

Submission Header Summary

Element	Value
Submission Type	20-F
Contact Information	
Name	EDGAR Advantage Service Team
Phone Number	800-688-1933
Filer Information	
CIK	0001444406
CCC	*****
Issuer Stock Exchanges	
Stock Exchange	NYSE
Period Date	12-31-2021
Shell Company	false
Voluntary Filer	false
Well-Known Seasoned Issuer	true
Emerging Growth Company	false
Accelerated Filer Status	Large Accelerated Filer
Notifications	
Email Address	green_team2@ToppanMerrillLLC.com

Document Sequence

Count	Output File Name	Source File Name	Document Type	Description
1	ec-20211231x20f.htm	ec_20211231_20F_TaxonomyIFRS2021	20-F	20-F
2	ec-20211231xex1d1.htm	ec_Ex1_1	EX-1.1	EX-1.1
3	ec-20211231xex4d20.htm	ec_Ex4_20	EX-4.20	EX-4.20
4	ec-20211231xex4d21.htm	ec_Ex4_21	EX-4.21	EX-4.21
5	ec-20211231xex8d1.htm	ec_Ex8_1	EX-8.1	EX-8.1
6	ec-20211231xex12d1.htm	ec_Ex12_1	EX-12.1	EX-12.1
7	ec-20211231xex12d2.htm	ec_Ex12_2	EX-12.2	EX-12.2
8	ec-20211231xex13d1.htm	ec_Ex13_1	EX-13.1	EX-13.1
9	ec-20211231xex23d1.htm	ec_Ex23_1	EX-23.1	EX-23.1
10	ec-20211231xex23d2.htm	ec_Ex23_2	EX-23.2	EX-23.2
11	ec-20211231xex23d3.htm	ec_Ex23_3	EX-23.3	EX-23.3
12	ec-20211231xex23d4.htm	ec_Ex23_4	EX-23.4	EX-23.4
13	ec-20211231xex23d5.htm	ec_Ex23_5	EX-23.5	EX-23.5
14	ec-20211231xex99d1.htm	ec_Ex99_1	EX-99.1	EX-99.1
15	ec-20211231xex99d2.htm	ec_Ex99_2	EX-99.2	EX-99.2
16	ec-20211231xex99d3.htm	ec_Ex99_3	EX-99.3	EX-99.3
17	ec-20211231xex99d4.htm	ec_Ex99_4	EX-99.4	EX-99.4
18	ec-20211231x20f040.jpg		GRAPHIC	GRAPHIC
19	ec-20211231x20f005.jpg		GRAPHIC	GRAPHIC
20	ec-20211231x20f033.jpg		GRAPHIC	GRAPHIC
21	ec-20211231x20f009.jpg		GRAPHIC	GRAPHIC
22	ec-20211231x20f004.jpg		GRAPHIC	GRAPHIC
23	ec-20211231x20f041.jpg		GRAPHIC	GRAPHIC
24	ec-20211231x20f002.jpg		GRAPHIC	GRAPHIC
25	ec-20211231x20f039.jpg		GRAPHIC	GRAPHIC
26	ec-20211231x20f034.jpg		GRAPHIC	GRAPHIC
27	ec-20211231xex4d20002.jpg		GRAPHIC	GRAPHIC
28	ec-20211231xex4d20004.jpg		GRAPHIC	GRAPHIC
29	ec-20211231xex4d20006.jpg		GRAPHIC	GRAPHIC
30	ec-20211231xex4d20005.jpg		GRAPHIC	GRAPHIC
31	ec-20211231xex23d2002.jpg		GRAPHIC	GRAPHIC

32	ec-20211231xex23d2001.jpg	GRAPHIC	GRAPHIC
33	ec-20211231xex23d3001.jpg	GRAPHIC	GRAPHIC
34	ec-20211231xex23d3002.jpg	GRAPHIC	GRAPHIC
35	ec-20211231xex23d4001.jpg	GRAPHIC	GRAPHIC
36	ec-20211231xex23d5001.jpg	GRAPHIC	GRAPHIC
37	ec-20211231xex99d1004.jpg	GRAPHIC	GRAPHIC
38	ec-20211231xex99d1005.jpg	GRAPHIC	GRAPHIC
39	ec-20211231xex99d1001.jpg	GRAPHIC	GRAPHIC
40	ec-20211231xex99d1002.jpg	GRAPHIC	GRAPHIC
41	ec-20211231xex99d2002.jpg	GRAPHIC	GRAPHIC
42	ec-20211231xex99d2001.jpg	GRAPHIC	GRAPHIC
43	ec-20211231xex99d3001.jpg	GRAPHIC	GRAPHIC
44	ec-20211231xex99d3002.jpg	GRAPHIC	GRAPHIC
45	ec-20211231xex99d4005.jpg	GRAPHIC	GRAPHIC
46	ec-20211231xex99d4004.jpg	GRAPHIC	GRAPHIC
47	ec-20211231xex99d4002.jpg	GRAPHIC	GRAPHIC
48	ec-20211231xex99d4013.jpg	GRAPHIC	GRAPHIC
49	ec-20211231xex99d4012.jpg	GRAPHIC	GRAPHIC
50	ec-20211231.xsd	EX-101.SCH	EX-101.SCH
51	ec-20211231_cal.xml	EX-101.CAL	EX-101.CAL
52	ec-20211231_def.xml	EX-101.DEF	EX-101.DEF
53	ec-20211231_lab.xml	EX-101.LAB	EX-101.LAB
54	ec-20211231_pre.xml	EX-101.PRE	EX-101.PRE

[Table of Contents](#)

As filed with the Securities and Exchange Commission on April 25, 2022

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM 20-F
ANNUAL REPORT PURSUANT TO
SECTION 13 OR 15(d) OF
THE SECURITIES EXCHANGE ACT OF 1934

For the fiscal year ended December 31, 2021

Commission file number: 001-34175

ECOPETROL S.A.
(Exact name of Registrant as specified in its charter)

N/A
(Translation of Registrant's name into English)

REPUBLIC OF COLOMBIA
(Jurisdiction of incorporation or organization)

Carrera 13 No. 36 – 24
BOGOTA – COLOMBIA
(Address of principal executive offices)
Tel. (57) 310 315 8600

Lina María Contreras Mora

Investor Relations Officer
investors@ecopetrol.com.co
Tel. (57) 310 315 8600
Carrera 13 No.36 - 24
Bogota, Colombia

(Name, Telephone, E-Mail and/or Facsimile number and Address of Company Contact Person)

Securities registered or to be registered pursuant to Section 12(b) of the Act.

Title of each class	Trading Symbol(s)	Name of each exchange on which registered:
American Depositary Shares (as evidenced by American Depositary Receipts), each representing 20 common shares par value COP\$609 per share	EC	New York Stock Exchange
Ecopetrol common shares par value COP\$609 per share		New York Stock Exchange (for listing purposes only)
5.875% Notes due 2023	EC23	New York Stock Exchange
4.125% Notes due 2025	EC25	New York Stock Exchange
5.375% Notes due 2026	EC26	New York Stock Exchange
6.875% Notes due 2030	EC30	New York Stock Exchange
4.625% Notes due 2031	EC31	New York Stock Exchange
7.375% Notes due 2043	EC43	New York Stock Exchange
5.875% Notes due 2045	EC45	New York Stock Exchange
5.875% Bonds due 2051	EC51	New York Stock Exchange

Securities registered or to be registered pursuant to Section 12(g) of the Act: None

Securities for which there is a reporting obligation pursuant to Section 15(d) of the Act: None

Indicate the number of outstanding shares of each of the issuer's classes of capital or common stock as of the close of the period covered by the annual report.

41,116,694,690 Ecopetrol common shares, par value COP\$609 per share

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act.

[Table of Contents](#)

☒ Yes ☐ No

If this report is an annual or transition report, indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934.

☐ Yes ☒ No

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days.

☒ Yes ☐ No

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files).

☒ Yes ☐ No

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or an emerging growth company. See definition of “large accelerated filer,” “accelerated filer,” and “emerging growth company” in Rule 12b-2 of the Exchange Act.

Large accelerated filer ☒

Accelerated filer ☐

Non-accelerated filer ☐

Emerging growth company ☐

If an emerging growth company that prepares its financial statements in accordance with U.S. GAAP, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards[†] provided pursuant to Section 13(a) of the Exchange Act. ☐

[†] The term “new or revised financial accounting standard” refers to any update issued by the Financial Accounting Standards Board to its Accounting Standards Codification after April 5, 2012.

Indicate by check mark whether the registrant has filed a report on and attestation to its management’s assessment of the effectiveness of its internal control over financial reporting under Section 404(b) of the Sarbanes-Oxley Act (15 U.S.C. 7262(b)) by the registered public accounting firm that prepared or issued its audit report.

☒ Yes ☐ No

Indicate by check mark which basis of accounting the registrant has used to prepare the financial statements included in this filing:

☐ U.S. GAAP

☒ International Financial Reporting Standards as issued by the International Accounting Standards Board

☐ Other

If “Other” has been checked in response to the previous question, indicate by check mark which financial statement item the registrant has elected to follow:

☐ Item 17 ☐ Item 18

If this is an annual report, indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act).

☐ Yes ☒ No

[Table of Contents](#)

Table of Contents

	Page
1. Introduction	1
1.1. About This Annual Report	1
1.2. Forward-looking Statements	2
1.3. Selected Operating Data	3
2. Strategy and Market Overview	3
2.1. Our Corporate Strategy	5
2.1.1. 2040 Strategy: Energy that Transforms	5
2.1.1.1. Grow with the Energy Transition	5
2.1.1.2. Generate Value through TSEG	6
2.1.1.3. Cutting-edge Knowledge	6
2.1.1.4. Competitive Returns	6
2.1.2. 2022 – 2024 Business Plan	6
2.1.3. 2022 Investment Plan	8
2.2. Unconventional Hydrocarbons	9
3. Business Overview	10
3.1. Our History	10
3.2. Our Corporate Structure	11
3.3. Recent Developments	12
3.4. Our Business	12
3.5. Exploration and Production	12
3.5.1. Exploration Activities	12
3.5.1.1. Exploration Activities in Colombia	13
3.5.1.2. Exploration Activities Outside Colombia	15
3.5.2. Production Activities	17
3.5.2.1. Production Activities in Colombia	17
3.5.2.1.1. Ecopetrol S.A.'s Production Activities in Colombia	17
3.5.2.1.2. Ecopetrol S.A.'s Affiliates and Subsidiaries' Production Activities in Colombia	24
3.5.2.2. Production Activities Outside Colombia	27
3.5.2.3. Marketing of Crude Oil and Natural Gas	31
3.5.3. Reserves	32
3.5.4. Joint Venture and Other Contractual Arrangements	41
3.6. Transportation and Logistics	45
3.6.1. Transportation Activities	45
3.6.1.1. Pipelines	47
3.6.1.2. Export and Import Facilities	50
3.6.2. Other Transportation Facilities	50
3.6.3. Marketing of Transportation Services	50
3.7. Refining and Petrochemicals	52
3.7.1. Refining	52
3.7.1.1. Barrancabermeja Refinery	52
3.7.1.2. Cartagena Refinery	53
3.7.1.3. Esentia S.A.	54
3.7.1.4. Invercolsa	55
3.7.1.5. Biofuels	55
3.7.2. Marketing and Supply of Refined Products	55
3.8. Electric Power Transmission and Toll Roads Concessions	55
3.8.1. ISA	55
3.8.2. Electricity Transmission Activities	56
3.8.2.1. Electricity Transmission Activities in Colombia	57
3.8.2.2. Electricity Transmission Activities Outside Colombia	57
3.8.3. Toll Roads Concessions Activities	57
3.8.4. Telecommunications and ICT	58
3.9. Research and Development; Intellectual Property	58
3.10. Applicable Laws and Regulations	59
3.10.1. Regulation of Exploration and Production Activities	59
3.10.1.1. Business Regulation	59
3.10.1.1.1. Environmental Licensing and Prior Consultation	63
3.10.1.1.2. Royalties	65
3.10.2. Regulation of Transportation Activities	65
3.10.3. Regulation of Refining and Petrochemical Activities	67
3.10.3.1. Regulation of Liquefied Petroleum Gas (LPG) and Liquid Fuels	68

[Table of Contents](#)

3.10.3.2. Regulation Concerning Production and Prices	68
3.10.3.3. Regulation of Biofuels, Biogas and Related Activities	70
3.10.4. Regulation of the Natural Gas Market	71
3.10.5. Regulation of the Electric Energy Commercialization Activity	72
3.10.6. Regulation of the Electricity Self-Generation Activity	74
3.10.7. Regulatory Framework for Energy Transmission	75
3.10.8. Regulation of the Toll Roads Concessions	77
3.11. Technology, Environment, Social and Governance (TESG)	79
3.11.1. Energy Initiatives	84
3.11.2. HSE	84
3.11.2.1. Ecopetrol S.A.	84
3.11.2.2. Cenit	90
3.11.2.3. Cartagena Refinery	90
3.11.2.4. ISA	90
3.12. Related Party and Intercompany Transactions	91
3.13. Insurance	97
3.13.1. Downstream, Upstream, and Midstream	98
3.13.2. Electric Power Transmission and Toll Roads Concessions	100
3.14. Human Resources/Labor Relations	101
3.14.1. Employees	101
3.14.2. Collective Bargaining Arrangements	103
4. Financial Review	103
4.1. Factors Affecting Our Operating Results	104
4.2. The COVID-19 Pandemic	107
4.3. Effect of Taxes, Exchange Rate Variation, Inflation and the Price of Oil on our Results	108
4.3.1. Taxes	108
4.3.2. Exchange Rate Variation	111
4.3.3. Effects of Inflation	113
4.3.4. Effects of Crude Oil and Refined Product Prices	113
4.4. Accounting Policies	113
4.5. Critical Accounting Judgments and Estimates	114
4.6. Operating Results	114
4.6.1. Consolidated Results of Operations	114
4.6.1.1. Total Revenues	115
4.6.1.2. Cost of Sales	116
4.6.1.3. Operating Expenses before Impairment of Non-Current Assets Effects	117
4.6.1.4. Impairment of Non-Current Assets	119
4.6.1.5. Finance Results, Net	120
4.6.1.6. Income Tax	121
4.6.1.7. Net Income (Loss) Attributable to Owners of Ecopetrol	121
4.6.1.8. Segment Performance and Analysis	122
4.6.1.9. Exploration and Production Segment Results	123
4.6.1.10. Transportation and Logistics Segment Results	126
4.6.1.11. Refining and Petrochemicals Segment Results	127
4.6.1.12. Electric Power Transmission and Toll Roads Concessions Segment Results	129
4.7. Liquidity and Capital Resources	129
4.7.1. Review of Cash Flows	129
4.7.2. Capital Expenditures	131
4.7.3. Dividends	131
4.8. Summary of Differences between Internal Reporting (Colombian IFRS and IFRS)	132
4.9. Financial Indebtedness and Other Contractual Obligations	134
4.10. Off Balance Sheet Arrangements	137
4.11. Trend Analysis and Sensitivity Analysis	137
5. Risk Review	140
5.1. Risk Factor Summary	140
5.2. Risk Factors	143
5.2.1. Risks Related to Our Business	143
5.2.2. Risks Related to Colombia and the Region's Political and Regional Environment	159
5.2.3. Legal and Regulatory Risks	165
5.2.4. Risks Related to Our ADSs	168
5.2.5. Risks Related to the Controlling Shareholder	171
5.3. Risk Management	171
5.3.1. Integrated Risk Management System and Internal Control System	171
5.3.2. Managing Low Carbon Economy and Climate Change Risks	173

[Table of Contents](#)

5.3.3. Managing Information Security and Cybersecurity	173
5.3.4. Managing Financial Risk	174
5.4. Legal Proceedings and Related Matters	176
6. Shareholder Information	185
6.1. Shareholders' General Assembly	185
6.2. Dividend Policy	185
6.3. Market and Market Prices	186
6.4. Description of Ecopetrol Registered Debt Securities	187
6.5. Description of Ecopetrol ADRs	187
6.6. Taxation	189
6.6.1. Colombian Tax Considerations	189
6.6.2. U.S. Federal Income Tax Consequences	193
6.7. Exchange Controls and Limitations	196
6.8. Exchange Rates	197
6.9. Major Shareholders	197
6.10. Enforcement of Civil Liabilities	198
7. Corporate Governance	199
7.1. Bylaws	201
7.2. Code of Ethics and Conduct	204
7.3. Board of Directors	205
7.3.1. Board Practices	210
7.3.2. Board Committees	211
7.4. Compliance with NYSE Listing Rules	213
7.5. Management	215
7.6. Compensation of Directors and Management	218
7.7. Share Ownership of Directors and Executive Officers	219
7.8. Controls and Procedures	219
8. Financial Statements	222
9. Signature Page	222
10. Exhibits	223
11. Cross-reference to Form 20-F	225

[Table of Contents](#)

1. Introduction

1.1. About This Annual Report

We file our Annual Report on Form 20-F and other information with the U.S. Securities and Exchange Commission.

We file reports, including annual reports on Form 20-F, and other information with the SEC pursuant to the rules and regulations of the SEC that apply to foreign private issuers. The materials included in this annual report on Form 20-F may be downloaded at the SEC's website: <http://www.sec.gov>. Any filings we make are also available to the public over the Internet at the SEC's website at www.sec.gov and at our website at www.ecopetrol.com.co. This URL is intended to be an inactive textual reference only. It is not intended to be an active hyperlink to our website. The information on our website, which might be accessible through a hyperlink resulting from this URL, is not and shall not be deemed to be incorporated into this annual report.

Unless the context otherwise requires, the terms "Ecopetrol", "we", "us", "our", "Ecopetrol Group", or the "Company" are used in this annual report to refer to Ecopetrol S.A. and its subsidiaries on a consolidated basis.

For purposes of the section *Business Overview—Exploration and Production*, "we" refers to Ecopetrol S.A., its subsidiaries and the partnerships in which Ecopetrol has an interest.

References to the Nation in this annual report relate to the Republic of Colombia (Colombia), our controlling shareholder. References made to the Colombian government (or the Government) correspond to the executive branch including the President of Colombia, the ministries, and other government agencies responsible for regulating our business.

Our consolidated financial statements for the years ended December 31, 2019, 2020, and 2021 were prepared in accordance with IFRS as issued by IASB. References in this annual report to IFRS mean IFRS as issued by the IASB.

IFRS differs in certain significant aspects from the current reporting standards as in effect in Colombia (Colombian IFRS), which is the accounting standard we use for local reporting purposes. As a result, our financial information presented under IFRS is not directly comparable to our financial information presented under Colombian IFRS. For a description of the differences between Colombian IFRS and IFRS, see section *Financial Review—Summary of Differences between Internal Reporting Policies and IFRS*.

Our consolidated financial statements were consolidated line by line and all transactions and balances among subsidiaries have been eliminated. These financial statements include the financial results of all subsidiary companies controlled, directly or indirectly, by Ecopetrol S.A. See Exhibit 1 – *Consolidated companies, associates, and joint ventures, to our consolidated financial statements included in this annual report*.

In this annual report, references to "US\$" or "U.S. dollars" are to United States dollars and references to "COP\$" "Colombian Peso" or "Colombian Pesos" are to Colombian Pesos, the Ecopetrol Group's functional and presentation currency under which we prepare our consolidated financial statements. This annual report translates certain Colombian Peso amounts into U.S. dollars at specified rates solely for the convenience of the reader. Unless otherwise indicated, such Colombian Peso amounts have been translated at the rate of COP\$3,981.16 per US\$1.00, which corresponds to the average *Tasa Representativa del Mercado* (TRM), or Representative Market Exchange Rate, for 2021. Such conversion should not be construed as a representation that the Colombian Peso amounts correspond to, or have been or could be converted into, U.S. dollars at that rate or any other rate. On April 18, 2022, the Representative Market Exchange Rate was COP\$ 3,737.32 per US\$1.00. Certain figures shown in this annual report have been subject to rounding adjustments, and, accordingly, certain totals may therefore not precisely equal the sum of the numbers presented. In this annual report, a billion is equal to one with nine zeros.

[Table of Contents](#)

1.2. *Forward-looking Statements*

This annual report on Form 20-F contains forward-looking statements within the meaning of the safe harbor provisions of the U.S. Private Securities Litigation Reform Act of 1995. These statements are not based on historical facts and reflect our expectations for future events and results. Most facts are uncertain because of their nature. Words such as “anticipate”, “believe”, “could”, “estimate”, “expect”, “should”, “plan”, “potential”, “predict”, “prognosticate”, “project”, “target”, “achieve” and “intend”, among other similar expressions, are understood as forward-looking statements. We have made forward-looking statements that address, among other things:

- changes in international crude oil and natural gas prices;
- our exploration and production activities, including drilling; import and export activities;
- our liquidity, cash flow, and sources of funding;
- the results of our electric power transmission and toll roads activities through our subsidiary, Interconexión Eléctrica S.A. (“ISA”) and our ability to integrate ISA’s operations;
- our projected and targeted capital expenditures and other cost commitments and revenues; and
- dates by which certain areas will be developed or will come on-stream; and
- future growth and development of the energy industry.

Our forward-looking statements and sensitivity analysis are not guarantees of future performance and are subject to assumptions that may prove incorrect and to risks and uncertainties that are difficult to predict. Actual results could differ materially from those expressed or forecasted in any forward-looking statements as a result of a variety of factors. These factors may include, but are not limited to, the following:

- general economic and business conditions, including crude oil and other commodity prices, refining margins and prevailing exchange rates;
- competition;
- our ability to obtain financing;
- our ability to find, acquire or gain access to additional reserves and our ability to develop existing reserves;
- uncertainties inherent in making estimates of our reserves;
- the modification, adjustment or reduction of the tariffs, rates or fees charged by the electricity transmission businesses in the countries where they operate;
- significant political, economic and social developments in Colombia and other countries where we do business;
- natural disasters, pandemics and other public health events, including the coronavirus (“COVID 19”) pandemic;
- the recent Russian invasion of Ukraine;
- other military operations, terrorist acts, wars or embargoes;
- regulatory developments, including regulations related to climate change;

[Table of Contents](#)

- receipt of government approvals and licenses;
- technical difficulties; and
- other factors discussed in section *Risk Review—Risk Factors* of this document as “Risk Factors.”

All forward-looking statements attributed to us are qualified in their entirety by this cautionary statement. We undertake no obligation to publicly update or revise any forward-looking statements, whether as a result of new information or for any other reason. Accordingly, readers should not place undue reliance on forward-looking statements.

1.3. *Selected Operating Data*

The following table sets forth, for the periods and at the dates indicated, certain key operating data.

Table 1 – Selected Operating Data

Operating Information	2021	2020	2019	2018	2017
Oil and gas production (mboed)	679.0	697.0	725.1	720.4	715.1
Proved oil and gas reserves (mmboe) ⁽¹⁾	2,002	1,770	1,893	1,727	1,659
Exploratory wells ⁽²⁾⁽³⁾	16	18	20	17	20
Refinery throughput (bpd) ⁽⁴⁾	355,895	322,038	375,754	375,666	347,483
1P Reserves replacement ratio	200 %	48 %	169 %	129 %	126 %
Transmission Lines (km)	48,330	47,358	46,374	45,142	44,176

(1) Include natural gas royalties and exclude crude oil royalties.

(2) Gross exploratory wells.

(3) The table does not include stratigraphic test wells. Although these wells are considered to be exploratory wells, we do not include them as part of our exploratory wells information in the table above as these wells are plugged and abandoned after the relevant test study is completed.

(4) Includes the Barrancabermeja, Cartagena, Apiay and Orito refineries.

2. *Strategy and Market Overview*

Global oil demand increased significantly in 2021, on the back of the economic recovery driven by the slowdown of the COVID-19 pandemic, which in turn was due to a rapid rollout of effective COVID-19 vaccines and supportive economic policies. Additionally, most central banks kept their interest rates at record lows and the world benefited from the strong fiscal stimulus implemented in the United States and the Eurozone (in the United States, the fiscal stimulus in 2021 stood at 10% of GDP and in the Euro Zone it stood at 6% of GDP). In total, crude oil demand raised by 4.9 million barrels per day (“mmbd”) in 2021, after having declined by 9.1 mmbd in 2020.

Despite the rapid recovery in demand and favorable crude oil prices throughout the year (since February Brent price remained above US\$ 60/Bl), supply only grew by 1.6 mmbd between 2020 and 2021. The Organization of the Petroleum Exporting Countries (OPEC) and ten of the world’s major non-OPEC oil-exporting nations, including Russia (OPEC+), kept their production under control, favoring a continuous reduction of the bulging inventories that accumulated in 2020. In 2021, OPEC only returned 0.7 mmbd in supply, out of the 4.2 mmbd it withdrew from the market in 2020. Outside OPEC+, crude oil production growth in 2021 was very low, primarily as a result of strict capital discipline of oil and gas companies.

Restricted supply growth led to a fast reduction in world oil inventories, at a rate of 2.4 mmbd (the crude oil market was in deficit throughout 2021), allowing not only to drain the inventories that built up in 2020 (when such inventories grew at a rate of 1.8 mmbd), but also to bring inventories in OECD (Organization for Economic Co-operation and Development) countries to levels not seen since 2014. In this context, Brent showed a swift recovery, reaching an average level of US\$ 71/Bl in 2021, far exceeding the average of US\$43/Bl in 2020.

[Table of Contents](#)

The table below sets forth the oil demand and supply balance compared against the evolution of the Brent price as of the periods indicated:

Graph 1 – Supply/Demand Balance vs ICE Brent Price Evolution



Source: Platts, Bloomberg

Moreover, after weeks of intense tensions between Russia and Ukraine, as well as with the West, on February 24, 2022, Russia launched a full-scale military invasion of Ukraine. This war has increased volatility in the capital markets and has caused many commodities to rise due to supply risk (Brent crude oil prices have reached levels above 100 USD per barrel and natural gas prices in Europe have exceeded 30 USD/mmmbtu). To the extent the conflict is prolonged energy prices (particularly natural gas) are expected to continue to increase, particularly if energy supplies and its related derivatives, such as naphtha, are disrupted, further exacerbating supply chain risks of companies with higher sensitivities to rising energy and related costs.

Also, although international oil prices and global demand and supply dynamics are significant factors affecting our business and financial condition, Colombia's local economic factors have also influenced and will continue to affect our performance, given that we conduct most of our business in Colombia.

The Colombian economy, as measured by GDP, grew 10.6% in 2021, one of the highest rates in the region and a significant improvement to 2020 when the Colombian economy, as measured by GDP, decreased by 7.0%. This growth was mainly driven by private consumption, which expanded at a rate of 14.6%, with more than 1.5 million jobs recovered in 2021. Public consumption also contributed favorably to GDP, growing at a rate of 12.1% in 2021. The external sector, on the other hand, contributed negatively to GDP growth, with imports growing much faster than exports (27.5% compared to 14.2% in 2021), widening the current account deficit and weakening the exchange rate.

Local sales of refined products jumped 25% in 2021 compared to 2020, on the back of strong gasoline sales. Gasoline demand rebounded 34%, fueled by easing coronavirus-led mobility curbs and higher driving activity, surpassing pre-pandemic levels. Meanwhile, diesel demand grew at a slower pace (14%), affected by social unrest experienced during May and June, that blocked the country's main roads. All in all, the country's demand for refined products reached 301 mbd (thousand barrels per day) in 2021, exceeding 2019 levels.

[Table of Contents](#)

2.1. Our Corporate Strategy

2.1.1. 2040 Strategy: Energy that Transforms

On February 8, 2022, the Ecopetrol Group's published its long-term strategy, also referred to as "Energy that Transforms", being the first company of the oil and gas industry in Latin America to disclose a roadmap for the next 20 years. The strategy fully addresses current environmental, social, and governance challenges, while maintaining its focus on generating sustainable value for all its stakeholders. The objective of this long-term strategy is to consolidate an agile and dynamic organization that promptly adapts to the changes faced by the energy industry and the challenges of a world that moves forward generating and using cleaner sources of energy while anticipating growth opportunities and gaining leadership in the American continent.

"Energy that Transforms" is expected to position the Ecopetrol Group as an integrated energy group that participates in all segments of the hydrocarbon chain (upstream, midstream, downstream, and commercialization) as well as energy infrastructure, with the ambition to diversify into low-emission businesses that allow it to continue reducing its carbon footprint and achieve net-zero carbon emissions (scopes 1 and 2) and a 50% reduction in total emissions (scopes 1, 2 and 3), both by 2050. This strategy comprises four strategic pillars: (i) Grow with the Energy Transition, (ii) Generate Value through Technology, Environmental, Social and Governance (TESG), (iii) Cutting-edge Knowledge, and (iv) Competitive Returns. The strategy is based on the following oil price assumptions: (i) for the 2022 – 2024 Plan: 2022; US\$ 63/Bl, 2023 and 2024; US\$ 60/Bl and (ii) for the long-term plan: 2025 – 2040: US\$ 45 – 55/Bl. Within this context, the main long-term objectives are presented below:

2.1.1.1. Grow with the Energy Transition

The first pillar aims at maintaining the Ecopetrol Group's competitiveness in the integrated hydrocarbon value chain and increasing gas supply, offshore exploration, enhanced recovery, and the development of unconventional reservoirs, thereby strengthening our traditional businesses with the latest technology and innovations to have more sustainable processes and maximize the value of reserves and future barrels.

On average, we expect to invest between US\$ 5.2 and US\$ 6.0 billion annually by 2040. In production, investment is expected to be focused on enhanced recovery technologies, new activity in the Piedemonte Llanero region, and protecting the base production curve by improving the natural decline of production fields. In line with international best practices, the valuation for these projects includes greenhouse gas emissions cost under the CO2 shadow price methodology, with a price curve that begins at 20 US\$/tCO2e today and reaches 40 US\$/tCO2e by 2030.

In the upstream segment, we expect to reach nearly 850 mboed of production by 2030, even under conservative price scenarios (i.e., using a Brent price range of between US\$ 45 - 55/Bl).

In terms of gas, production is expected to increase, along with a search for new commercialization options, seeking also to venture into regasification and storage, with a 33% participation target in total production by 2040. The latter is expected, among others, to maintain market share in Colombia at 78% in gas and 77% in Liquefied Petroleum Gas (LPG).

In the midstream segment, the long-term objectives of the segment include, among others, capturing over 90% share of the Colombian hydrocarbon transport market.

The downstream segment seeks to: (i) increase the margin of existing refineries' assets; (ii) maximize the polypropylene margin, and (iii) assess options for diversifying into petrochemicals.

Additionally, the value of the various products is expected to be strengthened through commercial strategies which seek to diversify heavy crude destinations, leverage the advantage in quality and reliability of supply and integrate customer-based logistics and recipes.

For the electric power transmission and toll roads concessions segment, the aim is to continue the growth trajectory in both new and existing geographies, taking advantage of ISA's strategic leadership position in the power transmission business in Latin America, in line with ISA's 2030 Strategic Plan.

[Table of Contents](#)

The diversification towards low-emission businesses in the long term contemplates: (i) between 2019 and 2030 carry out investments of US\$8.3 billion in current businesses and geographies and US\$2.2 billion in new geographies, and (ii) having non-conventional renewable energies achieve a share of between 25% and 40% in our self-generation matrix by 2040.

The aforementioned is expected to be supported by a gradual incursion into emerging businesses that are aligned with new global trends that seek to mitigate the effects of climate change, such as the production of low-carbon hydrogen as an energy source, Carbon Capture, Utilization, and Storage (CCUS), and Natural Climate Solutions (NCS). The value proposition includes diversifying into low-emission businesses, for which more than US\$ 200 million are expected to be invested over the next three years, in green hydrogen projects in the Cartagena and Barrancabermeja refineries, and in CO2 capture projects through both emerging technologies and NCS projects.

2.1.1.2. Generate Value through TESH

This pillar seeks to strengthen transparent and ethical relations with our stakeholders, applying high standards of corporate governance to achieve environmentally responsible, safe, and efficient operations in which innovation and technology act as catalysts to accelerate solutions for future challenges. To achieve this, the Ecopetrol Group has identified 5 strategic lines: (i) build and generate value through an efficient, clean, and safe production, (ii) accelerate and prioritize decarbonization and energy efficiency, (iii) ensure circular water management, (iv) support local development in the territories where we operate, and (v) generate trust in the social context through proactive dialogue and by improving the quality of life of people, with a focus on inclusion and on reactivating local economies.

Environmentally, the long-term TESH targets include the achievement of: (i) net-zero emissions of CO2 equivalent by 2050 (scopes 1 and 2), (ii) zero routine gas flaring by 2030, (iii) zero treated produced and waste water discharges by 2045 along with an expected reduction of 58% to 66% in the intake of fresh water for operations.

On the social front, the long-term TESH targets focus on promoting the generation of approximately 230 thousand new non-oil related jobs by 2040 and contributing to the education of two million young Colombians.

2.1.1.3. Cutting-edge Knowledge

This pillar seeks to develop the required skills and capacities to face the challenges towards growth and TESH, through a comprehensive science, technology, and innovation strategy (CT+i for its Spanish acronym), as well as improving the competitiveness and resilience of current assets, contributing to diversification, increasing clean energy, decarbonizing operations and strengthening of talent through transformative practices by means of training programs to optimize performance (upskilling) or fill new positions (reskilling).

Thus, the expected long-term goals are, among others: (i) having approximately 70% of workers complete reskilling programs by 2030, and (ii) achieving automation of 100% of human talent processes by 2030.

2.1.1.4. Competitive Returns

Finally, the fourth pillar ensures continuity of our strict capital discipline, the efficient use of resources, and the protection of cash, all of which have been leveraging the Ecopetrol Group's strategy since 2015. The long-term aspiration includes, among others, maintaining the ordinary dividend policy at between 40% and 60%, in line with operating results. The long-term strategy will allow transfers to the Nation between US\$ 3.4 and US\$ 5.3 billion annually on average, through royalties, taxes, and dividends.

2.1.2. 2022 – 2024 Business Plan

The Ecopetrol Group's Organic Business Plan (the "Business Plan") for the 2022-2024 period is aimed at fulfilling the four strategic pillars of the 2040 Strategy and also seeks to maintain an effective response to uncertain economic and environmental conditions, ensure the financial sustainability of the Ecopetrol Group and deliver a competitive value proposition to stakeholders in the medium and long term. The organic investment included in the Business Plan is expected to be financed mainly with internal cash generation. The Brent price assumptions under the Business Plan are as follows: US\$ 63/BI in 2022, and US\$ 60/BI in 2023 and 2024.

[Table of Contents](#)

The Business Plan features an investment between US\$ 17 billion and US\$ 20 billion for the three-year period (2022 - 2024), of which 74% is expected to be allocated in Colombia, and 26% in the United States, Brazil, Chile, and Peru. It seeks to ensure capital allocation towards the incorporation of more competitive reserves and resources, positioning the company in the energy transition (with a main focus in gas, decarbonization, short-cycle hydrocarbons, and the incorporation of renewable energies), reliability investments necessary for a responsible and sustainable operation, and social investment focused in areas where our operations are located.

Approximately 75% of the investment is expected to be allocated towards growth opportunities aimed at continuing the exploration and profitable development of existing assets, with investments focused on the continuation of enhanced recovery programs and growth of the gas value chain. The remaining 25% is expected to be allocated to operational continuity, seeking to preserve the value of the assets and bring reliability and integrity to the Ecopetrol Group's consolidated operations.

The most relevant operational targets of the Business Plan are the following: (i) reaching production levels between 700 thousand and 705 thousand barrels of oil equivalent per day ("boepd") in 2022, 730 thousand boepd by 2024; (ii) reaching a joint throughput at the Barrancabermeja and Cartagena refineries of between 340 thousand and 360 thousand barrels per day in 2022, with a growth path at such refineries of up to 430 thousand barrels per day by 2024; and (iii) to reach transported volumes of over one million barrels per day – in line with the evolution of the production and demand for liquid fuels in the country.

Upstream

The Business Plan allocates an investment between US\$ 11 billion and US\$ 12 billion, maintaining the growth of this segment as a strategic objective, with a focus on accelerating the progression of resources and reserves, through exploration, drilling, and enhanced recovery.

Of the aforementioned resources, (i) 70% is expected to be allocated in production activities in Colombia, including the Rubiales, Castilla, Piedemonte, CPO09, Chichimene, and Caño Sur fields, with a continued focus on maturity and development of improved recovery activities, (ii) 21% is expected to be allocated internationally, where the main focus areas will be Brazil and the Permian Basin in the United States; and (iii) 9% of the resources are expected to be allocated in exploration activities, with expected drilling of more than 50 wells located in the basins of greater materiality, with emphasis on the Caribbean Offshore, Piedemonte, Middle Magdalena Valley and Llanos Orientales basin.

In terms of unconventional reservoirs, the Ecopetrol Group will continue the development process of the Comprehensive Research Pilot Projects (PPII for its Spanish acronym), Kalé and Platero, in the Middle Magdalena Valley basin in Colombia with expected investments of approximately US\$ 80 million, and well as increasing development activities in the Permian Basin in Texas with expected investments of approximately US\$ 1.9 billion.

As for the natural gas chain, US\$ 1.8 billion of the total investment is expected to be allocated towards the evaluation and development of the largest offshore gas discoveries in the Colombian Caribbean, and in the exploration and development of Piedemonte and other sources of gas in the Middle Magdalena Valley, Guajira, and the Sinú-San Jacinto basin areas in Colombia.

Midstream

The Business Plan allocates an investment between US\$ 800 million and US\$ 900 million, mainly aimed at strengthening the integrity and reliability of the infrastructure, generating operational efficiency, prioritizing resources for the growth of the multi-purpose pipeline business for refined products, while advancing in increasing flexibility and efficiency in logistics for the evacuation of heavy crude and the growth of the crude oil pipeline infrastructure, and the consolidation of the Ecopetrol Group as a comprehensive logistics operator. These investments are also expected to enable future operating costs optimization by upgrading equipment and improving its performance.

[Table of Contents](#)

Downstream

The Business Plan allocates an investment between US\$ 1.2 billion and US\$ 1.4 billion focused on guaranteeing the reliability and sustainability of the operations across the Barrancabermeja and Cartagena refineries, as well as the development of fuel quality programs and wastewater management to ensure increasingly cleaner effluents and more resilient refineries to face energy transition scenarios. The estimated investment aims to achieve a joint throughput at such refineries reaching between 420 and 430 thousand barrels per day in 2024.

Electric Power Transmission and Toll Roads Concessions

The Business Plan aims at continuing the growth trajectory in Latin America, taking advantage of ISA's strategic leadership position in the power transmission business. The Ecopetrol Group expects to allocate an investment of US\$ 2.6 billion mainly in electric power transmission (80%) and toll roads (17%) with projects in Brazil, Colombia, Chile, and Peru.

Commercial Strategy

The Business Plan maintains the Ecopetrol Group's strategy of diversifying clients and destinations, aiming to maximize the commercialization margin, diversifying heavy crude destinations, leveraging the advantage in quality and reliability of supply, and integrating customer-based logistics and recipes. Additionally, it has an important emphasis on the independent refining sector in China, while maintaining an active participation in the refining market of the United States. The foregoing is expected to be leveraged on our operational flexibility at ports, stable quality of our crude oil, and optimization of logistics.

TESG

The Business Plan allocates approximately COP\$ 1.5 trillion for social investment, aimed at closing social gaps and promoting the development and well-being of the communities where the Ecopetrol Group operates, with strategic projects expected in infrastructure, public services, education, sports and health, inclusive rural development and entrepreneurship and business development.

US\$ 240 million are expected to be allocated to innovation, technology, and digital transformation projects, which include cybersecurity and cyberdefense programs, optimization of the supply chain, technologies for production water management as a profitable and sustainable resource, new technologies to increase the recovery factor, and studies for the capture of CO2 in natural sinks. In addition, the plan includes an expected investment of approximately US\$ 26 million by 2024 destined to optimize human talent through training, with close to 35% thereof expected to be allocated to retooling.

In connection with the Ecopetrol Group's energy transition strategy and TESG objectives, the Business Plan (without considering ISA) includes investments of approximately US\$ 1,400 million in projects for comprehensive water management, decarbonization, including solar, wind, and geothermal energy projects, energy efficiency, use of energy and alternative sources, fuel quality improvements, and studies and pilots in green and blue hydrogen for applications in refineries and mobility.

For more information on the TESG agenda see section [Technology, Environment, Social and Governance](#) (TESG).

2.1.3. 2022 Investment Plan

In December 2021, the Board of Directors approved between US\$ 4.8 billion and US\$ 5.8 billion for the 2022 investment plan at US\$ 63/Bt Brent. The Ecopetrol Group expects to allocate 70% of these investments to projects in Colombia and the remainder to the positioning and development of the Ecopetrol Group's operations in the United States, Brazil, Peru and Chile.

The 2022 investment plan for the electric power transmission and toll roads concessions segment includes investments of approximately US\$1.1 billion to be developed in Brazil (30%), Colombia (28%), Peru (24%), and Chile (18%). These investments are expected to be distributed in electric power transmission (83%), toll roads (16%) and telecommunications (1%).

[Table of Contents](#)

The 2022 investment plan also has a focus on supporting the Ecopetrol Group's energy transition and sustainability strategy, strengthening socio-environmental investment programs, deepening digital transformation, and accelerating the development and implementation of technologies to optimize operations throughout the chain. Approximately US\$50 million is expected to be invested in decarbonization projects in 2022, where renewable energy and gas use projects stand out as part of the roadmap to meet the Ecopetrol Group's decarbonization objectives.

The 2022 investment plan also includes investments in gas projects of between US\$ 400 million and US\$ 500 million, mainly in the exploration and production projects in the Piedemonte and Caribbean onshore/offshore.

Such investment plan also includes an investment of more than US\$ 700 million in unconventional oil and gas activities in the Permian basin in Texas, United States aiming at production growth, as well as approximately US\$ 20 million in investments in the Kalé and Platero projects located in the Middle Magdalena Valley in Colombia.

The table below sets forth the details of the investment plan per business segment announced in December 2021:

Table 2 – 2022 Investment Plan

Business Segment	% Percentage ⁽¹⁾
Exploration	7 %
Production	56 %
Midstream	6 %
Downstream	8 %
Electric Power Transmission and Toll Roads Concessions	20 %
Other	3 %
TOTAL	100 %

(1) Percentage over the upper range.

2.2. Unconventional Hydrocarbons

Our strategy for unconventional resources in Colombia is based on the high potential of Cretaceous rocks and the significant acreage position we have in the Middle Magdalena Basin. In September 2019, the Colombian Council of State (the highest administrative court in the country) sustained the suspension of the effects of Decree 3004 of 2013 and the Resolution 90341 of 2014 that established the technical requirements for the development of unconventional reservoirs. Despite the suspension of the effects of such regulation, the court has authorized the execution of PPIIs to obtain information on the possible effects of using multi-stage hydraulic fracture technology in the country.

On February 28, 2020, the Colombian Government, issued the Decree 328, providing the general guidelines for developing PPIIs, followed by the issuance of corresponding environmental technical and social regulation by other Ministries to allow PPIIs to be performed. Furthermore, on December 24, 2020, Ecopetrol S.A. signed a contract with the National Hydrocarbons Agency (*Agencia Nacional De Hidrocarburos*, or the "ANH" for its acronym in Spanish) regarding the development of a PPII, entitled Kalé, and, on June 4, 2021, Exxon Mobil Colombia signed a contract for the development of a PPII located near Ecopetrol S.A.'s PPII area, named Platero. On June 17, 2021, Exxon Mobil and Ecopetrol S.A. signed a consortium to jointly develop both PPIIs, in which Ecopetrol S.A. is the consortium operator.

On October 29, 2021, the environmental impact study (*estudio de impacto ambiental*, or "EIA" for its acronym in Spanish) for the Kalé project was submitted to the National Environmental Licensing Authority (*Autoridad Nacional de Licencias Ambientales*, or "ANLA" for its acronym in Spanish). On March 25, 2022, the ANLA granted the environmental license for the Kalé project.

On February 15, 2022, Ecopetrol submitted the EIA for the Platero project to the ANLA.

On April 21, 2022, the First Administrative Court of the Barrancabermeja Judicial Circuit suspended Ecopetrol's environmental license for the Kalé PPII and the licensing process for the Platero project. Ecopetrol will appeal the court's decision within the corresponding legal term.

[Table of Contents](#)

In addition, in connection with our unconventional resources strategy outside Colombia, in 2019 we formed a joint venture (JV) with Occidental Petroleum Corp for the development of approximately 97,000 acres in the Midland Basin, within the Permian Basin, Texas, by which we acquired 49% of Rodeo Midland Basin LLC (Rodeo). See section *Production Activities—Production Activities Outside Colombia*.

3. **Business Overview**

3.1. **Our History**

We were formed in 1951 by the Colombian government as *Empresa Colombiana de Petróleos* and began operating the crude oil fields at La Cira-Infantas, the first oil field in Colombia, where production started in 1918, and the pipeline that connected that field with the Barrancabermeja refinery and the port of Cartagena. In 1961, we assumed the direct operation of the Barrancabermeja refinery and continued its transformation into an industrial complex. In 1974, we acquired the Cartagena refinery (as defined below), which had been in operation since 1957. Pursuant to Decree 0062 of 1970, we were transformed into a governmental, industrial, and commercial company.

In 2003, pursuant to Decree Law 1760, the ANH was created and Ecopetrol's public role as administrator and regulator of the national hydrocarbons resources was transferred to the ANH. Ecopetrol modified its organic structure and became Ecopetrol S.A., a publicly held corporation, one hundred percent state-owned, and continued the development of exploration and production activities on a competitive basis with autonomy over business decisions. Since 2006, according to Law 1118, we evolved from a wholly state-owned entity to a mixed-economy company with private capital. This process has resulted in a substantial change in the legal framework to which we are subject, and in the nature of our relationship with the Nation, as our controlling shareholder.

We carried out our initial public offering in August 2007, when our common shares were listed on the Colombian Stock Exchange. Our American Depositary Shares (ADSs) were listed on the New York Stock Exchange in September 2008. We carried out a follow on public offering in Colombia in August 2011.

In June 2012, Cenit was incorporated as a subsidiary specialized in logistics and transportation of hydrocarbons in Colombia, whose main objective was to enhance the strategic and logistical framework of the Colombian oil industry, given the boost in hydrocarbon production and looking to increase sales of crude oil and refined products in Colombia and in international markets.

In 2016, 34 units of the Cartagena refinery came into operation and upgrades were made to the Barrancabermeja refinery.

In 2017, we entered for the first time into the Mexican market (together with Petronas and Pemex), where we were awarded two blocks to explore and produce hydrocarbons in shallow waters in the southeastern basin.

In 2018, we made progress in the internationalization of offshore exploration by entering the Brazilian pre-salt oil region, one of the areas with the greatest potential for oil reserves in the world, working together with top-tier companies such as British Petroleum, China National Petroleum, China National Offshore Oil Corporation, Shell and Chevron. Additionally, we reached a milestone in our plan to transition into renewable energies with the award of a contract for the construction of the first solar Ecopark in Meta, with an installed capacity of more than 20MW to supply part of the energy demanded by the Castilla field.

In 2019, we began operations in the Permian basin through a strategic alliance with Occidental Petroleum. We believe this project contributed to strengthen our position in knowledge and technology in unconventional reservoirs.

On July 1, 2021, we incorporated Ecopetrol Singapore Pte Ltd., a wholly owned subsidiary which owns 100% of the capital stock of Ecopetrol Trading Asia Pte Ltd.. The latter's main purpose is the international commercialization of crude and refined products of the Ecopetrol Group and of third parties throughout Asia.

On August 20, 2021, we acquired 51.4% of the outstanding shares of ISA from the *Ministerio de Hacienda y Crédito Público* (Ministry of the Treasury and Public Credit, MHCP for its Spanish acronym), through which we expect to reposition ourselves along the energy value chain by offering services such as electricity transmission and aligning ourselves with the market trends towards decarbonization and electrification.

[Table of Contents](#)

3.2. Our Corporate Structure

We are organized into the following corporate divisions: (i) Exploration and Production; (ii) Transportation and Logistics; (iii) Refining, Petrochemicals and Biofuels; and (iv) Sales and Marketing.

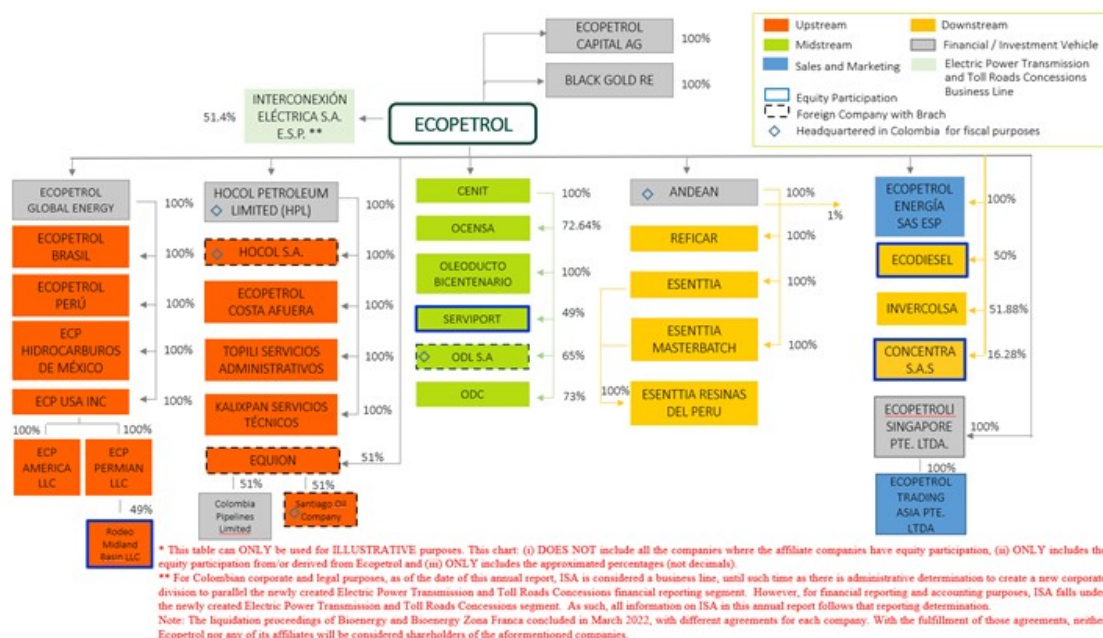
Our subsidiaries, Refinería de Cartagena S.A.S. (Reficar or Cartagena Refinery), Cenit Transporte y Logística de Hidrocarburos S.A.S. (Cenit), Oleoducto Central S.A. (Ocensa) and Interconexión Eléctrica S.A. E.S.P (ISA) are significant subsidiaries, as such term is defined under SEC Regulation S-X.

We have several directly and indirectly held subsidiaries both in Colombia and abroad. As of March 31, 2022, we have twelve directly owned and 59 indirectly owned subsidiaries.

In 2021, the only change that was made to the Ecopetrol Group's structure relates to the Inter-Administrative Share Purchase Agreement we signed on August 11, 2021 with the MHCP (the "ISA SPA"), pursuant to which we agreed to acquire 51.4% of the outstanding shares of ISA from the MHCP (the "Acquisition") for the Acquisition Price, as defined elsewhere. The Acquisition was consummated on August 20, 2021. For a "free" English convenience translation of the ISA SPA, see Exhibit 4.20 to this annual report. In case of any discrepancies, the Spanish version of the ISA SPA shall prevail. For more information on the Acquisition, see section [Related Party and Intercompany Transactions—ISA Acquisition](#).

The table below sets forth our corporate structure as of March 31, 2022:

Graph 2 – Ecopetrol's Corporate Structure



The stock ownership percentage listed refers to Ecopetrol S.A.'s direct and indirect participation as of March 31, 2022. The data in this structure shows neither the whole ownership nor its decimal figures, so they will be used only for information purposes.

[Table of Contents](#)

Exhibit 8.1 to this annual report identifies our principal operating subsidiaries, their respective countries of incorporation, and our percentage ownership in each (both directly and indirectly through other subsidiaries).

3.3. Recent Developments

Ecopetrol, through its subsidiary Ecopetrol Óleo e Gás do Brasil, jointly participated with the company Shell Brasil Petróleo Ltda. to present the best offer in six exploratory blocks located in the Santos Basin in the Third Permanent Offer Cycle of the *Agência Nacional do Petróleo, Gás Natural e Biocombustíveis* (ANP). Ecopetrol will have a participation of 30% in the aforementioned blocks, and Shell, as the operator, will have a 70% participation. With this new acquisition, Ecopetrol was able to increase its presence to 12 blocks in Brazil; including exploratory acreage within the Santos and Ceará basins, and the Gato do Mato development project.

3.4. Our Business

We are the largest company in Colombia and one of the most relevant integrated energy companies in Latin America, with a presence primarily in Colombia and activities in the U.S. (U.S. Gulf of Mexico and Permian Basin), Brazil, Mexico, Peru, Chile and Bolivia. In Colombia, we are responsible for more than 60% of the hydrocarbon production, transportation, logistics, and hydrocarbon refining systems, and hold a leading position in the petrochemicals and gas distribution segment. Through ISA, we have a strong position in the electric power transmission business, toll roads and telecommunications sectors throughout Latin America. The Nation currently owns 88.49% of our voting capital stock. We are among the world's largest public companies, ranking 633 on the Forbes 2021 Global 2000 Ranking, and the largest Colombian company in this ranking.

3.5. Exploration and Production

Our exploration and production business segment includes exploration, development, and production activities in Colombia and abroad. We began local exploration in 1955 and international exploration in 2006. Exploration and production activities are conducted directly by Ecopetrol S.A., and through some of our subsidiaries, as well as through joint ventures with third parties. As of December 31, 2021, we were the largest operator and producer of crude oil and natural gas in Colombia, maintaining the largest exploration acreage position in Colombia.

Unless otherwise stated, all figures are given before deducting royalties.

3.5.1. Exploration Activities

In 2021, our exploration strategy was focused on three working fronts: Colombian onshore, Caribbean offshore, and overseas.

Our Business Plan aims at incorporating resources in high reward projects concentrated in: (i) onshore basins in Colombia (both foothills and foreland in Llanos basin, Middle and Upper Magdalena Valley, Putumayo and gas in Guajira, Sinu-San Jacinto and Lower Magdalena Valley), (ii) offshore Colombia (appraise and evaluate existing gas discoveries), and (iii) international areas such as offshore Brazil in pre-salt and post-salt Santos and Campos basins and the Deepwater basin in the U.S. Gulf of Mexico.

[Table of Contents](#)

Graph 3 – Sedimentary Basins where Ecopetrol Executes Exploration Activities



3.5.1.1. Exploration Activities in Colombia

In 2021, Ecopetrol S.A. and its subsidiaries drilled fifteen (15) wells in Colombia, out of which eight (8) were exploratory (A3/A2), six (6) were appraisal (A1) and one (1) was stratigraphic. As of December 31, 2021, three (3) wells were successful, four (4) were dry, seven (7) were under technical evaluation and one (1), the stratigraphic well, was plugged and abandoned.

It should be noted that four (4) of these wells correspond to the activity operated at the exclusive risk by partners. This drilling activity was concentrated mainly in the Eastern foothills in Llanos, the Middle and Upper Magdalena Valley, and the Sinú San Jacinto Basin.

The three (3) successful wells drilled by Ecopetrol S.A. in Colombia during 2021 were: (i) Liria YW- 12 well; in which Ecopetrol S.A. holds a 100% working interest, at the Recetor Contract, (ii) Boranda Sur-2 well in which Ecopetrol S.A. holds a 50% working interest and Parex Resources is the operator and holds the remaining 50% working interest, at the Boranda Contract and (iii) Flamencos-3 well, in which Ecopetrol S.A. holds a 100% working interest, at the Middle Magdalena Valley Contract.

The following table sets forth, for the periods indicated, the number of gross and net productive, dry, and under evaluation exploratory wells drilled by us and by our joint venture partners, and the exploratory wells drilled by third parties pursuant to sole risk contracts with us.

[Table of Contents](#)

Table 3 – Exploratory Drilling in Colombia

	For the year ended December 31,		
	2021	2020 (Number of wells)	2019
COLOMBIA			
Ecopetrol S.A			
Gross exploratory wells			
Owned and operated by Ecopetrol			
Productive	2.00	—	1.00
Dry ⁽¹⁾	1.00	2.00	1.00
Under Evaluation ⁽²⁾	—	1.00	—
Total	3.00	3.00	2.00
Operated by a partner in Joint Venture			
Productive	1.00	—	4.00
Dry ⁽¹⁾	2.00	—	1.00
Under Evaluation ⁽²⁾	1.00	1.00	1.00
Total	4.00	1.00	6.00
Operated by Ecopetrol in Joint Venture			
Productive	—	—	—
Dry ⁽¹⁾	—	—	—
Under Evaluation ⁽²⁾	—	2.00	—
Total	—	2.00	—
Net Exploratory Wells⁽³⁾			
Productive	2.50	—	2.80
Dry ⁽¹⁾	2.00	2.00	1.40
Under Evaluation ⁽²⁾⁽⁴⁾	0.48	2.50	0.40
Total	5.00	4.50	4.60
Sole Risk			
Productive	—	1.00	1.00
Dry ⁽¹⁾	1.00	1.00	5.00
Under Evaluation ⁽²⁾	3.00	3.00	—
Total	4.00	5.00	6.00
Hocol			
Gross Exploratory Wells			
Productive	—	1.00	1.00
Dry ⁽¹⁾	—	2.00	2.00
Under Evaluation ⁽²⁾⁽⁵⁾⁽⁶⁾	3.00	2.00	2.00
Total	3.00	5.00	5.00
Net Exploratory Wells⁽³⁾			
Productive	—	1.00	0.50
Dry ⁽¹⁾	—	2.00	2.00
Under Evaluation ⁽²⁾	2.50	1.00	1.00
Total	2.50	4.00	3.50

- (1) A dry well or hole is an exploratory well found to be incapable of producing either crude oil or natural gas in sufficient quantities to justify completion as a crude oil or natural gas well.
- (2) An “under evaluation” well is an exploratory well where there is not yet enough information to determine its result as successful or dry. This classification is maintained until additional well-testing operations are carried out to determine the hydrocarbon production capacity or some petrophysical parameter of the rocks or fluids in the reservoir.
- (3) Net exploratory wells were calculated according to our percentage of ownership in these wells.
- (4) The Cira 3540 well which Ecopetrol S.A. holds a 48% working interest and Sierracol Energy is the executor and holds the remaining 52% interest, at the business collaboration contract.
- (5) The Ibamaca-1 well was classified as “under evaluation” for the year ended December 31, 2021. However, as of January 2022, it has been declared successful.
- (6) The Basari-1 well was classified as “under evaluation”. However, in 2021, an accounting provision was recognized in the financial statements for the value of the investment, considering the uncertainty about the success of a future well intervention, and hence its commercial viability. Note: The table does not include

[Table of Contents](#)

stratigraphic test wells. Although these wells are considered to be exploratory wells, we do not include them as part of our exploratory wells information in the table above as these wells are plugged and abandoned after the relevant test study is completed.

In June 2021, we entered into an agreement with Parex Resources for the transfer of a 50% interest of the Arauca and Llanos 38 Contracts in the northern part of the Llanos Basin.

In June 2021, the ANH launched the fourth cycle for the permanent assignment of exploration areas, the Colombia 2021 Round Bid. We participated and presented bids in that bidding cycle and, as a result of these bids, we entered into new contracts for the exploration of four areas, and our subsidiary Hocol has entered into a new contract for the exploration of one block.

Seismic

In Colombia, during 2021, our subsidiary Hocol acquired 83.98 Km of 2D seismic information about the SN18 block, with the aim of improving our geological understanding of this area in the Sinú San Jacinto basin.

In addition, in that same year, Ecopetrol S.A. reprocessed and re-analyzed 1,250 Km2 of 3D seismic information and 1,486 Km of 2D seismic information, with the purpose of improving subsurface imaging. This allows us to continue identifying and evaluating the potential of certain basins and to mature the existing prospects within the company's portfolio.

3.5.1.2. Exploration Activities Outside Colombia

Our international exploration strategy aims to focus on basins with high materiality, to help dilute our risks, thus improving the possibility of increasing our reserves. Moreover, it also focuses on keeping a healthy portfolio by relinquishing unprofitable acreage. A key aspect of this strategy is to participate in bidding rounds to secure blocks available for exploration and entering into joint ventures with international and regional oil companies that contribute with operational expertise and technology.

Outside Colombia, our subsidiaries drilled two (2) exploratory wells. Ecopetrol America LLC, together with its partners, drilled the Silverback 2 well, operated by Chevron, which was declared dry. Moreover, our subsidiary ECP Hidrocarburos Mexico S.A. de C.V. drilled the Moyote-1 well, operated by our partner Petronas, which was declared dry.

In 2021, as a result of the "Round 17 licensing process" held by the Brazilian National Petroleum Agency (*Agência Nacional do Petróleo*, or "ANP") on October 7, 2021, Ecopetrol S.A., through its subsidiary, Ecopetrol Óleo e Gás do Brasil Ltda., acquired a 30% stake in block S-M-1709, located in the Santos basin in Brazil. The acquisition of this block, which will be operated by Shell (70% stake), is aligned with the growth strategy of the Ecopetrol Group, with a focus on the highest potential basins in the continent.

[Table of Contents](#)

The following table sets forth information on our international exploratory drilling for the periods indicated.

Table 4 – Exploratory Drilling Outside Colombia

	For the year ended December 31,		
	2021	2020	2019
	(Number of wells)		
UNITED STATES			
Ecopetrol America LLC			
Gross Exploratory Wells			
Productive	—	—	1.00
Dry ⁽¹⁾	1.00	—	—
Under Evaluation ⁽²⁾	—	—	—
Total	1.00	—	1.00
Net Exploratory Wells ⁽³⁾⁽⁴⁾			
Productive	—	—	0.20
Dry ⁽¹⁾	0.10	—	—
Under Evaluation ⁽²⁾	—	—	—
Total	0.10	—	0.20
BRAZIL			
Ecopetrol Óleo e Gás do Brasil Ltda.			
Gross Exploratory Wells			
Productive ⁽⁵⁾	—	1.00	—
Dry ⁽¹⁾	—	1.00	—
Under Evaluation ⁽²⁾	—	—	—
Total	—	2.00	—
Net Exploratory Wells ⁽³⁾⁽⁴⁾			
Productive	—	0.30	—
Dry ⁽¹⁾	—	0.10	—
Under Evaluation ⁽²⁾	—	—	—
Total	—	0.40	—
MEXICO			
Ecopetrol Mexico			
Gross Exploratory Wells			
Productive	—	—	—
Dry ⁽¹⁾	1.00	—	—
Under Evaluation	—	—	—
Total	1.00	—	—
Net Exploratory Wells ⁽²⁾⁽³⁾			
Productive	—	—	—
Dry ⁽¹⁾	0.50	—	—
Under Evaluation	—	—	—
Total	0.50	—	—

- (1) A dry well or hole is an exploratory well found to be incapable of producing either crude oil or natural gas in sufficient quantities to justify completion as a crude oil or natural gas well.
- (2) An "under evaluation well" is an exploratory well where there is not yet enough information to determine its result as successful or dry. This classification is maintained until additional well testing operations are carried out to determine the hydrocarbon production capacity or some petrophysical parameter of the rocks or fluids in the reservoir.
- (3) Net exploratory wells were calculated according to our percentage of ownership in these wells.
- (4) None of our international wells were drilled pursuant to a sole risk contract.
- Note: The table does not include stratigraphic test wells. Although these wells are considered to be exploratory wells, we do not include them as part of our exploratory wells information in the table above as these wells are plugged and abandoned after the relevant test study is completed.

[Table of Contents](#)

Seismic

During 2021, our subsidiary Ecopetrol Óleo e Gás do Brasil Ltda, purchased 73,371 km² of 3D seismic data located in the Santos and Campos basins to evaluate the exploratory potential of those basins and to mature the existing prospects within the portfolio. In addition, Ecopetrol-America LLC licensed 2,365 km² of seismic data in the Norphlet Formation of the deep-water Gulf of Mexico, to enhance maturation efforts of eight prospects in the Chevron Strategic Alliance.

3.5.2. Production Activities

In 2021, our consolidated average production was 679 thousand boepd, showing a decrease of 18 thousand boepd as compared to 2020, primarily due to the following factors: (i) the effects of the COVID-19 pandemic, which caused a slow paced recovery in oil and gas demand in early 2021, (ii) public order issues in the second quarter of the year, impacting our operations in different regions, (iii) a heavy rainy season in Colombia, (iv) the adverse effects of hurricanes in the Gulf of Mexico and (v) the temporary limitations on production in the Castilla field associated with water management. These situations resulted in the temporary closure of some wells, negatively affecting the production of some fields. However, as of the date of this annual report, all affected wells have been reactivated.

The following table summarizes the results of our oil and gas production activities for the periods indicated:

Table 5 – Ecopetrol Group's Oil and Gas Production

	2021			For the year ended December 31,			2020			2019		
	Oil	Gas ⁽¹⁾	Total	Oil	Gas ⁽¹⁾	Total	Oil	Gas ⁽¹⁾	Total	Oil	Gas ⁽¹⁾	Total
				(Thousand boepd)								
Total gross production in Colombia⁽²⁾	504.0	144.6	648.6	537.4	138.1	675.5	576.6	130.5	707.1			
Total international gross production⁽³⁾	23.1	7.3	30.4	17.4	4.2	21.5	15.0	3.0	18.0			
Total gross production of Ecopetrol Group	527.1	151.9	679.0	554.7	142.3	697.0	591.6	133.5	725.1			
Total production of Ecopetrol Group for presentation of reserves⁽⁴⁾	485.9	146.2	632.2	508.5	138.8	647.3	528.9	133.7	662.6			

(1) Conversion between million cubic feet per day (mcfpd) and boepd is performed at 5,700 mcfpd to 1 boepd.

(2) Total production in Colombia corresponds to Ecopetrol S.A., Hocol and Equion (until February 2020). Includes royalties.

(3) Total International production corresponds to Ecopetrol Permian LLC; Savia Perú and Ecopetrol America LLC. Includes royalties.

(4) For the Company's presentation of reserves, the Company deducts from its total gross production the 100% of crude royalties from Ecopetrol Group companies and gas royalties from non-Colombian Ecopetrol Group companies, Ecopetrol Permian LLC (United States) and Ecopetrol America LLC (United States). Gas royalties derived from Colombian production are not deducted because according to local regulation the Company is entitled to such gas royalties. Also includes self-consumption, which is only comprised of natural gas self-consumption and is immaterial. Oil production include NGL and oil self-consumption, which is immaterial.

3.5.2.1. Production Activities in Colombia

3.5.2.1.1. Ecopetrol S.A.'s Production Activities in Colombia

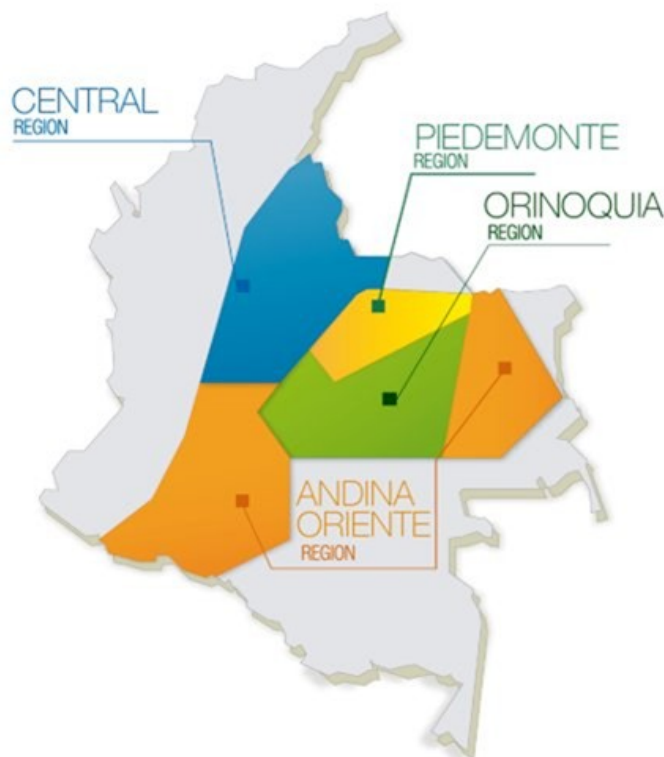
For the year ended December 31, 2021, Ecopetrol S.A. was the largest participant in the Colombian hydrocarbons industry, accounting for approximately 66% of crude oil production and 55% of natural gas production (calculations based on information from the Ministry of Mines and Energy (MINEM for its Spanish acronym). In 2021, Ecopetrol S.A. completed the drilling of 280 development wells, mainly in the Central, Orinoquía, and Andina regions (181 through direct operations and 99 through associated companies).

Ecopetrol S.A. manages its production operations through a regional organization, which comprises a total of 86 oil fields with active production in 2021 in four regions: (i) Central Region, (ii) Orinoquía Region, (iii) Andina Oriente Region, and (iv) Piedemonte Region. Additionally, we operate 103 fields with active production through Associated Operations with different partners.

[Table of Contents](#)

The map below shows the locations of Ecopetrol S.A.'s operations by region.

Graph 4 – Ecopetrol S.A. Operations in Colombia



Note: Associated Operations are conducted through a countrywide Vice-presidency of Associated Operations.

Crude Oil Production

The average daily production of crude oil in Colombia by Ecopetrol S.A. (excluding its subsidiaries), was 486 mbod in 2021, 30 mbod lower than in 2020, which represents a year-to-year decrease of 6%.

[Table of Contents](#)

The following chart summarizes Ecopetrol S.A.'s average daily crude oil production in Colombia by region, prior to deducting royalties, for the periods indicated.

Table 6 – Ecopetrol S.A.'s Average Daily Crude Oil Production in Colombia by Region

	For the year ended December 31,		
	2021	2020 (Thousand bpd)	2019
Central Region			
La Cira – Infantas	18.11	19.51	25.90
Casabe	12.33	13.11	13.20
Yarigui	18.66	18.90	17.90
Nare	2.31	9.53	10.90
Other ⁽¹⁾	17.23	16.95	15.90
Total Central Region	68.64	78.00	83.80
Orinoquía Region			
Castilla	96.29	112.22	114.10
Chichimene	67.41	68.80	69.10
CPO-09	9.23	5.25	10.90
Apiay	5.09	6.33	7.30
Other	7.06	7.15	5.60
Total Orinoquía Region	185.08	199.75	207.00
Piedemonte Region			
Floreña	23.35	25.54	22.70
Cupiagua	6.29	6.22	7.20
Cusiana	1.58	2.13	3.10
Recetor	2.18	—	—
Total Piedemonte Region	33.40	33.89	33.00
Andina Oriente Region			
Rubiales	100.43	106.27	119.30
Caño Sur	3.65	5.06	4.50
San Francisco	3.33	4.05	6.20
Huila Area	4.49	5.55	3.80
Tello	4.54	4.33	3.40
Other	8.66	7.50	10.40
Total Andina Oriente Region	125.10	132.76	147.60
Associated Operations			
Quifa	11.63	14.72	20.50
Caño Limon	24.32	24.14	25.70
Nare	7.03	—	—
Floreña	—	2.62	—
Other	30.71	30.15	30.40
Total Associated Operations	73.69	71.63	76.60
Total average daily crude oil production Ecopetrol S.A. (Colombia)	485.91	516.03	548.00

(1) The Nare fields were included in Associated Operations until November 2021, when the association contract with Mansarovar ended. Starting in November 2021, these fields are reported under the Central Region.

[Table of Contents](#)

Table 7 – Ecopetrol S.A. Production per Type of Crude

	2021 (Mbod)	Year-on-Year Δ (%)	2020 (Mbod)	Year-on-Year Δ (%)	2019 (Mbod)
Light	34.3	(12.1)%	39.0	6.8 %	36.5
Medium	138.3	(1.7)%	140.6	(6.5)%	150.3
Heavy	313.3	(6.9)%	336.4	(6.9)%	361.2
Total	485.9	(5.8)%	516.0	(5.8)%	548.0

Ecopetrol S.A.'s crude oil production in Colombia during 2021 was approximately 64% heavy crudes and 36% light and medium crudes. In 2020, approximately 65% of the crude oil production consisted of heavy crudes, and 35% of the crude oil production consisted of light and medium crudes. In 2019, approximately 66% of the crude oil production consisted of heavy crudes and 34% consisted of light and medium crudes.

Natural Gas Production

In 2021, the average daily production of natural gas by Ecopetrol S.A. (excluding its subsidiaries) reached 125.23 mboed, including natural gas liquids (NGLs), corresponding to a 2.80% increase compared to 2020 production. This production was supplied from the following fields: Cupiagua (38%), Cusiana (21%), Floreña (22%), Guajira (10%), and the remaining 9% from other fields.

By the end of December 31, 2021, the Liquefied Petroleum Gas (LPG) plant of the Cupiagua field produced 7,300 LPG barrels per day. The plant produces LPG and other products such as natural gas liquids (NGL), and penthane (C5).

[Table of Contents](#)

Table 8 – Ecopetrol S.A.’s Average Daily Natural Gas Production in Colombia

	For the year ended December 31,					
	2021		2020		2019	
	Thousand bpd	mmcfpd	Thousand bpd	mmcfpd	Thousand bpd	mmcfpd
Central Region						
La Cira – Infantas	0.39	2.23	0.10	0.57	0.12	0.68
Provincia	1.17	3.07	1.48	4.84	1.58	4.96
Yarigui	0.41	2.33	0.42	2.41	0.43	2.45
Other	1.85	9.77	2.00	10.42	1.68	8.84
Total Central Region	3.82	17.40	4.00	18.24	3.81	16.93
Orinoquía Region						
Apiay	0.21	—	0.32	—	0.29	—
Other	0.56	—	0.58	—	0.64	—
Total Orinoquía Region	0.77	—	0.90	—	0.93	—
Piedemonte Region						
Floreña ⁽¹⁾	27.34	138.74	24.37	119.84	14.45	66.23
Cupiagua	47.69	216.77	42.68	194.99	36.45	196.08
Cusiana	26.58	126.30	29.57	136.63	35.72	164.67
Gibraltar	4.35	22.24	5.71	29.12	6.25	31.86
Total Piedemonte Region	105.96	504.05	102.33	480.58	92.87	458.84
Andina Oriente Region						
Huila Area	0.16	0.31	0.19	0.34	0.09	0.40
Tello	0.03	—	0.08	0.47	0.07	0.40
Other	0.25	1.12	0.19	0.53	0.25	0.23
Total Andina Oriente Region	0.44	1.43	0.46	1.34	0.41	1.03
Associated Operations						
Guajira	12.58	71.69	12.80	72.92	17.92	102.14
Other	1.66	6.57	1.33	5.37	0.82	3.48
Total Associated Operations	14.24	78.26	14.13	78.29	18.74	105.62
Total Natural Gas Production (Colombia)	125.23	601.14	121.82	578.45	116.76	582.42

(1) The Gibraltar field used to be classified as part of the Central Region, but as of January 1, 2021, the field was reclassified to the Piedemonte Region. Note: Conversion between mcfpd and boepd is performed at 5,700 mcfpd to 1 boepd. Conversion was done only in respect of natural gas, since natural gas liquids cannot be converted into mcfpd. Therefore, when the Company’s natural gas production is measured in boepd, it is higher as that includes natural gas and natural gas liquids. The Company’s sales of natural gas liquids represented less than 1% of the Company’s consolidated sales for the periods presented in this annual report.

Projects to Increase Recovery Factor

In 2021, we continued the implementation of secondary and tertiary recovery programs to improve the fields’ recovery factor. By the end of 2021, the fields with secondary and tertiary recovery programs contributed 38% of the daily production of the Ecopetrol Group, underpinned by the good results obtained from the water injection expansion projects in the Chichimene and Castilla fields.

The recovery programs increased proven reserves by 139 million barrels of oil equivalent (“mmboc” or “million boc”) with an investment of approximately US\$ 632 million distributed on 52 recovery projects, 43 of which correspond to secondary recovery and nine to tertiary recovery.

[Table of Contents](#)

Development Wells

The following table sets forth the number of gross and net development wells drilled in Colombia, both solely by Ecopetrol S.A. and with its associates, that reached total depth for the years ended December 31, 2021, 2020 and 2019.

Table 9 – Ecopetrol S.A.’s Gross and Net Development Wells in Colombia⁽¹⁾

	For the year ended December 31,					
	2021		2020		2019	
	Productive Wells	Dry Wells	Productive Wells	Dry Wells	Productive Wells	Dry Wells
Central Region						
Gross development wells owned and operated by Ecopetrol	57.0	—	51.0	—	84.0	1.0
Orinoquía Region						
Gross development wells owned and operated by Ecopetrol	11.0	—	32.0	—	87.0	2.0
Andina Oriente Region						
Gross development wells owned and operated by Ecopetrol	113.0	1.0	73.0	—	124.0	—
Piedemonte Region						
Gross development wells owned and operated by Ecopetrol	—	—	—	—	—	—
Total gross development wells owned and operated in Colombia	181.0	1.0	156.0	—	295.0	3.0
Associated Operations						
Gross development wells in joint ventures	99.0	5.0	45.0	—	268.0	5.0
Net development wells	67.9	1.9	29.0	—	137.0	2.6
Total gross development wells in joint ventures Ecopetrol S.A. in Colombia	99	5	45.0	—	268.0	5.0
Total net development wells in joint ventures Ecopetrol S.A. in Colombia⁽²⁾	67.9	1.9	29.0	—	137.0	2.6
Total gross development wells Ecopetrol S.A. in Colombia	280	6	201.0	—	563.0	8.0
Total net development wells Ecopetrol S.A. in Colombia⁽²⁾	248.9	2.9	185.0	—	432.0	5.6

(1) Includes only wells that were drilled and completed.

(2) Net wells correspond to the sum of wells owned and operated by us plus the net wells in our associated operations. Net wells in the associated operations are the result of our working interest in wells owned in joint ventures with our partners, as defined in the contract obligations.

[Table of Contents](#)

The following tables set forth activities by geographical area, including the number of gross and net wells in the process of being drilled, completed, or waiting on completion for the year ended December 31, 2021.

Table 10 – Ecopetrol S.A.’s Gross and Net In Process Wells

	For the year ended December 31, 2021			
	Drilled but not completed	Mobilization (Number of wells)	Being drilled	Being completed
COLOMBIA				
Central Region ⁽¹⁾				
Gross in process wells owned and operated by Ecopetrol	1.0	1.0	3.0	2.0
Orinoquia Region				
Gross in process wells owned and operated by Ecopetrol	—	—	1.0	—
Andina Oriente Region				
Gross in process wells owned and operated by Ecopetrol	—	—	5.0	—
Piedemonte Region				
Gross in process wells owned and operated by Ecopetrol	—	—	3.0	—
Total gross in process wells owned and operated in Colombia	1.0	1.0	12.0	2.0
Associated Operations				
Gross in process wells in joint ventures	10.0	—	6.0	2.0
Net in process wells ⁽²⁾	8.1	—	2.7	0.8
Total gross in process wells in joint ventures Ecopetrol S.A.	10.0	—	6.0	2
Total net in process wells in joint ventures Ecopetrol S.A.⁽²⁾	8.1	—	2.7	0.8
Total gross in process wells Ecopetrol S.A. in Colombia	11.0	1.0	18.0	4.0
Total net in process wells Ecopetrol S.A. in Colombia⁽²⁾	9.1	1.0	14.7	2.8

- (1) The Nare fields were included in Associated Operations until November 2021, when the association contract with Mansarovar ended. Starting in November 2021, these fields are reported under the Central Region.
- (2) Net wells correspond to the sum of wells owned and operated by Ecopetrol plus the net wells in our associated operations. Net wells in the associated operations are the result of our working interest in wells owned in joint ventures with our partners, as defined in the contract obligations.

Production Acreage

The following table sets forth Ecopetrol S.A.’s developed and undeveloped gross and net acreage of crude oil and natural gas production in Colombia for the year ended December 31, 2021.

Table 11 – Ecopetrol S.A.’s Developed and Undeveloped Gross and Net Acreage of Crude Oil and Natural Gas Production in Colombia

	For the year ended December 31, 2021			
	Developed		Undeveloped	
	Gross	Net	Gross	Net
	(Acres)			
Ecopetrol S.A.	481,951	390,752	4,562,296	3,420,641

Gross and Net Productive Wells

The following table sets forth Ecopetrol S.A.’s total gross and net productive wells by region for the year ended December 31, 2021.

[Table of Contents](#)

Table 12 – Ecopetrol S.A.’s Gross and Net Productive Wells by Region⁽¹⁾⁽²⁾

	For the year ended December 31, 2021			
	Crude Oil ⁽³⁾		Natural Gas ⁽⁴⁾	
	Gross	Net ⁽⁵⁾	Gross	Net ⁽⁵⁾
	(Number of wells)			
COLOMBIA				
Central Region ⁽⁶⁾	3,271	2,786	3.0	3.0
Orinoquía Region	961	947	—	—
Andina Oriente Region	1,091	1,043	9.0	9.0
Piedemonte Region	55	46	20.0	18.0
Associated Operations Region	1,511	960	35.0	17.0
Total	6,889	5,782	67.0	47.0

- (1) The table reflects the productive wells that directly contribute to hydrocarbon production and therefore excludes wells used for injection, disposal, water abstraction, or other similar activities.
(2) Includes only wells that were drilled and completed.
(3) We consider crude oil wells to be those in which the main operation is oil production, although many of these wells produce gas associated with oil production that, in some cases, have a commercial purpose.
(4) Natural gas wells are those in which operations are directed only toward the production of commercial gas.
(5) Net productive wells are calculated by multiplying gross productive wells by our ownership percentage.
(6) The Nare fields were included in Associated Operations until November 2021, when the association contract with Mansarovar ended. Starting in November 2021, these fields are reported under the Central Region.

3.5.2.1.2. ***Ecopetrol S.A.’s Affiliates and Subsidiaries’ Production Activities in Colombia***

In 2021, the subsidiaries’ production in Colombia came from Hocol, with a production of 37.48 thousand boepd, which represents 5,5% of the Ecopetrol Group’s total production.

Crude Oil Production

The following table sets forth our average daily crude oil production from Hocol and Equion, prior to deducting royalties, for the periods indicated.

Table 13 – Ecopetrol S.A.’s Subsidiaries in Colombia Average Daily Crude Oil Production⁽¹⁾

	For the year ended December 31,		
	2021	2020 (Thousand bpd)	2019
COLOMBIA			
Hocol			
Joint venture operation	1.11	1.06	2.00
Direct operation	16.98	19.14	18.80
Total Hocol	18.09	20.20	20.80
Equion⁽¹⁾			
Joint venture operation	—	—	—
Direct operation	—	1.13	7.90
Total Equion⁽¹⁾	—	1.13	7.90
Production Tests	—	—	—
Total Average Daily Crude Oil Production (Subsidiaries in Colombia)	18.09	21.33	28.70

- (1) Equion fields were in operation until February 2020.

[Table of Contents](#)

Natural Gas Production

The following table sets forth our subsidiaries' average daily natural gas production, prior to deducting royalties, for the periods indicated.

Table 14 – Ecopetrol S.A.'s Subsidiaries in Colombia Average Daily Natural Gas Production

	For the year ended December 31,					
	2021		2020		2019	
	Thousand bpd	mmcfpd	Thousand bpd	mmcfpd	Thousand bpd	mmcfpd
COLOMBIA						
Hocol						
Joint venture operation	2.49	14.18	2.18	12.43	2.00	11.40
Direct operation ⁽¹⁾	16.90	96.32	13.24	75.48	6.70	38.20
Total Hocol	19.39	110.50	15.42	87.91	8.70	49.60
Equion⁽²⁾						
Joint venture operation	—	—	—	—	—	—
Direct operation	—	—	0.86	4.10	5.00	23.29
Total Equion	—	—	0.86	4.10	5.00	23.29
Production Tests	—	—	—	—	—	—
Total Average Daily Gas Production (Subsidiaries in Colombia)	19.39	110.50	16.28	92.01	13.70	72.89

- (1) In May 2020, our subsidiary Hocol acquired Chevron's interest in the Chuchupa and Ballena fields and took the position of operator; this represents the increase in production related to direct operation.
 (2) Equion fields were in operation until February 2020. Note: Conversion between mcfpd and boepd is performed at 5,700 mcfpd to 1 boepd. Conversion was done only in respect of natural gas, since natural gas liquids cannot be converted into mcfpd. Therefore, when the Company's natural gas production is measured in boepd, it is higher as that includes natural gas and natural gas liquids. The Company's sales of natural gas liquids represented less than 1% of the Company's consolidated sales for the periods presented in this annual report.

Development Wells

The following table sets forth the number of gross and net development wells drilled exclusively by our subsidiaries and in their joint ventures in Colombia for the periods indicated.

Table 15 – Ecopetrol S.A.'s Subsidiaries in Colombia Gross and Net Development Wells⁽¹⁾

	For the year ended December 31,					
	2021		2020		2019	
	Productive Wells	Dry Wells	Productive Wells	Dry Wells	Productive Wells	Dry Wells
	(Number of wells)					
Hocol						
Gross development wells owned and operated by Hocol	22.0	—	24.0	—	21.0	2.0
Gross development wells in joint ventures	—	—	—	—	2.0	—
Net development wells ⁽²⁾	22.0	—	24.0	—	22.0	2.0
Equion						
Gross development wells owned and operated by Equion ⁽³⁾	—	—	—	—	—	—
Gross development wells in joint ventures	—	—	—	—	—	—
Net development wells ⁽²⁾	—	—	—	—	—	—
Total gross development wells owned and operated in Colombia	22.0	—	24.0	—	21.0	2.0
Total gross development wells in joint ventures in Colombia	—	—	—	—	2.0	—
Total net development wells (Subsidiaries in Colombia)⁽²⁾	22.0	—	24.0	—	22.0	2.0

- (1) Includes only wells that were drilled and completed.

[Table of Contents](#)

- (2) Net wells correspond to the sum of wells owned and operated by us plus the net wells in our associated operations. Net wells in the associated operations are the result of our working interest in wells owned in joint ventures with our partners, as defined in the contract obligations.
(3) Equion fields were in operation until February 2020. Note: There were no dry wells in our Colombian subsidiaries' operations for the year ended December 31, 2020 and December 31, 2021.

Table 16 – Ecopetrol S.A.'s Subsidiaries in Colombia Gross and Net In Process Wells⁽¹⁾

	For the year ended December 31, 2021			
	Drilled but not completed	Mobilization (Number of wells)	Being drilled	Being completed
Hocol				
Gross in process wells owned and operated by Hocol	—	—	—	—
Gross in process wells in joint ventures	—	—	—	—
Net in process wells ⁽¹⁾	—	—	—	—
Equión				
Gross in process wells owned and operated by Equión	—	—	—	—
Gross in process wells in joint ventures	—	—	—	—
Net in process wells ⁽¹⁾	—	—	—	—
Total gross in process wells owned and operated in Colombia	—	—	—	—
Total gross in process wells in joint ventures in Colombia	—	—	—	—
Total net in process wells (Subsidiaries in Colombia)	—	—	—	—

- (1) Net wells correspond to the sum of wells owned and operated by us plus the net wells in our associated operations. Net wells in the associated operations are the result of our working interest in wells owned in joint ventures with our partners, as defined in the contract obligations.

Production Acreage

The following table sets forth our subsidiaries developed and undeveloped gross and net acreage of crude oil and natural gas production in Colombia for the year ended December 31, 2021.

Table 17 – Ecopetrol S.A.'s Subsidiaries in Colombia Developed and Undeveloped Gross and Net Acreage of Crude Oil and Natural Gas Production

	For the year ended December 31, 2021			
	Developed		Undeveloped	
	Gross	Net	Gross	Net
	(Acres)			
Hocol	62,846	37,923	329	297
Total	62,846	37,923	329	297

The following table sets for the expiration dates of material concentrations of the Company's consolidated undeveloped acreage by geographic area as of December 31, 2021.

[Table of Contents](#)

Table 18 – Undeveloped Production Acreage as of December 31, 2021 by Expiration Year

	For the year ended December 31,									
	2022		2023		2024		2025		2026 and beyond	
	Gross	Net	Gross	Net	Gross	Net	Gross	Net	Gross	Net
(Acres)										
COLOMBIA										
Ecopetrol S.A.	—	—	—	—	—	—	551,854	321,642	—	—
Hocol	—	—	—	—	—	—	—	—	—	—
Equión	—	—	—	—	—	—	—	—	—	—
Total Colombia	—	—	—	—	—	—	551,854	321,642	—	—
UNITED STATES OF AMERICA										
Ecopetrol America LLC	—	—	—	—	—	—	—	—	—	—
Ecopetrol Permian LLC ⁽¹⁾	128	63	—	—	1,193	584	—	—	—	—
Total United States of America	128	63	—	—	1,193	584	—	—	—	—

(1) Net acres correspond to our share and includes only acreage under direct operation by Occidental Petroleum Corp (OXY). Non-operated acreage is not included because they are not considered material.

Gross and Net Productive Wells

The following table sets forth our subsidiaries' total gross and net productive wells in Colombia for the year ended December 31, 2021.

Table 19 – Ecopetrol S.A.'s Subsidiaries in Colombia Gross and Net Productive Wells⁽¹⁾⁽²⁾

	For the year ended December 31, 2021			
	Crude Oil ⁽³⁾		Natural Gas ⁽⁴⁾	
	Gross	Net ⁽⁵⁾	Gross	Net ⁽⁵⁾
(Number of wells)				
Hocol	311.0	279.1	38.0	21.3
Total (Subsidiaries in Colombia)	311.0	279.1	38.0	21.3

(1) The table reflects productive wells that directly contribute to hydrocarbons production and therefore excludes wells used for injection, disposal, water abstraction or other similar activities.

(2) Includes only wells that were drilled and completed.

(3) We consider crude oil wells to be those in which the main operation is oil production, although many of these wells produce gas associated with oil production that, in some cases, have a commercial purpose.

(4) Natural gas wells are those in which operations are directed only towards the production of commercial gas.

(5) Net wells correspond to the sum of wells entirely owned by us or our subsidiaries and our ownership percentage of wells owned in joint ventures with our partners.

3.5.2.2. Production Activities Outside Colombia

In 2021, the subsidiaries' production outside Colombia came mainly from Ecopetrol America LLC and Ecopetrol Permian LLC. In 2021, the production obtained from these two companies was 30.20 thousand boepd, which represents 4.45% of the Ecopetrol Group's total production.

Crude Oil Production

The following table sets forth our average daily crude oil production outside Colombia, prior to deducting royalties, for the periods indicated.

[Table of Contents](#)

Table 20 – Ecopetrol S.A.’s Subsidiaries Outside Colombia Average Daily Crude Oil Production

	For the year ended December 31,		
	2021	2020 (Thousand bpd)	2019
PERÚ			
Savia Perú ⁽¹⁾	0.15	3.11	3.50
UNITED STATES OF AMERICA			
Ecopetrol America LLC	9.45	10.41	11.40
Ecopetrol Permian LLC	13.48	3.85	0.10
Total average daily crude oil production (International)	23.08	17.37	15.00

(1) In January 2021 Ecopetrol S.A. divested its 50% equity share in Savia Peru as the result of a competitive bidding process led jointly with its partner KNOC.

Natural Gas Production

The following table sets forth our average daily natural gas production outside Colombia, prior to deducting royalties, for the periods indicated.

Table 21 – Ecopetrol S.A.’s Subsidiaries Outside Colombia Average Daily Natural Gas Production

	For the year ended December 31,					
	2021		2020		2019	
	Thousand bpd	mmcfpd	Thousand bpd	mmcfpd	Thousand bpd	mmcfpd
PERÚ						
Savia Perú ⁽¹⁾	0.02	0.00	0.91	2.44	0.90	3.99
UNITED STATES OF AMERICA						
Ecopetrol America LLC	1.46	8.33	1.78	10.15	1.80	10.26
Ecopetrol Permian LLC	5.81	14.52	1.46	3.26	—	—
Total average daily natural gas production (International)	7.29	22.85	4.15	15.85	2.70	14.30

(1) In January 2021 Ecopetrol S.A. divested its 50% equity share in Savia Peru as the result of a competitive bidding process led jointly with its partner KNOC.
Note: Conversion between mcfpd and boepd is performed at 5,700 mcfpd to 1 boepd. Conversion was done only in respect of natural gas, since natural gas liquids cannot be converted into mcfpd. Therefore, when the Company’s natural gas production is measured in boepd, it is higher as that includes natural gas and natural gas liquids. The Company’s sales of natural gas liquids represented less than 1% of the Company’s consolidated sales for the periods presented in this annual report.

[Table of Contents](#)

Development Wells

The following table sets forth the number of gross and net development wells outside Colombia, drilled exclusively by us and in joint ventures for the periods indicated.

Table 22 – Ecopetrol S.A.’s Subsidiaries Outside Colombia Gross and Net Development Wells⁽¹⁾

	For the year ended December 31,					
	2021		2020		2019	
Number of wells	Productive Wells	Dry Wells	Productive Wells	Dry Wells	Productive Wells	Dry Wells
PERÚ						
Savia Peru⁽²⁾						
Gross development wells	—	—	—	—	—	—
Net development wells ⁽³⁾	—	—	—	—	—	—
UNITED STATES OF AMERICA						
Ecopetrol America LLC						
Gross development wells	—	—	—	—	2.0	—
Net development wells ⁽³⁾	—	—	—	—	0.5	—
Ecopetrol Permian LLC⁽⁴⁾						
Gross development wells	85.0	—	18.0	—	6.0	—
Net development wells ⁽³⁾	41.7	—	8.8	—	2.0	—
Total gross wells (International)	85.0	—	18.0	—	8.0	—
Total net wells (International)⁽³⁾	41.7	—	8.8	—	2.5	—

(1) Includes only wells that were drilled and completed.

(2) In January 2021, we divested our 50% equity share in Savia Peru as the result of a competitive bidding process led jointly with its partner KNOC.

(3) Net wells correspond to the sum of wells entirely owned by us or our subsidiaries and our ownership percentage of wells owned in joint ventures with our partners.

(4) Includes only wells drilled and completed under direct operation by Occidental Petroleum Corp (OXY). Non-operated wells are not included because they are not considered material. Wells operated by others are not included because our share is not material.

Table 23 – Ecopetrol S.A.’s Subsidiaries Outside Colombia Gross and Net In Process Wells

	For the year ended December 31, 2021			
	Drilled but not completed	Mobilization (Number of wells)	Being drilled	Being completed
PERÚ				
Savia Perú⁽¹⁾				
Gross in process wells	—	—	—	—
Net in process wells ⁽²⁾	—	—	—	—
UNITED STATES OF AMERICA				
Ecopetrol America LLC				
Gross in process wells	—	—	—	—
Net in process wells ⁽²⁾	—	—	—	—
Ecopetrol Permian LLC⁽³⁾				
Gross in process wells	9.0	1.0	4.0	16.0
Net in process wells ⁽²⁾	4.4	0.5	2.0	7.8
Total gross in process wells (International)	9.0	1.0	4.0	16.0
Total net in process wells (International)⁽²⁾	4.4	0.5	2.0	7.8

(1) In January 2021, we divested our 50% equity share in Savia Peru as the result of a competitive bidding process led jointly with its partner KNOC.

(2) Net wells correspond to the sum of wells owned and operated by us plus the net wells in our associated operations. Net wells in the associated operations are the result of our working interest in wells owned in joint ventures with our partners, as defined in the contract obligations.

(3) Includes only wells under direct operation by OXY. Non-operated wells are not included because they are not material.

[Table of Contents](#)

Production Acreage

The following table sets forth our developed and undeveloped gross and net acreage of crude oil and natural gas production outside Colombia for the year ended December 31, 2021.

Table 24 – Ecopetrol S.A.’s Subsidiaries Outside Colombia Developed and Undeveloped Gross and Net Acreage of Crude Oil and Natural Gas Production

	For the year ended December 31, 2021			
	Developed		Undeveloped	
	Gross	Net	Gross	Net
	(Acres)			
PERÚ				
Savia Perú ⁽¹⁾	—	—	—	—
UNITED STATES OF AMERICA				
Ecopetrol America LLC	55,440	14,479	23,040	6,566
Ecopetrol Permian LLC	66,801	47,880	874	647
Total (International)	122,241	62,359	23,914	7,213

(1) In January 2021, we divested our 50% equity share in Savia Peru as the result of a competitive bidding process led jointly with its partner KNOC.

Gross and Net Productive Wells

The following table sets forth our total gross and net productive wells outside Colombia for the year ended December 31, 2021.

Table 25 – Ecopetrol S.A.’s Subsidiaries Outside Colombia Gross and Net Productive Wells⁽¹⁾⁽²⁾

	For the year ended December 31, 2021	
	Crude Oil ⁽³⁾	
	Gross	Net ⁽⁴⁾
	(Number of wells)	
PERÚ		
Savia Perú ⁽⁵⁾	—	—
UNITED STATES OF AMERICA		
Ecopetrol America LLC	18.0	4.3
Ecopetrol Permian LLC ⁽⁶⁾	104.0	51.0
Total (International)	122.0	55.3

(1) Includes only wells that were drilled and completed.

(2) The table reflects productive wells that directly contribute to hydrocarbons production and therefore excludes wells used for injection, disposal, water abstraction or other similar activities.

(3) We consider crude oil wells to be those in which the main operation is oil production, although many of these wells produce gas associated with oil production that, in some cases, have a commercial purpose.

(4) Net wells correspond to the sum of wells entirely owned by us or our subsidiaries and our ownership percentage of wells owned in joint ventures with our partners.

(5) In January 2021, we divested our 50% equity share in Savia Peru as the result of a competitive bidding process led jointly with its partner KNOC.

(6) Includes only wells drilled and completed under direct operation by Occidental Petroleum Corp (OXY). Non-operated wells are not included because they are not material.

[Table of Contents](#)

3.5.2.3. Marketing of Crude Oil and Natural Gas

In 2021, we sold 893.6 mboed, out of which 420.2 mboed represented sales of fuels and petrochemicals (47%), 378.2 mboed represented sales of crude oil (42%), and 95.2 mboed sales of natural gas (11%).

Crude Oil Export Sales

In 2021, crude oil export sales totaled 375.8 and decreased by 42.7 mboed compared to 2020, mainly due to higher crude oil runs at the refineries, which in turn was primarily due to an increase in the domestic demand for fuels and refined products. Our crude oil export sales are traded both in the spot and contract markets, primarily to refiners in Asia and the United States.

The Castilla blend is the main type of crude oil for export sales, with 297.9 mboed sold during 2021 (a 79% share of the crude oil basket) followed by the Apiay blend with 31.8 mboed (a 8% share of the crude oil basket), the Mares blend with 11.6 mboed (a 3% share of the crude oil basket) and the domestic crudes sold by Ecopetrol Permian LLC with 10.4 mboed, (a 3% share of the crude oil basket).

We place our exports in markets that provide the best value for its crudes. In 2021, Asia was the main destination, representing 57% of crude oil exports, followed by the United States with 37%. The expansion of the refining capacity in countries like China as well as the fast recovery in crude demand of key refining hubs in Asia have supported the increase of crude oil flows from Colombia to that region. At the same time, the United States kept a strong position as a result of its economic reactivation.

On July 1, 2021, the constitution of Ecopetrol Singapore Pte Ltd. was concluded, in which Ecopetrol directly owns 100% of the share capital. In turn, this subsidiary owns 100% of the share capital of Ecopetrol Trading Asia Pte Ltd., whose main purpose is the international commercialization of crude and refined products of the Ecopetrol Group and of third parties in Asia. Both companies are domiciled in Singapore.

Moreover, volatility in the production of regional competitors has given refiners in the United States, India, and other markets an incentive to diversify their supply sources, which in turn has opened opportunities for Colombian producers. Our crude basket realization price increased by US\$ 32.4/BI year over year, due to market conditions stemming from the effects of the COVID-19 pandemic mentioned above.

Crude Oil Purchase Contracts

We have signed several crude oil purchase contracts with third parties and business partners. We also purchased the country's crude oil royalties from the National Hydrocarbons Agency. These crudes are processed in our refineries or exported. The purchase price is referenced to export parity based on international market prices, plus a commercial fee. See section *Business Overview—Related Party and Intercompany Transactions*.

The table below sets forth the volumes of crude oil purchased from our business partners and third parties and volumes of crude oil purchased from the ANH from royalties for the years ended on December 31, 2021, 2020 and 2019.

Table 26 – Ecopetrol Consolidated Crude Oil Purchases

	For the year ended December 31,		
	2021	2020 (Million barrels)	2019
Crude oil purchased from ANH royalties	27.2	31.0	35.4
Crude oil purchased from third parties	41.8	34.0	30.0
Crude oil imported from third parties	9.0	5.6	9.1

During 2021, part of our crude strategy was centered on increasing the purchase and subsequent commercialization of crude oil from third parties, which enables further optimization of the supply chain and margin capture.

[Table of Contents](#)

Import of Diluents

In 2021, we decreased the imports of diluent by 20% (7 mbod) compared to 2020, due to the use of domestically produced naphtha. Diluent is used to transport heavy crudes through the pipeline system.

Natural Gas Sales

We sell natural gas to distribution companies through firm, interruptible and conditional contracts. These distributors supply natural gas to the residential market, as compressed natural gas for vehicles market and to large industrials in Colombia. We also market and sell natural gas directly to the industrial sector and to gas-fired power plants.

Our natural gas sales and self-consumption in 2021 increased by 6.99% (128.76 mboed) compared to 2020, mainly due to (i) a recovery in demand, after the Colombian government started to lift restrictions related to the COVID-19 pandemic, (ii) Hocol's acquisition of Chevron's interest in the Guajira association contract, and (iii) an increase in our activities in the Permian Basin.

Natural Gas Delivery Commitments

The table below sets forth the commitments we have in Colombia under firm contracts with local natural gas distribution companies, local industries, gas-fired power generators and internal agreements with our refineries and fields.

Table 27 – Ecopetrol Consolidated Natural Gas Delivery Commitments

	For the year ended December 31,			
	2022	2023	2024	2025
		(gbtud)		
Volume for sales third parties	509.2	448.1	331.6	228.7
Volume for self-consumption	150.4	146.8	149.3	145.8
Volume for intercompany sales	92.4	91.2	91.3	80.4
Total Commitments	752.0	686.1	572.2	454.9

The table above is based on current contracts of Ecopetrol S.A. and the official report made to the Ministry of Mines and Energy in 2021. Self-consumption volumes decreased over time as a result of more efficient operations in our refineries. Third party volumes do not include potential production coming from exploratory projects. According to current regulations, these volumes will be committed and commercialized after declaring exploratory success.

3.5.3. Reserves

The reserves reporting process was conducted in accordance with SEC definitions and rules set forth in Rule 4-10(a) of Regulation S-X and the disclosure guidelines contained in the SEC's Modernization of Oil and Gas Reporting final rule dated December 31, 2008, and effective as of January 1, 2010.

The estimated reserve amounts presented in this annual report, as of December 31, 2021, are based on the average prices during the 12-month period prior to the ending date of the period covered in this annual report, determined as the unweighted arithmetic averages of the prices in effect on the first day of the month for each month within such period, unless prices were defined by contractual arrangements, as required by the SEC regulations.

Our crude oil and natural gas net proved reserves include reserves from our subsidiaries located in the United States, and from Hocol's assets in Colombia.

[Table of Contents](#)

Estimated Net Proved Reserves

The following table sets forth our estimated net proved developed reserves of crude oil and gas by region for the years ended December 31, 2021, 2020 and 2019.

Table 28 – Net Proved Developed Reserves

	Colombia	North America	South America excluding Colombia	Total
Net Proved Developed oil reserves in million barrels oil equivalent				
At December 31, 2021	823.0	33.0	—	856.0
At December 31, 2020	757.4	16.3	2.3	776.0
At December 31, 2019	832.0	12.0	3.8	848.0
Net Proved Developed NGL reserves in million barrels oil equivalent				
At December 31, 2021	59.0	6.0	—	65.0
At December 31, 2020	57.0	1.1	0.4	58.0
At December 31, 2019	49.0	0.1	0.5	50.0
Net Proved Developed gas reserves in billion standard cubic feet				
At December 31, 2021	2,517.0	44.0	—	2,561.0
At December 31, 2020	2,617.0	15.0	4.4	2,636.4
At December 31, 2019	2,645.0	11.0	7.0	2,662.0
Net Proved Developed oil, NGL and gas reserves in million barrels oil equivalent				
At December 31, 2021	1,323.6	46.6	—	1,370.0
At December 31, 2020	1,273.3	20.0	3.5	1,296.8
At December 31, 2019	1,345.0	14.0	6.0	1,365.0

- (1) Oil Reserves included 16.9 barrels of Fuel Oil.
(2) Gas Reserves included 413 bcf of Fuel Gas.

Note: Totals may not exactly equal the sum of the individual entries due to rounding. The conversion rate used is 5,700 standard cubic feet = 1 barrel of oil equivalent.

We are required, as are all oil companies undertaking exploratory and production activities in Colombia, to pay a percentage of our production to the Government as royalties. However, the ANH's Resolution 877 of 2013, Resolution 351 of 2014 and Resolution 640 of 2014 require natural gas royalties to be paid in cash, which means that the determination of the property rights to the quantities of natural gas we produce is based on the total volume produced without deductions on account of royalties. The main producing gas fields are Cupiagua, Pauto, Cusiana, Chuchupa and Cupiagua Sur.

Ecopetrol S.A. owns 100% of Cenit, a subsidiary that operates in Colombia and is dedicated to the storage and transportation of hydrocarbons through pipelines and refined products through multipurpose pipelines. Cenit provides transportation services for the entire Ecopetrol Group, and we fully consolidate Cenit into our consolidated results of operations. Therefore, the difference between the tariffs set by the Ministry of Mines and Energy and the real transportation costs (fixed and variable operating expenses) does not affect our consolidated income statement. Thus, in presenting our reserves information in the 2019, 2020 and 2021 annual reports, we have used our real transportation costs, rather than the regular tariffs set by the Ministry of Mines and Energy.

The following table summarizes our proved oil, NGL and natural gas reserves, which includes 16.9 million barrels of fuel oil, 413 billion standard cubic feet of fuel gas within our natural gas results and 450 billion cubic feet of royalties, as of December 31, 2021.

[Table of Contents](#)

Table 29 – Proved Oil, NGL and Natural Gas Reserves for 2021

	Oil (mmb)	NGL (mmb)	Natural Gas (bcf)	Total Oil and Gas (mmboe)
PROVED DEVELOPED RESERVES				
Colombia	823.0	59.0	2,517.0	1,323.6
International				
North America	33.0	6.0	44.0	46.6
South America	—	—	—	—
TOTAL PROVED DEVELOPED RESERVES	856.0	65.0	2,561.0	1,370.0
PROVED UNDEVELOPED RESERVES				
Colombia	364.0	10.0	444.0	452.0
International				
North America	120.5	34.0	146.6	180.0
South America	—	—	—	—
TOTAL PROVED UNDEVELOPED RESERVES	485.0	43.6	590.0	632.0
TOTAL PROVED RESERVES	1,341.0	108.5	3,151.0	2,002.0

Note: Totals may not exactly equal the sum of the individual entries due to rounding. The conversion rate used is 5,700 standard cubic feet = 1 barrel of oil equivalent.

The following table summarizes our proved oil, NGL and natural gas reserves, which includes 14 million barrels of fuel oil, 411 billion standard cubic feet of fuel gas within our natural gas results and 429 billion cubic feet of royalties, as of December 31, 2020.

Table 30 – Proved Oil, NGL and Natural Gas Reserves for 2020

	Oil (mmb)	NGL (mmb)	Natural Gas (bcf)	Total Oil and Gas (mmboe)
PROVED DEVELOPED RESERVES				
Colombia	757.4	56.8	2,617.0	1,273.3
International				
North America	16.3	1.1	15.0	20.0
South America	2.3	0.4	4.4	3.5
TOTAL PROVED DEVELOPED RESERVES	776.0	58.2	2,636.4	1,296.8
PROVED UNDEVELOPED RESERVES				
Colombia	290.5	6.1	179.9	328.2
International				
North America	105.8	21.0	105.1	145.2
South America	—	—	—	—
TOTAL PROVED UNDEVELOPED RESERVES	396.4	27.1	285.0	473.4
TOTAL PROVED RESERVES	1,172.4	85.3	2,921.5	1,770.2

(1) The reserves in South America include participation in Savia Peru, where we sold our interest on January 19, 2021.

Note: Totals may not exactly equal the sum of the individual entries due to rounding. The conversion rate used is 5,700 standard cubic feet = 1 barrel of oil equivalent.

[Table of Contents](#)

The following table summarizes our proved oil, NGL and natural gas reserves, which includes 17 million barrels of fuel oil, 381 billion standard cubic feet of fuel gas within our natural gas results and 517 billion cubic feet of royalties, as of December 31, 2019.

Table 31 – Proved Oil, NGL and Natural Gas Reserves for 2019

	Oil (mmb)	NGL (mmb)	Natural Gas (bcf)	Total Oil and Gas (mmboe)
PROVED DEVELOPED RESERVES				
Colombia	832.0	49.0	2,645.0	1,345.0
International				
North America	12.0	0.1	11.0	14.0
South America	3.8	0.5	7.0	6.0
TOTAL PROVED DEVELOPED RESERVES	847.8	50.0	2,662.0	1,365.0
PROVED UNDEVELOPED RESERVES				
Colombia	306.0	28.0	111.0	353.0
International				
North America	123.0	29.0	133.0	175.0
South America	-	-	-	-
TOTAL PROVED UNDEVELOPED RESERVES	429.0	57.0	244.0	529.0
TOTAL PROVED RESERVES	1,277.0	107.0	2,906.0	1,893.0

Note: Totals may not exactly equal the sum of the individual entries due to rounding. The conversion rate used is 5,700 standard cubic feet = 1 barrel of oil equivalent.

Changes in Proved Reserves

Table 32 – Changes in Proved Reserves

	For the year ended December 31,		
	2021	2020 (Mmboe)	2019
Revisions of previous estimates	315.1	(71.5)	83.0
Improved Recovery	138.9	113.1	94.0
Extensions and discoveries	11.9	42.7	67.0
Purchases	—	29.9	164.0
Sales	(3.5)	(1.0)	—
Total reserves additions	462.4	113.2	408.0
Production	(230.7)	(236.3)	(242.0)
Net change in proved reserves	231.7	(123.0)	166.0

Reserves Replacement

The reserves replacement ratio is defined as the sum of additions and revisions of proved reserves divided by produced volumes in any given period. The following table presents the changes in reserves in each category relating to the reserve replacement ratio for the years 2021, 2020 and 2019.

The reserves replacement ratio for 2021 was 200% compared to 48% in 2020 and 169% in 2019.

[Table of Contents](#)

The average replacement ratio for the last three years was 139%.

Table 33 – Reserves Replacement Ratio (Including Purchases and Sales)

	For the year ended December 31,		
	2021	2020	2019
Annual	200 %	48 %	169 %
Three-year average	139 %	115 %	140 %

Revisions of Previous Estimates

In 2021, revisions increased reserves by 315 million boe, mainly as a result of:

- (i) An increase of 115 million boe in reserves due to new areas included in the approved development plan for our North American fields, which increased reserves by 67 million boe and new projects mainly in the Cupiagua Sur, Chuchupa, Cusiana, Ballena, Cajua and Rubiales fields, which increased reserves by 48 million boe.
- (ii) An increase of 178 million boe in reserves due to economic factors. More specifically, we were positively impacted by the increase in oil prices, with the ICE Brent crude price being 59% higher in 2021 as compared to 2020, which resulted in better economic conditions in some of our fields. The Brent reference price used in our reserve estimation process was US\$ 69.2 per barrel in 2021 as compared to US\$ 43.4 per barrel in 2020.
- (iii) An increase of 22 million boe in reserves due to field performance studies and development activities in existing fields, such as Rubiales, Caño Limon, Caño Sur and Gibraltar, among others.

In 2020, revisions decreased reserves by 71 million boe, mainly as a result of:

- (i) A 215 million boe decrease attributed to economic factors and reevaluated projects. More specifically, we were negatively impacted by the substantial decrease in oil prices, with the ICE Brent crude price being 32% lower in 2020 as compared to 2019, which resulted in the lowering of economic limits in some of our fields and some projects becoming uneconomical under SEC standards.
- (ii) An offsetting positive 114 million boe increase in reserves related to new projects in the Caño Sur, Quifa, Cusiana, Pauto and Rubiales fields as well as new areas included in the approved five-year development plan for our North American fields.
- (iii) An offsetting positive 30 million boe increase related to field performance studies and development activities in existing fields.

In 2019, revisions increased reserves by 83 million boe, mainly as a result of:

- (i) An increase of 33 million boe due to improved reservoir performance in the Rubiales field and continuous development with drilling activities.
- (ii) An increase of 36 million boe in reserves due to the review of the curve type of new development activities according to updated new wells results in the Caño Sur field and additional gas processing plant capacity to extract NGL in the Cupiagua field.
- (iii) An increase of 14 million boe in reserves, due to better production performance mainly in the Akacias, Caño Limón and Chichimene fields.

[Table of Contents](#)

Nonetheless, due to the decrease in oil price compared to the Brent reference price used in the reserve estimation process at US\$ 63 per barrel in 2019 (as compared to US\$ 72 per barrel in 2018), the Company removed volumes of total proved reserves in the amount of 19 million boe, which have become uneconomical. This impact was partially offset by improved reservoir performance and new projects in several fields.

Improved Recovery

In 2021, improved recovery activities increased reserves by 139 million boe, mainly due to new proved areas under water flooding in the Chichimene, Akacias, Yarigui, Casabe and Castilla fields, and optimization of the gas injection and blowdown strategy in the Cupiagua and Pauto fields.

In 2020, improved recovery activities increased reserves by 113 million boe, associated with new proved areas under water flooding in the Chichimene and Castilla fields, and optimization of the gas injection and blowdown strategy in the Cupiagua field.

In 2019, improved recovery activities increased reserves by 94 million boe. An increase of 25 million boe was associated with new proved areas under water flooding in the Chichimene and Akacias fields. Furthermore, the continued development of water flooding projects at existing wells in the Castilla, Chichimene, Yarigui, La Cira-Infantas fields accounted for a 45 million boe increase. The remaining 26%, or 24 million boe increase was primarily due to water injection reservoir responses at various fields.

Extensions and Discoveries

The following table sets forth the change in the Company's proved reserves attributed to extensions and discoveries in millions of barrels of oil equivalent for the periods indicated.

Table 34 – Changes in Proved Reserves Attributed to Extensions and Discoveries

	For the year ended December 31,		
	2021	2020 (Mmboe)	2019
Extensions and discoveries			
Total change	12.0	42.7	67.0
Proved Undeveloped Reserves Change	6.0	14.6	34.0
Change from unproved to proved developed reserves	6.0	28.0	33.0

The difference between the change of developed proved reserves and undeveloped proved reserves is related to the drilling of new wells in unproved acreage that led to new proved producing reserves.

The Company's extensions and discoveries during 2021 amounted to 12 million boe, primarily due to extensions of proved acreage, which in turn were mainly from activities in new proved areas in the Rubiales, Castilla and Llanito fields, which accounted for 10 million boe of the increase. The remaining 2 million boe corresponds to smaller changes in 13 fields with variations of between 0.006 to 0.7 million boe.

The Company's extensions and discoveries during 2020 amounted to 43 million boe primarily due to extensions of proved acreage, which in turn were mainly from activities in new proved areas in the Rubiales, Suria, Yarigui and Llanito fields (accounting for 38.5 million boe of the total change) and newly discovered fields Andina and Esos (accounting for 4 million boe of the total change).

The Company's extensions and discoveries during 2019 amounted to 67 million boe primarily due to extensions of proved acreage, which in turn were mainly from activities in new proved areas in the Rubiales, Quifa, Suria, Tisquirama, Cupiagua Sur, Castilla and Garzas fields (accounting for 55 million boe). The remaining 12 million boe corresponded to smaller changes in 26 fields with variations between 0.01 to 2.1 million boe.

[Table of Contents](#)

Purchases

In 2021, there were no purchases or acquisitions of reserves.

Starting May 2020, Hocol S.A. took on the position of operator of the Guajira Contract, after the approval of the transaction in which Ecopetrol S.A. through its wholly-owned subsidiary, Hocol S.A., acquired 100% of Chevron Petroleum Company's participation in the contract (comprising the Ballena and Chuchupa fields in Colombia which corresponds to 43% of the total contract). This purchase increased proved reserves by 29.9 million boe.

In 2019, Ecopetrol S.A. through its wholly owned subsidiary, Ecopetrol Permian LLC acquired 49% of Rodeo Midland Basin LLC, a company whose economic activity is directed towards the execution of a joint development plan under the joint venture between us and Occidental Petroleum Corp, announced on July 31, 2019, which represented 164 million boe. Through this joint venture, the Company and Occidental Petroleum Corp are pursuing development of unconventional reservoirs in approximately 97,000 acres of the Permian Basin in Texas. For the acquisition and closing of the transaction, Ecopetrol S.A. made an initial payment of approximately US\$ 876.5 million dollars. As of December 31, 2021, Ecopetrol S.A. had paid a total of US\$ 375.5 million of the initial US\$750 million carry obligation.

Sales

In 2021, we sold 100% of our interest in Savia Perú S.A.

In December 2020, pursuant to a public auction process carried out by us and Hocol, an offer was received from Cordillera Resources SAS, Nikoil Energy Corp and Petroleum Blending International for 100% of our working interest in the La Punta and Santo-Domingo fields, which was declared the winning offer. We are now pending approval of such sale from the ANH, a process that typically takes 18 months. Based on that timing, we do not expect the formal approval to be received until July 2022.

Development of Reserves

As of December 31, 2021, our total proved undeveloped oil and gas reserves amounted to 632 million boe, 72% of which is related to development activities at the Rubiales, Castilla, Chichimene, Caño Sur, Pauto, and Akacias fields in Colombia, among others, and 28% of which is related to development activities in North American fields. The proved undeveloped reserves estimated for the Cajúa, Caño Sur Este, and Quifa fields include locations with production start dates that extend beyond the five-year initial disclosure period and are associated with the current water-handling capacities in these fields. Similarly, the development plan of the Rubiales field extended beyond the initial five-year period due to the limitations in water-handling capacities in the field. Reserves in the United States Gulf of Mexico were estimated for one undeveloped location with a production start date outside of five years from initial booking because we have represented that a portion of the capital expense required for the projects will be spent within five years. These exemptions were reviewed and approved by an external certification agent.

As of December 31, 2020, our total proved undeveloped oil and gas reserves amounted to 473 million boe, 69% of which is related to development activities at the Rubiales, Castilla and Chichimene fields in Colombia, among others, and 31% of which is related to development activities in North American fields. Our year-end development plans are consistent with SEC guidelines for the development of proved undeveloped reserves within five years. The development plan of Rubiales field goes beyond the five years due to the water disposal restrictions in the facilities. The drilling of two wells in the United States Gulf of Mexico and one well onshore in Colombia also goes beyond five years due to drilling schedule. These wells are part of the ongoing development projects and all remaining development investments for the latter three wells will be completed within six years from their initial disclosure. These exemptions were reviewed and approved by an external certification agent.

As of December 31, 2019, our total proved undeveloped oil and gas reserves amounted to 529 million boe, 46% of which is related to development activities in the Rubiales, Castilla, Caño Sur Chichimene, Teca, Akacias and Pauto fields and 31% of which is related to the development of unconventional reservoirs of the U.S. Permian Basin in Texas. The remaining 23% comes from activities at several other fields. In 2019, our year-end development plans were consistent with SEC guidelines for the development of proved undeveloped reserves within five years. The development plan of Rubiales field went beyond the five years due to the limitations in water handling in the facilities. These exemptions were reviewed and approved by an external certification agent.

[Table of Contents](#)

The following table reflects the developed and undeveloped proved reserves estimates through the past three fiscal years.

Table 35 – Developed and Undeveloped Proved Reserves

	Oil (mmb)	NGL (mmb)	Natural Gas (bcf)	Total Oil and Gas (mmboe)
2021 Proved Reserves				
Developed	856	65	2,561	1,370
Undeveloped	485	44	590	632
2020 Proved Reserves				
Developed	776	58	2,636	1,297
Undeveloped	396	27	285	473
2019 Proved Reserves				
Developed	848	50	2,662	1,365
Undeveloped	429	57	244	529

Of the total amount of proved undeveloped reserves that we had at the end of 2020 (473 million boe), we converted approximately 87 million boe, or 18%, to proven developed reserves during 2021. Approximately 75% of the total conversion is mainly associated with the development of crude oil and gas projects in the Castilla, Rubiales, Chichimene, Yarigui and Mamey fields, among others, and 25% is associated with development execution in fields in the United States. The amount of investments made during 2021 to convert proved undeveloped reserves to proved developed reserves was US\$ 528 million.

Of the total amount of proved undeveloped reserves that we had at the end of 2019 (529 million boe), we converted approximately 69 million boe, or 13%, to proven developed reserves during 2020. Approximately 86% of the total conversion is mainly associated with the development of crude oil and gas projects in the Castilla, Rubiales, and Cupiagua fields, among others, and 14% is associated with development execution in fields, such as the Ocelote field, among others. The amount of investments made during 2020 to convert proved undeveloped reserves to proved developed reserves was US\$353 million.

Of the total amount of proved undeveloped reserves that we had at the end of 2018 (338 million boe), we converted approximately 89 million boe, or 26%, to proven developed reserves during 2019. Approximately 75% of the total conversion is primarily associated with the development of crude oil and gas projects in the Castilla, Rubiales, Chichimene and Yarigui fields (67 million boe), while the remaining 25% is associated with development execution in other fields such as the Suria, Casabe, Quifa, Caño Sur and Ocelote fields, among others. The amount of investments made during 2019 to convert proved undeveloped reserves to proved developed reserves was US\$791 million.

Changes in Undeveloped Proved Reserves

The following table reflects the main changes in undeveloped proved reserves as of December 31, 2021, 2020 and 2019.

Table 36 – Changes in Undeveloped Proved Reserves

	For the year ended December 31,		
	2021	2020 (Mmboe)	2019
Consolidated companies			
Revisions of previous estimates	141.0	(46.3)	43.0
Improved Recovery	98.0	45.9	40.0
Extensions and discoveries	6.0	14.6	34.0
Purchases	—	—	163.0
Proved undeveloped converted to proved developed	(87.0)	(69.4)	(89.0)
Net change in unproved reserves	158.0	(55.2)	190.0

Note: The conversion rate used is 5,700 standard cubic feet = 1 barrel of oil equivalent. Totals may not exactly equal the sum of the individual entries due to rounding.

[Table of Contents](#)

Undeveloped Proved converted to Developed Proved: Of the total amount of undeveloped proved reserves that we had at the end of 2020 (473 million boe), we converted approximately 87 million boe, or 18%, to developed proved reserves during 2021. Approximately 75% of the total conversion was mainly associated with the development of crude oil and gas projects in the Castilla, Rubiales, Chichimene, Yarigui and Mamey fields, among others, and 25% is associated with development execution in fields in the United States.

All the explanations that were included in Changes in Proved Reserves apply for this section.

Reserves Process

Our reserves process is coordinated by Fidel Antonio Delgado Loria, the Corporate Resources and Reserves Manager. Mr. Delgado Loria is a Petroleum Engineer with over 20 years of experience in the upstream sector of production business in us and other companies in the industry in Colombia and Venezuela. He received his engineering degree from Universidad Central de Venezuela. He reports to the Upstream Chief Financial Officer. In addition, our reserves team is comprised of reserves coordinators who are geologists and petroleum engineers, each of them with more than fifteen years of experience in reservoir characterization, field development, estimation, and reporting of reserves by SEC Guidelines. This team supports and interacts with the specialists involved in the estimation and reporting process, following an established procedure with its corresponding internal controls. As in previous years, reserves are estimated and certified by recognized external independent engineers, this year consisting of DeGolyer and MacNaughton, Gaffney Cline & Associates, Ryder Scott Company, and Sproule International Limited, in compliance with the definitions of the Society of Petroleum Engineers and the applicable SEC rules. According to our corporate policy, we report the values of the reserves obtained from the external engineers, even if they are lower than our expected reserves.

The reserves estimation process ends when the Corporate Resources and Reserves Manager consolidates the results and together, with the Development Vice-President and the Upstream Chief Financial Officer, presents the outcome to the Resources and Reserves Committee, which comprises the Ecopetrol Group's CEO, CFO, COO and the Vice-President of Development and Production, among others. Results are later presented to the Audit and Risk Committee of the Board of Directors and finally reviewed and approved by the Board of Directors.

The aforementioned external independent engineering consultants have estimated and certified our proved reserves as of December 31, 2021. These external engineers estimated 99% of our estimated net proved reserves for the year ended December 31, 2021, 2020 and 2019. The reserves' reports of the external engineers are included as exhibits to this annual report.

Our reserves process uses deterministic methods which are commonly used internationally to estimate reserves. These methods whilst reliable, have some inherent uncertainty, and thus, estimates should not be interpreted as exact amounts. The majority of the producing proved reserves were estimated by applying appropriate decline curves or other performance relationships. In analyzing decline curves, reserves were estimated by calculating economic limits that are based on current economic conditions. In certain cases, where the methods previously employed could not be used, reserves were estimated by analogy with similar reserves for which more complete data was available.

Estimates of reserves were prepared by geological and engineering standard methods commonly used in the oil and gas industry. The method or combination of methods used in the analysis of each reserve was adopted from experience analogy reserves, including information on the stage of development, quality and completeness of basic data and production history.

[Table of Contents](#)

The following table reflects the estimated proved reserves of oil and gas as of December 31, 2019 through 2021, and the changes therein.

Table 37 – Estimated Proved Reserves of Oil and Gas

	Colombia	North America	South America excluding Colombia	Total
	Net proved oil, NGL and gas reserves in mmboe			
At December 31, 2019	1,698.0	189.7	5.6	1,893.0
Revisions	(49.8)	(20.8)	(0.9)	(71.5)
Improved Recovery	113.1	—	—	113.1
Extensions and Discoveries	40.8	1.8	—	42.7
Purchases	29.9	—	—	29.9
Sales	(1.0)	—	—	(1.0)
Production	(229.6)	(5.6)	(1.2)	(236.3)
At December 31, 2020	1,601.1	165.1	3.5	1,770.2
Revisions	245.0	70.0	—	315.0
Improved Recovery	139.0	—	—	139.0
Extensions and Discoveries	12.0	—	—	12.0
Purchases	—	—	—	—
Sales	—	—	(3.5)	(3.5)
Production	(222.0)	(8.9)	—	(231.0)
At December 31, 2021	1,775.1	226.2	—	2,001.7

Note: Totals may not exactly equal the sum of the individual entries due to rounding. For more information regarding the potential impacts of oil prices on our reserve estimates, see sections *Financial Review—Trend Analysis and Sensitivity Analysis* and *Risk Review—Risk Factors*.

3.5.4. Joint Venture and Other Contractual Arrangements

We conduct our exploration and production business through a variety of contractual arrangements with the Colombian government or with third parties. Below is a general description of the main types of contractual arrangements to which we were a party as of December 31, 2021.

Association Contract

The purpose of this type of contract, created by Decree 2310 of 1974, is the exploration of the areas covered by the contract, and the exploitation of hydrocarbons found in that area. This type of contract, together with E&P contracts and Special Contracts (La Cira-Infantas and Teca-Cocorná fields) which are described below, are the most significant in terms of our production and proved reserves.

Under association contracts, the exploratory risk is assumed entirely by Ecopetrol S.A.'s contractual partner, the associate. If there is a discovery and Ecopetrol S.A. agrees that the relevant field is commercially viable, Ecopetrol S.A. will participate in the field's development. A joint account will be created, and Ecopetrol S.A. and the partner will participate in the expenses and investments in the proportions established in the corresponding contract. Ecopetrol S.A. will reimburse the direct exploratory expenses incurred by the contractual partner in the proportions established by the contract.

If Ecopetrol S.A. does not believe that the relevant field is commercially viable, the partner has the right to execute on its own all activities considered necessary for the field's exploitation as a "sole risk operation", and to be reimbursed for a defined percentage of all investments for such sole risk operation in accordance with the corresponding contract.

Every association contract provides for an executive committee that makes all technical, financial, and operational decisions if Ecopetrol S.A. has agreed that a field is economically viable. All major decisions of this committee must be made unanimously by the parties.

The maximum term of an association contract is 28 years. The first six years of the contract are for the exploratory phase, which are extendible for 1 or 2 more years at the partner's request. The remaining time is for the exploitation phase.

[Table of Contents](#)

Incremental Production Contract

We enter into incremental production contracts to obtain additional hydrocarbon production beyond a base production curve that is established based on the proven reserves of a specific field or well. Under this type of arrangement, Ecopetrol S.A. owns 100% of the hydrocarbons defined by the base production curve. The incremental production (i.e., the hydrocarbon volume obtained beyond the basic production as a result of investment activities), will be owned by the contract parties in the proportions established by such contract.

The initial phase of an incremental production contract has a term of up to 3 years, in which the contractual partner executes an initial work program approved by Ecopetrol S.A. in order to gain the right (but not the obligation) to continue with the second phase. If our partner decides to continue with the project for the second phase (the complementary phase), it must inform Ecopetrol S.A. in writing no later than 90 days prior to the termination date of the initial phase and deliver a proposed development plan for each covered field. The second phase is the production phase and has a maximum term of 22 years minus the length of the initial phase.

Incremental production contracts provide for an executive committee that is responsible for taking all decisions in order to approve, control and supervise all operations that take place during the duration of the contract. These contracts also provide for a steering committee, which is responsible for the supervision of the execution of the work programs, the annual budget, and other items.

Special Contracts

We are party to a Joint Venture Contract for Exploration and Exploitation of “La Cira-Infantas” Area and of “Teca-Cocorná” Area.

These contracts between Ecopetrol S.A. and SierraCol Energy, formerly known as Occidental Andina LLC, which were executed on September 6, 2005, and June 24, 2014, respectively, have as their purpose, a joint collaboration between the parties with the goal of increasing the economic value of the La Cira-Infantas and the Teca-Cocorná fields, by means of hydrocarbon exploration and production activities, including, among others, an incremental production project to improve the recovery factor, process optimization, and exploratory activities.

Ecopetrol S.A. partially assigned its exploratory and production rights in the contracted areas to SierraCol Energy. Additionally, pursuant to these contracts, Ecopetrol S.A. provides financial resources and the preferential rights of use for the existing infrastructure in that zone and SierraCol Energy provides financial resources and the technical and operative experience in mature fields redevelopment projects and enhanced recovery technologies.

Ecopetrol S.A. is the operator under both Joint Venture Contracts, and on behalf of the parties is responsible for the conduction, execution, and control, directly or via contractors, of the operational activities.

The La Cira-Infantas contract term is divided in three phases. The first phase lasts 180 days, the second 730 days and the third phase lasts up to the economical limit of the field.

The incremental production, after deduction of the royalties, is owned 52% by Ecopetrol S.A. and 48% by SierraCol Energy. These same percentages apply to the participation in the operational and direct expenses. Adjustments to the participations for the benefit of Ecopetrol S.A. will occur if there are high production levels or high prices.

The Teca-Cocorná contract term is divided in two phases. The first phase lasts three years, extendable for up to an additional year, the second term is 20 years and will be reduced by the term of any extensions of the first phase.

The basic production is 100% owned by Ecopetrol S.A. The incremental production, after deduction of the royalties, is owned 60% by Ecopetrol S.A. and 40% by SierraCol Energy. These same percentages apply to the participation in the operational and direct expenses. Adjustments to the participations for the benefit of Ecopetrol S.A. will occur if there are high production levels and high prices.

[Table of Contents](#)

The National Hydrocarbons Agency (ANH) and its Contracts

The ANH was created by Decree Law 1760 of 2003 and was given the authority to administer all national hydrocarbon reserves under contracts executed beginning on January 1, 2004. Decree Law 1760 of 2003 states, “The *Empresa Colombiana de Petróleos*, Ecopetrol, is split, its organic structure is modified, and the *Agencia Nacional de Hidrocarburos* and the *Sociedad Promotora de Energía de Colombia S.A.* are created.” Prior to January 1, 2004, Ecopetrol S.A. had the authority to contract with third parties for the exploration and production of new areas.

The creation of the ANH did not modify our rights or obligations or the rights or obligations of other parties with respect to contracts in existence before January 1, 2004, when the ANH was created and therefore we retain the authority to execute agreements with respect to all areas that it held prior to that date.

Below, we include a brief description of each type of contract that we have entered into with the ANH:

Technical Evaluation Agreement

This type of contract grants the contractor the right to develop technical evaluation operations with operational autonomy at its own cost and risk, seeking to appraise the hydrocarbon potential, with the purpose of identifying the zones of prospective interest in the area by means of the execution of an exploratory program. The contractor has the option to request the conversion of a technical evaluation agreement (TEA) into one or more E&P Contracts that cover the area of the TEA (or a portion thereof).

The contractor can conduct evaluation activities for terms that vary between 18, 24, and 36 months, depending on the terms of reference of the ANH’s bidding round.

E&P Contract

The ANH enters into concession contracts pursuant to which the Nation grants exploration and production rights and receives royalties and taxes. In turn, the contractor provides 100% of the investment and expenses resources and receives 100% of the production after royalties and taxes. The ANH has named this contract an “Exploration and Production Contract” (E&P Contract).

The ANH only receives a percentage of oil revenues in two cases:

- (i) when the international oil prices rise beyond a specified price (high price fee), above which the ANH has a right to participate in a share of the increased revenues generated, or
- (ii) in the case of recognition of production rights in an extended contractual phase (additional production share).

Under all E&P contracts executed since ANH’s 2008 bidding round, the ANH receives a percentage of the production share, upon the commencement of the production phase, and not only in the extension phase of the contract (additional production share) as mentioned in the previous paragraph. In addition, ANH has economic rights when the price of oil exceeds a reference price set in the contract (high price fee) as well as the surface fee based on the hectares of the assigned area of the contract (both with and without production).

E&P contracts have three phases: (i) an exploration period, which term is 6 years counted from the effective date, renewable for two additional years, (ii) an evaluation period of two years, assuming a discovery is made, to determine the commercial potential of the discovery and (iii) a production period, which is, with respect to each production field, 24 years plus any extensions, which are counted from the date of declaration of commerciality of the corresponding field. The abovementioned terms have been modified during ANH’s 2014 bidding round for unconventional and offshore reservoirs to an exploration period of nine years and a 30-year production period. As per the new model E&P contract published by the ANH on June 29, 2018, the term of the evaluation period for offshore contracts entered into as of 2019 will be three, five, or seven years, depending on the depth of the water where the discovery is located. For the fourth cycle of the Permanent Competitive Bidding Procedure (“PPAA”) in 2021, ANH included in the E&P contract model an economic exclusive value that corresponds to the economical proposal presented by the interested party and such value shall become a guarantee of the exploration phase obligations under the executed E&P contract.

[Table of Contents](#)

ANH and Ecopetrol Agreements (Convenios)

Decree-Law 1760 of 2003, established that the rights over the production area and over the movable and immovable assets of (i) all fields that were directly operated by Ecopetrol S.A. as of December 31, 2003, and (ii) all fields in which there was an association contract before said date will continue to belong to Ecopetrol S.A.

Pursuant to Article 2 of Decree 2288 of 2004, which regulates Decree Law 1760 of 2003, Ecopetrol S.A. must execute an agreement with the ANH to regulate the exploration and exploitation terms and conditions of the relevant area, which was previously subject to an association contract.

Decree 2288 of 2004 also established that Ecopetrol S.A. would have to execute agreements with ANH covering fields directly operated by Ecopetrol S.A. Under these agreements ANH recognizes the exclusive right of Ecopetrol S.A. to explore and exploit the hydrocarbons property of the Nation that are obtained in the areas they cover, until resource depletion or until Ecopetrol S.A. returns the area to the Nation through the ANH.

These agreements also provide the conditions under which Ecopetrol S.A. is able to assign, partially or completely, its rights and duties thereunder to third parties.

[Table of Contents](#)

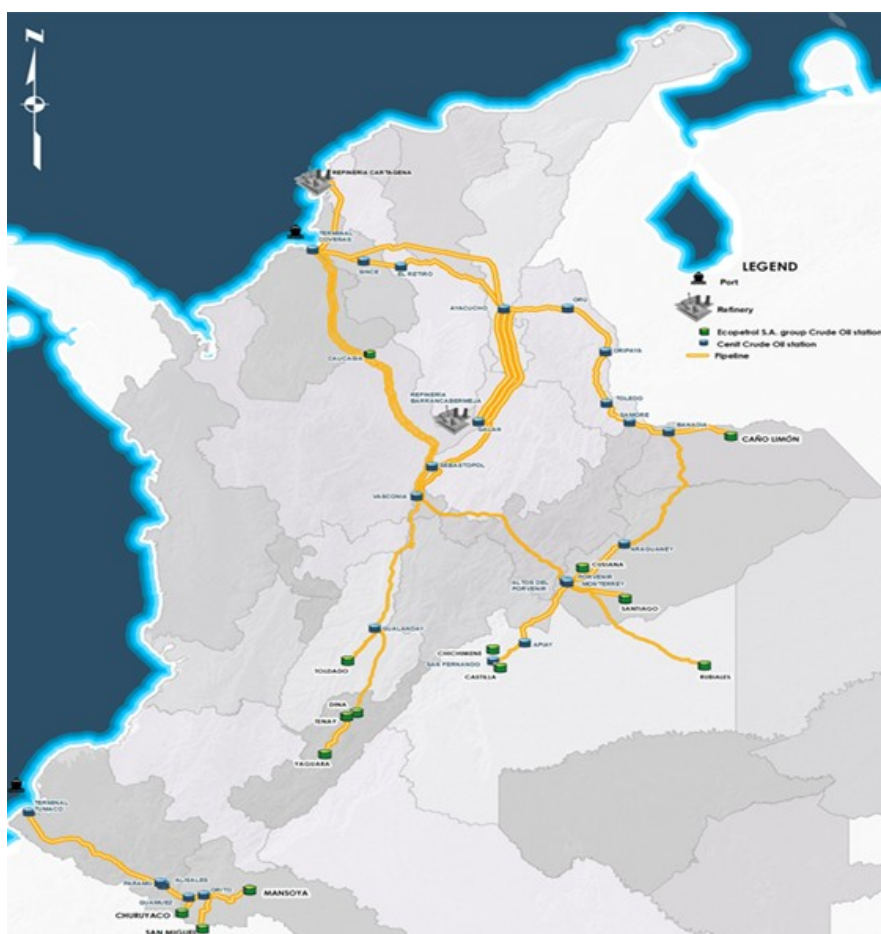
3.6. ***Transportation and Logistics***

3.6.1. ***Transportation Activities***

The transportation and logistics segment includes the transportation of crude oil, motor fuels, fuel oil, and other refined products including diesel, jet, and biofuels. We conduct most of these activities through our wholly owned subsidiary Cenit and its subsidiaries.

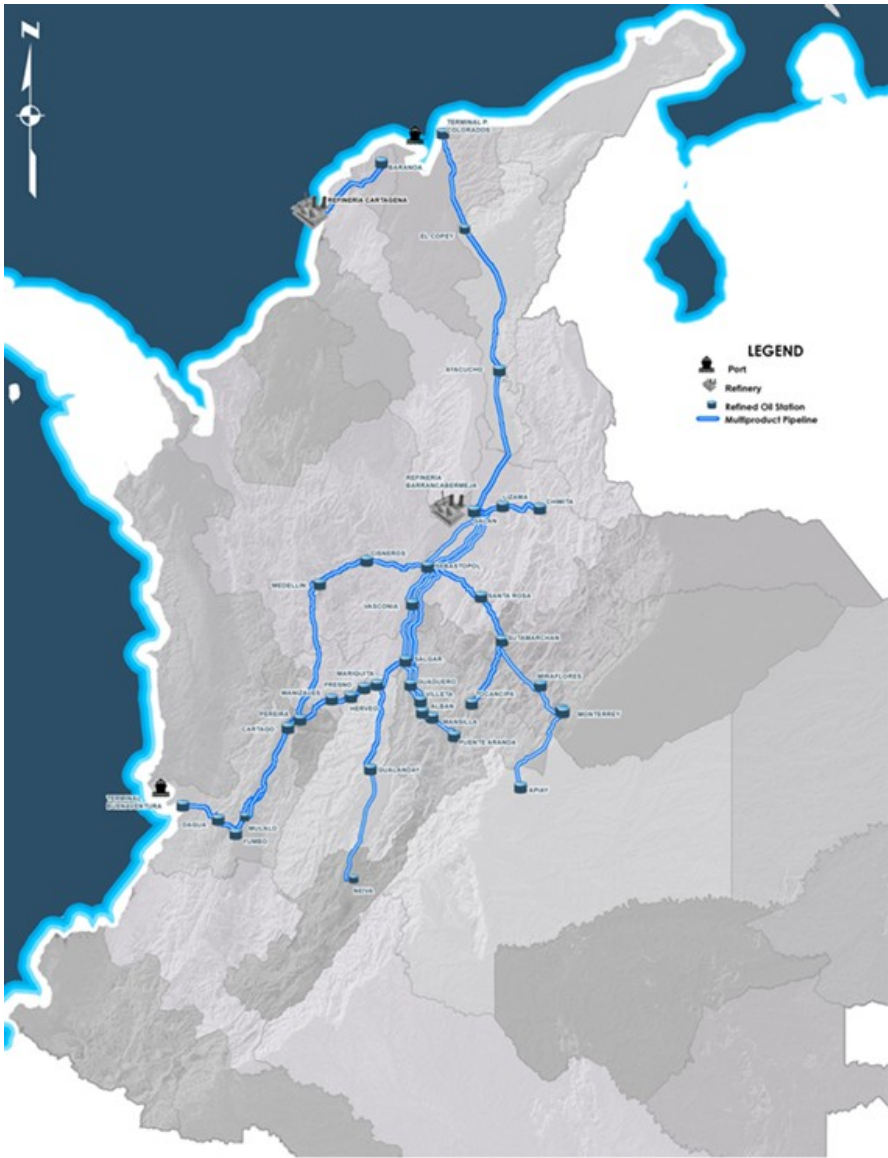
The map below shows the locations of the main transportation networks owned by our business partners and us.

Graph 5 – Map of Oil Pipelines



[Table of Contents](#)

Graph 6 – Map of Multi-purpose Pipeline



The table below sets forth the volumes of crude oil and refined products transported through the crude oil pipelines and multi-purpose pipelines owned by us.

[Table of Contents](#)

Table 38 – Volumes of Crude Oil and Refined Products Transported

	For the year ended December 31,		
	2021	2020 (Thousand bpd)	2019
Crude oil transport ⁽¹⁾	730.0	785.6	877.7
Refined products transport ⁽²⁾	277.2	231.5	275.3
Total	1,007.2	1,017.1	1,153.0

(1) The crude oil transported volumes correspond to the following systems: Ocesa Segment 3, ODC, Vasconia-Galan, Ayacucho-Galan, Ayacucho-Coveñas and Trasandino Pipeline.

(2) The pipelines transporting refined products include the following: Galan-Sebastopol, Galan-Salgar, Galan-Bucaramanga, Buenaventura-Yumbo and Cartagena-Baranoa.

The volume of crude oil transported by Cenit's main systems and those of its subsidiaries decreased by 7.1% in 2021 compared to the previous year, as a result of a lower production in the country, mainly in the Llanos area. Of the total volume of crude transported by oil pipelines, approximately 85.3% belonged to the Ecopetrol Group.

The volume of refined products transported by Cenit increased by 19.8% in 2021 compared to the previous year, mainly due to the recovery of economic activity following the lifting of restrictions related to the COVID-19 pandemic. Of the total volume of refined products transported by multi-purpose pipelines in 2021, 29.5% belonged to the Ecopetrol Group.

Transportation Capacity

Our main crude oil pipeline systems' operating capacity was 1,469 thousand barrels per day in 2021. Our main multi-purpose pipeline transportation capacity increased from 519 thousand barrels per day in 2020 to 524 thousand barrels per day in 2021.

References to our crude oil transportation capacity in this annual report refer to the capacity of the pipelines that belong to Cenit and its subsidiaries to transport crude oil volumes either to the refineries or to our export facilities. In addition, we have other feeder systems that transport oil volumes from producing facilities or other pumping stations to these main pipelines. References to our refined products transportation capacity refer to the capacity of pipelines that begin in the Galan station (Barrancabermeja refinery) and Cartagena station (Cartagena refinery).

3.6.1.1. Pipelines

As of December 31, 2021, we, directly or indirectly with private partners, own, operate and maintain an extensive network of crude oil and multi-purpose pipelines. These pipelines connect our own and third-party production centers, import facilities and terminals to refineries, major distribution points, and export facilities in Colombia.

Cenit directly owns 45% of the total crude oil pipeline shipping capacity in Colombia. When aggregated with the crude oil pipelines in which Cenit owns an interest, Cenit owns 85% of the oil pipeline shipping capacity in Colombia. By December 31, 2021, our network of crude oil and multi-purpose pipelines was approximately 9,127 kilometers in length. The transportation network consists of approximately 5,388 kilometers of main crude terminals and oil pipeline networks connecting various fields to the Barrancabermeja refinery and Cartagena refinery, as well as to our export facilities.

We also own 3,739 kilometers of multi-purpose pipelines for transportation of refined products from the Barrancabermeja and Cartagena refineries to major distribution points. Out of the 5,388 kilometers of crude oil pipelines, owned by us, 3,175 kilometers of crude oil pipeline are wholly-owned, and 2,212 kilometers of crude oil pipeline are owned through non-wholly owned subsidiaries.

[Table of Contents](#)

The following table sets forth our main pipelines in which we own an indirect interest as of December 31, 2021.

Table 39 – Our Main Pipelines

Pipeline	Kilometers	Capacity (mbd)	Product Transported	Origin	Destination	Indirect Ownership Percentage
Caño Limón-Coveñas	774	251	Crude Oil	Caño Limón	Coveñas	100.00 %
Oleoducto de Alto Magdalena (OAM)	391	99	Crude Oil	Tenay	Vasconia	95.80 %
Oleoducto de Colombia (ODC)	483	223	Crude Oil	Vasconia	Coveñas	73.00 %
Oleoducto Central – Ocensa ⁽¹⁾	848	745	Crude Oil	Cupiagua	Coveñas	72.65 %
Oleoducto de los Llanos (ODL) ⁽²⁾	260	305	Crude Oil	East fields	Monterrey Cusiana	65.00 %
Oleoducto Bicentenario de Colombia ⁽³⁾	230	233	Crude Oil	Araguany	Banadia	100.00 %

(1) Ocensa has four segments with different capacities. 745 mbd refers to the capacity of segment two (El Porvenir-Vasconia). The capacity of the other segments are as follows:

- a. Cupiagua-Cusiana (segment zero): 198 mbd
- b. Cusiana-El Porvenir (segment one): 745 mbd
- c. Vasconia-Coveñas (segment three): 550 mbd

(2) Transportation capacity for this pipeline is measured by using crude oil viscosity of 1.350 cStk (30° C).

(3) Represents the contractual crude oil transportation capacity for the pipeline currently in operation.

As of December 31, 2021, we owned 75 stations, 41 located in crude oil pipelines, 30 in refined products pipelines, 2 in crude oil ports and 2 in refined product ports.

As of December 31, 2021, we had a nominal storage capacity associated with the transportation network of 16.7 million barrels of crude oil and 4.7 million barrels of refined products. We do not own any tankers.

Pipeline Projects

Coveñas- Cartagena

The objective of the Coveñas - Cartagena project is to increase this system's reliability, capacity, and pipeline infrastructure. To date, this pipeline has a nominal capacity of 135,000 barrels per day and feeds the Cartagena refinery with national crudes. As the demand for national crudes from the Cartagena refinery continued to increase, Cenit identified a need to expand this system. In May 2020, Cenit approved the project to increase the system's nominal capacity by 20,000 barrels per day to 155,000 barrels per day and has been in operation since November 2021.

Operational Storage Program

The operational storage program's objectives and scope includes ensuring a storage of 916,000 barrels of refined products in 5 different stations. The program foresees the construction of 10 tanks distributed through 4 projects divided in this way: (i) 1 tank of 260,000 barrels for Nafta in Pozos Colorados Terminal, (ii) 2 tanks of 100,000 barrels each in Sebastopol station and 1 tank of 62,000 barrels in Yumbo station (all this storage is for Biodiesel Extra (B2E) and Gasoline (GM)), (iii) 2 tanks of 70,000 barrels each, to storage B2E and GM in Cartago Station and (iv) 4 new tanks in Medellín that in total has 254,000 barrels of capacity to storage Jet (JA1), Gasoline Extra (GE) and B2E.

The construction phase began in 2020 in Pozos Terminal and Sebastopol station and in 2021 in Yumbo station. According to the construction, startup phase and commissioning, the systems in Pozos Terminal and Sebastopol station, will be completed in April 2022. Eventually, with those new tanks in Pozos and Sebastopol, the storage capacity of the system will increase by 460,000 barrels. Startup of the new tank at Yumbo station is estimated for the first quarter of 2023.

[Table of Contents](#)

Apiay Fuel Loading Dock

Seeking fuel supply flexibility in the area, the Fuel Loading Dock Project was developed in Apiay. This asset allows alternative delivery of fuels by the dock in this Crude Oil Station. As such, the scope consists of enabling the receipt of fuels from the Poliandino pipeline to the fuel tank at the station in Apiay and the construction of the facilities required to load fuel trucks inside the station. The project was completed in November 2021 and is ready to use based on fuels demand in the area.

Replacement of Tanker Loading Unit TLU - Coveñas

In 2019, Ocesa invested US\$ 32.8 million in offshore infrastructure as a part of the investment plan signed with the Infrastructure National Agency (ANI), which allows Ocesa to continue operating in a public area of the Morrosquillo Gulf, loading tankers with a capacity of up to 2 million barrels of crude oil. Investments during 2019 consisted of the following: the acquisition of a new, more efficient CALM Turret Buoy and PLEM (Pipeline End Manifold), which will improve the loading times of the tankers; the acquisition of two fiber optic systems, one of which communicates the TLU-2 with land and the other monitors the deformations of the submarine pipeline caused by sea currents; the maintenance of a string of floating hoses; the improvement of the inland transport and handling system; and the completion of integrity works such as inspections of the underwater pipeline, which lead to the repair of four welded joints of 42" and the stabilization of the last 72 meters of the seabed of the offshore pipeline.

In 2020, Ocesa invested US\$ 9.1 million in offshore infrastructure according to an updated investment plan signed with the ANI on December 4, 2019. The new CALM Turret buoy and PLEM are in Colombia and are in the preparation phase with integration tests currently taking place prior to the replacement of the TLU system. The installation of two fiber optic systems was successfully completed.

In 2021, Ocesa invested US\$ 9.8 million in offshore infrastructure according to an updated investment plan signed with the ANI on December 4, 2019. The installation, testing, and start-up of the TLU2 was carried out in a 60-day window, once the delays derived from the pandemic were overcome, which forced the system to change the window, initially scheduled for 2020, to be postponed by 5 months. During this period, technical support, verification, and guarantee assistance activities were carried out for the TLU-2 system by specialists and allies within the scope of the contract for the Comprehensive Standardization and Validation Plan of the offshore system. The maintenance of floating marine hoses and the integrity works of the subsea pipeline was performed according to the plan.

Ocesa Segment 3 Connection to Cenit Tanks in Coveñas

Seeking operational efficiencies for the Ocesa terminal in Coveñas, the Segment 3 Connection Project was developed. This connection consists of enabling direct deliveries from the entrance of the Ocesa pipeline to the tank system of the Cenit station in Coveñas. Previously, crude oil was received in Ocesa's tanks in Coveñas and then transferred to Cenit's tanks. The operation of this connection is governed by an agreement between Cenit and Ocesa, which defines the rate and operating conditions that should be in place with the project expected to result in additional income for Ocesa.

In 2019, the engineering for the project was completed and the execution phase was approved.

In 2020, due to the impact of the COVID-19 pandemic in the oil and gas industry, construction was postponed until October 2020, with construction, pre-commissioning, and commissioning activities completed in December 2020. The tests and entry into service of the system were undertaken in January 2021 and the project is currently fully operational.

In 2021, stabilization of the system of the Coveñas Segment III Connection to Cenit Tanks - SEG3COV project was accomplished during the first days of January 2021. This connection has allowed direct delivery of barrels since the beginning of its operation, with a daily average in 2021 of 32,059 barrels per day, complying with the nomination of deliveries to customers and ensuring the stable condition of the delivery system by operators of Ocesa, Cenit, and Ecopetrol.

[Table of Contents](#)

Vasconia Energy Recovery (RECVA)

Given that the Vasconia station operates 24 hours a day, an opportunity was identified to recover energy from the system, converting hydraulic energy (flow and pressure) into electrical energy through the installation of a hydraulic power recovery turbine (HPRT). In 2019, the HPRT was purchased, manufacturing was completed, and the engineering development was concluded.

In May 2020, the HPRT was received on-site, and during Ocesa's scheduled plant shutdown in November 2020, the turbine connection points were installed in the existing process lines, and 20" valves were installed in the high- and low-pressure line.

In 2021, once the inconveniences derived from the pandemic were overcome, the execution phase continued, the construction contract was awarded; the civil, mechanical, electrical, and instrumentation works began. Likewise, during 2021, pre-commissioning activities were carried out and the logistics of vendors for the commissioning stage were managed. The construction phase and commissioning stage, in order to begin the RECVA system, are estimated to be completed in April 2022. The system operation and stabilization process is projected for May 2022, along with the start of the environmental benefit through energy recovery and the reduction of CO2 emissions.

3.6.1.2. Export and Import Facilities

We currently have concessions granted by the Colombian Government for four export/import docks for crude oil and refined products: Coveñas, Tumaco, Pozos Colorados, and Cartagena. Our export capacity reached 2.33 million barrels per day for crude oil. Our import capacity of refined products and crude oil reached 0.61 million barrels per day and 0.34 million barrels per day, respectively.

Our crude oil loading facilities can load tankers of up to 350 thousand deadweight tonnage (DWT). Adjacent to these loading facilities we also have storage facilities with 9.98 million barrels of capacity. Our docks, used for import and export refined products, can load tankers of 70 thousand DWT. Additionally, these facilities have a storage capacity of up to 1.1 million barrels.

3.6.2. Other Transportation Facilities

We have entered into transportation agreements with tanker trucks and barge companies to transport crude oil from locations that do not have pipeline connections to refineries and export facilities. The volume of refined products that cannot be transported by pipelines or tanker trucks due to capacity limitation, is transported by barges. During 2021, 17.8 million barrels of crude oil and refined products were transported by tanker trucks, and 9.9 million barrels of refined products were transported by barges, particularly using the Magdalena River, connecting Barrancabermeja with Barranquilla and Cartagena.

3.6.3. Marketing of Transportation Services

Cenit and its subsidiaries' main line of business is the crude oil pipeline transport (76.55% of revenues), followed by the refined products pipeline transport (16.83% of revenues) and ports and related services (6.62% of revenues). Both crude and refined product pipeline transport are regulated activities; crude oil pipeline transport services are regulated by the Ministry of Mines and Energy, while refined product pipeline transport services are regulated by the Energy and Gas Regulatory Commission (*Comisión de Regulación de Energía y Gas* or "CREG" by its acronym in Spanish).

Transportation contracts of crude oil may take several forms: ship or pay (payment for the availability of a fixed capacity in the system), ship and pay (payment for volumes actually transported), or spot contracts. The main users for the crude oil transportation business are Ecopetrol S.A., Frontera Energy, Parex, Hocol, Trafigura, and Vitol, who collectively represented 74.85% of this business segment's revenues in 2021. Transportation services for crude oil provided to Ecopetrol S.A. represented 87.76% of this business segment's crude oil transport revenues.

Cenit also transports refined products, and its main client is Ecopetrol S.A., which accounted for 39.61% of refined products pipeline transport revenues in 2021, mainly due to the transport of naphtha, diesel, and gasoline. Cenit also has 28 other fuel wholesalers' customers for whom it transports refined products. The most significant among them are Organización Terpel, Primax Colombia, Chevron Petroleum Company, Biocombustibles S.A.S. and Petrobras Colombia.

[Table of Contents](#)

Deregulated businesses, such as ports and crude-loading facilities, represent a smaller portion of Cenit and its subsidiaries revenue (6.6% in 2021). Clients for these businesses include some of the same parties for which Cenit provides crude oil and refined products transportation services.

Developments with certain clients of Bicentenario and Cenit

Bicentenario, Cenit and Frontera Settlement Agreement

On November 17, 2020, Cenit, Bicentenario and Frontera reached an agreement, for the joint filing of a petition for a binding settlement which, upon completion and approval by the competent Colombian court, would resolve all the disputes pending among them, related to the Caño Limón – Coveñas pipeline and the Oleoducto Bicentenario de Colombia pipeline, and would terminate all the pending arbitration proceedings related to such disputes. The arrangement was conditioned to certain regulatory approvals, including approval of the settlement arrangement as a conciliation under Colombian law, which required an opinion from the Attorney General's Office (*Procuraduría General de la Nación*), which was issued on March 24, 2021, and approval of the Administrative Tribunal of Cundinamarca, which was notified on November 5, 2021, and became effective and binding on November 10, 2021. All approvals have been obtained and the parties performed all their obligations under the agreement on November 11, 2021.

This transaction eliminates any uncertainty related to the potential outcomes of the disputes, thus protecting the interests of all the parties and those of their stakeholders and creating new business opportunities for the parties involved. The settlement arrangement included a full and final mutual release of all present and future amounts claimed by all parties in respect of the terminated transportation contracts for the Bicentenario and Caño Limón – Coveñas pipelines. Frontera entered into new transportation contracts with Cenit and Bicentenario. The new initial ship or pay commitment is 2,811 barrels per day, which is based on the oil price as of the date of closing, for a term of five years, subject to adjustments. Frontera will not have to make payments for oil it may have to ship through alternate pipelines. These contracts allow Cenit and Bicentenario to obtain payment of certain amounts included in the settlement, during the term of the contracts. Additionally, as part of the agreement Frontera transferred to Cenit its 43.03% of the outstanding shares of Bicentenario (Ecopetrol Group's stake in Bicentenario is now 100%) and transferred to Bicentenario its participation in the Bicentenario pipeline line fill.

Bicentenario and Canacol Settlement Agreement

On March 8, 2021, Bicentenario and Canacol reached an agreement to settle all their disputes, which was approved by the competent arbitration tribunal on April 23, 2021; and entered into a transaction agreement on March 16, 2021, to settle all their disputes on the storage agreement, the later subject to the approval of the settlement of the transportation agreement disputes by the competent arbitration tribunal.

The parties performed all their obligations under the agreement on April 30, 2021. The settlement arrangements included a full and final mutual release upon closing of all present and future amounts claimed by all parties in respect of the terminated transportation contract for the Bicentenario pipeline and the storage agreement for the Terminal de Coveñas, ended all contractual obligations between the parties, and settled all the outstanding obligations between the companies. Additionally, as part of the settlement, Canacol entered into a new transportation contract with Bicentenario. This contract will allow Bicentenario to obtain payment of certain amounts included in the settlement, during the term of the contract.

Bicentenario and Vetra Settlement Agreement

On January 13, 2021, Bicentenario and Vetra reached an agreement to settle all their disputes. The settlement was approved by the competent arbitration tribunal on April 28, 2021, and the parties performed all their obligations under the agreement on May 5, 2021.

The arrangement included a full and final mutual release upon closing of all present and future amounts claimed by all parties in respect of the terminated transportation contracts for the Bicentenario pipeline, ended all contractual obligations between the parties and settled all the outstanding obligations between the companies.

[Table of Contents](#)

3.7. **Refining and Petrochemicals**

3.7.1. **Refining**

Our main refineries are the Barrancabermeja refinery, which Ecopetrol S.A. directly owns and operates, and a refinery in the Free Trade Zone in Cartagena owned by Reficar, a wholly owned subsidiary of Ecopetrol S.A., who operates this refinery and two other minor refineries -Orito and Apiay-, but these are considered part of the upstream segment since most of the production is for self-consumption.

Our refineries produce a full range of refined products, including gasoline, diesel, jet fuel, LPG and heavy fuel oils, among others.

The following table sets forth our average daily installed and actual refinery capacity for each of the last three years:

Table 40 – Average Daily Installed and Actual Refinery Capacity

	For the year ended December 31,								
	2021			2020			2019		
	Capacity (bpd)	Throughput (bpd)	Use (%)	Capacity (bpd)	Throughput (bpd)	Use (%)	Capacity (bpd)	Throughput (bpd)	Use (%)
Barrancabermeja	250,000	211,004	84 %	250,000	179,210	72 %	250,000	218,612	87 %
Cartagena ⁽¹⁾	150,000	142,898	95 %	150,000	140,866	94 %	150,000	155,049	103 %
Apiay	2,500	886	35 %	2,500	887	35 %	2,500	779	31 %
Orito	2,300	1,107	48 %	2,300	1,074	47 %	2,300	1,314	57 %
Total	404,800	355,895	88 %	404,800	322,038	80 %	404,800	375,754	93 %

(1) Includes crudes and recirculated products.

3.7.1.1. **Barrancabermeja Refinery**

The Barrancabermeja refinery produced approximately 46% of the fuels consumed in Colombia in 2021, according to internal calculations made by us and Colombia's fuel consumption as reported by the Ministry of Finance.

The following table sets forth the production of refined products of the Barrancabermeja refinery for the periods indicated.

Table 41 – Production of Refined Products from the Barrancabermeja Refinery

	For the year ended December 31,		
	2021	2020 (bpd)	2019
LPG, Propylene and Butane	11,475	9,101	10,114
Gasoline Fuels and Naphtha	61,919	50,167	64,063
Diesel	59,200	54,261	57,469
Jet Fuel and Kerosene	20,404	11,910	24,320
Fuel Oil	26,969	25,112	32,009
Lube Base Oils and Waxes	694	577	797
Aromatics and Solvents	2,333	2,274	2,652
Asphalts and Aromatic Tar	31,373	27,018	29,593
Polyethylene, Sulphur and Sulphuric Acid	1,078	856	1,139
Total	215,445	181,276	222,156
Difference between Inventory of Intermediate Product	(829)	1,046	(703)
Total Production	214,616	182,322	221,453

In 2021, total production from the Barrancabermeja refinery increased by 17.7% compared with 2020, largely attributable to the increase in fuels demand, in line with the normalization of the economy after the easing of restrictions related to the COVID-19 pandemic.

[Table of Contents](#)

We own and operate four petrochemical plants and one paraffin and lube plant located within the Barrancabermeja refinery. In 2021, we produced 29,519 tons of low-density polyethylene, an increase of 41% compared to the production of 20,945 tons in 2020. This increase was primarily due to a return to normalcy in the demand for fuels that allowed a more stable operation of the cracker with a greater supply of fuel gas from the production fields. We produced 530.7 mboe of aromatics (benzene, toluene, xylene, orthoxylene, heavy aromatics, and cyclohexane), a 3.7% decrease as compared with the production of 551 mboe of aromatics in 2020, mainly as a result of a major maintenance of the unit.

The gross refining margin increased from US\$ 9.1/Bbl in 2020 to US\$ 11.5/Bbl in 2021, primarily due to strengthening of the prices of refined products compared against crude, due to a higher differential in all indicators, which in turn was primarily due to a recovery in demand as a result of the economic reactivation previously discussed. The average conversion index for the Barrancabermeja refinery was 88.9% in 2021 and 87.6% in 2020. This increase was primarily due to an optimization in the blending of fuel oil and the implementation of initiatives for the best use of valuable products.

3.7.1.2. Cartagena Refinery

The following table sets forth the production of refined products from the Cartagena Refinery for the periods indicated.

Table 42 – Production of Refined Products from the Cartagena Refinery

	For the year ended December 31,		
	2021	2020 (bpd)	2019
LPG, Propylene and Butane	3,440	3,321	4,255
Gasoline Fuels and Naphtha	41,201	43,259	49,904
Diesel	76,798	72,170	79,069
Jet Fuel and Kerosene	5,951	7,424	9,331
Fuel Oil	3,983	2,375	3,660
Sulfur	456	466	585
Total	131,829	129,015	146,804
Difference between Inventory of Intermediate Product	4,757	5,318	2,262
Total Production⁽¹⁾	136,586	134,333	149,066
Petcoke (Metric Tons)	854,808	828,931	922,460

(1) Does not include petcoke.

The following tables set forth the imports and sales of refined products from the Cartagena Refinery for the periods indicated.

Table 43 – Imports and Sales of Refined Products from the Cartagena Refinery

	For the year ended December 31,		
	2021	2020 (bpd)	2019
Imports			
Motor Fuels	6,835	—	521
Jet Fuel and Kerosene	274	—	—
LPG and Butane	303	1,132	990
Total Imports	7,412	1,132	1,511

[Table of Contents](#)

	For the year ended December 31,		
	2021	2020 (bpd)	2019
Sales			
Motor Fuels	27,844	43,979	49,865
Diesel	77,560	73,188	77,981
Jet Fuel and Kerosene	5,975	7,394	9,063
Fuel Oil	1,390	2,552	3,713
Other Products	41,940	24,275	22,435
Total Sales	154,709	151,388	163,057

During 2021, the Cartagena refinery imported butane in order to achieve the planned feed of the Butamer Unit and to increase the production of alkylate.

Total sales increased from US\$ 2,399 million in 2020 to US\$ 4,104 million in 2021. A total of 52 million barrels of crude were processed in 2021 compared to 51.6 million barrels of crude processed in 2020. Exports to international markets represented 30% of total sales (US\$ 4,104 million).

The Cartagena refinery's 2021 figures already reflect the operation of all units. The gross refining margin increased to US\$ 8.5/Bl in 2021 from US\$ 6.6/Bl in 2020 mainly due to the increase of demand generated by a worldwide economic recovery and the strengthening of refined products prices.

In terms of growth opportunities, the project for the "Interconnection of the Crude Plants at the Cartagena refinery – IPCC", currently in execution, seeks to increase the nominal capacity of the refinery from 150,000 bpd to 200,000 bpd, by the interconnection of the original crude unit (U-001) to the new refinery, generating an incremental production of clean fuels and optimizing the refinery operation during the scheduled maintenance of the new crude unit (U-100). The project is in the mechanical completion and commissioning stage, for the subsequent start-up of the original crude unit, which is expected for 2022.

3.7.1.3. Esenttia S.A.

During 2021, Esenttia's production totaled 500 thousand tons of petrochemical products, a 2.1% increase compared to the 490 thousand tons produced in 2020, primarily due to a full year of efficiency projects initially implemented in 2020. The total contribution margin in 2021 (including the contribution of polypropylene, polyethylene and masterbatches) was 8% higher than in 2020 (from US\$ 235 per ton in 2020 to US\$ 253 per ton in 2021).

The increase in contribution margin is primarily a result of the temporary reduction in the availability of polypropylene ("PP") in America, which in turn was primarily due to a decrease in the arrival of products from Asia and environmental impacts on PP units in the United States.

Table 44 – Operating Capacity of Esenttia

	For the year ended December 31,		
	2021	2020 (Metric Tons)	2019
Average capacity	499,873	480,000	470,000
Throughput	499,759	489,627	459,737
% Use	100 %	102 %	98 %

[Table of Contents](#)

3.7.1.4. Invercolsa

During 2021, Inversiones de Gases de Colombia S.A. (Invercolsa), registered 1.32 million users of natural gas, an increase of 4.8% compared to the 1.26 million users of natural gas in 2020, due to the economic reactivation following the restrictions imposed as a result of the COVID-19 pandemic and the recovery of the facilities hookup processes. Throughout 2021, Invercolsa continued to integrate its operations into the Ecopetrol Group, in connection with the increase in stake completed by Ecopetrol in November 2019.

3.7.1.5. Biofuels

As of the date of this annual report, we have investments in the biofuel company Ecodiesel Colombia S.A., in which we own 50% of the shares, currently in operation with a capacity of 130 thousand tons of biodiesel per year.

During 2021 we managed to capitalize on opportunities and achieved historical results in production, going from a production of 123 thousand tons in 2020 to 133 thousand tons in 2021. This represents a year-to-year growth of 8% and was due mainly as a result of greater plant availability and process stability, which allowed for an increase in load from 14.7 tons/hour in 2020 to 16.0 tons/hour in 2021.

3.7.2. Marketing and Supply of Refined Products

We are the main producer and supplier of refined products in Colombia. We market a full range of refined and feedstock products, including regular and high-octane gasoline, diesel fuel, jet fuel, LPG and petrochemical products, among others.

Domestic sales of products totaled 322.2 mboed and increased by 60.9 mboed in 2021, 23% higher as compared to 2020. This increase is primarily the result of strengthening fuels demand, mainly gasoline (34.3 mboed), diesel (16.9 mboed) and jet fuel (9.5 mboed) sales. The aforementioned was mainly driven by the economic recovery following the overcoming of the COVID-19 peaks in the country.

In 2021, 6.2 million barrels of diesel and 0.9 million barrels of gasoline produced by the Cartagena refinery were allocated to complement the supply from the Barrancabermeja refinery and fulfill Colombia's demand, avoiding larger imports and allowing us to maintain the share of the national market. In the same way, 7.0 million barrels of diluent produced by the Cartagena refinery were used to transport crude reducing diluent imports. In addition, we imported petrochemicals to complement the national supply, generating additional sales of lubricating bases, polyethylene, hexanes, and others.

Exports of products decreased by 11% in 2021 compared to 2020, explained by a decrease of 16.9 mboed from the Cartagena refinery primarily due to strengthened domestic demand, which was partially offset by an increase of 4.5 mboed from Ecopetrol, due to higher exports of fuel oil and asphalt as a result of the increase in runs at the Barrancabermeja refinery.

3.8. Electric Power Transmission and Toll Roads Concessions

Our new electric power transmission and toll roads concessions segment arose directly out of the Acquisition and includes the offering of services such as electricity transmission and the designing, building, operating, and maintaining toll road infrastructure in various countries in Latin America. We conduct these activities through ISA and its subsidiaries.

3.8.1. ISA

ISA, our new subsidiary, was founded as a joint stock company in Bogotá, Colombia, in 1967. Since then, it has grown into a multi-Latin corporate group operating in Colombia, Brazil, Peru, Chile, Bolivia, Argentina, and Central America. ISA and its 46 subsidiaries operate and maintain electricity transmission networks, with the broadest presence of any Latin American electricity transmission company in terms of the number of countries where ISA operates. ISA is also involved in toll-road concessions, telecommunications, and information and communications technology (ICT) businesses.

ISA is organized as a Colombian stock corporation and as a mixed public services company. As of December 31, 2021, we owned 51.41% of ISA's capital stock and other shareholders (including Colombian pension funds, international and local institutional investors, and retail shareholders) owned the remaining 48.59% of ISA's capital stock.

[Table of Contents](#)

The majority of ISA's consolidated revenues are derived from contracts with customers (i) from the regulated payments that ISA and its consolidated subsidiaries operating in the electricity transmission segment receive from making their electricity transmission assets available to the national interconnected systems of the countries where they operate, (ii) from revenues related to interconnection charges, the dispatch and coordination of the National Dispatch Center (CND for its Spanish acronym) in Colombia and administration services of the Wholesale Energy Market (MEM for its Spanish acronym) in Colombia, and (iii) from revenues recognized by reference to the stage of completion of contract activity in the electricity transmission business.

3.8.2. Electricity Transmission Activities

ISA is the largest international energy transmission company in Latin America in terms of kilometers of electricity lines in operation, according to ISA's internal calculation of the total kilometers of high-voltage network circuits of the energy transmission segment in each country in which ISA operates. The energy transmission companies of ISA operate and maintain a high-voltage transmission network in Colombia, Brazil, Bolivia, Peru, and Chile, as well as some international interconnections that operate between Colombia-Ecuador and Ecuador-Peru. In Central America, the company holds a stake in *Empresa Propietaria de la Red* (EPR), a company incorporated under the laws of Panama and headquartered in San José, Costa Rica, which operates the Energy Interconnection System for the Countries of Central America (SIEPAC for its Spanish Acronym).

The revenues associated with the provision of energy transmission services are regulated and are not affected by the supply or demand of electricity. Additionally, revenues are indexed to macroeconomic variables such as the Colombian peso to U.S. dollar exchange rate, the Producer Price Index (PPI), the Consumer Price Index (CPI), or the corresponding indexes in the different countries.

In addition, ISA, through its subsidiaries, transmits 448,000 GWh annually, by means of 48,330 kilometers of high-voltage network circuits, which support the supply of energy in Latin America. As of December 31, 2021, ISA is in the process of constructing an additional 7,133 kilometers of high-voltage network circuits, which are expected to start operations in the near term.

In Colombia, ISA's subsidiary, *XM Compañía Expertos en Mercados S.A. E.S.P.* ("XM"), exclusively operate, plan and coordinate the resources of the National Interconnected System (SIN for its Spanish acronym), and also manages the Commercial Settlement System (SIC for its Spanish acronym) in the MEM, the International Electricity Transactions (TIE for its Spanish acronym) with Ecuador, and carries out the settling and clearing of charges for use of the SIN's grids. XM also develops solutions and provides energy and information services. As the sole operator of the Colombian SIN, XM guarantees the balance between production and consumption of energy in the country. Also, based on energy demand estimates, XM carries out the coordinated real-time operation of the generation plants and the grid to ensure that power plants' generation continuously responds to consumers' demand in a cost-effective, reliable, and safe manner with quality standards.

The following table sets forth certain metrics related to ISA's energy transmission operations for the periods indicated:

Table 45 – Key Electricity Transmission Metrics

	For the year ended December 31,		
	2021	2020	2019
In Operation			
Km of Circuit	48,330	47,358	46,374
MVA Installed Capacity	104,138	95,720	92,600
In Construction			
Km of Circuit	7,133	6,529	5,618
MVA Capacity	14,007	15,603	14,312
Operational Results			
Reliability	99.99 %	99.99 %	99.99 %
Availability	99.81 %	99.87 %	99.78 %

[Table of Contents](#)

3.8.2.1. Electricity Transmission Activities in Colombia

In 2021, ISA's subsidiaries electricity transmission activities in Colombia included 13,226 km of transmission lines. As of December 31, 2021, ISA owned and operated an aggregate transformation capacity of 22,721 MVA (Megavolt-Amperes), transforming high voltage electricity into low voltage electricity, and vice versa.

The following table sets forth ISA's transmission lines and transformation capacity relating to electricity transmission activities in Colombia, for the periods indicated.

Table 46 - Transmission Infrastructure in Colombia

	For the year ended December 31,					
	2021		2020		2019	
	Transmission Lines (Km)	Transformation Capacity (MVA)	Transmission Lines (Km)	Transformation Capacity (MVA)	Transmission Lines (Km)	Transformation Capacity (MVA)
Colombia	13,226	22,721	12,543	21,661	12,495	21,181

3.8.2.2. Electricity Transmission Activities Outside Colombia

In 2021, ISA's subsidiaries electricity transmission activities outside Colombia included 35,105 km of controlled transmission lines, where Brazil represents 59.06% of the total transmission infrastructure.

The following table sets forth ISA's electricity transmission activities outside Colombia, for the periods indicated.

Table 47 - Transmission Infrastructure Outside Colombia

	For the year ended December 31,					
	2021		2020		2019	
	Transmission Lines (Km)	Transformation Capacity (MVA)	Transmission Lines (Km)	Transformation Capacity (MVA)	Transmission Lines (Km)	Transformation Capacity (MVA)
Brazil	20,734	61,857	20,536	56,375	20,390	56,355
Peru	11,836	13,240	11,745	12,714	10,955	12,344
Chile	1,948	5,850	1,948	4,500	1,948	2,250
Bolivia	587	470	587	470	587	470
Total	35,105	81,417	34,816	74,059	33,880	71,419

3.8.3. Toll Roads Concessions Activities

ISA designs, builds, operates, and maintains toll road infrastructure that connects millions of people in Chile and Colombia. As of December 31, 2021, ISA was the largest intercity road operator and operated four concessions in Chile, while in Colombia, it operated the Ruta Costera Concession. In total, it operated five toll roads concessions, which covered a total of 860 kilometers in these two countries and had 136.46 kilometers of new toll roads under construction in Rutas del Loa Concession. During the year ended December 31, 2021, 153.9 million vehicles traveled on roads operated by ISA.

[Table of Contents](#)

The following tables set forth certain metrics related to ISA's toll road concession operations in Colombia and Chile for the periods indicated:

Table 48 - Total Traffic (Vehicles)

	For the year ended December 31,			
	Road Length (Km)	2021	2020	2019
COLOMBIA				
Ruta Costera	146	4,808,287	3,183,506	4,823,463
CHILE				
Ruta del Maipo	237	93,396,012	69,192,576	85,540,626
Ruta del Bosque	161	21,023,883	15,822,778	17,267,706
Ruta de la Araucania	144	24,287,331	18,023,487	21,624,879
Ruta de los Ríos	172	10,381,272	7,725,255	9,044,041
Total	860	153,896,785	113,947,602	138,300,715

3.8.4. Telecommunications and ICT

Within the telecommunications and ICT segment of its business, Internexa and its subsidiaries provide connectivity services, managed services, cloud services, data center and security services to customers across Latin America. In 2020, they added a new line of services based on analytics and "Internet of Things" (IoT). These ISA subsidiaries also maintain a fiber-optic network that totals more than 56,000 kilometers as of December 31, 2021. In addition to existing data centers in Medellín, Bogotá, and Río de Janeiro, two new data centers were incorporated by ISA in Santiago and Lima during 2020.

3.9. Research and Development: Intellectual Property

The main pillars of our research, technology development and innovation efforts are focused on four areas: (i) asset optimization by means of process automation, process and asset management innovation, data analytics, extending the economic limits, and Enhanced Oil Recovery (EOR) and Improved Oil Recovery (IOR) technologies to enhance reserves growth, (ii) supporting decarbonization and energy transition corporate plans through studies that will conduct the implementation of CCUS and hydrogen value chain technologies and (iii) exploring opportunities to increase circularity in our operations, considering not only recycling and the safe disposal of residues, but also initiatives for reuse, remanufacturing and repurposing, and (iv) increasing the position and competitiveness of the current electric power transmission and toll road concession businesses.

Our main innovation and technology development center is the Colombian Petroleum Institute (ICP for its Spanish acronym), established in 1985 and located in Piedecuesta, Santander. As a key lever of our TSEG strategy, technology and innovation are essential to our efforts to add value to our business segments. Value generation is achieved through the development of proprietary technologies and competitive advantages and the adaptation of third-party technologies to our processes. The scope of the ICP activities covers our entire value chain: exploration, production refining, transportation, trading, and marketing including asset integrity and environmental sustainability.

ICP will continue monitoring technological advances to support our value chain and developing technological solutions to our challenges, with a special focus on carbon capture, sustainable fuels, and hydrogen technologies. Since water represents a critical resource, our efforts will include a technology-enabled water management program that encompasses the conservation, recycling, reuse, and valorization of production water streams. We are incorporating multi-scale technological approaches to identify, quantify, characterize, and abate methane emissions to reduce our impact on climate. Furthermore, we are conducting studies to establish carbon stocks and fluxes associated to strategic ecosystems, to promote transparent carbon compensation projects related to nature-based solutions, and to reduce the risk of biodiversity loss in Colombia. The production and upscaling of high-performance materials from petroleum molecules, that could be the base for advanced, sustainable, reusable, non-combustion products, are also part of our research, development, and innovation efforts, aimed at reducing our scope 3 CO₂ emissions. In our petrochemical business, we are working mainly in mechanical and chemical plastic recycling and biopolymers. We also work modeling and developing tools to optimize the energy value chain.

[Table of Contents](#)

Each year we present to the Colombian National Council for Tax Benefits (*Consejo Nacional de Beneficios Tributarios*, or CNBT) our research, technology development projects and innovation initiatives, to obtain certifications for its science and technology investments. The CNBT certifies eligible science and technology investments, which are deductible from income tax upon execution; and we apply the tax benefit.

Our intangible assets are preserved through a technology valuation process and an intellectual property protection process, which include the consolidation of trade secrets, patents, copyrights, trademarks, industrial designs, publications in peer reviewed journals and presentations in prime level technical events. The Ecopetrol Group has filed 311 patent applications in the last 16 years, 26 of them in 2021. Our most recent patent applications include innovative technologies, such as (i) technologies for modeling our oil and gas integrated value chains, (ii) a system and method for the optimization of surface and subsurface components of production and fields development plans, (iii) a chemical product for the inhibition of calcium carbonate precipitates from produced waters and its manufacturing process, (iv) iron and carbon hybrid magnetic nanocomposites and their preparation method, (v) a magnetic activated carbon and its preparation method, (vi) devices and processes for the treatment of production water, (vii) synthesis and formulation of a fluid based on copolymers for the modification of relative permeability, (viii) resin from copolymerization of ethylene and propylene, and (ix) system for energy obtained by electromagnetic induction.

In 2021, the Colombian authorities granted us seven new patents and we have obtained seven patents abroad (one in Mexico, one in Argentina and five in Brazil). We currently hold 114 patents in Colombia, the United States, Mexico, Argentina, Peru, Venezuela, Ecuador, Brazil, Russia, Nigeria, Indonesia, India, and Malaysia.

In 2021, Ecopetrol S.A. licensed four of its technologies to private companies for use, manufacturing, marketing commercialization and technical support including two to companies that belong to the Ecopetrol Group.

We currently have 55 technologies licensed to Colombian and multi-national companies.

3.10. Applicable Laws and Regulations

3.10.1. Regulation of Exploration and Production Activities

3.10.1.1. Business Regulation

Pursuant to the Colombian Constitution, the Nation is the exclusive owner of minerals and non-renewable resources located in the subsoil and has full authority to determine the rights to be held and royalties or compensation to be paid by investors for the exploration or production of any hydrocarbon reserves. The Ministry of Mines and Energy and the ANH are the authorities responsible for regulating all activities related to the exploration and production of hydrocarbons in Colombia.

Decree Law 1056 of 1953 (the Petroleum Code, or *Código de Petróleos*) declares that the hydrocarbon industry and its activities of exploration, exploitation, refinement, transportation, and distribution are of public interest, which means that, in the interest of the hydrocarbon industry, the Colombian government may order, for example, necessary expropriations in order to develop such industry. The hydrocarbon industry is under governmental supervision and control, regulated mainly by the Ministry of Mines and Energy and the ANH.

Ministry of Mines and Energy Resolution 181495 of 2009, as amended by Resolution 40048 of 2015, establishes a series of regulations regarding hydrocarbon exploration and production.

Ministry of Mines and Energy Resolution 180742 of 2012, partially repealed by Resolution 90341 of 2014, includes a series of technical regulations for unconventional hydrocarbon resources, including the procedures for advancing the exploration and exploitation of unconventional reserves. It also establishes the types of wells and their classification, as well as the fulfillment of those minimum (drilling and abandoning) conditions necessary to initiate or perform E&P activities. Furthermore, it contemplates the applicable procedure to resolve disputes between the mining sector and the oil and gas sector, regarding the coexistence of their rights in some specific projects.

[Table of Contents](#)

Decree 3004 of 2013, issued by the Ministry of Mines and Energy, sets forth guidelines regarding future regulation related to the exploration and exploitation of unconventional hydrocarbon resources in Colombia. Under Decree 3004, an unconventional field is defined as a rock formation with low primary permeability that requires stimulation in order to improve the conditions of mobility and recovery of hydrocarbons. This regulation contains a series of guidelines regarding the regulation for unconventional hydrocarbon resources, including a definition of unconventional reservoirs and the term in which the Ministry of Mines and Energy has to issue the specific technical regulation regarding the exploration and exploitation of unconventional hydrocarbons and the proceedings that interested actors have to follow in order to seek the exploration and exploitation of unconventional hydrocarbons in Colombia. Resolution 90341 was issued on March 27, 2014, in development of the mandate of Decree 3004 setting the technical conditions, requirements and procedures for the exploration and exploitation of unconventional fields. Resolution 90341 of 2014 is currently suspended by order of the Council of State, as a precautionary measure in the analysis of a legal action filed by the Universidad del Norte. This precautionary measure covers both the Decree 3004 of December 26, 2013, and Resolution 90341 of March 27, 2014, related to unconventional fields.

On May 26, 2015, Decree 1073 compiled the majority of Colombian decrees in force regarding the administrative sector of mines and energy.

Decree Law 4137 of 2011, which modified the legal nature of the ANH regulates what corresponds to the integral administration of the hydrocarbon reserves and resources owned by the nation of Colombia.

In accordance with the aforementioned Decree Law, it is the responsibility of the Board of Directors of the ANH to define the criteria for administration and allocation of the areas; approve model contracts for their exploration and exploitation, while establishing the rules and criteria for their management and monitoring the contribution to the economic and social development of the country through the promotion and sustainable use of reserves and resources.

Agreement (*Acuerdo*, a type of regulation) 004 of 2012, as issued by the ANH, amends Agreement 008 of 2004 and sets forth the rules governing the award of exploration and production areas and the execution of contracts. As set forth below, Agreement 002 of 2017 replaces this *Acuerdo*. Each agreement entered into with ANH is ruled by the *Acuerdo* that was in effect on the date of execution of the relevant agreement.

Agreement 003 of 2014, as issued by the ANH, complements Agreement 004 of 2012 by setting forth the contractual framework for the carrying out of activities in unconventional reservoirs, the procurement regulations for the exploration and exploitation of unconventional fields and the procurement process for the awarding of hydrocarbon exploration and exploitation areas.

Agreement 002 of 2015, as issued by the ANH, partially amends Agreement 004 of 2012 and sets forth the initial rules and measures the Government can take to mitigate the adverse effects of the decline of international oil prices. The main measures established by this agreement are the following:

- (i) The extension of terms and deadlines for the execution of activities related to investments in exploration and evaluation phases and for the declaration of commercial discoveries;
- (ii) The establishment of procedures to transfer investments in exploration programs between allocated areas; and
- (iii) The leveling of the contractual terms of offshore contracts entered before 2014 to the ones included in the contracts executed as a result of the 2014 Colombian Round.

Agreement 003 of 2015, as issued by the ANH, modifies and also partially amends, Agreement 004 of 2012, and provides certain rules and measures the Government can take to mitigate the adverse effects of the decline of international oil prices. This agreement permits performance guarantees required under E&P contracts to be reduced in the same amount as the works actually performed during the term of the respective phase.

Agreement 004 of 2015, as issued by the ANH, also partially amends Agreement 004 of 2012, and provides certain rules and measures for the Government to mitigate the adverse effects of the decline of international oil prices. This agreement allows contractors to attribute additional activities carried out under a TEA to commitments under the first phase of an E&P contract.

[Table of Contents](#)

Agreement 002 of 2017, as issued by the ANH on May 18, 2017, replaces Agreement 004 of 2012, Agreement 003 of 2014, and Agreements 002, 003, 004 and 005 of 2015. It establishes the general structure of the New Regulation for Administration and Assignment of Areas and the general guidelines regarding future hydrocarbon contracts in Colombia. Seeking the interests of the Nation, the market conditions, the national hydrocarbon sector strategy, the competitive context of producer countries and the Nation's social and environmental evolution.

Agreement 002 of 2017 adapts the existing regulations for the selection of contractors, and the applicable rules for the award, execution, termination, liquidation, monitoring, control and surveillance of the contracts signed with the ANH. In regard to unconventional reservoirs, this agreement also establishes the need to sign additional contracts and additional arrangements for the industry to exploit unconventional reservoirs in Colombia.

On November 8, 2018, the High Court for Administrative Matters (*Consejo de Estado*) analyzed the potential annulment of Decree 3004 of 2013 and Resolution 90341 of 2014 and issued an interim order to suspend their effects as of such date. However, the aforementioned Court established that, "... if the National Government is interested in investigation, clarifying and exploring the feasibility of the hydraulic fracturing procedure for the exploration and exploitation of hydrocarbons in unconventional reservoirs (YNC), it could advance in the PPII to identify the risks of unconventional activity."

On February 4, 2019, the ANH published the new model contract for offshore exploration and production. The purpose of this new model contract is to foster and stimulate investments in exploration and the exploitation of offshore hydrocarbons, enhancing Colombia's competitiveness to attract and retain investments from large and experienced O&G operators.

On February 5, 2019, the ANH by implementing the *Acuerdo* No. 2 (Agreement No. 2 of 2017) opened a PPAA, which aims to select, among previously qualified proponents on equal terms, the most favorable offers to allocate the areas previously determined, demarcated and classified by the ANH. Several addendums have modified the terms of references of the PPAA, but, as to date, the applicable terms of reference of such bidding process are included in Addendum No. 25 of November 23, 2021.

The Agreement 02 of 2017 was partially modified by agreement 03 of February 18, 2019, to clarify the moment in which contractors may withdraw from the contracts signed with the ANH and also presents another alternative for those interested in the PPAA when they belong to business groups, other than the issuance of a parent company guarantee.

Resolution 078 of 2019, as issued by the ANH, approved the final terms of reference and the model of the onshore and offshore contract for the PPAA. Pursuant to this procedure, the ANH will select areas over which proposals may be received at any time, without the need of launching specific bidding procedures for their allocation.

As a result, in 2019, the ANH issued terms of references for the PPAA and carried out two cycles both of which were divided in the following four stages: (i) submission of the proposals and selection of the initial proponent, (ii) submission of counterproposals and selection of the most favorable counterproposal, (iii) the exercise of the right of option of improvement by the initial proponent and (iv) allocation of areas, contract awards and execution of contracts. In 2020 a third cycle was carried out by the ANH.

As result of the first cycle of the PPAA, the ANH awarded 11 onshore areas and 1 offshore area. As part of the second cycle, the ANH allocated 14 onshore blocks. Finally, as a result of the third cycle, the ANH awarded 4 onshore areas.

Agreement 01 of March 27, 2020, of the ANH regulates the transfer of activities or investments between legal instruments signed with the ANH to promote exploratory investment in the country and to seek the incorporation of new reserves, repealing the articles of Agreement 02 of 2017.

Agreement 02 of April 7, 2020, of the ANH regulates temporary measures to strengthen the hydrocarbon sector due to the effects generated by the fall in international oil prices. This agreement considers what is regulated by Decree 417 of 2020, where the Government declared the State of Economic, Social and Ecological Emergency throughout the national territory, and the declaration by the World Health Organization (WHO) of the outbreak of COVID-19 as a global pandemic. Among the legal measures enacted were: (i) the extension of terms and deadlines in the contracts signed with the ANH; (ii) exceptions to the requirements established in Agreement 01 of 2020 mentioned above, which considers the status of the international oil prices; (iii) possibility of allocating resources from the Benefit Programs to the Communities "PBC" to strengthen measures applied by the Government to face the crisis; and (iv) reduction of contractual guarantees, complying with the requirements established there.

[Table of Contents](#)

Agreement 06 of September 11, 2020, of the ANH added Agreement 18 of 2004, Agreement 04 of 2005, Agreement 21 of 2006, and Agreement 2 of 2017 to incorporate into the Contracting Regulations for the Exploration and Exploitation of Hydrocarbons, the contractual elements that allow entities to carry out PPII on hydrocarbons in unconventional reservoirs (YNC) with the use of the Multistage Hydraulic Fracturing with Horizontal Drilling (FHPH) technique. These terms and conditions were modified by Agreements 007, 008 and 009 of 2020 establishing the final terms and conditions by means of which the contractors were selected by the ANH to perform the aforementioned hydrocarbons activities, as well as the final terms of the CEPI to be executed.

Through Resolution 0613 of September 14, 2020, the ANH opened a competitive process for the development of Research Projects in Unconventional Reservoirs using the FHPH technique.

Agreement 001 of February 5, 2021, issued by the ANH, established the requirements for the request of extension by mutual agreement to carry out additional exploratory activities in the Exploration Period, Subsequent Exploration Program, and Appraisal Programs. Furthermore, it regulated the granting of term extensions for the compliance of contractual obligations and the requests.

Agreement 003 of February 11, 2021, issued by the ANH, approved the Model of the *Convenio* of Exploration and Production of Hydrocarbons.

Agreement 004 of February 26, 2021, issued by the ANH, amended Agreement 06 of 2020 regarding the accreditation of commitments and counteroffer requirements applicable to the PPAA.

For 2021, considering the remaining impact caused by the COVID-19 pandemic, the ANH issued Agreement 05 of July 14, 2021, and established additional temporary measures to aid hydrocarbon companies in Colombia, including: (i) the acceptance of transfer of activities or investment allowed by Agreement 01 of 2020 to areas that were included in the fourth cycle of the PPAA process developed in 2021; and (ii) extension of contractual terms to comply with obligations included in agreements entered into with the ANH.

Agreement 06 of July 14, 2021, issued by the ANH, added general guidelines of the PPAA to those listed in the motivating part of ANH Agreement 02 of 2019.

Agreement 09 of October 12, 2021, issued by the ANH, provided the compilation of every modification of the Agreement 02 of 2017 establishing the updated rules to allocate and entitle areas to develop exploration and production of hydrocarbons in Colombia and the procedures to perform the contractual obligations agreed according to these rules.

Resolution 728 of October 14, 2021, issued by the ANH, provided the terms and conditions by means of which the Benefit Programs to the Communities should be performed in the areas of influence of E&P agreements. As part of the obligations of the E&P agreements, operators should develop programs for the benefit of the communities where the E&P activities take place according to this Resolution.

The ANH also issued Agreement 10 of November 12, 2021, and established the possibility to comply with exploratory obligations in E&P and TEA agreements, as well as in any *Convenios* by drilling A3 or A2 wells in any area of the Colombian territory that is included in the land map provided by the ANH. This possibility will apply for wells that are drilled in 2021 and 2022. If any company wants to use this possibility, its legal representative shall previously notify the ANH. Regarding Contracts for Research Projects or "CEPIs" ruled by Agreement 06 of 2021, this Agreement, established specific procedures and alternatives that the contractor has for certification of compliance obligations under this type of special agreement including: effective investment performance criteria, obligation to deliver technical information to the Petroleum Information Bank of the Colombian Geological Service and allocation of the investment performed by the contractor. This Agreement was regulated by Resolution 10882 of 2021, issued by the ANH as well.

On December 1, 2021, the hearing for the Deposit and Opening of Proposals of the Fourth Cycle of the Permanent Process for the Allocation of Areas - Colombia Round 2021 was held, according to the schedule of the Terms of Reference, in which Ecopetrol S.A. submitted four (4) proposals corresponding to three (3) Areas incorporated by this company and one of the Areas offered at the initiative of the ANH.

Per the Terms of Reference and the Declaration of Initial Bidder of the Fourth Cycle of the Permanent Process of Allocation of Areas dated December 14, 2021, concerning the Areas LLA 141, VMM 4-1, VMM 14-1, and VMM 65, the ANH through Resolution 20919 of December 20, 2021, proceeded to award them to ECOPETROL S.A.

[Table of Contents](#)

As a result of the award, on January 18, 2022, the ANH and ECOPETROL S.A. signed the TEA contracts VMM 65, VMM 14-1 and VMM 4-1, and the E&P Llanos 141.

Temporary regulation for the Comprehensive Research Pilot Projects (PPII)

We have actively participated in the formulation of specific regulation for the implementation of the PPII. The regulatory framework includes:

- Resolution 40185 of 2020, modified by Resolution 40011 of 2021, of the Ministry of Mines and Energy. Technical regulations for the development of PPII.
- Resolution 0904 of 2020 of the Ministry of Interior and the Ministry of Mines and Energy. Social Guidelines for the development of PPII.
- Resolution 304 of 2020 of the Colombian Geological Service. Guidelines for the monitoring of seismicity and the inclusion of a seismic traffic light for the PPII.
- Agreement 006 of 2020 of the ANH, modified by Agreements 007, 008 and 009 of 2020 and Agreement 004 of 2021. Regulations for the selection of contractors for CEPIS.
- Decree 328 of 2020 issued by the Ministry of Mines and Energy providing the general guidelines for developing PPII on unconventional reservoirs.
- Agreement 008 of 2021 issued by the ANH established the manual for delivery of technical and geological information on hydrocarbon exploration, evaluation, and production activities to the Petroleum Information Bank of the Colombian Geological Service for the purpose of accruing the technical information related to these activities in Colombia.
- In January 2021, the Colombian Geological Service office issued the third version of the technical guidelines for the laboratory sampling and analysis procedure of radioactive materials produced by the PPII.
- Resolution 1541 of 2021 of the Ministry of Health guidelines for the development of PPII

As of the date of this annual report, additional items of the PPII regulatory framework are being discussed with the Colombian Government pursuant to which we have made comments. In particular, the Colombian Government and the oil & gas industry are waiting for the final versions of the regulatory framework for pilot evaluation criteria, and evaluation variables.

3.10.1.1.1. Environmental Licensing and Prior Consultation

Law 99 of 1993 and other environmental regulations, such as Decree 1076 of 2015 in particular (compilation decree regarding the administrative sector of environment and sustainable development), impose to companies, including oil and gas companies, the obligation to obtain an environmental license prior to undertaking any activity that may result in a serious deterioration of renewable natural resources, or that may have the capacity of materially modifying the physical environment.

The National Authority on Environmental Licensing (ANLA), created by means of Decree 3573 of 2011, is the authority responsible for evaluating the applications and issuing the environmental licenses for oil & gas-related activities, as well as surveilling and overseeing all hydrocarbon projects and monitoring the environmental compliance of such activity.

If the projects or activities could have a direct impact over the territories or the interests of indigenous, Afro-Colombian or Raizal communities, the Colombian Constitution provides that the companies developing such projects or activities must conduct a consultation process with those communities before initiating such projects or activities. This consultation process is a prerequisite for obtaining the required environmental licenses.

[Table of Contents](#)

In addition, the Colombian Constitution and laws establish that, as part of the public participation mechanisms, Colombian citizens may request information regarding the activities of the project and their potential impacts. They may also request to undertake an environmental hearing to obtain information of the project subject to environmental licensing.

On May 26, 2015, the Ministry of Environment and Sustainable Development (MESD) issued Decree 1076, which compiles most of Colombian regulations in force regarding environment and sustainable development.

The environmental license encompasses all the necessary permits, authorizations, concessions and other control instruments necessary under Colombian environmental law to undertake a project or activity that may result in the serious deterioration of renewable natural resources, or that have the capacity of materially modifying the physical environment. The license defines specific conditions under which the license holder shall undertake such project or activity. The procedure to obtain an environmental license begins when the company files an Environmental Impact Study (EIA) related to the project before the ANLA. The licensing process includes an application for the use of natural renewable resources (water, soil, and air). When the project or activity requires permits for the use of forestry banned species, these should be included in the environmental license process, according to Decree 2106 of 2019. The EIA must be filed as well as a plan to prevent, mitigate, correct, and compensate for any activity that may harm the environment, known as the Environmental Management Plan (PMA).

The environmental licensing procedure in Colombia is included in Decree 1076 of 2015. According to the regulation currently in effect, the procedure to obtain an environmental license shall not take more than 90 business days. But, depending on the complexity of the information requested by the ANLA and administrative delays, including an oral hearing to request additional information for the EIA assessment, the procedure may take between 165 and 265 business days, depending on whether the applicant is required to file additional information.

The environmental licensing process for the Comprehensive Research Pilot Projects (PPII for its Spanish acronym) is established in Decree 1076 of 2015. However, the Ministry of Environment and Sustainable Development issued resolution 0821 of September 24, 2020, which established the terms of reference for the preparation of the Environmental Impact Study of the PPII.

The MESD is also responsible for issuing regulation and establishing climate change policies for different sectors in Colombia. The Ecopetrol Group complies with all applicable regulations. In particular, MESD is responsible for issuing regulation regarding Law 1931 of 2018 (Climate Change Law), which outlines provisions for the establishment of a National Program of Greenhouse Gas (GHG) Tradable Emission Quotas (PNCTE for its Spanish acronym). The PNCTE must be fully implemented by 2030. The MESD is also responsible for the National Emission Reductions Registry (RENARE for its Spanish acronym), in which companies must register verified GHG emission reductions. RENARE started operating in 2021. As part of our continuous monitoring of climate change requirements, we also participated in a regulatory process related to the issuance of Resolution 40066 of 2022 regarding the reduction of fugitive emissions and routine flaring, led by the Ministry of Mines and Energy. A company that does not comply with the applicable environmental laws and regulations, does not execute the corresponding Environmental Management Plans (PMA) approved by the environmental authority or ignores the requirements imposed by an environmental license may be subject to an administrative sanction proceeding initiated either by the ANLA or the regional environmental authorities established by Law 1333 of 2009, without disregard to the criminal actions that may take place in accordance with law 2111 of 2021. The proceeding may result in oral or written warnings, monetary penalties, fines, license revocation or the temporary or permanent suspension of the activity being undertaken. Apart from administrative sanctions, the Colombian judiciary or other law enforcement authorities may also impose civil and even criminal sanctions if environmental damages are verified as a consequence of having breached the environmental laws and regulations applicable to the project.

[Table of Contents](#)

3.10.1.1.2. Royalties

In Colombia, the Nation is the owner of minerals and non-renewable resources located in the subsurface, including hydrocarbons. Thus, companies engaged in exploration and production of hydrocarbons, such as us, must pay to the National Hydrocarbons Agency, as representative of the Government of Colombia, a royalty on the production volume of each production field, as determined by the ANH.

Royalties may be paid in kind or in cash. Each production contract has its applicable royalty arrangement in accordance with applicable law. In 1999, a modification to the royalty regime established a sliding scale for royalty payments for crude oil and natural gas production fields discovered after July 29, 1999, and depending on the quality of the crude oil produced. Since 2002, as a result of the enactment of Law 756 of 2002, the royalty rate was fixed as a sliding scale depending on the produced volume from 8% for fields producing up to 5 mbd to 25% for fields producing in excess of 600 mbd. Notwithstanding the royalties for Incremental Production Contracts, Contracts for Undeveloped and Inactive Fields, and Incremental Production Projects defined in paragraph 3 Article 16 Law 756 of 2002, and Article 29 of the Law 1753 of 2015, the changes in the royalty regime only apply to new discoveries and do not apply to fields already in the production stage as of July 29, 1999. Producing fields pay royalties in accordance with the royalty law in force at the time of the discovery.

With the issuance of Law 2056 of 2020, (“Through which the organization and operation of the general system of royalties is regulated”), the royalties’ regime applicable to the hydrocarbon fields on which there have been made additional investments aimed at increasing the recovery factor of existing deposits was established. Article 18 of this law established that all the volumes produced in these fields will be considered incremental.

For crude oil, the ANH issued Resolution 164 of 2015, modified by Resolution 907 of 2016, and 855 of 2020 to determine the procedures and terms for liquidation of the royalties caused for crude oil production in Colombian territory.

Regarding natural gas, in accordance with Resolution 877 of 2013, as amended by Resolution 640 of 2014, starting on January 1, 2014, and Resolution 351 of 2014, the ANH has received royalties in cash rather than in kind. Thus, the producer may dispose of its gas production volumes corresponding to royalties paid in cash. Through Resolution 165 of 2015 modified by Resolution 436 of 2021, the ANH established the procedure to liquidate royalties of natural gas.

On September 23, 2021, the Ministry of the Interior issued Decree 1142 “Whereby Decree 1821 of 2020, Sole Regulatory Decree of the General Royalties System, is added and modified”. Article 3.1.1.2.1 of this Decree established that the total volume of hydrocarbons produced that is additional to that stipulated in the basic production curve of incremental production projects or incremental production contracts will enjoy the benefits provided in paragraph 3 of Article 16 of Law 756 of 2002.

3.10.2. Regulation of Transportation Activities

Hydrocarbon transportation activity is a public interest activity in Colombia and a public service. As such, it is under governmental supervision and control, regulated mainly by the Ministry of Mines and Energy and the Energy and Gas Regulatory Commission.

Transportation and distribution of crude oil, liquefied petroleum gas and refined products must comply with the Petroleum Code, the Code of Commerce and all governmental decrees and resolutions. However, liquefied petroleum gas-related activities are regulated by CREG. According to Law 681 of 2001, multi-purpose pipelines owned by Cenit (a company wholly owned by Ecopetrol S.A.) must be open to third-party use on the basis of equal access to all.

Notwithstanding the general rules for hydrocarbon transportation in Colombia, Law 142 of 1994 defines the regulatory framework for the provision of public utility services, including the provision of natural gas and liquefied petroleum gas. Moreover, natural gas transportation is subject to regulations specific to the natural gas industry as issued by CREG, due to the categorization of natural gas distribution as a public interest activity under Colombian laws.

According to Resolution CREG 057 of 1996, natural gas producers, such as us, are not allowed to have significant economic interests in gas transportation companies. Accordingly, we currently, we do not perform any natural gas transportation activities.

[Table of Contents](#)

Transportation systems, classified as crude oil pipelines and multi-purpose pipelines, may be owned by private parties. Pipeline construction, operation and maintenance must comply with environmental, social, technical, and economic requirements under national guidelines and international standards for the oil and gas industry.

Construction of transportation systems requires licenses and local permits awarded by the ANLA and regional environmental authorities, respectively.

Crude oil transportation

Crude Oil Pipelines

According to Resolution 72145 of 2014, the regulatory framework relating to crude oil transportation accounts for both private use and public use pipelines. Private use pipelines are those built by the operating or refining entity for its own exclusive right and that of its affiliates. Public access pipelines are defined as pipelines built and operated by a public or private legal entity, for the purpose of publicly providing crude oil transportation services. The Colombian government, through the ANH, has a preferential right to use up to 20% of the total capacity of any public or private access pipeline to transportation its crude oil royalties, as provided by Resolution 72145 of 2014. However, for both private and public access pipelines, the ANH must pay the tariff for the pipeline use to transportation its percentage of production.

The Ministry of Mines and Energy is responsible for reviewing and approving the design of and tracks for crude oil pipelines and establishing transportation rates based on information provided by the service providers. It also oversees the calculation and payment of hydrocarbon transport-related taxes and manages the information system for the oil product distribution chain.

In 2014, the Ministry updated the transportation regulation and the rate calculation method for this line of business. It introduced a framework for the secondary market and incentives for new pipeline construction and current pipeline capacity expansions. According to the Petroleum Code, rates must be revised every four years.

During the scheduled revision of 2019, the Ministry of Mines and Energy, by means of Resolutions 31123 and 31132 of 2019, modified Resolution 72146 of 2014 and established the applicable rules for transportation and oil production companies to negotiate tariffs for the next four years. Once the negotiation period was over, the Ministry of Mines and Energy through a series of resolutions set the applicable tariffs for transportation of crude oil through pipelines. Such resolutions, were in line with the tariff methodology that has been in place since 2014, providing more regulatory stability for the Midstream companies through June 2023.

In August 2020, the MINEM started a consultation process to carry out a study to review, adjust, and update the methodology for setting crude oil tariffs. The scope of the study required contractors to prepare a document proposing changes to the current methodology and analyze whether it would be possible to implement the proposed methodology once the current tariff period (2019-2023), determined by Resolution 72146 of 2014, has ended. The results of such study were published and analyzed, and the various stakeholders presented their comments to the MINEM. Such proposals are expected to be discussed among all the stakeholders prior to any change to the current methodology.

Hydrocarbon Ports

The Port Superintendence is the authority that oversees the port business for crude oil and refined products. Although this business is not highly regulated, market participants are required to report certain information to the Port Superintendence.

As a result of the enactment of Decree 119 of 2015, operators of private use hydrocarbon ports are currently able to provide hydrocarbon transportation services to third parties pursuant to a mechanism established under that decree.

Decree 119 of 2015 was incorporated into Decree 1079 of 2015 issued by the Ministry of Transport, which compiles the majority of Colombian decrees and regulations in force regarding the administrative sector of transportation.

[Table of Contents](#)

Refined products and liquefied petroleum gas transportation

In 2014, CREG assumed responsibility for regulating product pipeline transportation from the Ministry of Mines and Energy, in addition to its pre-existing regulatory responsibility for liquefied petroleum gas, natural gas, and electric energy transportation.

In February 2021, CREG issued Resolution 004 of 2021, partially modified by Resolution 073 of 2021, by which CREG defined the Weighted Average Cost of Capital (WACC) methodology applicable to the different activities that CREG regulates. The activities regulated by CREG include energy distribution and transmission, gas distribution and transportation and refined products transportation. The discount rate for transportation of refined products is calculated in accordance with the inputs defined by the resolution and will be applicable once the tariff methodology for this activity is updated and published.

In December 2021, CREG issued Resolution 208 of 2021, which established the regulations for transportation by multi-purpose pipelines, including transportation of LPG. The main objectives of the new regulation are: (i) to ensure free access to the transportation system without discrimination; and (ii) to offer optimal conditions in the operation and provision of the public transportation service.

Also in December 2021, the MINEM published Resolution 40408 of 2021, which established the refined products pipelines expansion plan.

3.10.3. Regulation of Refining and Petrochemical Activities

Article 58 of the Petroleum Code establishes that oil refining activities can be developed throughout the Colombian territory and are not reserved to the Nation. However, Article 4 establishes that such activities are considered of public interest subject to governmental regulation, and the development of those activities must comply with technical requirements established by regulation.

Law 1205 of 2008, further developed by Resolution 180689 of 2010, issued by the Ministry of Mines and Energy, was issued with the main purpose of contributing to a cleaner environment. It established the minimum quality specifications for liquid fuels in Colombia. Since August 2010, we have been producing and selling diesel and gasoline that comply with the requirements of the aforementioned law.

Since 1995, under Resolution 898 of August 23, 1995, the Ministries of Environment and Sustainable Development and of Mines and Energy, have regulated the environmental criteria for liquid and solid fuels used in commercial and industrial furnaces and boilers, as well as automobile internal combustion engines. Resolution 898 has been subject to numerous modifications through the years, the most recent by Resolution 40103 of April 7, 2021, which states diesel quality requirements to protect the environment, health, and quality of liquid fuels in general.

Decree 1073 of 2015 under article 2.2.1.1.2.2.1.1. establishes the general regulation related to buying and selling fuels in Colombia. With respect to refining activity, the aforementioned Decree provides the requirements and authorization procedures to develop this activity in Colombia. We are duly registered as a refining agent and therefore is authorized to sell fuels in Colombian territory to specific agents and use and acquire fuels as a large consumer, as well in specific oil plants as is published in the information system of liquid fuels of the Ministry of Mines and Energy.

[Table of Contents](#)

3.10.3.1. Regulation of Liquefied Petroleum Gas (LPG) and Liquid Fuels

Wholesale marketing, transportation, distribution and retail marketing of LPG are mainly regulated by CREG Resolution 74 of 1996, and subsequent resolutions. LPG in Colombia is primarily obtained through our refineries, field production and imports. The LPG must meet minimum quality standards to be marketed. Our marketing activities are regulated by CREG Resolution 53 of 2011 (as amended by CREG Resolutions 108 of 2011, 154 of 2014, 19 of 2015, 18, 34, 63, 64 of 2016 and 171 of 2017). The LPG price is regulated by CREG Resolutions 66 of 2007 (as amended by CREG Resolutions 59 of 2008, 002 of 2009, 123 of 2010, 95 of 2011, and 65 and 129 of 2016) as well as by CREG Resolution 80 of 2017 which sets forth that the price of LPG imported by us, which is meant to be marketed for the provision of public utilities, shall be the result of competitive procedures. In the Resolution 108 of 2021, issued by CREG, is established the “*opción tarifaria*” mechanism or “rate option”, which is a mechanism that defers on time the impact of the international rate hikes on the selling price of LPG to the final user.

According to Article 4 and 212 of the Petroleum Code and Law 39 of 1987 (added by Law 26 of 1989 and as amended by Law 812 of 2003), the distribution of crude oil and its derivatives has a public purpose (*utilidad pública*), and the distribution of fuel oil and crude oil by-products is considered a public utility activity. Consequently, individuals or entities engaged in these activities are subject to regulations issued by the Colombian government. The Government has the power to determine quality standards, measurement, and control of liquid fuels, and establish penalties that may apply to dealers who do not operate in compliance therewith.

The Ministry of Mines and Energy is the entity that controls and exercises technical supervision over the distribution of liquid fuels derived from petroleum, including the refining, import, storage, transportation, and distribution in the country. Article 61 of Law 812 of 2003 (whose validity was extended by Law 1955 of 2019) identified the agents of the supply chain of petroleum-based liquid fuels. In this context, the Ministry of Mines and Energy through Resolution 40344 of 2017, published the required actions to ensure the LPG supply for the priority sectors in the country.

The distribution of liquid fuels, except LPG, is governed by Decree 1073 of 2015 (as amended), which establishes the requirements, obligations, and penalties applicable to supply agents in the distribution, refining, import, storage, wholesale, transportation, retail sale and consumption of liquid fuels.

Decree 1073 of 2015 establishes the minimum technical requirements for the construction of storage plants and service stations. This Decree also regulates the distribution of liquid fuels, except LPG establishing the minimum requirements for distributors and the activities and types of agreements permitted for these agents. The Ministry of Mines and Energy also regulates the types of liquid fuels that can be sold and purchased and the penalties for noncompliance with governmental regulations.

Pursuant to Law 1430 of 2010, modified by Article 220 of Law 1819 of 2016, the distribution of fuels in areas near Colombian borders is the responsibility of the Ministry of Mines and Energy and is subject to specific regulations that impose strong control procedures and requirements. The Ministry of Mines and Energy establishes the safety standards for LPG, storage equipment, maintenance, and distribution of LPG.

The Superintendence of Public Domestic Utilities also oversees the liquefied petroleum gas transportation business.

3.10.3.2. Regulation Concerning Production and Prices

According to the Decree - Law 4130 of 2011 and Decree 1260 of 2013, CREG is responsible for setting the prices of petroleum by-products throughout the entire chain of production and distribution, except for gasoline, diesel and biofuels. On the other hand, by Decree 381 of 2012, as amended by Decree 1617 of 2013, and Decree 2881 of 2013, the Ministry of Mines and Energy is in charge of setting the methodology to determine the reference price of gasoline, diesel, biofuels and mixtures thereof.

Then, since May 2012, CREG sets the prices for most crude oil by-products, except for gasoline, diesel, and biofuels. CREG determines the methodology to calculate their price while the Ministry of Mines and Energy sets the relevant prices in accordance with said methodology. The ANH does not intervene in the definition of prices of gasoline and diesel fuel. In addition, under Resolution 007 of 2017, CREG determined the basis for the methodology of compensation of terrestrial transportation of liquid fuel-oil, including gasoline, diesel and biofuels between the storage plant and the fuel service station.

[Table of Contents](#)

The methodology for calculating jet fuel prices is set out in Law 1450 of 2011, and jet fuel prices themselves are set by the Ministry of Mines and Energy.

The ANH determines the formula that is used to calculate royalty payments corresponding to the production of crude oil.

Decree 381 of 2012 and 1617 of 2013, as amended by Decree 2881 of 2013, as compiled in Decree 1073 of 2015, restructured the Ministry of Mines and Energy and gave it the responsibility to study industry problems and implement short and long-term refining planning policies. The Ministry is also responsible for establishing the governmental policies and goals to ensure the reliability, stability, and continuity for the production of liquid fuels, biofuels and others.

Pursuant to Article 58 of the Petroleum Code, if there is a fuel shortage, any refining company operating in Colombia must offer to sell a portion or, if needed, the total of its production to supply local demand prior to exporting any production.

Fuel Price Stabilization Fund (FEPC)

The Fuel Price Stabilization Fund was created by Law 1151 of 2007. It is a fund assigned and administered by the Ministry of Finance and Public Credit. Its function is to attenuate, in the domestic market, the impact of fluctuations on fuel prices in international markets.

According to Article 2.3.4.1.3 of Decree 1068 of 2015, amended by Decree 1451 of 2018, the resources for the functioning of the FEPC come from the following sources: (a) financial returns of resources of the Fund; (b) extraordinary credit resources received from the National Treasury; (c) funds allocated to the FEPC in the national general budget; (d) fuel taxes and; (e) bonds or other public debt securities issued by the Nation in favor of the FEPC, in order to cover the obligations of the Fund.

The operation of the FEPC is governed by Decree 1068 of 2015, amended by Decree 1451 of 2018, Chapter 1, and Title 4 (compilation decree regarding treasury public sector). First, refiners and/or importers of regular gasoline and diesel must report to the Ministry of Mines and Energy the volume of regular gasoline and diesel sold in the previous month and such reports must be made within the next 35 calendar days of each month.

The report must also contain, among other matters: information corresponding to each fuel disaggregated daily; the discrimination of the volumes sold, and the origin national or imported of the gasoline and diesel sold. If the regular gasoline or the diesel is of national origin, the refiner/importer must inform from which refinery they come. Secondly, the Ministry of Mines and Energy calculates and liquidates, by resolution, the net position of each refiner/importer and each fuel to be stabilized by the FEPC.

Decree 1068 of 2015, amended by Decree 1451 of 2018, provides that the FEPC will pay in Colombian pesos the value corresponding to the calculation and settlement of the Net Position of each refiner and/or importer within the term defined by the Ministry of Mines and Energy and based on availability of FEPC resources.

Law 1819 of 2016 as amended created a tax, related contribution to finance the FEPC. This contribution is caused when the sum of the Differentials of Participation (difference between the Producer Revenue and the International Parity Price, when the first is greater than the second on the date of issuance of the sales invoice, multiplied by the volume of fuel sold) is greater than the sum of the Differentials of Compensation (the difference presented between the Producer Revenue and the International Parity Price, when the second is greater than the first on the date of issuance of the sales invoice, multiplied by the volume of fuel sold).

The event that generates the contribution is the sale in Colombia of gasoline or diesel by the refiners and/or importers to the wholesale distributor of fuels, according to the price set by the Ministry of Mines and Energy, however, if the importer is at the same time a wholesale distributor, the triggering event shall be the withdrawal of the product to be sold. The taxpayer responsible for the contribution is the refiner and/or importer and the active subject is the Nation. The tax base corresponds to the positive difference between the sum of the Differentials of Participation and the sum of the Differentials of Compensation.

The Ministry of Mines and Energy calculates the contribution through the liquidation of the Net Position of each refiner or importer with respect to the FEPC based on the report that the refiners and/or importers submit. If the sum of the Differentials of Participation is greater than the sum of the Differentials of Compensation and the contribution is caused, the Ministry of Mines and Energy will order the refiner or the importer to pay the contribution to the National Treasury within the 30 days following the execution of the liquidation resolution.

[Table of Contents](#)

Subsequently, Law 1837 of 2017 (Article 16) provided that the remaining resources that were in our accounts as of December 2014, as a result of the collection of the Differential Contribution from the FEPC, would be transferred to the General Direction of Public Credit and Treasury of the Ministry of Finance and Public Credit (DGCPTN for its Spanish acronym). In addition, Law 1955 of 2019 (Article 33) authorizes the Ministry of Finance and Public Credit to enter into hedging agreements and establishes the conditions thereof, for purposes of guaranteeing the sustainability and the functioning of the FEPC. Law 1955 of 2019 authorizes the Ministry of Finance and Public Credit, as administrator of the FEPC, among others, to carry out, directly or indirectly, the design, management, acquisition and/or execution of hedges on the Ministry of Finance's direct exposure to (i) crude oil liquid fuel oils prices in the international market or (ii) the exchange rate of the Colombian Peso. This law also authorizes the Ministry of Finance to set stabilization mechanisms of the reference recommended retail prices of regulated fuel oil, as well as the subsidies to such regulated fuel oils to be executed through the FEPC. Law 2159 of 2021, which sets forth the 2022 national general budget, gave the MHCP the ability to utilize different budgetary tools to address the debts relating to the FEPC, and to even to set-off these debts against dividends that it would be entitled to receive from Ecopetrol as its major shareholder.

The Ministry of Mines and Energy issued Resolution 01192 of 2021, which contains the settlement of our Net Positions corresponding to the third and fourth quarter of 2020 and Resolution 01195 of 2021 corresponding to the first and second quarter of 2021. Accordingly, DGCPTN transferred to us COP\$ 286,284,645,376.82 for the third and fourth quarter of 2020, and COP\$ 2,784,715,144,662.42 for the first and second quarter of 2021.

Also, by means of Resolution 01193 of 2021, the MINEM instructed the DGCPTN to transfer COP\$ 32,477,822,614.02 to Refinería de Cartagena S.A.S for the settlement of the company's Net Positions corresponding to the third and fourth quarter of 2020 and, under Resolution 01194 of 2021, the MINEM ordered the DGCPTN to transfer COP\$ 749,990,624,690.13 to Refinería de Cartagena S.A.S. for the settlement of the company's Net Positions corresponding to the first and second quarter of 2021.

As of December 31, 2021, Ecopetrol S.A. recorded COP\$ 6.3 trillion in accounts receivable due from FEPC and Reficar recorded COP\$ 1.5 trillion in accounts receivable due from FEPC.

3.10.3.3. Regulation of Biofuels, Biogas and Related Activities

The sale and distribution of biofuels and biogas is regulated by the Ministry of Mines and Energy. Regulations establish the quality and pricing standards for biofuels and impose minimum requirements for mixing ethanol with gasoline and biodiesel with diesel.

The sale and distribution of biogas is provided under CREG Resolution 240 of 2016, which particularly regulates: a) the sorts of market that will be served with biogas and biomethane; b) the quality and safety conditions; and c) the tariff regime. Pursuant to Article 4 of the foregoing Resolution, biogas supply through isolated networks to serve non-regulated users and natural gas vehicles (GNV as per its Spanish acronym), shall be incorporated as a public utility company. Furthermore, Article 5 provides that biomethane supply through isolated networks or interconnected networks to the National Transportation System shall also be incorporated as a public utility company. Finally, Article 12 states that biogas suppliers may develop the production, transportation, distribution, and commercialization activities through integrated structures, provided that they keep separate accounts for each activity and grant free access to the networks to both regulated and non-regulated users. To the same extent, production, distribution, and commercialization of biomethane through interconnected networks to the National Transportation System may be developed through integrated structures, as long as the supplier keeps separate accounts for each activity and grants free access to the networks to both regulated and non-regulated users.

[Table of Contents](#)

3.10.4. Regulation of the Natural Gas Market

Decree 1073 of 2015, Part 2, Title 2, Chapter 2, established that all producers have to issue a production statement that includes the volumes of natural gas available for sale for a period of ten years. This decree established the regime for the selling and marketing of natural gas in Colombia, including specific procedures that regulate the Colombian market in order to manage the remaining natural gas reserves owned by the Nation, and to protect domestic consumers, especially residential consumers, by prioritizing delivery of gas to residential consumers, regulating the export of natural gas and setting forth the export restrictions applicable during an internal shortage of natural gas.

Currently in Colombia the price of natural gas is determined freely by the market. CREG issued Resolutions 185 (for transportation) and 186 (for supply) of 2020, which jointly replaced Resolution 114 of 2017 and its amendments, related to commercial aspects of the wholesale natural gas market in Colombia. However, pursuant to Decree 1073 of 2015 and article 19 Resolution CREG 186 of 2020, such procedures do not apply to the following activities: a) natural gas exports; b) natural gas as raw material in petrochemical production; c) natural gas commercialization from minor fields (production capacity under 30 million SCFD); d) natural gas commercialization from hydrocarbon fields under testing phase or which have not yet been declared commercially viable; e) natural gas commercialization from unconventional reservoirs; and f) internal consumption from natural gas producers.

CREG determines which agents can participate in the primary and secondary markets. We are authorized to participate as a seller in the primary market as a natural gas producer and as a buyer to acquire natural gas for our operation. We can participate also in the secondary market when we require natural gas from other producers for our own needs. CREG regulations provide that a natural gas producer cannot participate as a merchant of natural gas in the secondary market, except that it may purchase gas to meet its existing contractual obligations. We are also able to resell available natural gas transportation capacity into the secondary market as a non-regulated consumer. During 2021, CREG issued an analysis of natural gas market and current regulation identifying some opportunities to improve market dynamics, which are the basis for eventual modifications to regulatory frameworks.

Priority for the Supply of Natural Gas

The export of natural gas, in contrast, is not considered a public utility activity under Colombian law and therefore is not subject to Law 142 of 1994. Nevertheless, the domestic supply of natural gas is a priority for the Colombian government and is considered a public utility complementary activity, and therefore public utility regulations apply to the internal supply of natural gas.

Decree 1073 of 2015 (amended by Decree 2345 of 2015) provides that in the event the supply of natural gas is reduced or halted as a result of a shortage, the Colombian government has the right to suspend the supply of natural gas for export. If such export contracts are suspended by the Colombian government, the export agents are entitled to receive compensation in accordance with Article 2.2.2.2.15 and 2.2.2.2.38 of Decree 1073, 2015. Notwithstanding the foregoing, Decree 1073 of 2015 establishes freedom to export natural gas under normal gas-reserve conditions. Producers of natural gas may enter into natural gas export contracts if the ratio of proved reserves to consumption exceeds seven years, as determined by the Colombian Energy Planning Authority (or UPME for its Spanish acronym).

Decree 1073 of 2015 (amended by Decree 2345 of 2015) establishes an order of supply when restrictions are placed on the supply of natural gas or serious emergency situations arise that preclude the continued provision of certain services, as follows: (i) essential demand, as established in Decree 1073 of 2015, (ii) non-essential demand under an existing firm agreement, and (iii) firm exports delivery.

The order of priority for the supply of natural gas is as follows: (i) the operation of the compressor stations of the National Transportation System, (ii) residential users and small business users engaged in the distribution network, (iii) vehicular compressed natural gas and (iv) gas refineries, excluding those destined for self-generation of electricity that can be replaced with energy from National Transportation System, which has first priority. The Ministry of Mines and Energy also establishes distribution priorities in the event of a natural gas shortfall derived from supply or infrastructure issues. This order of priority is based on the type of contract, with firm supply contracts having priority over interruptible supply contracts.

Decree 1073 of 2015 and CREG Resolution 186 of 2020: (i) provide specific procedures and forms of supply pursuant to which an agent may sell and buy natural gas in the Colombian primary and secondary market produced from large fields (capacity of more than 30 million CFPD); as well as the minimum terms that shall be included in the natural gas supply agreements, and (ii) establish the general procedure and minimum requirements for the sale of natural gas from small fields (capacity under 30 million CFPD).

[Table of Contents](#)

Natural gas waste restrictions

The Ministry of Mines and Energy issued Resolution 40066 of 2022 by means of which it regulates the use of natural gas, establishing the obligation for hydrocarbon producers to carry out the necessary studies for its efficient use. It also establishes that natural gas waste is prohibited in Colombia and provides certain examples of what it considers could constitute natural gas waste during hydrocarbon exploration and exploitation activities.

The Resolution establishes the scenarios in which burning and venting of gas is allowed in the stages of exploration and exploitation of hydrocarbons, as well as the technical parameters to execute efficiently and responsibly these activities, when expressly authorized. This Resolution also sets standards for the natural gas leaks detection, quantification, repair, and control in respect of the activities performed on natural gas exploration and exploitation fields. The detection and repair programs to prevent leaks are regulated by this Resolution as well as the elements included therein, as well as the reports that must be delivered to Colombian authorities.

3.10.5. Regulation of the Electric Energy Commercialization Activity

As determined by article 11 of Law 143 of 1994, commercialization activities, which are developed by commercialization agents, consist of the purchase of electricity in the electric energy market ("MEM", for its Spanish acronym) and the subsequent resale to other participants of the wholesale such as commercialization agents, generation agents, or to end-customers, both regulated and non-regulated. Ecopetrol Energía S.A.S E.S.P. ("Ecopetrol Energía"), a subsidiary of Ecopetrol S.A., is registered as a commercialization agent before the manager of the commercial exchanges systems and performs commercialization activities within the MEM.

Commercialization activity is regulated by CREG Resolution 156 of 2011, which establishes regulations, rights and duties of agents. The main income of commercialization agents is derived from the variable and fixed components of the unit cost tariff formula described in CREG Resolution 119 of 2007, as modified by CREG Resolutions 191 of 2014 and 074 of 2021. The variable component considers:

- the costs of commercialization services, as determined by article 12 of CREG Resolution 180 of 2014,
- the amount that these agents must pay to the manager of the commercial exchanges system, calculated by ASIC based on the mathematic methodology set forth by CREG Resolution 174 of 2013 (as modified by CREG Resolutions 175 of 2016 and 100 of 2015) and which is paid monthly,
- the amount that these agents must pay to the Public Utilities Superintendence and to CREG, which is defined every year by CREG following the rules set in article 85 of Law 142 of 1994. These payments must be made each year, and
- the cost of the guarantees that the agent must provide to participate in the MEM by following the rules of CREG Resolution 024 of 1995 (as modified, among others, by CREG Resolutions 116 of 1998, 068 of 1999, 066 of 2000, 019 of 2006, 089 of 2009, 011 of 2010, 038 of 2010, 073 of 2010, 157 of 2011, 110 of 2014, 184 of 2015, 060 of 2019 and 044 of 2020).
- Regarding the markets that commercialization agents attend, Law 143 of 1994 divides the market into two segments: regulated market ("Regulated Market") and the non-regulated market ("Non-Regulated Market").

The Regulated Market is comprised of individual and industrial customers, residential or commercial, with electricity demands below 0.10 MW or monthly consumption lower than 55 megawatt-hours ("MWh"). Regulated Customers are free to select any service provider. However, tariffs are subject to a regulated freedom of choice regime, whereby commercialization agents are required to follow the criteria and methodology set forth by the CREG, which establishes the parameters that must be used by electric energy agents in setting forth the maximum applicable charges for the services they provide. Purchases of electricity in the Regulated Market are made through public bids in order to ensure open and free access.

The Non-Regulated Market is comprised of electricity consumers that either have a peak demand greater than 0.10 MW or a minimum monthly consumption greater than 55.0 MWh. This segment is attended by generation and commercialization companies. Purchases of electricity in this segment can be freely agreed among participants at freely negotiated prices for the commercialization and generation components of the tariff's unitary price.

[Table of Contents](#)

Resolution CREG 015 of 2018 establishes the obligations for Network Operators (owner of the physical networks) and commercialization agents for the transportation and distribution of energy and also regulates the quality standards for the delivery of energy at the point of consumption, and the applicable methodology for calculating the distribution charges of each Network Operator.

As determined by article 74 of Law 143 of 1994, as modified by article 298 of Law 1955 of 2019, any public utilities company that makes part of the National Interconnected System ("SIN" for its Spanish acronym) can perform the generation, (which consists of the production of electricity through any generation plant connected to the SIN, activity performed by generation agents, who participate in the MEM by selling electric energy to other generation and commercialization agents, or to Non-Regulated Users), distribution (which consists of transporting and delivering electric energy to end users through the Regional Transmission Systems (STR for its Spanish acronym), and the Local Distribution Systems (SDL for its Spanish acronym) deploying tension levels under 220 kV; agents in charge of providing the distribution public utility are called Distribution Agents or Grid Operators (OR for its Spanish acronym) and commercialization activities in an integrated manner.

This provision also applies to companies having the same controlling party or between those where there is a situation of control, which encompasses the real beneficiary rationale applicable under Colombian electric energy regulation (for reference see article 74 of 1994, as amended by Law 1955 of 2019. A situation of control is defined by article 260 of the Code of Commerce. On the other hand, transmission companies are prevented by law from holding market shares in generation, commercialization, or distribution companies (see CREG Resolution 001 of 2006).

In relation with transmission, (which comprises the transportation of electrical energy in the Colombian National Transmission System, or "STN" for its acronym in Spanish, deploying tension levels of 220 kV or higher, guaranteeing the required quality standards and the availability of the transmission assets; the owners of the transmission assets must ensure free access to the transmission networks to the users and to generation agents) companies carrying out this activity are not able to develop commercialization, distribution or generation activities. However, commercialization, distribution and generation companies are allowed to hold shares, quotas, or participation of corporate interest in the capital of transmission companies, as long as they represent no more than 15% of the company's capital. Please note that, in this case, neither the transmission company nor the other companies may have a control situation over the other.

Exceptionally, commercialization, distribution and generation companies may own more than 15% of a transmission company if the income of the transmission company does not represent more than 2% of the total transmission income from the SIN. If the company engaged in the transmission activity, with a cut-off date of December 31 of each year, exceeds this limit, the commercialization, generation, or distribution company who has shares, quotas or interest shares in the capital of the company must sell, within six months following the occurrence of this fact, the shares, quotas or interest shares that exceed 15% of the capital stock of the transmission company. This, unless within the same period, the transmission company sells the assets that makes it exceed the 2% limit of the total income.

Ecopetrol Energía and, since August 2021, ISA, are subsidiaries of Ecopetrol S.A. While Ecopetrol Energía is a commercialization company, ISA has a significant percentage of the market share of the national transmission activity. As a result, and considering the competition rules mentioned above, the CREG established that we shall divest from Ecopetrol Energía or cease any commercialization activity as soon as reasonably practicable. Ecopetrol S.A. is in the process of ceasing commercialization activities and estimates this process may be accomplished during 2022.

[Table of Contents](#)

3.10.6. *Regulation of the Electricity Self-Generation Activity*

Law 1715 of 2014 regulates the integration of non-conventional renewable energies to the National Interconnected System. Among other aspects, this law obliges the Colombian Government and the CREG to develop the regulatory framework for the promotion of the electricity self-generating activity from non-conventional renewable energy sources and the sale of self-generation surpluses.

Based on Law 1715 of 2014, Decree 2469 of 2014, as currently compiled by Section 4 of Decree 1073 of 2015, which established energy policy guidelines regarding the delivery of self-generation surpluses through the SIN. In addition, this decree sets forth the parameters for a person to be considered as an electricity self-generator. Specifically, it states that in order to be considered a self-generator a person must (a) receive electricity for its consumption without it being necessary to use assets of the SIN, (b) the electricity surpluses may be higher in any measure, and without any regulatory limit or restrictions, than the value of its own consumption, (c) for the delivery of surpluses to the SIN it will be necessary for the self-generator to submit itself to the regulation of the CREG, case in which large-scale self-generators must be represented before the wholesale energy market, and (d) the generation assets may be owned by the self-generator and may be owned and operated by third parties.

Decree 348 of 2017, as currently compiled by Section 4A of Decree 1073 of 2015, establishes public policy guidelines on efficient energy management and delivery of small-scale electricity self-generation surpluses. In addition, this regulation establishes the conditions for the connection of small-scale self-generators (AGPE for its Spanish acronym) to the SIN, the parameters to be an AGPE, the reporting of surpluses to the Mining and Energy Planning Unit ("UPME") and the remuneration of surplus energy. Note that, as determined by Resolution UPME 281 of 2015, the maximum electricity generation limit to be considered an AGPE is one (1) MW and will correspond to the installed capacity of the self-generator's generation system. Above that limit, an electricity self-generator will be considered a big-scale electricity self-generator ("AGGE" as per its acronym in Spanish).

The specific regulation for AGGE is currently determined by CREG Resolution 024 of 2015, whereas the specific regulation for AGPE is currently set by CREG Resolution 174 of 2021.

CREG Resolution 024 of 2015 (modified by CREG Resolution 140 of 2017) sets conditions for surplus sales of an AGGE, connection and metering conditions, and back-up and energy supply conditions. Specifically, this resolution determines that AGGE must follow the general connection rules to the SIN for a generation plant, that they must have a remote telemetry system, and that they must have a back-up power purchase agreement, among others.

CREG Resolution 174 of 2021 establishes the connection conditions for AGPE, and for the AGGE with a capacity under 5 MW surplus sales conditions, metering conditions and energy commercialization rules for AGPE.

The Ecopetrol Group has invested in several projects that are considered projects from AGGE, which means that CREG Resolution 024 of 2015 is the main regulation that applies to our self-generation projects, notwithstanding the rules applicable pursuant CREG Resolution 174 of 2021. As of the date of this annual report, we comply with all regulations, as set forth in the above-mentioned resolution and Decree 2469 of 2014 regarding the delivering of electricity surpluses to the SIN and to its subsidiaries or controlled parties.

In July 2021, Congress issued Law 2099 of 2021 which regulates aspects related to energy transition and updated provisions with respect to the development and promotion of unconventional sources of energy, energy efficiency and clean hydrogen.

Listed below are certain relevant aspects of Law 2099 of 2021:

- (i) the new law brought amendments to Law 1715 of 2014 on the declaration of public and social interest, which consists in the promotion, stimulation and incentive to the development of generation activities, use, storage, administration, operation and maintenance of non-conventional energy sources ("FNCE" for its acronym in Spanish), mainly those of renewable sources ("FNCER" for its acronym in Spanish). The qualification of public utility or social interest will have positive impacts in such projects, and grant them preference rights in issues related to land use, planning and environmental planning, economic promotion, positive valuation in administrative procedures and forced expropriation. The new regulation includes those projects related to storage within those that can be part of the declaration of public and social interest, which is a nod to the development of such projects for the purposes of energy efficiency and energy transition;

[Table of Contents](#)

- (ii) green hydrogen was added as a FNCER and blue hydrogen as FNCE. Green hydrogen is that produced from FNCER such as biomass, wind energy, geothermic energy, solar energy, tidal energy and small hydropower. On the other hand, blue hydrogen is produced from fossil fuels, especially by the decomposition of methane and its production process has a system of carbon capture, use and storage;
- (iii) the Ministry of Mines and Energy, or the entity designated by it, was set as the entity to establish guidelines for the development of geothermal energy in Colombia, and must create a geothermal registry in which all projects intended to explore and exploit geothermal energy to generate electricity will be registered. The Ministry of Mines and Energy may establish special registration conditions for already existing projects of co-production of electric energy and hydrocarbons, in order to avoid the overlapping of projects, define the areas that will not be subject to registration and determine conditions, terms, requirements and obligations;
- (iv) the law states that the Colombian Government will develop the necessary regulations for the promotion and development of CCUS technologies. CCUS should be understood as the set of technological processes the purpose of which is to reduce carbon emissions in the atmosphere, capturing the CO₂ generated on a large scale from fixed sources to store it under earth in a safe and permanent manner. Under the same logic, the Colombian Government will design a public policy to promote research and local development of technologies for the production, storage, conditioning, distribution, reelectrification, energy and non-energy uses of hydrogen and other low-emission technologies within six months after the entry into force of this law. Furthermore, the Ministry of Mines and Energy will promote the reconversion of mining and hydrocarbon projects that contribute to the energy transition. For this purpose, the National Hydrocarbons Agency and the National Mining Agency may design mechanisms and agree on conditions in current and future contracts that encourage the generation of energy through FNCE, the use of alternative energy sources, and the capture, storage and use of carbon;
- (v) the policy for the development of electric energy services in the so-called non-interconnected zones is strengthened through: (i) service reliability, (ii) transfer of resources for lower tariffs, (iii) transfer of assets, and (iv) hybrid solutions.

3.10.7. Regulatory Framework for Energy Transmission

In the countries in which ISA operates, energy transport is a regulated and independent activity within the electricity sector's production chain and is considered a natural monopoly, although there are different business models in the electricity industry in those countries. In particular, in Colombia and Chile, the transmission companies own the assets and infrastructure. In Peru and Brazil, companies obtain concessions to operate assets and infrastructure and revert ownership to governments once the concessions expire. In each of those models, the companies must provide the service with the quality standards defined by the regulation and, by virtue of this, receive the corresponding remuneration. The revenues are not affected by the supply and demand for electricity or the volume of electricity actually consumed by the end users.

In general, the revenues of transmission companies are comprised of two components: the first remunerates the investment at a regulated revenue, while the second remunerates the administration, operation and maintenance expenses required to provide the service with quality and efficiency. The revenues are adjusted on an annual, semiannual or monthly basis, based on inflation, as measured by the relevant consumer and producer price indexes or in some cases by the PPI or the WPI.

Colombia

Electricity transmission is defined by article 1 of CREG Resolution 24 of 1995 and article 1 of CREG Resolution 22 of 2001, applicable CREG regulations, as the transportation of electricity through national electricity transmission systems at a tension level equal to or greater than 220 kV and is remunerated through usage charges for constructive units that comprise the National Transmission System (STN).

Colombian regulations establish the responsibility of the State, through Mining and Energy Planning Unit (UPME), to prepare the Reference Generation Transmission Expansion Plan. The projects proposed in the STN expansion plans must be technically and economically feasible and must have the approval of the relevant environmental authorities mentioned above. The STN expansion procedure, as provided in applicable regulations including CREG Resolution 022 of 2001, guarantees a competitive bidding process summoned by UPME with respect to the construction, operation and maintenance of new electricity transmission expansion projects.

[Table of Contents](#)

Pursuant to number IV of section a of article 4 of Resolution CREG 22 of 2001, ISA must present a proposal to participate in every bidding process summoned by UPME. Such bidding processes are awarded to the investor or bidder who offers the lowest present value to be received as expected annual income (IAE) for a period of 25 years. Once the 25 years payment period elapses, the successful bidder would be remunerated through the regulated revenue tariff methodology established by Resolution CREG 011 of 2009 for agents who operate existing transmission assets.

The remuneration applicable to existing assets is regulated by CREG Resolution 011 of 2009 by means of a regulated revenue tariff methodology, which establishes usage charges for constructive units, taking into account the reposition value; the administration, operation and maintenance costs; and some asset availability and quality indexes. Thus, the quality of the transmission service is defined according to asset availability and Energy Not Supplied (ENS). Transmission companies may be liable for deductions from their regulated revenue, when they are unable to provide a good service.

Brazil

The public electricity transmission service of the National Interconnected System (SIN) comprises the facilities of the Basic Grid (RB), Other Transmission Installations (DIT) and International Interconnection Installations. In accordance with Regulatory Resolution No. 67 of July 8, 2004, the RB comprises the SIN facilities with voltage level equal to or higher than 230 kV, while the RBF comprises the SIN power transformer units with voltage higher than or equal to 230 kV and lower than 230 kV. Transmission services are operated exclusively through concessions, in which the Brazilian government grants private agents, through bids, the right to build, operate and maintain the facilities.

The planning for the sector is centralized and conducted by Energy Research Company (EPE) and National Electric System Operator (ONS), which, with the support of the other agents of the sector, evaluate the need for expansion or reinforcement of the transmission system, identifying the necessary works that will be indicated to the Brazilian Ministry of Mines and Energy to compose the concession plan that National Electric Energy Agency (ANEEL) will use to issue reinforcement authorizations or bidding notices. It is ANEEL's responsibility, based on the indications and definitions of the Electricity transmission subsidy plan (POTEE), to proceed with the concession process of the indicated works, promoting transmission tendering or authorizing existing transmission companies to implement the indicated works in their facilities.

As defined in module 4 of the Transmission Standards in Brazil, the quality of the transmission service is measured by the availability and operational capacity of the Transmission Function (FT). When the Transmission Function is available or operates with capacity restrictions, the transmission company suffers a reduction of its Allowed Annual Revenue (RAP) proportionate to this unavailability.

Peru

Transmission lines belong to four national systems: Guaranteed (SGT), Complimentary (SCT), Principal (SPT) and Secondary (SST), with this last one being the largest one.

There are basically three transmission plans that allow the expansion of the transmission network: (i) the Transmission Plan that is designed by Committee of Economic Operation of the Electrical System (COES) every 2 years and subject to the approval of MINEM, (ii) the Investment Plan approved by Energy and Mining Supervisory Authority (OSINERGMIN) and (iii) the Expansion Plan of the network subject to REP's concession which must be filed by REP before the MINEM.

The quality of the electricity service is governed by the Technical Standard for the Quality of Electricity Services (NTCSE), approved by Supreme Decree 020-97-EM of 1997. This standard establishes the minimum quality levels of the electrical services with regard to the quality of the product, supply, commercial and public lighting; as well as the obligations of the electricity companies and the clients that operate under the regime of the Electricity Concessions Law, Decree Law 25844.

[Table of Contents](#)

Chile

The public electricity transmission service provided in the National Electric System (SEN) includes the installations of the following segments: (i) the National Transmission System, (ii) the Local Transmission System, (iii) the Dedicated Transmission System and (iv) the Transmission Systems for Development Poles.

Regarding the process of planning investments in transmission, the General Law of Electric Services (LGSE) establishes centralized planning directed by the National Energy Commission (CNE) for the National, Local and Development Poles Transmission Systems. This process is for a term of at least 20 years and will result in the expansion plan which defines new and expansion works will be mandatory. The regulation then defines two types of works, which are remunerated differently: (i) new work is a transmission line or electrical substation that does not exist and is projected to increase the capacity or safety or quality of service of the SEN and (ii) extension work is one that increases the capacity or the safety and quality of service of existing electrical lines and substations.

The conditions of safety and quality of service are contained in the Technical Standard of Safety and Quality of Service (NTSyCS). The quality of supply of generation and transmission services is evaluated through the index of unavailability of the transmission facilities.

3.10.8. Regulation of the Toll Roads Concessions

Colombia

Beginning in the early 1990s, Colombia adopted modernization and economic liberalization policies, and implemented structural, institutional and industry specific reforms. These have included the expansion and promotion of infrastructure and public utilities in conjunction with the private sector. Different regulatory reforms have been implemented, such as Law 80, Law 105 and Law 1508 of 2012 (the “PPP Law”), with this latter one being one the most representative in this sector, by implementing the regulatory framework for the development of Public and Private Partnerships (PPP) in the different modes of transport, among others. Likewise, some laws related to PPP projects and the public procurement regime in general have been enacted, such as: Law 1150 of 2007, Law 1437 of 2011, Law 1474 of 2011, Decree 19 of 2012, Law 1682 of 2013, Law 1778 of 2016, Law 1882 of 2018, Law 2195 of 2022, oriented to introduce different mechanisms and procedures to strengthen and streamline the development of PPP projects.

Regulation of Public Private Partnerships

The PPP Law allows the execution of concession contracts in the different modes of transport, among other infrastructure. Under this law, payments to contractors are subject to delivery, availability and compliance by the contractor based on the criteria for availability and service levels defined in the contract.

PPP agreements must distribute the foreseeable risks among the parties, assigning them to the party in the best position to control the risk and mitigate its effects. Likewise, it must contain formulas for recognition of economic compensations to the contractor for the early termination of the contract and the constitution of a trust fund for the management of a project’s resources.

The PPP Law introduced a distinction between Public Initiative PPP Projects, which are proposed by the granting authorities and a qualified concessionaire is selected through a competitive bidding process, and Private Initiative PPP Projects, which were introduced to facilitate the structuring infrastructure projects or public services by the private sector. The implementing legislation of the PPP Law is compiled by Decree 1082 of 2015 and was recently modified by Decree 438 of 2021, through which, some definitions associated with PPP were implemented, in order to align rules between projects and national and territorial prioritization, define liquidity mechanisms to avoid early termination of contracts in Private Initiative PPPs, promote competition and establish requirements for the presentation of private initiatives, among others.

Furthermore, Law 1682 of 2013 provides tools to overcome common bottlenecks that usually affect the feasibility of transport infrastructure projects. The main contributions of Law 1682 of 2013 are:

- *Improved planning.* Requiring the public entities and persons responsible for planning transportation infrastructure projects to consider the impact the project will have on utility networks, cultural and archeological heritage sites, protected areas, communities and land acquisition, among other things, during the structuring phase.

[Table of Contents](#)

- *Land acquisition.* Authorizing both administrative and judicial expropriation procedures. Real estate owners are allowed to grant a voluntary irrevocable permission to access and perform the required works in the property and if such permission is not granted within 15 days following the administrative expropriation order, the granting authority may request the eviction of the owner. Judges may seize the property on the grounds of public interest within ten business days following the request of the corresponding granting authority.
- *Utility Networks.* Providing guidelines for the relocation of utility networks, in particular regarding the allocation of costs between the infrastructure project and the public utilities suppliers.
- *Environmental licenses.* Not requiring environmental licenses for works or activities related to maintenance, rehabilitation and improvement of transportation infrastructure projects. Instead, the concessionaire may prepare an adaptation plan for the environmental guide (Plan de Adaptation of the Environmental Guide, or "PAGA"). Decree 769 of 2014 provides which works and activities are considered "improvement" of transportation infrastructure projects and do not require an environmental license.
- *PAGA.* Pursuant to Decree 769 of 2014, PAGA is an environmental plan that provides, among other things, an identification and evaluation of the environmental impacts that could be caused by the relevant project, activity or work, the related environmental management program, a list of the required environmental permits and a contingency plan. Unlike the environmental licenses, PAGAs do not need to be approved by the environmental authorities. The concessionaire submits PAGAs to ANI and the intervenor for their approval or non-objection. However, any environmental permits listed on the PAGAs must be requested from and granted by the applicable environmental authorities prior to commencing construction of the respective functional unit.

4G – 5G Highway Concessions

In Colombia, 5 generations of road concessions have been developed since 1994, which have had as a differentiating aspect the allocation of risks between the state and the private partner, as well as the complexity of the transactions.

The 4G Program, which includes Public and Private Initiative Projects, aims to reduce Colombia's infrastructure deficit, and consolidate the national road network by creating continuous and efficient connectivity between production centers, the country's main ports and country boundaries.

Since 2019 some modifications to the 4G program have been promoted, giving rise to the creation of the 5G Program, which was launched through the document CONPES 4060 "Bicentennial Concessions" and seeks to regulate some key aspects for the development of infrastructure, under the premises of project sustainability based on 4 pillars: institutional, social, environmental, and financial. This 5G Program implements contractual modifications aimed at improving property management, risks associated with natural disasters, climate change, economic compensation for commercial risk, among others. As a characteristic feature, the 5G program comprises not only toll roads concessions, but also river dredging and navigation concessions, airport concessions and railway concessions

Chile

In order to improve the level of maintenance of the Chilean road infrastructure and reduce the demands on public finances, starting in the early 1990s, the Chilean government began to grant concessions, with a pre-assigned model of obligations and rights between the public and private sectors.

The execution, repair and conservation of public works are governed by the Statute of the Public Works Concessions Law (the "Concessions Law"), originally contained in Decree with Force of Law No. 164 of 1991, which allows persons and entities, to exploit the works and services of said public works that are the object of a concession.

Likewise, the following laws and decrees have been promoted in relation to Public and Private Partnerships (PPP) projects: Law No. 19,292 of 1993 Supreme Decree No. 900 of the Ministry of Public Works (MOP), Supreme Decree No. 956 of 1997 of the MOP, Law No. 20,128 of 2006, Law No. 20,190 of 2007 and Law No. 20,410 of 2010, all of which are aimed at facilitating the execution of projects under the PPP scheme.

[Table of Contents](#)

The provisions of the concession contracts generally govern the term and termination of the concessions, the works to be carried out, the operation and maintenance obligations, government supervision, the maintenance reserve funds, certain fees payable to the government and the fees for toll that can be charged.

The concessionaire is normally responsible for the construction, financing, operation, and maintenance of the highway in accordance with the standards, specifications, and designs established by the Ministry of Public Works or, failing that, in the bidding conditions, and is obliged to correct any defect in the road that arises during the term of the concession. In exchange for developing these activities, the concessionaire is entitled to retain substantially all toll revenues derived from the operation of the toll road during the term of the concession. The road itself and the accessories related to its operation remain the property of the government during the term of the concession.

Each concession establishes a schedule of tolls by vehicle category. Most concessions allow concessionaires to increase tolls annually in accordance with Chile's IPC. Such toll increases can be made without government approval, although supporting documentation must be submitted to the MOP. All other toll rate increases must be approved by the MOP. The MOP has the right to terminate a concession without compensation before the expiration of its term in the event of the occurrence of specified events. Furthermore, the government has the legal right to seize any concession and claim all assets related to it.

3.11. *Technology, Environment, Social and Governance (TESG)*

We have a long-standing commitment to make positive economic, social, and environmental contributions, and grounding our behavior on a solid corporate governance, a business conduct based on values and ethical principles, with transparency at the core. This work has been led considering the interests and expectations of our stakeholders, through initiatives and strategies that have been framed in strong corporate responsibility and sustainability. We have strengthened our metrics and reporting of environmental, social and governance (ESG) issues, in line with international standards, disclosing more clearly short, medium, and long terms targets, our performance against targets, and trends.

Furthermore, we have identified that Technology (T), using applied innovation and the revolution brought by the digital transformation, is a key catalyst to accelerate and achieve the necessary changes to address ESG challenges and opportunities. This is the new concept of TESG. The incorporation of TESG as a pillar of our 2040 Strategy marks a milestone that we expect will change the future of the Company, where its transformation into an energy company is leveraged by technology. With this, we validate our commitment to be a Company that moves towards value creation in a sustainable future.

The TESG pillar integrates technological innovation to environmental, social, economic and governance issues, enabling the exploration of innovative solutions which accelerate implementation and enhance scalability. In 2020, we reviewed our environmental, social, and governance (ESG) materiality assessment considering shifts in international trends, recognized ESG standards and instruments, potential risks and stakeholder's expectations.

The materiality assessment identified 28 TESG issues that have or could have a significant impact (positive or negative) on our ability to generate value in the short, medium, and long term and/or a significant relevance to stakeholders. Based on this analysis, we identified materiality as a dynamic and recurring process that is constantly reviewed. In our disclosures, we will prioritize the following issues, based on their materiality:

- Climate Change
- Water Management
- Local Development
- Occupational Health and Industrial Safety
- Biodiversity and Ecosystem Services
- Talent attraction, development, and retention

[Table of Contents](#)

- Circular Economy
- Air Quality
- Fuel Quality
- Energy use alternative sources
- Process safety

In 2020, we also reviewed and updated our seven stakeholder groups (as defined below), given that their interests and expectations are considered in our materiality assessment. The methodology used for this update was based on the AA1000 standard. The purpose is to responsibly manage relationships with our key stakeholders, leveraging decision-making and strategic vision, resulting in long-term value creation. Our seven key stakeholder Groups are: (i) associates and partners, (ii) investors, (iii) clients, (iv) suppliers, contractors and their employees, (v) employees, retirees and their beneficiaries, (vi) state, and (vii) society and community.

Corporate Responsibility (which is overseen by Ecopetrol's Secretary General) is the area responsible for consulting the perceptions and expectations of our seven stakeholder groups with respect to the 28 TSEG issues and our attributes as a Corporate Citizen. In 2021 our annual stakeholder survey collected stakeholder perceptions on our management of material issues, the level of satisfaction with our delivery of value promises to each of our stakeholders, and stakeholder prioritization of ESG issues.

During 2021, we launched our Environmental Strategy defining eight strategic pillars:

Environmental Planning and Compliance

Based on the mitigation hierarchy principle, Ecopetrol S.A. undertakes a robust field baseline environmental and social sensitivity information within the project's area of influence and conducts EIAs to identify potential environmental and social impacts at the early stages of project planning and design. Environmental Studies and diagnosis are developed to comply with regulatory requirements for environmental licenses and permits and environmental and social management plans are developed to minimize, mitigate, or compensate for impacts.

In 2021, 18 authorizations and four environmental licenses/management plans modifications were granted by the National Authority for Environmental Licenses (ANLA), and 53 permits were granted by environmental local authorities. In addition, 132 environmental permits were submitted for local and national authorities' evaluation, and 41 archaeological programs were developed on site, based on the archaeological permits granted by the Anthropology and History Colombian Institute (ICANH, for its Spanish acronym).

Climate Change

As part of our efforts to contribute to the Sustainable Development Goals, the Paris Agreement and Colombia's Nationally Determined Contribution (NDC), on March 25, 2021, we announced our plan to achieve net-zero Greenhouse Gas (GHG) emissions by 2050 (scopes 1 and 2), in line with our commitment to mitigate climate change and further the energy transition and the TSEG agenda.

By 2030, we seek to reduce our CO₂e emissions by 25% as compared to the 2019 baseline for scopes 1 and 2, which correspond to direct and indirect emissions associated with the purchase of energy. In addition, the Ecopetrol Group will seek to reduce 50% of our total emissions (scopes 1, 2, and 3) associated with the company's value chain, which includes the use of its products, by 2050. However, we cannot offer any assurance on our ability to meet these goals by such dates.

To achieve these targets, we launched a program entitled "Net Zero Roadmap" focusing on four components: (i) permanent update and verification of the GHG inventory, (ii) review and optimization of a high emission intensity portfolio, and carbon price incorporation in the valuation process of future projects, (iii) gradual incorporation of competitive low carbon technologies (e.g., energy efficiency, reduction of gas flaring and fugitive emissions and vents, renewable energies, biofuels) and emergent technologies (e.g., green hydrogen and CCUS, energy storage of renewable energies), and (iv) implementation of Natural Climate Solutions ("NCS") to abate residual emissions.

[Table of Contents](#)

In 2021, we verified our GHG emissions inventory for the 2017 – 2020 period through a third-party, Ruby Canyon Engineering, and reduced 293,594 CO₂e from new projects implemented during that year, exceeding the established annual target by 25%.

In addition to the efforts on decarbonizing our operations, we took additional measures to manage our climate-related risks and opportunities, through the following actions:

- (i) Adaptation and vulnerability: climate risks and vulnerability have been evaluated in the regions where the company has operations, to implement adaptation measures in the comprehensive management of water, ecosystems and biodiversity, infrastructure and to increase the capacity and resilience to extreme weather events.
- (ii) Innovation, research, and development: we advanced in further exploring opportunities to implement emerging low-carbon technologies like CCUS, in piloting hydrogen projects and in testing top-down and bottom-up technologies for the detection and measurement of fugitive emissions and vents in the upstream and downstream segments.
- (iii) Participation in public policy documents: the company articulates its climate ambition with government plans and strategies and participates in the construction of climate change regulations.

In November and December 2021, respectively, Cenit and the Oleoducto de los Llanos and Oleoducto Bicentenario pipelines received the Carbon Neutral certification from the Colombian Institute of Technical Standards and Certifications (ICONTEC). To achieve this, the companies developed a work plan with three major focus areas that also enabled their certification to extend for the next three years: (i) an emissions inventory, which requires tabulating a monthly and annual emissions estimate regarding the companies' tons of CO₂ emission, (ii) an emissions reduction portfolio to continue the companies' expansion into renewable energies, and (iii) continuing to apply NCS as a compensation alternative, identifying opportunities for restoring strategic ecosystems, protecting biodiversity, enhancing ecosystem services, and contributing to the construction of more sustainable economies in the regions where they operate.

Water Neutrality (towards water net positive)

Ecopetrol S.A. aims to improve water use efficiency to reduce water-related impacts and potential associated conflicts, as well as promoting water security within the operation's areas of influence. Water use is optimized also, to ensure production sustainability due to the operation's dependence on water resources.

In the long term, we seek to reduce our water footprint aiming to achieve water neutrality, by reducing surface and groundwater use, reducing wastewater disposal, and thus promoting reuse and recycling, as well as promoting forest conservation and restoration actions in strategic water basins within projects and operations area of influence. These targets are aligned with our Corporate Strategy, the TSEG agenda, and the United Nations' Sustainable Development Goal 6, which seeks to guarantee universal access to drinking, safe and affordable water for all by 2030.

During 2021, 111.3 million cubic meters of water were reused, which means that 74% of the total water we require to operate is reused within the operation, a 15% increase compared to 2020. In addition, 40.1 million cubic meters of water were used (26% of total water required for our operations), resulting in a 4% decrease compared to 2020.

In 2021, the Llanito and Casabe Clean Technology Reconversion Programs were concluded which resulted in the suspension of 5 million cubic meters per year of wastewater disposal in surface waters of the Magdalena River.

Sustainable Production System and Biodiversity

Our biodiversity strategy is based on two components: (i) prevention and mitigation of biodiversity impacts and (ii) implementation of nature-based solutions, to offset residual impacts and actively respond to challenges related to climate change, water resources, and biodiversity management, food security, or disaster risks, among others. Each of these themes is described below.

- (i) Prevention and mitigation of biodiversity impacts:
 - Updated biodiversity information for decision-making and resilience analysis.

[Table of Contents](#)

- Incorporate the mitigation hierarchy in the planning and implementation of projects and operations.
- (ii) Implementation of nature-based solutions:
 - Large-scale interventions in priority areas to capture GHG emissions through NCS and generate additional biodiversity and social co-benefits.
 - Conservation initiatives to positively impact biodiversity and ecosystem services.

In 2021, we entered into partnerships with The Nature Conservancy (TNC), the Wildlife Conservation Society, South Pole, and Fundación Natura to develop our portfolio on nature based solutions. We also signed off a voluntary strategic partnership with Cormacarena (local environmental authority in the Meta Department) to develop payment for ecosystem services actions in the Guayuriba and Metica river basins, aiming to promote forest and biodiversity conservation.

In compliance with local and national environmental authority's projects and operations requirements, during 2021, 14.08 hectares were planted within river basins, sustainable cattle grazing systems were developed in 34.3 hectares, agroforestry actions were developed in 21.5 hectares and 1.92 forest hectares were restored. In addition, 33 new conservation agreements were signed, and 128 conservation agreements were continued from previous years which are continuously being monitored.

In addition, we joined the World Economic Forum initiative "It.org" and made a public pledge to protect 30,000 hectares of strategic ecosystems, plant 12 million trees and achieve the capture of at least 2 million tons of carbon emissions equivalent by 2030. We also joined the Taskforce on Nature-related Financial Disclosures – TNFD to contribute to the development of a framework for reporting risks and opportunities associated with natural capital.

In June 2021, with the technical support of the Alexander Von Humboldt Biological Resources Research Institute, we created a voluntary network of conservation areas, called "Ecoreservas", aimed at protecting biodiversity and offering ecosystem services. The current *Ecoreservas* network includes fifteen designated areas covering 15,085 hectares which are located mainly in the Andes region, the Magdalena Valley and the Llanos region.

Circular Economy

Our circular economy model is a key driver that contributes to advance in the energy transition, achieve the net-zero emissions and water neutrality targets, and advance in achieving closed-loop cycles of materials and waste, and diversification of new businesses. Specifically, the adoption of a circular economy model allows us to:

- (i) further promote the efficiency in the use of materials and water and increase the recovery capacity of ecosystems,
- (ii) foster the identification of new business models that generate economic, environmental and social benefits, and
- (iii) increase innovation, technological advances and research and development of new products and services.

Clean Air and Quality of Fuels

The Clean Air strategic pillar was developed to promote prevention and mitigation actions for reducing air quality impacts. In addition, a Clean Air roadmap was developed as this element was classified as "outstanding" in Ecopetrol's materiality analysis. The roadmap aims to reduce atmospheric emissions of criteria pollutants, to ensure environmental compliance based on operational practices and synergic initiatives with the decarbonization, energy transition and clean fuels agendas.

Key objectives include verifying the criteria pollutants emissions inventory which aims to be verified by a third party by 2023, develop goals for the production and refining operations, and develop key initiatives in accordance with the World Health Organization (WHO) Air Quality Guidelines.

[Table of Contents](#)

In 2021, ISA defined an annual consolidated goal relating to the company's reduction of CO₂e emissions. This goal integrated potential CO₂e emissions reductions from the "Conexión Jaguar" program and emissions reductions generated from voluntary actions of eco-efficiency for the management of SF₆, energy and water consumption, generation of waste, and other emissions reductions relating to remote work. The specific goals of CO₂e emissions reductions associated with SF₆ and energy consumption were 1,937 tCO₂e and 1,042 tCO₂e. By the end of 2021, the consolidated performance of CO₂ emissions reduction by SF₆ was 371 tCO₂e, which represents 19% of the goal, and the reduction of CO₂ by energy consumption was 2,691 tCO₂e, which represents a fulfillment of 2.6 times of the established goal.

In order to achieve these results, ISA has implemented several practices such as the use of real-time meters to identify SF₆, preventive maintenance or refurbishing of high voltage circuit breakers to avoid gas leaks, development of a prototype to capture of SF₆ before it is released into the atmosphere, reusing this kind of gas when the conditions allow it and appropriating final disposal of it. Moreover, some companies have been implementing different actions to reduce the consumption of energy, such as the installation of solar panels in some of ISA's locations and electrical substations, the implementation of LED technology, the purchase of international renewable energy certificates I-REC. In connection with ISA's toll roads business in Chile, the company has been using renewable energy supply on a third of one of the roads in this country.

Ecopetrol is also committed to improving the quality of the fuels it supplies in order to contribute to a better air quality and comply with fuel quality regulations. Taking advantage of being an integrated company, after April 2018, we have been significantly reducing the sulfur content in our diesel B2 (98% fossil and 2% biodiesel). In particular, in 2021 the diesel and the gasoline that we distributed in Colombia had an average of 13.3 ppm and 60.4 ppm of sulfur, respectively, below the current local regulations of 20 ppm in diesel and 100 ppm in gasoline. The Barrancabermeja and Cartagena refineries made adjustments to their operating schemes to be ready for the application of the new regulation limiting sulfur content to a maximum of 50 ppm in regular gasoline commencing in 2022.

Waste Management

The Waste Management pillar was developed to implement key actions on waste prevention, reduction and reuse thus promoting circularity actions by developing circular economy initiatives. This pillar has three main objectives: (i) reduction at the source, (ii) materials recovery based on the 9Rs circular economy concept, and (iii) disruptive technologies implementation.

In 2021 clear targets were defined for production and refining on waste reduction and waste reuse including hazardous and non-hazardous waste, for 2022 - 2024. Investments were made in the Barrancabermeja refinery wastewater treatment plant as part of the improvement of quality parameters towards discharge and improvement in the water footprint of this refinery.

During 2021 a total of 337,093 tons of waste were generated, a 13% increase as compared to 2020. This increase was expected as per the reactivation of the economy following the lifting of restrictions related to the COVID-19 pandemic.

Prevention and Remediation of Environmental Impacts caused by Operational Incidents

This pillar focuses on the prevention of operational incidents that may impact the environment, as well as remediating sites which have been historically impacted by improper practices used various decades ago mainly by former operators.

During 2021, seven incidents (greater than one barrel) lead to the spillage of 157.8 barrels, which had an impact on environmental features (surface water, groundwater, soil, flora and/or fauna). Although there is an increase in the number of incidents in relation to 2020 and 2019 (five and four, respectively), during the last three years the number of incidents has decreased compared to the past 10-year trend, primarily as a result of integrity management investments and operational discipline actions.

In addition, during 2021, 116.31 hectares of soil were remediated by using phytoremediation and bioremediation techniques on 20 previously identified and prioritized affected sites.

Further information can be found in our 2021 Sustainability Report which is available on our website at: www.ecopetrol.com.co. This report is provided for reference only and the information contained on the referenced website is not a part of or incorporated by reference into this annual report.

[Table of Contents](#)

3.11.1. Energy Initiatives

We have been undertaking significant efforts to make efficient and rational use of energy resources in our production processes and to reduce energy consumption, costs, and carbon dioxide emissions. Our pillars are efficiency, reliability, optimization, and energy diversification.

During 2021, we focused our efforts on strengthening our renewable energy portfolio, which currently includes projects such as the Cravo Norte Solar Ecopark (40 MW), Brisas Solar Ecopark (26 MW), Solar Cenit (23 MW), La Cira Solar Ecopark (56 MW), Rubiales Solar Ecopark (87 MW), Refineries (44 MW), and Solar rooftop (2MW), which will be developed with direct investment from us through EPC contracts or business models such as Power Purchase Agreement (“PPA”) or through partnerships.

With the entry into operation of the San Fernando Solar Ecopark in October 2021, the Ecopetrol Group achieved the inclusion of a total of 112.5 MW of renewable energy in its supply matrix, which means 8% of its installed capacity, and it became the largest self-generator of renewable energy in Colombia.

Production

During 2021, our production segment had an average monthly energy consumption of 374.86 GWhm (gigawatts per hour per month) for its direct operation, from which 62.5% was provided through self-generation and the remaining 37.5% with non-regulated energy purchased from the National Transmission System.

In 2021, we awarded a PPA for the construction of the Brisas Solar Ecopark, which will be located in the municipality of AiPE (Huila), will have an installed capacity of 26 MW, and is expected to come into operation by the end of 2022.

Transport

In October 2021, San Fernando Solar Ecopark, our second solar Ecopark, began operations and currently supplies renewable energy to our transport and production operations. This Ecopark has an installed capacity of 61 MW, which added up, along with the current capacity of the Castilla Solar Ecopark (21 MW), a total capacity of 82 MW of solar generation in 2021. The San Fernando Ecopark supplies part of the energy required by the San Fernando transport station and the Castilla field.

Refining

During 2021, the Barrancabermeja refinery’s average monthly energy consumption was 58 GWhm (gigawatts per hour per month), provided through self-generation, compared to 53 GWhm in 2020. Similarly, in 2020, the Cartagena Refinery’s average monthly energy consumption was 59 GWhm (gigawatts per hour per month), provided through self-generation, compared to 58 GWhm in 2020.

3.11.2. HSE

This section describes the health, safety and environmental (HSE) practices of Ecopetrol S.A. Subsidiaries guidelines must be consistent with those established by Ecopetrol S.A.

3.11.2.1. Ecopetrol S.A.

One of the principles that guides Ecopetrol S.A. is the commitment to our employees and the development of the communities in which we operate. For that reason, Ecopetrol S.A. is devoted to improving our health, safety and environmental practices.

The results of the HSE performance in 2021, compared with the prior year, were:

- The severity of occupational incidents decreased in 2021 compared to 2020, with zero fatalities recorded in 2021 as compared to three fatalities recorded in 2020;

[Table of Contents](#)

- The Total Recordable Injuries Frequency (TRIF) was 0.44 in 2021, compared to 0.43 in 2020. The TRIF represents the number of employee or contractor injuries that require minimum medical treatment for every million hours worked, including fatalities, days away from work, restricted work and medical treatment cases;
- A 133% increase in road accidents, with a balance of seven road accidents in 2021, as compared to three accidents in 2020, primarily due to increased activity and higher exposure observed in 2021, given the reactivation of operations, particularly in activities that have historically recorded higher accident rates and affected the indicator. Specifically, there was an increase in the mobilization of drilling and subsurface equipment, as well as an increase in the mobilization of personnel between the company's facilities and/or operating bases;
- An improvement in reporting minor oil spills and identifying their causes, due to a better asset integrity and maintenance programs monitoring;
- Three Tier 1 process safety incidents in 2021, from five incidents in 2020;
- An increase of 21% in the amount of oil spilled. In 2021, 157.8 barrels were spilled as compared to 125 barrels in 2020.

We have several programs in place aimed at increasing the safety of our industrial processes and minimizing the number of occupational accidents and other major incidents. Our HSE management model is based on key focus areas that are aligned with our integrated management system.

Total Recordable Injuries Frequency – Employees and Contractors

Ecopetrol S.A. places an important emphasis on understanding, monitoring, and controlling the health and safety impacts on workers and contractors.

In 2021, 49 recordable cases occurred, where 31% led to restricted work, 10% required medical treatment and 59% led to lost days. There were not fatal incidents. Additionally, we had a 2% increase in the number of recordable cases compared to 2020, primarily as a result of increased work hours in 2021 and the economic reactivation observed in Colombia following the lifting of restrictions related to the COVID-19 pandemic.

Graph 7 – Total Recordable Injuries Frequency – Employees and Contractors (*) ()**



* Number of employee or contractor injuries requiring minimum medical treatment for every million hours worked.
** Includes data for Ecopetrol S.A. but does not include data for subsidiaries of Ecopetrol.

[Table of Contents](#)

Contingency Plans and Environmental Remediation

In order to protect and minimize damage to people, the environment, and assets, Ecopetrol S.A.'s operational areas have documented, updated, disclosed and trained emergency and contingency plans to guarantee immediate, timely and effective intervention in the event of emergencies and disasters that may occur in our facilities and operations.

Emergency and contingency response plans are prepared in accordance with Colombian legal requirements and considering internal emergency guidelines. These plans, which have the approval of the National Authority for Environmental Licenses (ANLA), are articulated with municipal emergency response strategies and risk management procedures of the territories where we operate.

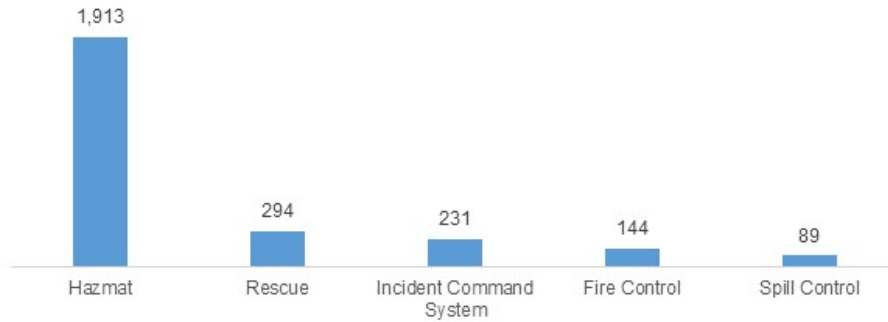
The main results obtained in the implementation of the emergency and contingency plans for 2021 by Ecopetrol S.A. are presented below:

- 30 Updated Emergency and Contingency Plans that include identifying emergency and disaster scenarios, strategies, and procedures to respond to emergencies of a technological origin (spills, fires, explosions, events involving hazardous materials, emergencies of natural origin, socio-natural, anthropic, of electrical origin, events that affect people, among others) caused by other types of operational or environmental risks.
- Definition and implementation of resources, equipment, and tools.
- An expert workshop was held with the participation of an average of 170 people to ensure the sustainability of the unified model of emergency management, command, and control, which allows organized and goal-oriented decision-making, implemented by Ecopetrol S.A. since 2010.
- Definition and implementation of resources, equipment, and tools.
- Execution of 266 drills in 2021 where all types of emergency scenarios were tested.
- Definition of mechanisms for activation, notification, reporting to entities and authorities, and early warning system to communities.
- Signing of 9 mutual assistance schemes with formalized cooperation and coordination schemes in various regions of the country.
- Operational information and communications available to assess and conduct a situational analysis of emergency events.
- Training programs for workers who are part of the emergency response brigades.

[Table of Contents](#)

Ecopetrol S.A. continuously implements training programs for all personnel involved in emergency or contingency response plans. In 2021, 2,671 trainings took place to improve our employees' skills.

Graph 8 – Trained Personnel 2021



Frequency of Process Safety Incidents

Our Process Safety Management (PSM) strategy is to: (i) define high-risk processes, (ii) prioritize intervention in high-risk processes and (iii) apply all PSM elements in the prioritized high-risk processes.

Loss of primary containment is the number of unplanned or uncontrolled releases of oil, gas or other hazardous materials.

We report Tier 1 process safety events per million hours worked, which are the losses of primary containment of greatest consequence causing harm to a member of the workforce, costly damage to equipment or exceeding defined quantities according to API-754. The reporting thresholds for API-754 Tier 1 is an unplanned or uncontrolled release of any material, including non-toxic and non-flammable materials, from a process that results in one or more health, safety or environmental consequences set forth under those guidelines. In 2021, there were 0.03 Tier 1 process safety incidents per million hours worked, a decrease from the 0.05 recorded in 2020.

Frequency of Tier 1 process safety incidents per hours worked (per million hours worked):

Graph 9 – Tier 1 Process Safety Incidents (*) ()**



[Table of Contents](#)

* Tier 1 process safety incidents per million hours worked (API-754).

** Includes data for Ecopetrol S.A. classified according to the criteria in API-754 Tier 1 but does not include Ecopetrol S.A.'s subsidiaries.

Environmental Incidents

In 2021, Ecopetrol S.A. recorded 7 environmental incidents greater than one barrel, compared to 4 in 2020. The volume of oil spilled in these incidents was 157.8 in 2021, an increase from 125 barrels in 2020.

Corrective and mitigation actions implemented by Ecopetrol S.A.

In due course, Ecopetrol S.A. carried out all the social, environmental, and technical actions to fully attend the event and mitigate other damages and manage the incident, in compliance with the obligations contained in Law 1523 of 2012, Presidential Decree 321 of 1999 and the contingency plan of the Lisama Well.

After closing the event and abandoning of the well, Ecopetrol S.A. continues to implement environmental recovery actions, in accordance with the orders given by and in coordination with the environmental authorities. Likewise, voluntary social investments have been fulfilled.

Investigations and legal claims

Investigations

As of the date of this annual report the following investigations are being conducted by environmental authorities and control agencies in respect of the incident:

On January 20, 2020, Ecopetrol S.A. was informed that the ANLA, in the course of the administrative process initiated by said authority as a consequence of the events occurred during the Lisama 158 well spill, decided to impose a fine on Ecopetrol S.A. in an amount of COP\$5.155 million. In the course of said administrative process, the ANLA exonerated Ecopetrol S.A. from liability for some charges, due to the fact that ANLA evidenced that Ecopetrol S.A. had activated its contingency plan and implemented the corresponding actions. It also mentioned that Ecopetrol S.A.'s environmental control actions were taken in an appropriate manner. Nonetheless, it decided to impose the fine, because the ANLA considered that the actions were not taken in a timely manner and because, it considered that Ecopetrol S.A. did not adopt and implement the necessary actions to correct the mechanic failures in the well, in order to prevent the environmental damage. On February 11, 2020, Ecopetrol S.A. filed a reconsideration appeal before ANLA requesting the reversal of this decision. On February 9, 2021, through Resolution 290, the decision of the ANLA was announced and reduced the fine to COP\$3,863,918,267. The file is now closed by the environmental authority.

Ecopetrol S.A. complied with ANLA'S decision and paid the penalty on February 17, 2021. However, Ecopetrol S.A. requested the annulment of the sanction before the High Administrative Court on June 9, 2021. The lawsuit was admitted by the court on February 18, 2022.

The Attorney General's Office (First Solicitor's Office Delegate for Administrative Supervision) opened disciplinary investigations against certain of Ecopetrol S.A.'s employees for alleged disciplinary infringements related to the oil well abandonment process.

An initial suspension order against those Ecopetrol S.A. workers was at first issued and lifted in August 2018. Currently, their investigations finished the probationary stage.

The Prosecutor's Office – National Human Rights Unit and International Human Rights has conducted a preliminary investigation against Ecopetrol S.A. and governmental employees for the alleged crime of environmental pollution due to the exploitation of mining or hydrocarbon deposits. Currently, the investigation is in the pre-trial stage.

[Table of Contents](#)

Agreement with fishermen and fish traders

On July 28, 2021, Ecopetrol S.A. and a fishermen group certified by the Fishing and Aquaculture National Authority (AUNAP for its acronym in Spanish), made an arrangement for an economic recognition regarding the affectations caused by the Lisama 158 event. Ecopetrol S.A. reached an arrangement with AUNAP, as well with the local fish traders associations from Barrancabermeja ASOCORAMB (Asociación De Comerciantes Del Sector La Rampa De La Ciudad De Barrancabermeja) and ASOCOPROPAL (Asociación de Comerciantes de Pescado). Due to these arrangements, 893 fishermen and 118 fish traders got a compensation for COP\$7,604,361,878.

Ecopetrol S.A. simultaneously agreed to continue with the actions contained in the Environmental Recovery Plan (PRA for its acronym in Spanish), which were accepted by the ANLA as environmental recovery of the area affected by the event.

Legal Claims

As of the date of this annual report:

There are two more actions that have been filed before the Administrative Court of Santander, related to the Lisama 158 incident:

Approximately 600 people, members of the community and fishermen who live in the vicinity of where the incident took place, filed a class action in the amount of COP \$614,503,232,689, seeking compensation for damages allegedly suffered as consequence of the incident. As of the date of this annual report the court has not scheduled a hearing date. On September 25, 2020, Ecopetrol S.A. informed Mapfre Seguros Generales de Colombia S.A. that it was seeking to invoke guarantee coverage by the guarantors.

Senator Antonio Eresmid Sanguino filed a class action, seeking protection of collective rights (no compensation or indemnification petitions), arguing that the incident led to the destruction of (i) people's health and (ii) damages to the environment caused by the incident.

On October 2, 2018, the Administrative Court of Santander (competent judge) issued an interim measure whereby the latter ordered different authorities and Ecopetrol S.A. to perform various activities to prevent any additional environmental damage to occur.

On January 16, 2020, the High Court for Administrative Matters (Consejo de Estado) revoked the interim measure imposed by the Administrative Court of Santander, considering that with the abandonment of the well "the risk that caused the production of the spill has been surpassed". In its ruling, the High Court for Administrative Matters also mentioned that Ecopetrol S.A. has been taking the necessary actions to solve the damages produced by the incident, and also implemented the actions to repair the alleged damage. As of the date of this annual report, both complaints were properly answered, and we are still awaiting for the commencement of the evidentiary stage.

On March 22, 2018, Ecopetrol S.A. made a claim to MAPFRE SEGUROS GENERALES DE COLOMBIA S.A., based on its Control of Well Policy and received the US\$19 million in October 2019. Thereafter, as a result of the third-party liability policy claim objection, Ecopetrol S.A. has taken the relevant actions to obtain the guaranteed coverage of guarantors. On February 27, 2020, Ecopetrol S.A. filed a lawsuit against "MAPRE SEGUROS GENERALES DE COLOMBIA S.A." to obtain recognition and payment of COP\$128,807,833,685 based on civil liability. The court admitted the lawsuit on January 20, 2022.

[Table of Contents](#)

3.11.2.2. Cenit

Cenit, as head of the transportation segment of the Ecopetrol Group, established and implemented the HSE management system based on Decree 1072 of 2015 in 2017 and Resolution 0312 of 2019 in 2020, it has also evolved aligning itself to the process model of the Integrated Management and Continuous Improvement System (SG-MC) adopting the denomination of “Element Commitment to Life and Safety Processes” and from there the goals and indicators have been defined in order to measure the management to the compliance of the HSE plan and the establishment of lessons learned and best practices within the industry.

3.11.2.3. Cartagena Refinery

In 2021, approximately 6,194,468 man-hours were employed conducting Reficar’s business activities. Our HSE performance indicators for Total Recordable Incidents Frequency (TRIF), Process Safety Incident (PSI), and Environmental Incident (EI) were well within our established expectations.

The following table covers Reficar’s TRIF for 2019, 2020 and 2021, which includes Ecopetrol Operation and Maintenance (O&M), Reficar and subcontractors. The table presents statistics related to operating and maintenance activities. Reficar has not reported fatalities during the period 2010 – 2021.

Table 49 – Performance Indicators

Metric	For the year ended December 31,		
	2021	2020	2019
Man-hours	6,194,468	5,179,194	6,538,295
Recordable accidents	8	1	1
Total recordable incidents frequency (TRIF)*	1.29	0.19	0.15
Environmental Incidents (EI)	—	—	—
Process Safety Incidents (PSI)	—	—	—

* These risks were associated with normal operations.

3.11.2.4. ISA

For ISA and its companies, it is important to protect and preserve the health and safety of workers, regardless of the type of contractual relationship, guaranteeing safe work environments, self-care, and the application of good prevention practices. This high commitment to people is expressed in the occupational health and safety policy, which seeks to offer safe working environments and healthy lifestyles.

ISA monitors two main indicators that contain its goals in terms of safety and health at work and that are part of the comprehensive management chart and variable compensation: (i) reduce events with a high potential for seriousness and (ii) the frequency of work accidents in own workers and contractors.

There is a process of continuous improvement of the occupational health and safety management system in ISA’s subsidiaries with high-risk activities, whose purpose is to manage occupational hazards and contemplate the execution of activities aimed at protecting the lives of people and that is maintained through the health and safety management systems certified under quality management systems and complying with the provisions of the legislation of each of the countries in which ISA is present.

[Table of Contents](#)

Accident Management

During 2021, exposure to occupational risk increased by 21.97%, with 8.1 million additional man-hours of work compared to 2020, primarily as a result of an increase in the contractors' and employees' man-hours in *Companhia de Transmissão de Energia Elétrica Paulista* (CTEEP) and *Red de Energía del Perú* (REP). Nonetheless, the integrated accident frequency rate (own personnel and contractors) decreased by 2.86% compared to the same period. Throughout the year, the number of work accidents per 1,000,000 hours of work has been lower, as set forth in the table below:

Table 50 – Integrated Frequency Index for Employees and Contractors

Metric	For the year ended December 31,		
	2021	2020	2019
Man-hours worked ⁽¹⁾	44,550,560	36,526,796	36,033,784
Total accidents	378	319	457
Frequency rate ⁽²⁾	8.48	8.73	12.68

(1) Costera is not included.

(2) Frequency Rate calculated as: (Occupational accidents in the period/man-hours of exposure during the period)*1,000,000. It considers all workplace accidents, including those that did not result in lost time injuries.

Fatal Accidents

During 2021, there were three fatal accidents involving ISA's CTEEP contractors. The first accident occurred while the disconnecter of one of the 138 kV transmission lines was being assembled, the second in preparation for the transport of a backhoe, and the third while disconnecting a structure jumper on the transmission line.

3.12. Related Party and Intercompany Transactions

Set forth below is a description of material related-party transactions. For additional information about transactions with related parties, see Note 31 to our consolidated financial statements.

Ocensa

Ecopetrol S.A. has entered into a number of agreements with its 72.65%-owned subsidiary, Ocensa, of which the following are the most significant:

In March 1995, Ecopetrol S.A. entered into an agreement for the transportation of crude oil through the Ocensa pipeline. Pursuant to the terms of this agreement, Ecopetrol S.A. was required to make monthly payments that varied, depending on both the volume of crude oil transported through the pipeline and a tariff imposed by Ocensa based on Ocensa's financial projections and their expected volumes of crude oil. On January 17, 2013, this agreement was amended as a result of Ocensa's new business model. Among other changes, this amendment to the transportation agreement establishes the payment of the tariff, calculated according to resolutions issued by the Ministry of Mines and Energy. In 2013, another amendment was executed that modified the terms by which the payments of invoices should be made. In 2020, an amendment including security standards for the supply chain was executed.

On July 29, 2014, after Ocensa implemented and carried out an open process to receive offers to enter into transportation agreements for an extended capacity of approximately 135,000 barrels per day in Ocensa's pipeline (the P135 Project), Ocensa accepted the proposal made by Ecopetrol S.A. to enter into a ship-or-pay transportation agreement for 70,000 barrels per day of crude.

On November 20, 2014, after a total and definitive assignment agreement that was notified to Ocensa on December 15, 2016, Ecopetrol S.A. became the successor of Hocol, of a ship-or-pay transportation agreement for 17,500 barrels per day, thus increasing our contracted capacity in the P135 Project to 87,500 barrels per day.

On July 1, 2017, with the consent of Ecopetrol S.A. and Ocensa, and as contemplated in the Act of Commencement of Operations issued by the Ministry of Mines and Energy (Resolution 31344 dated April 27, 2017), Ocensa started supplying increased capacity in the P135 Project.

[Table of Contents](#)

On July 17, 2018, Ecopetrol S.A. and Ocesa entered into an amendment to the P135 Project ship-or-pay transportation agreements mentioned above (consisting of a capacity of 87,500 barrels of crude per day) in order to adjust the standard tariff and monetary conditions. This followed Ocesa having entered into a settlement agreement as approved by an arbitration panel with Frontera Energy Colombia and executed on May 15, 2018, pursuant to which the transportation tariff and monetary conditions in Ocesa's ship-or-pay transportation agreement with Frontera Energy Colombia in respect of the P135 Project were adjusted. Therefore, in application of regulatory principles, Ocesa offered similar terms to the remaining shippers of the P135 Project, including Ecopetrol S.A., and executed (i) settlement agreements with those who accepted Ocesa's offer and (ii) the corresponding amendments to the transportation agreements.

In 2021, payments made by Ecopetrol S.A. under these two agreements amounted to US\$ 1,012.15 million.

On October 28, 2013, Ecopetrol entered into a natural gas supply contract in force until November 30, 2018, pursuant to which Ecopetrol S.A. supplies gas to Ocesa and receives a fixed price per MBTU (Million British Thermal Units). This agreement replaced the contract for natural gas supply in Cusiana entered into in December of 2004, under which Ocesa paid a variable rate to Ecopetrol. Since December 1, 2018, the parties have agreed to extend the term of the agreements for one-year terms, most recently on December 1, 2021, when the term of the agreement was again extended for another one-year term until November 30, 2022. In 2021, Ecopetrol S.A. received an aggregate sum of US\$ 3.4 million under the contract.

Ocesa has entered into the following agreements, among others, with some of our other subsidiaries:

In March 1995, Equión and Santiago Oil Company entered into agreements for the transportation of crude oil through the Oleoducto Central S.A. (Ocesa) pipeline. Equión and Santiago Oil Company currently hold 5% of transportation rights in Ocesa. In 2014, the transportation fees billed by Ocesa were: Equión (US\$ 44.4 million), Santiago Oil Company (US\$ 3.8 million) and Hocol (US\$ 30.8 million). On January 17, 2013, this agreement was amended as a result of Ocesa's new business model. Among other changes, the amendment to the transportation agreement establishes that tariff payments are to be calculated according to resolutions issued by the Ministry of Mines and Energy. On May 23, 2013, another amendment was executed that modified the terms by which the payments of invoices should be made. Hocol paid Ocesa, as assignee of transportation rights from original shippers, US\$ 25.45 million in 2021.

Oleoducto de Colombia S.A. (ODC).

Ecopetrol S.A. entered into the following agreements with its 73%-owned subsidiary, ODC:

In July 1992, a ship-and-pay agreement was signed for the transportation of hydrocarbons. Pursuant to this agreement, Ecopetrol S.A. must pay a previously agreed tariff for the volume of hydrocarbons transported. The duration of this agreement is indefinite; however, the contract will remain in force as long as Ecopetrol S.A. holds shares in Oleoducto de Colombia S.A., whether directly, or through an affiliate. As of January 2013, the parties agreed that the applicable tariff would be the one set by the Ministry of Mines and Energy (the MINEM Tariff). The last tariff update by the MINEM was in 2019 for a four-year term, with a yearly adjustment based on macroeconomic variables. In 2021, payments made by Ecopetrol S.A. under this agreement amounted to US\$ 154.08 million.

[Table of Contents](#)

In August 1992, an operation and maintenance agreement was signed for the Vasconia and Coveñas terminals both property of ODC. The duration of this agreement is indefinite but can be terminated by any party upon six months' notice. The initial contract included services rendered by Ecopetrol S.A. directly or by third-party contractors hired by Ecopetrol S.A. through mandate, with a variable surcharge over expenses and third-party contracts between 5% and 12% plus any applicable taxes. In 2014, an amendment to the agreement was signed, adjusting the monthly fixed rate to include expenses of services rendered directly by Ecopetrol S.A., plus an additional 10% fee, and to eliminate the administrative surcharge. The contract also includes a variable sum related to contracts and purchases made by Ecopetrol S.A. through mandate. In March 2015, the monthly rate was adjusted for both Vasconia and Coveñas Stations. In March 2016, an amendment to the agreement was signed, adjusting the agreement's scope to include the pipeline's maintenance and adjusting the monthly fixed rate. In December 2017, an amendment to the agreement was signed, adjusting the agreement's scope according to the change of the maintenance model of the midstream segment and including the Caucasia station and the Vasconia-Coveñas pipeline system into the scope. In March 2018, the parties amended the agreement in order to narrow the scope to the purchase and contracting management and adjust the monthly rate. In February 2019 the scope of this agreement was amended to include planning, structuring, administration, and execution of the agreements signed with the Ministry of National Defense (Fuerzas Militares de Colombia). In July 2020, an amendment to the agreement was signed, adjusting the monthly fixed rate. In 2021, three amendments to the agreement were signed, adjusting the scope of the contract and the monthly fixed rate. This agreement expired May 31, 2021, was not renewed and pursuant to its terms, ODC paid Ecopetrol S.A. approximately US\$ 0.99 million in 2021.

In March 1998, a joint operation agreement was signed for the TLU-1 Coveñas buoy. The duration of this agreement is indefinite and can be terminated by mutual agreement. In December 2013, Ecopetrol S.A. assigned its rights under this agreement to Cenit, though Ecopetrol S.A. kept its role as operator under the agreement. On September 15, 2021, Ecopetrol S.A. ceased its role as agreement's operator. Pursuant to the terms of this agreement, ODC paid Ecopetrol S.A. approximately US\$ 0.002 million in 2021.

In September 1999, a joint operation agreement was signed for the TLU-3 Coveñas buoy between Ocesa, ODC and Ecopetrol. The duration of this agreement is indefinite. In December 2013, Ecopetrol S.A. assigned its rights under this agreement to Cenit, though Ecopetrol S.A. kept its role as operator under the agreement. On September 15, 2021, Ecopetrol S.A. ceased its role as operator and pursuant to the terms of the agreement, ODC paid to Ecopetrol S.A. approximately US\$ 0.63 million in 2021.

ODC has entered into the following agreements with some of our other subsidiaries:

Between March 1992 and January 1993, Hocol, Equión and Santiago Oil Company each entered into agreements with ODC for the transportation of crude oil through the Vasconia-Coveñas pipeline. The term of each of these agreements is indefinite. As of January 2013, the applicable tariff is the one set by the Ministry of Mines and Energy. In 2021, the transportation fees billed by ODC were: Equión (US\$ 0.53 million) and Hocol (US\$ 0.86 million).

Oleoducto de los Llanos Orientales (ODL)

Ecopetrol S.A. has entered into the following agreements, among others, with its 65%-owned subsidiary, ODL:

In December 2009, Ecopetrol S.A. entered into a service agreement with ODL to transport crude oil. This agreement was replaced in January 2014 by a new agreement that expired in December 2020. This is a ship-or-pay agreement covering 167,000 bpd for 2014, 149,000 bpd for 2015 and 139,000 bpd until 2020. In January 2017, this agreement was amended in order to maintain the economic and commercial balance for the parties, based on changes to the standard condition of the system (to transport crude oil with a 690 cStk viscosity), reducing the "ship-or-pay" capacity from 139,000 bpd to 129,139 bpd until December 2020. On March 5, 2021, Ecopetrol S.A. and ODL entered into an amendment that adjusted terms and definitions, in order to transport barrels that were paid for but were not transported. On November 25, 2021, Ecopetrol S.A. entered into an amendment that adjusted terms and definitions of the applicable TRM and extended the term to provide ship-and-pay transportation services until November 2026. Payments by Ecopetrol S.A. under this contract were COP\$ 711.02 billion in 2021.

[Table of Contents](#)

In March 2010, Ecopetrol S.A. entered into a pipeline operating and maintenance agreement with ODL. This agreement had an original five-year term and was amended in 2015 to extend the term another ten years, adjusting certain conditions. In January 2017, this agreement was partially assigned by Ecopetrol to Cenit, due to matters related to the management of plants and pipeline assets. In August 2017, the maintenance obligations were partially assigned by Ecopetrol to a third party. In October 2017 and February 2018, the name of the contract, some technical definitions and the annexes of the contract were updated and certain of Ecopetrol's obligations were removed, in line with the partial assignment. In March 2020 the agreement was finished by the term of the contract and the new one was assigned to a third party. Pursuant to the terms of this agreement, ODL paid Ecopetrol S.A. COP\$ 0.03 billion, plus applicable taxes, in 2021 in connection with the termination of such agreement.

On August 1, 2015, ODL entered into an indefinite management agreement with Oleoducto Bicentenario by means of which ODL receives legal representation and provides management services to Oleoducto Bicentenario. On August 1, 2017, the agreement was amended in order to change the way ODL is remunerated by this service, improving the structure of the agreement. Pursuant to the terms of this agreement, Bicentenario paid to ODL COP\$ 8.01 billion plus applicable taxes in 2021.

Oleoducto Bicentenario de Colombia S.A.S.

Ecopetrol S.A. has entered into the following agreements, among others, with its 100% owned subsidiary, Oleoducto Bicentenario:

In June 2012, Ecopetrol S.A. entered into ship-or-pay and ship-and-pay agreements with Oleoducto Bicentenario for the transportation of crude oil from Araguaey to Banadía that established a price which requires the payment of Oleoducto Bicentenario's indebtedness to local banks for 12 years. This tariff is collected through a trust; the trust is also responsible for making the debt service payments to the banks. The duration of the ship-or-pay agreement is the earlier of 12 years or when the credit has been entirely paid, and the duration of the ship-and-pay agreement is 20 years after the ship-or-pay terminates. Under these agreements, Oleoducto Bicentenario has committed to transport at least 110,000 bpd, of which 55% of the agreement volume is provided directly by Ecopetrol S.A. and 0.97% indirectly by Hocol. In March 2014, the parties signed an amendment to these agreements under which Oleoducto Bicentenario acknowledges having received an advance tariff payment which can be amortized through volumes of crude transported in excess of 110,000 bpd. In April 2015, these agreements were amended to modify certain definitions to reflect new terms from the negotiation of the debt, which included a modification of participant banks and a reduction of the interest rate. In March 2017, the parties signed an amendment to these agreements in order to include the terms and conditions of the "contingent service" that involves the transportation of crude oil from Banadía to Araguaey when this service is required and includes a ship-or-pay commitment of 270,000 bpd when the contingent service is needed. In addition, this amendment includes an equivalent credit note of one and a half days of service into the original ship-or-pay agreement for the transportation of crude oil from Araguaey to Banadía. Hocol has signed an amendment to the transportation agreement from Araguaey to Banadía, in order to receive the related credit note in case that the availability of the service in that direction is suspended in order to enable the contingent service (Banadía-Araguaey). In September 2017 the agreement was amended to specify that the "contingent capacity" could be over 180,000 barrels per any "contingent service" operation and to extend the term until July 30, 2018. In July 2018, the agreement was amended to extend the term to provide the "contingent service" until March 23, 2019. In September 2018, this agreement was assigned by Hocol to Ecopetrol S.A. In November 2018, the agreement was amended to remove the restriction on the number of contingent services during 2018. In March 2019, the agreement was amended to extend the term to provide the "contingent service" until June 21, 2019. In June 2019, the agreement was amended to extend the term to provide the "contingent service" until September 21, 2019. In September 2019, the agreement was amended to extend the term to provide the "contingent service" until December 21, 2019. In October 2019, the agreement was amended to remove the restriction on the number of contingent services during 2019. In December 2019, the agreement was amended to extend the term to provide the "contingent service" until June 21, 2020. In June 2020 and December 2020, the agreement was amended to extend the term for six months to provide the "contingent service" until June 21, 2021. During 2021, the contract was amended various times to extend the "contingent service" until November 30, 2022. On November 9, 2021, the agreement was amended to adjust the conditions pursuant to which it may be assigned to third parties without prior approval of banks. Pursuant to the terms of these agreements, in 2021, Ecopetrol S.A. and Hocol paid COP\$ 776.94 billion to Bicentenario S.A.

[Table of Contents](#)

In June 2012, Ecopetrol S.A. and Hocol entered into storage or pay and storage and pay agreements with Oleoducto Bicentenario. Under these agreements, Oleoducto Bicentenario is committed to receive, store, preserve and deliver our crude oil. The storage or pay agreement will terminate when Oleoducto Bicentenario's indebtedness to local banks has been entirely paid, and the duration of the storage and pay agreement is 20 years after the storage or pay agreement terminates. In April 2015, this contract was amended to modify certain definitions to reflect new terms from the negotiation of the debt, which included a modification of participant banks and a reduction of the interest rate. In September 2018, this agreement was assigned by Hocol to Ecopetrol S.A. Pursuant to the terms of this agreement, Ecopetrol S.A. and Hocol paid to Bicentenario COP\$ 35.41 billion, plus applicable taxes, in 2021.

In August 2012, Ecopetrol S.A. entered into an Operation and Maintenance agreement for the Araguaney – Banadia pipeline system. The duration of this agreement is 15 years. This agreement was partially assigned in January 2017 by Ecopetrol to Cenit due to matters related to the management of plants and pipeline assets. In July 2018 Oleoducto Bicentenario and Cenit signed a settlement agreement to recognize costs related to this contract. The scope of the contract assigned by Ecopetrol to Cenit was terminated by the mutual agreement of the parties (Bicentenario and Cenit) in March 2020. In January 2021 the contract with Ecopetrol was terminated by mutual agreement of the parties and the new one was assigned to a third party. Pursuant to the terms of those agreements, Bicentenario paid Ecopetrol S.A. COP\$ 0.54 billion, plus applicable taxes, in 2021.

In November 2017, the maintenance obligations of the transportation system (from the first agreement mentioned in the preceding paragraph) were partially assigned to a third party. During December 2017, the agreement with Ecopetrol S.A. was modified to exclude from its scope the Araguaney and Banadia Stations' maintenance. In November 2018, the pipeline maintenance obligations were extended until April 2019. In April 2019, the pipeline maintenance obligations were extended until July 2019. In July 2019, the pipeline maintenance obligations were extended until October 2019. In October 2019, the pipeline maintenance scope was substituted by technical supervision and in July 2020, the technical supervision scope was terminated by mutual agreement of the parties. However, the operational scope of the contract is still valid. Pursuant to the terms of this agreement, in 2021 Bicentenario paid Ecopetrol S.A. COP\$ 0.83 billion, plus applicable taxes.

Ecodiesel

Ecopetrol S.A. entered into a supply agreement for the Barrancabermeja refinery, with Ecodiesel Colombia S.A. (Ecodiesel), a company in which Ecopetrol S.A. has a 50% equity interest. The current agreement began on February 1, 2021 ("renewed agreement") and expires on January 31, 2026. Pursuant to the terms of the renewed agreement, Ecodiesel must deliver to Ecopetrol S.A. and Ecopetrol S.A. must in turn purchase a minimum of 50,880 barrels of Ecodiesel's biodiesel production each month. Payments vary depending on the purchased volumes and the prices of biodiesel. In 2021, Ecopetrol S.A. paid a total of COP\$415 billion under the current agreement. Prior to this agreement, Ecopetrol S.A. and Ecodiesel were parties to a similar agreement that terminated on January 31, 2021, payments in 2021 by Ecopetrol S.A. under such prior agreement amounted to COP\$ 28.3 billion.

Additionally, Ecopetrol S.A., as Reficar's legal agent, signed another supply agreement with Ecodiesel on October 1, 2020, that is valid until September 30, 2023. Pursuant to the terms of this agreement, Ecodiesel must deliver to Reficar, and Reficar must in turn purchase a minimum of 10,400 barrels of Ecodiesel's biodiesel production each month. In 2021, Reficar paid a total of COP\$ 105.4 billion to Ecodiesel under this agreement.

In 2021, Ecopetrol S.A. bought COP\$ 443.1 billion worth of biodiesel from Ecodiesel for its own consumption and COP\$ 105.4 billion worth of biodiesel for Reficar's consumption.

[Table of Contents](#)

Savia Peru S.A.

On February 19, 2016, Ecopetrol S.A., as lender and shareholder of 50%, and Savia Perú S.A., as borrower, entered into a five-year loan agreement for an aggregate principal amount not to exceed US\$ 70 million. The proceeds of the facility were used to (i) repay short term loans and (ii) pay shortfalls related to final judgments (in case they materialize). The loan agreement accrues interest at an annual rate of 4.99%, which can be adjusted on an annual basis, with semi-annual interest payments and principal payments beginning on the 21st month following the disbursement date. Total disbursement was US\$ 57 million through the disbursement period ended on December 31, 2017. On December 11, 2019, Ecopetrol S.A. and Savia Perú agreed on an amendment to the terms of the loan agreement, in order to revise the payment schedule of the loan, without changing the original maturity, nor the interest rate. As of December 2020, the outstanding balance of the obligation with Ecopetrol S.A. is US\$ 28.3 million under the loan agreement. Korea National Oil Corporation (KNOC), as shareholder of the other 50% of Savia Perú S.A., signed a facility under the same terms and conditions as described above.

On January 19, 2021, Ecopetrol S.A. signed a Share Purchase Agreement with De Jong Capital LLC, through one of its subsidiaries as buyer, pursuant to which Ecopetrol S.A. sold its 50% ownership interest in OIG. Korea National Oil Corporation (KNOC) also sold its participation on OIG (the remaining 50%) to De Jong Capital LLC, under the same terms and conditions as Ecopetrol S.A.

On the same date, Ecopetrol S.A. and Savia Perú agreed on an amendment to the terms of the loan agreement described above, in order to revise the payment schedule of the loan and its maturity, with the interest rate remaining unchanged.

After the occurrence of an event of default due to failure to make a principal repayment by Savia Perú S.A. on September 2021, a restructuring process began in coordination with KNOC which sought to maximize the possibility of recovering the outstanding loan. The process concluded in February 2022 with the execution of a new set of documentation that incorporates: (i) an increase in the interest rate to 6.5%, (ii) the creation of a pledge over 100% of the shares of Procesadora de Gas Pariñas S.A.C. (a subsidiary of OIG), (iii) the creation of a trust structure holding the collection rights of Savia Perú S.A. derived from its sales to PetroPeru with Ecopetrol and KNOC as beneficiaries, (iv) monthly interest and principal payments, (v) mandatory prepayments under certain specific circumstances, and (vi) the obligation by Savia Perú S.A. to apply commercially reasonable efforts to prepay all the loans with any excess cash. The final maturity of the loan remains unchanged and is December 2023.

As of the date of this annual report, Savia Peru owed US\$ 19.1 million to Ecopetrol S.A. under this loan agreement.

ISA Acquisition

On August 11, 2021, Ecopetrol S.A. signed the Inter-Administrative Share Purchase Agreement with the Colombian government, represented by the MHCP, pursuant to which Ecopetrol S.A. agreed to acquire 51.4% of the outstanding shares of ISA from the MHCP for a purchase price of COP\$ 14,236,814,025,000, or US\$ 3,672,992,823.94 (the "Acquisition Price") based on the COP/US\$ market exchange rate of COP\$ 3,876.08 to US\$1.00 in effect on August 20, 2021. The acquisition was consummated on August 20, 2021. Ecopetrol S.A. financed the Acquisition through a loan agreement for an amount of up to US\$ 4.0 billion with Banco Santander, S.A., Citibank, N.A., JPMorgan Chase Bank, N.A. and The Bank of Nova Scotia (the "Acquisition Loan"), from which US\$ 3,672,000,000 was disbursed in connection with the closing of the Acquisition. On November 2, 2021, Ecopetrol S.A. prepaid US\$ 2.0 billion of the outstanding US\$ 3,672,000,000 principal amount under the Acquisition Loan using the net proceeds of the offering of the 4.625% Notes due 2031 and the 5.875% Bonds due 2051 of approximately US\$1,995,500,000 plus US\$ 4,500,000 of cash on hand. See section Financial Review—Financial Indebtedness and Other Contractual Obligations.

Although the Colombian government, through the MHCP, was the majority shareholder of ISA, as well as our largest shareholder, the Acquisition was structured and negotiated on an arm's length basis. Ecopetrol S.A. and the Colombian government each engaged their own financial advisors and legal counsels for purposes of consummating the Acquisition. In addition, for purposes of determining ISA's valuation, Ecopetrol S.A. engaged two experienced investment banking firms and a separate independent advisor to deliver a fairness opinion related to ISA's valuation and Ecopetrol S.A.'s final purchase price proposal. Moreover, our Board of Directors, which is composed by a majority of independent members (8 of 9 members are independent), retained full oversight and autonomy to approve the Acquisition, with the non-independent member abstaining from determinations relating to the Acquisition. In line with the aforementioned, on March 25, 2021, our Board of Directors approved the establishment of a temporary special committee to help it evaluate the valuation of ISA, the price range and/or the price of the Acquisition. The committee was comprised of the following independent members of our Board of Directors: Carlos Gustavo Cano, Sergio Restrepo, Esteban Piedrahita and Santiago Perdomo,

[Table of Contents](#)

who chaired the committee. The Acquisition Price for our 51.4% acquired interest in ISA was unanimously approved on July 30, 2021, by our Board of Directors.

Transactions with Other State-Controlled Entities

In the ordinary course of business, we enter into transactions with other state-owned enterprises that include but are not limited to the following:

- Selling and purchasing goods, including crude oil purchases of ANH royalties (see below);
- Selling and purchasing properties and other assets;
- Rendering and receiving services;
- Leasing assets;
- Depositing and borrowing money; and
- Using public utilities.

We have an agreement with the ANH by which we purchase all crude oil delivered to the ANH as royalties by us and by third parties. The purchase price is calculated according to a formula set forth in a contract between Ecopetrol S.A. and the ANH that reflects our crude export sales prices, a quality adjustment for API gravity and sulfur content, transportation rates from the wellhead to the export ports or internal refineries, marketing fee and diluent cost. We sell the physical product purchased from the ANH as part of our ordinary business.

For the period between November 2020 and October 2021, we purchased 27 million barrels of crude oil from the ANH corresponding to royalties paid in kind by oil producers in Colombia. The contract between the ANH and us is in force and was extended until October 31, 2022. See section Business Overview—Applicable Laws and Regulations—Regulation of Exploration and Production Activities—Business Regulation—Royalties for a description of the current royalty scheme.

The ANH is a state agency responsible for the administration and regulation of the nation's hydrocarbon resources and therefore it is controlled by the State. The State's control of the ANH arises from the fact that it is a state agency and hence a part of the Colombian government. On the other hand, Ecopetrol S.A. is a state-owned enterprise and the Nation's control of Ecopetrol S.A. results from the fact that it is one of our shareholders and owns more than a majority of our common shares. Neither Ecopetrol S.A. nor the ANH have the ability to control each other's actions. Notwithstanding that as a matter of Colombian law neither entity can influence the other, as a matter of U.S. regulation, they are considered to be under common control.

In addition, as a producer and transporter of hydrocarbons in Colombia, we are party to the FEPC. See section Regulation Concerning Production and Prices—Fuel Price Stabilization Fund (FEPC). Pursuant to that regulatory framework, for the year ended December 31, 2021, Ecopetrol S.A. recorded COP\$6.3 trillion in accounts receivable due from FEPC, while Reficar recorded COP\$1.5 trillion in accounts receivable due from FEPC.

3.13. Insurance

As part of the risk retention and transfer strategy, the Ecopetrol Group has insurance programs that seek local and international coverage for assets, operations and personnel in the downstream, upstream and midstream segments, as summarized below.

Also, as part our insurance strategy, Ecopetrol has a wholly owned subsidiary denominated Black Gold Re Limited (BGRé), which is a Captive Reinsurance company that began operations on August 24, 2006, and is in charge of overseeing and optimizing the management of the Ecopetrol Group's Corporate insurance program. BGRé meets its objectives by adjusting the levels of transfer and retention of risk, with the goal of protecting the Ecopetrol Group's assets and operations, strengthening negotiation capabilities in the insurance market and minimizing adverse effects from market cycles.

[Table of Contents](#)

BGRE designs and implements individual strategies of coverage and deductibles according to the needs of each business segment, capturing and controlling part of the placement cost, generating benefits for the Ecopetrol Group.

In 2021 BGRe increased its level of retention from US\$ 69 million to US\$ 93 million, supported by a retention capacity study, which was carried out in the same year.

As of the date of this annual report, the policies in which retention has been successful are Physical Damage (TRDM), Sabotage & Terrorism (S&T), Cyber and Fidelity (IRF), as well as deductible differences (DID Multi) through Oil Insurance Company.

Finally, ISA also has a robust underwriting strategy that provides coverage for the main risks and complies with its risk retention and transfer guidelines. Below you will also find the detailed scope of its program.

3.13.1. Downstream, Upstream, and Midstream

We have a clear and defined corporate policy based on risk financing guidelines that summarizes the Company's risk transfer and retention alternatives and provides support and guidance for all the insurance-related issues of all our affiliated and subsidiary companies.

As a proactive strategy to deal with the hardening conditions of the worldwide reinsurance market for the last three years, in July 2020, Ecopetrol S.A. became a member of the OIL Pool. OIL is an energy industry mutual insurance company based in Hamilton, Bermuda, established since 1972. This organization operates based on the concept of mutualization, in which several companies threatened by similar risks and with comparable exposure profiles decide to constitute a common fund, based on the individual contribution of each one, depending on the size of their operation and the estimated losses they may suffer as a result of the materialization of such risks. OIL insures assets worldwide for a total value over US\$3 trillion. Its credit rating is A (S&P) and A2 (Moody's). Currently, 65 companies in the world are members of OIL.

Under the model described above, the corporate insurance program has been consolidated in two main categories:

- (i) Category A: Coverage through the OIL pool and reinsurance market that includes the risks of physical damage, control of wells and leakage, pollution or contamination (which for the purposes of this annual report, are included in the limit of the third-party liability coverage).
- (ii) Category B: Coverage only through the traditional insurance and reinsurance market that includes third party liability, directors and officers, cargo, crime, charterers' liability, and cyber-attack insurance.

These structures provide coverage for our consolidated downstream, upstream, and midstream operations in excess of our local insurance programs (when applicable).

In the tables below we set forth our insurance program for our downstream, upstream and midstream operations and the companies covered, along with limits and coverage details.

Table 51 – Category A: Coverages through the Oil Pool and Reinsurance and Insurance Market for the Downstream Segment

US\$Millions Policies	Limit (eel / agg) ⁽¹⁾		Deductible		Ecopetrol Downstream	Reficar	Esentia
	Onshore	Offshore	Onshore	Offshore			
Property all risk	2,700	N/A	5.0	N/A	X	X	X
Sabotage and terrorism	600	N/A	0.5	N/A	X	X	X

- (1) Eel: each and every loss. Agg: Aggregate.
Note: Due to its liquidation, Bioenergy was not included in the renewal of our corporate insurance program for 2021.

[Table of Contents](#)

Table 52 – Category A: Coverages through the Oil Pool and Reinsurance and Insurance market for the Upstream segment

US\$Millions Policies	Limit (eel / agg) ⁽¹⁾		Deductible		Ecopetrol Upstream	Equión	Hocol	Santiago Oil	ECP America	Permian	ECP Costa Afuera
	Onshore	Offshore	Onshore	Offshore							
Property all risk ⁽²⁾	400	N/A	1.0	N/A	X	X	X	X	X	X	X
Sabotage and terrorism	600	N/A	0.5	N/A	X	X	X	X	N/A	X	N/A
Control of wells	400	400.0	1.0	5 / 6	X	X	X	N/A	X	X	N/A

(1) Eel: each and every loss. Agg: Aggregate.

(2) US\$ 250 million Property All Risk but US\$400 million Maximum Loss limit and in the aggregate in respect of earthquakes.

Table 53 – Category B: Transversal Coverages through the Traditional Insurance and Reinsurance Market for the Downstream, Upstream and Midstream Segments

US\$Millions Policies	Limit (eel / agg) ⁽¹⁾	Deductible	Ecopetrol	Reficar	Esentia	Esentia MB	Equión	Hocol	Santiago Oil	ECP America	Permian	Brazil	ECP Costa Afuera	Cenit	Ocensa	ODL	OBC	ODC	Invercosa
Third party liability	500	10.0	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	N/A
Crime	40	0.5	X	X	X	X	X	X	X	X	X	X	X	N/A	N/A	N/A	N/A	N/A	X
Directors & Officers	74.5	Various	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Cargo	75	3% dispatch	X	X	N/A	N/A	N/A	X	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Charterers	750	0.02	X	X	N/A	N/A	N/A	X	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cyber ⁽²⁾	25 / 150	Various	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

(1) Eel: each and every loss. Agg: Aggregate.

(2) Coverage through the Oil Pool and Reinsurance and Insurance Market. Coverage under Section one (buyback for property) does not apply to midstream subsidiaries.

Our third-party liability insurance policy covers Ecopetrol S.A., our subsidiaries and affiliates in excess of local underlying policy limits for claims made against them by third parties. Our commercial general liability coverage will pay on behalf of or indemnify amounts for which an insured becomes legally obligated to pay, including damages in respect of bodily injury, property, pollution, and product liability. Coverage of bodily injury and property damage is subject to coverage territory during the policy period.

Ecopetrol S.A.'s midstream subsidiaries continue having an independent program for their oil transportation companies (including crime and directors & officers policies).

Table 54 – Midstream's Program

US\$Millions Policies	Limit (eel / agg) ⁽¹⁾		Deductible		Cenit	Ocensa	ODL	OBC	ODC
	Onshore	Offshore	Onshore	Offshore					
Property all risk ⁽²⁾	200	200	0.25	0.50	X	X	X	X	X
Sabotage and terrorism ⁽³⁾	70	30	0.08	0.15	X	X	X	X	X
Third party liability	100	100	0.10	0.50	X	X	X	X	X
Directors & Officers ⁽⁴⁾	80	80	—	—	X	X	X	X	X
Crime	50	50	0.18	0.18	X	X	X	X	X
Cyber ⁽⁵⁾	15	15	0.25	0.50	X	X	X	X	X
Environmental Liability ⁽⁶⁾	20	20	1.00	1.00	X	X	X	X	X

(1) Eel: each and every loss. Agg: Aggregate.

(2) US\$ 200 million each company and an aggregated excess shared limit of US\$ 750 million (aggregate for the policy period 12 months).

(3) Does not include Caño Limón – Coveñas (CLC) and Oleoducto Transandino (OTA) systems owned by Cenit.

(4) Aggregate limit of US\$ 80 million worldwide coverage. Deductible only for coverage No.2 in the USA.

(5) New coverage under Property All Risk policy, buyback of cyber exclusion. Limit Aggregate for the Midstream.

(6) New coverage for environmental liability for the pumping stations. Limit Aggregate for the Midstream.

The corporate insurance programs detailed above are subject to particular conditions, limits, sub-limits, deductibles, guarantees and exclusions applying for each line of insurance and each coverage. For purposes of this annual report, only the main limits and deductibles were mentioned in each group.

[Table of Contents](#)

Regarding the offshore operations in the U.S. Gulf Coast, Ecopetrol America is party to Operating Agreements, or OAs, that include customary conditions, and which contain similar terms and provisions to those in the Model Form of Offshore Deepwater Operating Agreement of the American Association of Professional Landmen. In general, pursuant to these OAs, the obligations, duties, and liabilities of the contract parties are several, and not joint or collective, for all operations covered by the OAs.

Regarding the onshore operations in the U.S., Ecopetrol Permian has been included since its beginning in the Control of Wells, D&O, and cyber and crime policies. In 2020, we obtained a stand-alone policy for the third-party liability coverage. Ecopetrol S.A. has a contract with an insurance broker for local policies related to domestic operations. The local policies relate to transit, accidents, mandatory policies, liability mandatory policies, and personal accidents policies, among others.

3.13.2. *Electric Power Transmission and Toll Roads Concessions*

ISA and its subsidiaries have a robust insurance program, which sets basic guidelines for its risk retention and transfer policy. Consistent with its insurance guidelines, ISA transfers risk to the traditional market under regional and local insurance programs. We are currently assessing the potential for efficiencies to optimize ISA's risk retention and transfer strategy.

In order to strengthen its insurance program, in 2014, ISA registered Linear Systems Re as the captive insurance company for the group. As of the date of this annual report, Linear Systems Re has US\$ 1 million as authorized capitalization and participated in the placement of Property damage, Sabotage & Terrorism and Construction All Risk Policies (AR/EAR) allowing direct access to the commercial reinsurance markets.

Likewise, along with the corporate risk team and its brokers, on an annual basis, ISA examines the need to conduct various analyses, such as Probable Maximum Loss studies, Estimated Maximum Losses, to support and/or define coverages, limits and deductibles among others.

The insurance program responds to high placement standards, which include, among many others: (i) hiring policies with reinsurers with a minimum rating standard of A- or higher, and (ii) contracting with insurance companies and brokers that are present across all the countries in which ISA operates.

According to the above, the main policies of the corporate insurance program correspond to the following:

Table 55 – ISA's Program

US\$Millions	Limit (eel / agg) ⁽¹⁾	Deductible	ISA & Colombia	Perú	Chile	Bolivia	Brasil	Argentina
Policies								
Property all risk ⁽²⁾	80	Various	X	70	X	10	25	N/A
Sabotage and terrorism ⁽²⁾	80	Various	X	70	X	10	25	N/A
Equipment Electric ⁽³⁾	110	10 %	X	22	8.5	N/A	13	1.7
Construction All Risk	250	10 %	X	X	X	X	X	N/A
Directors & Officers	50	N/A	X	X	X	N/A	11	N/A
Cyber ⁽³⁾	52	10 %	X	X	X	X	30	5
Crime	20	0.20	X	X	X	1	N/A	1

(1) Eel: each and every loss. Agg: Aggregate.

(2) The deductible of 2% loss and a minimum that depends on the sum insured for machinery and equipment in each country.

(3) Deductible applies 10% each and every loss of the loss minimum US\$ 250,000

Note: Different coverages and conditions may apply in each country for each subsidiary

The policies detailed above are subject to particular conditions, limits, sub-limits, deductibles, guarantees and exclusions applying for each line of insurance and each coverage. For purposes of this annual report, only the main limits and deductibles were mentioned in each group.

[Table of Contents](#)

3.14. Human Resources/Labor Relations

3.14.1. Employees

As of December 31, 2021, the Ecopetrol Group had 18,378 employees, an increase of 31.30% compared to 2020, primarily due to the acquisition of ISA.

The table below presents the breakdown of our employees according to the business segments where they work, and the personnel of our subsidiaries for the years ended December 31, 2021, 2020 and 2019.

Table 56 – Ecopetrol Group's Employees

	For the year ended December 31,		
	2021	2020	2019
	(Number of employees)		
Ecopetrol S.A.			
Exploration and Production			
Exploration	215	208	227
Production	2,335	2,271	2,324
Others	769	712	501
Total Exploration and Production	3,319	3,191	3,052
Downstream			
Refining	2,497	2,526	2,661
Marketing	158	145	145
Others	127	38	37
Total Downstream	2,782	2,709	2,843
Transport	—	802	860
Others	818	820	796
Electric Power Transmission and Toll Roads Concessions	—	—	—
Total Operations	6,919	7,522	7,551
Corporate	2,403	2,248	2,536
Total Ecopetrol S.A.	9,322	9,770	10,087
Ecopetrol America LLC.	38	47	66
Ecopetrol Permian LLC.	43	16	—
Ecopetrol USA	34	29	—
Bioenergy S.A.S.	—	—	478
Bioenergy Zona Franca S.A.S.	—	—	287
Hocol S.A.	349	346	249
Equion Energía Limited	24	38	242
Oleoducto Central S.A.	279	283	288
Oleoducto de Colombia S.A.	24	15	7
Oleoducto de los Llanos S.A.	78	77	79
Oleoducto Bicentenario de Colombia S.A.S.	—	—	—
Ecopetrol del Perú S.A.	—	—	—
Ecopetrol Costa Afuera de Colombia S.A.S.	—	—	—
Refinería de Cartagena S.A.S.	50	98	143
Ecopetrol Óleo e Gás do Brasil Ltda.	36	35	31
Esenttia S.A.	426	417	412
Esenttia MB	42	41	46
Cenit Transporte y Logística de Hidrocarburos S.A.S.	1,079	511	366
Invercolsa	2,221	2,247	2,371
Ecopetrol Energía S.A. E.S.P	7	7	5
Interconexión Eléctrica S.A. E.S.P	4,326	—	—
TOTAL	18,378	13,977	15,157

[Table of Contents](#)

As of December 31, 2021, the subsidiaries Kalixpan Servicios Técnicos, S. de R.L. de C.V., Topili Servicios Administrativos S. de R.L. de C.V., Ecopetrol Capital AG and Black Gold RE did not have direct employees.

Loans and investment on training and development for our employees

To improve the quality of life of our employees, Ecopetrol S.A. extends various types of loans to its employees, including housing loans and general-purpose loans. The principal amount of the loan depends on the applicant's tenure. Ecopetrol S.A. does not guarantee any loans made by third parties. In 2021, Ecopetrol S.A. has extended 1,012 housing loans for a total of COP\$ 265.6 billion and 1,806 general-purpose loans for a total of COP\$ 20.2 billion. In 2021, Ecopetrol S.A. also provided on-site and external training and development, which totaled to COP\$ 23.02 billion, and it extended a total of COP\$ 192.1 billion in subsidies for education.

We have not provided loans (including housing loans), extended, or maintained credit lines, arranged for the extension of credit by third parties, materially modified or renewed an extension of credit lines, in the form of a personal loan to or for any of our executive officers since our ADSs were registered under the Exchange Act.

We do not offer loans to any of our executive officers.

Labor Regulation

In accordance with Article 123 of the Colombian Constitution and Article 7th of the Law 1118 of 2006, our employees are considered "public servants," even though they are subject to the common labor law. As such, their behavior is subject to the rules of those who handle public interests and goods and could be held liable for their illegal actions and omissions pursuant to the following regimes: (i) disciplinary (Law 734 of 2002), (ii) criminal or (iii) civil.

Declaration of Culture

In 2020, we updated our Declaration of Culture, which contains the six principles that guide our operation: (i) life first, (ii) collaboration, (iii) ethics & transparency, (iv) innovation, (v) excellence and (vi) leadership. The process had a participation of more than 10,000 workers of the Ecopetrol Group and more than 1,200 meetings were held. Our Board of Directors and steering committee were also involved in the process.

In 2021, 10,654 (or 92%) of our employees participated in the "Organizational Culture Index" survey of 2021. The survey includes questions relating to three main topics: (i) "culture", focusing to which extent employees are behaving consistently with the Declaration of Culture, (ii) "leadership", focusing on the way the company's leaders are fostering the behaviors expected from employees, (iii) "work environment", focusing on the extent to which employees are satisfied with and feel valued by the company. The report prepared based on the survey results highlighted the following issues:

- The Ecopetrol Group has maintained the "Cultural Adoption Level" of the Declaration of Culture, where 8 of each 10 employees consider the Declaration of Culture has been internalized.
- The work environment showed high levels of commitment, trust, and strategic management.
- Employees reported a significant increase in being comfortable in expressing themselves and receiving constructive performance feedback.

[Table of Contents](#)

3.14.2. Collective Bargaining Arrangements

Ecopetrol S.A.

A collective bargaining agreement with some labor unions governs labor relations between Ecopetrol S.A. and its unionized workers, which amounted to 4,680 employees as of December 31, 2021. The agreement also governs our labor relations with other 2,777 non-unionized employees who, according to current labor legislation, are beneficiaries of the collective bargaining agreement. We currently have 18 industry-wide labor unions and nine company labor unions.

In 2021, 49% of Ecopetrol S.A.'s employees were affiliated with one of the 18 trade union organizations. As of the same date, and in accordance with the governing legal provisions, the current Collective Bargaining Agreement (described below) applied to 78% of Ecopetrol S.A.'s total workers, out of which 29% were workers who were not affiliated with any Trade Union Organization but were beneficiaries of the Collective Bargaining Agreement by extension under Article 471 numeral 1 of the Substantive Labor Code.

Ecopetrol S.A.'s relations with unions are based on a permanent dialogue and communication sessions where different matters are discussed in order to solve and prevent any labor conflict.

Our current collective bargaining agreement has been in effect since July 1, 2018, and has a term of four and half years, expiring on December 31, 2022. The collective bargaining agreement included an increase in salaries at an annual rate of the local consumer price index (CPI) +1.21% for the remainder of 2018 and CPI +1.70% every year for the remainder of its duration. The agreement covers health, food, loans, and transportation, among other benefits for workers, within reasonable criteria. It also includes union guarantees and addresses regulatory issues.

During 2021, the agreements contained in the Collective Labor Convention 2018 – 2022 were performed, as were other agreements signed in the framework of the collective bargaining agreement process. In addition, a number of areas of dialogue with trade unions were advanced and different issues pertaining to their interest were addressed. A total of 357 meetings were scheduled.

The Company manages compliance with trade unions rights with respect to the discount of trade union dues, permits and trade union guarantees. It also fully observes the rules governing aspects such as trade union law and other rights related to freedom of association.

Interconexión Eléctrica S.A.

There are 24 labor unions within ISA and its subsidiaries. A total of 1,237 members are covered by 22 collective bargaining agreements that also benefit, per extension, 1,246 additional union members. Another two collective bargaining agreements cover 306 employees. The collective bargaining agreements establish certain terms and conditions of employment and are subscribed to on an individual, voluntary basis by employees. Collective bargaining agreements are not negotiated by unions or other representative bodies on behalf of our employees, but rather are developed through informal discussions between management and employees.

4. Financial Review

Our consolidated financial statements for the years ended December 31, 2021, 2020 and 2019 were prepared in accordance with IFRS as issued by the IASB.

IFRS differs in certain significant aspects from the current Colombian IFRS (which is the accounting standard we use for local statutory reporting purposes). As a result, our financial information presented under IFRS is not directly comparable to certain of our financial information presented under Colombian IFRS. A description of the differences between Colombian IFRS and IFRS is presented under Financial Review - Summary of Differences between Internal Reporting (Colombian IFRS and IFRS) below.

Our consolidated financial statements were consolidated line by line and all transactions and - balances between subsidiaries have been eliminated. These financial statements include the financial results of all subsidiaries companies controlled, directly or indirectly, by Ecopetrol S.A. See Exhibit 1—Consolidated companies, associates and joint ventures, to our consolidated financial statements included in this annual report.

[Table of Contents](#)

4.1. *Factors Affecting Our Operating Results*

Our operating results were affected mainly by: (i) international prices of crude oil, international prices for refined products and local prices for natural gas, (ii) volumes, product mix, and our operational performance, (iii) specific macroeconomics factors, such as inflation, particularly in Colombia, and the COP\$/US\$ exchange rate, and (iv) the public order situation. Crude oil prices and volumes are particularly important to the results of our exploration and production segments. This is because as export volumes or export prices of crude oil and products decrease or increase, our revenues also do. Results from our refining activities are also affected by the price of crude oil used as raw material, changes in international prices for refined products, change in environmental regulations, drastic changes in demand due to market factors, conversion ratios and utilization rates and refining capacity, all of which affect our refining margins. Terrorist attacks by guerillas against our pipelines and other facilities or social unrest can lead to loss of revenues by restricting the availability of transport systems for exports or sales of crude oil and products and/or production activities, in addition to the direct costs of repairing and cleaning.

The inflation rate and the GDP corresponding to countries such as Brazil, Colombia, and Chile, where ISA provides energy transmission services, have a direct effect on the financial results of the new Electric Power Transmission and Toll Roads Concessions segment. Results from our electric power transmission and toll roads activities are also affected by availability and competitiveness of alternative energy sources in the markets served by us, expiration or termination of significant contracts or concessions, the operational availability of the electricity transmission systems of other electricity transmission companies that are interconnected with our electricity transmission systems, interest rate fluctuations, changes in regulation and economic policies of the countries where we operate and changes in availability or demand of electricity.

Finally, changes in the value of foreign currencies, particularly the U.S. dollar against the Colombian Peso, can also have a significant effect on our financial statements. See section [Trend Analysis and Sensitivity Analysis—Trend Analysis](#) for further information.

Sales volumes and prices

Our results from the exploration and production segment depend mainly on our sales volumes and average local and international prices for crude oil and natural gas. Additionally, sales volumes also reflect the purchase of crude oil that we make from third parties and the ANH.

We sell crude oil and natural gas in the local and international markets. We also process crude oil at the Barrancabermeja and Cartagena refineries and sell refined and other petrochemical products in the local and international markets.

Local sales and prices

We have a number of crude oil short-term commercial agreements with local customers, and natural gas short and long-term supply contracts with gas-fired power plants and local natural gas distribution companies. Local sale prices are determined in accordance with existing regulations, contractual arrangements, and the spot market, in turn, linked to international benchmarks. Local sales represented 48.6% of our total revenues, on average, for the past three years.

International sales and prices

Our international sales represented 51.4% of our total revenues, on average, for the past three years.

International sale prices are determined in accordance with contractual arrangements and the spot market, in turn, linked to international benchmarks primarily the ICE Brent benchmark.

A market diversification strategy has allowed us to capture markets where we have been able to obtain higher prices for our crudes and refined products. We sell our crudes and refined products in various regions, such as the U.S., Central America and the Caribbean, Asia and Europe. In our negotiations with potential customers, we seek to use the most liquid benchmark reference prices in each region.

[Table of Contents](#)

Exploration costs

We account for exploratory drilling costs using the successful efforts method, whereby all costs associated with the exploration and drilling of productive wells are initially capitalized. Costs incurred in exploring and drilling dry or unsuccessful wells are expensed in the period in which the well is determined to be a dry or unsuccessful well and are accounted for under "Exploration and Project expenses." Consequently, an increase in the number of exploratory wells we declare as dry or unsuccessful will negatively affect our results and may cause volatility in our operating expenses. See Note 4.7 to our consolidated financial statements for a summary of our accounting policy for exploration costs.

Royalties

Each of our production contracts has its own royalty arrangement in accordance with applicable law. Law 141 of 1994 established a royalty fixed rate equivalent to 20% of total production. In 1999, a modification to the royalty system established a sliding scale for royalty percentage linked to the production level of crude oil and natural gas to fields discovered after July 29, 1999, depending on whether the production is crude oil or natural gas, and on the quality of the crude oil produced. Since 2002, as a result of the enactment of Law 756 of 2002, the royalty percentage has ranged from 8% for fields producing up to five thousand bpd to 25% for fields producing more than 600 thousand bpd. Producing fields pay royalties in accordance with the applicable royalty rate at the time of the discovery. Also, Law 756 of 2002 establishes that in the fields of the association contracts that terminate or revert an additional royalty rate of 12% of the basic production applies.

Since January 2014, the ANH has collected natural gas production royalties from producers settled in cash based on a formula, regardless of whether a producer has sold the gas. As a result, we no longer commercialize this gas on behalf of the ANH. In addition, since royalties are now payable to the ANH in cash, all the gas we produce is considered part of our reserves and production, without any deduction for royalties. The cost of natural gas royalties totaled COP\$ 940,206 million in 2021.

On September 30, 2020, Law 2056 of 2020 was issued, ("Whereby which the organization and operation of the general system of royalties is regulated"), under which the definition of incremental production was extended to all production from fields in which additional investments have been made to increase the recovery factor. According to above, the total production of these fields of the association contracts benefits from the variable royalty established in article 16 of Law 756 of 2002, and therefore, the additional 12% royalty referred to in article 39 of Law 756 of 2002 does not apply to these fields.

On September 23, 2021, the Ministry of the Interior issued Decree 1142 ("Whereby Decree 1821 of 2020, Sole Regulatory Decree of the General Royalties System, is incorporated and modified"), Article 3.1.1.2.1 of Decree 1142 established that the total volume of hydrocarbons produced that is in excess to that stipulated in the basic production curve of incremental production projects or incremental production contracts will also enjoy the benefits of Article 16 of Law 756 of 2002.

Purchases of hydrocarbons

We purchase all crude oil delivered to the ANH as royalties by us and by third parties. The purchase price is calculated according to a formula set forth in a contract between Ecopetrol S.A. and the ANH that reflects our export sales prices, a quality adjustment for API gravity and sulfur content, a marketing fee, and transportation rates from the wellhead to ports and refineries. We sell the physical product purchased from the ANH as part of our ordinary business. The contract between the ANH and Ecopetrol S.A. was extended until October 31, 2022.

We import crude oil for Cartagena and Barranca refineries' feedstock when such imports result in the better operational or economic performance of the Ecopetrol Group.

[Table of Contents](#)

Electricity transmission rates

Electricity transmission is a regulated activity in all jurisdictions where our subsidiary ISA operates. We must maintain certain quality, safety, and maintenance standards with respect to our businesses. Periodic adjustment of transmission rates or reviews of the methodologies established by applicable regulations for the calculation of such rates may result in a decrease of the revenues of the new Electric Power Transmission and Toll Roads Concessions segment and may have a material adverse effect on our consolidated results of operations and financial condition. Regulatory agencies could penalize ISA if we fail to comply with the terms of the rules and regulations applicable to our ISA's businesses.

Impact of the ISA Acquisition

On August 20, 2021, Ecopetrol acquired 569,472,561 shares of ISA, equivalent to 51.4% of its outstanding shares, for which Ecopetrol paid the agreed price of COP\$ 14,236,814 million or COP 25,000 per share to the Ministry of Finance and Public Credit. The payment was made in US Dollars, for an equivalent amount of US\$ 3,672,992,824, financed through the Acquisition Loan and cash on hand.

Once the transaction closed, as of August 31, 2021, ISA and its subsidiaries began to be fully integrated into Ecopetrol's consolidated financial statements as a new reporting segment, the Electric Power Transmission and Toll Roads Concessions segment. The primary effects on our consolidated financial statements as of and for the year ended December 31, 2021 are presented below:

- (i) Consolidated statement of profit and loss:
 - a. Contribution to the net income attributable to owners of Ecopetrol over ISA's results of COP\$ 307,926 million, which represents 1.7% of our consolidated net income for 2021. This corresponds to the line-by-line consolidation of ISA's consolidated income statement, deducting the non-controlling interest in the results of subsidiaries in which ISA does not have a 100% interest and Ecopetrol's non-controlling interest in ISA of 48.6%.
 - b. In addition to the results directly generated from ISA's operation, this segment recognized: (i) a gain from the exchange rate difference on the debt used to finance the acquisition of ISA of COP\$ 437,095 million, (ii) the financial interests associated with the ISA acquisition debt of COP\$ 123,079 million, (iii) the consultancy fees and costs incurred by Ecopetrol for the acquisition of ISA for COP\$ 69,018 million, and (iv) the income tax associated with the items previously mentioned of COP\$ 70,532 million.
- (ii) Statement of Financial Position:
 - a. Assets: Ecopetrol's consolidated assets increased by COP\$ 75,853,319 million, corresponding to: (i) the consolidation of each of the components of ISA's assets, equivalent to COP\$ 61,698,188 million, which represents 25.5% of Ecopetrol's total consolidated assets as of December 31, 2021, and (ii) the difference between the fair value and the book value of ISA's assets for COP\$ 14,155,131 million, according to IFRS standards.
 - b. Liabilities: Ecopetrol's consolidated liabilities increased by COP \$56,775,748 million, corresponding to: (i) the incorporation of ISA's liabilities, equivalent to COP\$ 39,565,192 million, which represent 26.1% of the Ecopetrol's Group's total consolidated liabilities, (ii) the difference between the fair value and the book value of ISA's liabilities for COP\$ 3,021,119 million according to IFRS standards, and (iii) the US\$ 3,672 million loan taken by Ecopetrol to finance the ISA acquisition.
 - c. Equity: ISA's non-controlling interest in subsidiaries and Ecopetrol's non-controlling interest in ISA were recognized at their fair value of COP\$ 18,973,080 million in accordance with IFRS standards. Similarly, conversion adjustments and other concepts in Other Comprehensive Income were also incorporated.

[Table of Contents](#)

4.2. The COVID-19 Pandemic

Effect on our 2021 Results

Throughout the COVID-19 pandemic, the Ecopetrol Group has taken the measures to ensure the sustainability of the business, prioritizing the opportunities to cash generation with better equilibrium prices, maintaining growth dynamics with a focus on executing strategic asset development plans, and preserving the value of assets through investments that provide reliability, integrity, and continuity to the current operation in refineries, transportation systems, and production fields.

Throughout 2021, we executed our vaccination program for our employees through the mechanism called “*Empresarios por la Vacunación*” led by the National Association of Business of Colombia (ANDI, for its Spanish acronym), in accordance with the regulations issued by the National Government. In this way, the business sector contributed to speeding up vaccination against COVID-19 and advancing a safer way of working. Ecopetrol also participated in a program for “country support”, focused on economic reactivation in sustainable development projects. This plan contemplates the execution of resources for social investment against COVID-19 in the areas of operations and communities from areas of influence in Colombia.

The Ecopetrol Group will continue monitoring the evolution of the COVID-19 pandemic, reviewing the indicators of impairment of non-current assets and investments in companies, the behavior of accounts receivable, fair value measurements of financial assets, changes in operating income, reserve levels, among others.

In connection with the oil and gas industry, the prices of crude oil and products during the year 2021 showed a recovery due to several factors, including (i) the efforts of the OPEC to keep the market balanced, (ii) the progress of vaccination campaigns in several countries around the world, (iii) the strengthening of the demand for fuels, driven by the economic recovery, once the peaks of COVID-19 in Colombia have been overcome and (iv) the elimination of restrictions on international routes.

In terms of the impact on ISA, its policies have allowed the company to address impacts of the COVID-19 pandemic without any significant negative effect on service revenues. ISA has identified and analyzed, for each business unit, impacts on operations and maintenance, execution of projects and procurement as well as the possible impacts on expected growth and business models.

The Ecopetrol Group is subject to mandatory protocols to be able to return to day-to-day activities and mitigate and adequately manage the COVID-19 pandemic. On June 2, 2021, the Ministry of Health and Social Protection issued Resolution No. 777, adopting a general biosecurity protocol to mitigate, control and perform the adequate management of COVID-19.

Additionally, the Ecopetrol Group has also worked to define and implement other preventive and protective actions, such as validation protocols with epidemiologists, international benchmarking to share experiences with other companies that are in a similar situation and human factor evaluations with psychologists.

[Table of Contents](#)

Effect on our 2020 Results

The effects of the COVID-19 pandemic on the Ecopetrol Group's business and the measures undertaken by us to ensure the sustainability of the business have been highlighted in the section Effect of the COVID-19 Pandemic on our 2020 Results of our annual report on Form 20-F for the year ended December 31, 2020 filed with the SEC on April 9, 2021.

4.3. Effect of Taxes, Exchange Rate Variation, Inflation and the Price of Oil on our Results

4.3.1. Taxes

In December 2016, the Colombian Congress adopted Law 1819, which introduced changes to the Colombian tax system, applicable beginning in 2017.

The 2016 Tax Reform included two tax benefits that are expected to improve the operations of the oil and gas industry:

Certificado de Reembolso Tributario ("CERT") incentive:

For exploration activities, the CERT incentive was approved, consisting of the reimbursement of part of the investment made in the exploration phase.

The CERT is granted when the income tax return is filed.

The CERT can only be redeemed to pay taxes at the national level and its effective maturity date is two years after it is issued. Nevertheless, Decree 2253 of 2017 establishes that a CERT redemption can be made from year two to year five, as from the date of the granting of the incentive. The CERT can also be sold and traded in fixed income market.

For production activities, the CERT reimbursement is granted exclusively to investments that increase the recovery factor, i.e., investments that increase the reserves that are currently proved in certain wells.

On December 29, 2017, the Colombian Government issued Decree 2253, which establishes that companies who (i) qualify as operators of association agreements entered into with Ecopetrol S.A., (ii) have exploration and production of hydrocarbons agreements and (iii) are currently involved in the exploration and production of hydrocarbons, among others, can also qualify for the CERT. Additionally, the CERT will not qualify as taxable income or capital gain for the taxpayer receiving or acquiring such incentive.

On March 23, 2018, the following Resolutions were issued in order to regulate the procedures and requirements that companies must comply to claim the CERT: 0860 of Ministry of Finance and Public Credit, 108 of ANH and 40284 and 40285 of Ministry of Mines and Energy.

On December 20, 2019, the Ministry of Finance and Public Credit informed the Company that the PGN includes the resources of CERT.

Refundable VAT on oil and gas exploration:

Taxpayers in the oil and gas industry are entitled to refund VAT paid in the exploration phase for offshore projects. Taxpayers can request for this VAT as of the next fiscal year in which the investment was made. VAT that is reimbursed cannot be used as a higher cost or expense for income tax purposes.

Additionally, in December 2018, the Colombian Congress adopted Law 1943, which introduced the following key changes to the Colombian tax system, applicable beginning in 2019, including the following aspects:

The corporate income tax rates were set to be reduced gradually from 33% to 30% as follows: 33% in 2019, 32% in 2020, 31% in 2021 and 30% from 2022 onward. However, in September 2021, the Colombian Congress adopted Law 2155, which changed the corporate income tax rates to 35% from 2022 onward.

The presumptive income tax rate was reduced to 0% from fiscal year 2021 onward.

[Table of Contents](#)

Taxpayers must calculate their taxable income taking as initial base the year and result under Colombian IFRS. Accounting profit is reconciled to obtain the net income tax, which is the basis to calculate the income tax.

For fiscal year 2020 and 2021 the dividends tax applied as follows:

- (i) In accordance with Article 245 of the Colombian Tax Code, the dividends tax applicable to non-resident shareholders is as follows: (i) a 10% dividend tax for dividends paid out of profits that were accrued as of January 1, 2017 and a 7.5% dividend tax for dividends paid out of profits that accrued as of January 1, 2019 and were taxed at the corporate level; (ii) no dividend tax on dividends paid out of profits that accrued until December 31, 2016 and were taxed at the corporate level; (iii) a withholding tax at the statutory corporate income tax rate (35% as from 2022) on dividends distributed from profits not taxed at the corporate level if the dividend is paid out of profits that accrued as of January 1, 2017, plus an additional, 10% dividend tax after applying the initial corporate income withholding tax rate.
- (ii) In accordance with Article 242 of the Colombian Tax Code, for Colombian individuals: for fiscal years 2020 and 2021, dividends paid greater than 300 UVT (Spanish acronym for Unidad de Valor Tributario) were taxed at 10%.
- (iii) In accordance with Article 242-1 of the Colombian Tax Code, dividends distributed from taxed profits to local corporations for fiscal years 2021 and 2022 are taxed at 7.5%, or a 31% withholding tax for 2021 and 35% as from 2022 on dividends distributed from non-taxed profits, plus an additional 7.5% dividend tax on the balance of the dividend amount after the initial 31% for 2021 and 35% as from 2022 withholding.

Tax losses accrued as of fiscal year 2017 may be offset against ordinary net income obtained in the following 12 taxable years.

Depreciation and amortization methods and annual percentages are limited to those established in the tax rule and depend on the type of asset. For example, machinery and equipment depreciate at an annual rate of 10%, infrastructure (including pipelines) at 2.22%, vehicles at 10% and computers at 20%, among others.

Income tax for free trade zone users increased from 15% to 20% as of fiscal year 2017. The tax rate for free trade zone users with a legal stability agreement (in which the income tax rate was stabilized) remains at 15% during the term of said agreement.

The general value added tax (VAT) rate increased to 19% and a differential rate of 5% for certain goods and services is maintained. The modification of the general VAT rate is effective from January 1, 2017.

The charge on financial transactions is 0.4%, with half of the tax liability being deductible.

In accordance with Resolutions No. 007 of 2021 and 019 of 2022, issued by the tax authority, the carbon tax accrues on the carbon content of fossil fuels used for combustion. The rate will be COP\$17,660 and COP\$18,829 per ton of CO₂, for fiscal year 2021 and 2022, respectively.

For additional information see Note 10.2.4 of our consolidated financial statements.

In October 2019, the Constitutional Court declared Law 1943 of 2018 (the Financing Law) unconstitutional effective January 1, 2020. Therefore, the Financing Law continued to have full effect for the full fiscal year 2019.

In September 2021, the Colombian Congress adopted Law 2155, which changed corporate income tax rates to 35% from 2022 onward.

The creation of a "normalization tax" for 2020 to enable taxpayers to regularize certain omissions of information about their assets and/or incorrect information about their liabilities, subject to the payment of a 15% tax on the value of the amount of the omitted information.

Introduces the Colombian Holding Companies (CHC) regime.

[Table of Contents](#)

As of 2020, in accordance with Article 115 of the Colombian Tax Code, taxes are fully deductible if they are effectively paid during the fiscal year, except for: (i) income tax, equity tax and normalization tax are non-deductible; (ii) only 50% of the financial transactions tax is deductible; and (iii) only 50% of the industry and commerce tax can be taken as a discount (tax credit) to income tax.

VAT paid on the acquisition, import, creation or construction of tangible fixed assets used in income generating activities may be treated as discount (tax credit) for income tax purposes, in the same year or in future years.

The dividend tax regime was modified and, as of 2021, is as follows:

- (i) Dividends paid to non-resident shareholders (Article 245 of the Colombian Tax Code): (i) a 10% dividend tax on dividends distributed from profits taxed at the corporate level (except that dividends paid to non-resident shareholders out of profits taxed at the corporate level prior to and including December 31, 2016, are not subject to this tax); or (ii) 31% withholding tax rate on dividends distributed from profits not taxed at the corporate level (35% from 2022 onward), plus an additional 10% dividend tax after applying the initial 31% (or 35%) withholding tax rate.
- (ii) Dividends paid to Colombian companies (Article 242-1 of the Colombian Tax Code): (i) a 7.5% dividend tax on dividends distributed from taxed profits, or (ii) a 31% withholding tax on dividends distributed from non-taxed profits (35% from 2022 onward), plus an additional 7.5% dividend tax on the balance of the dividend amount after the initial 31% withholding.
- (iii) For Colombian resident individuals: dividend income in excess of 300 UVT is taxed at a rate of 10%.

On September 14, 2021, the Colombian Congress passed Law 2155 which introduced, among others, the following key changes to the Colombian tax system:

- (i) The Corporate Income Tax rate will be 35% as from 2022 onward.
- (ii) The alternative to credit 100% of the Industry and Commerce Tax ("ICA") against Corporate Income Tax as from 2022 was eliminated (Article 65). However, the current alternative to credit 50% of the ICA remains going forward.
- (iii) A "normalization tax" was re-introduced for taxpayers to declare omitted assets or reject nonexistent liabilities subject to the payment of a 17% tax. This tax applies only for 2022 and a 50% prepayment is to be remitted in 2021.
- (iv) A new definition of final (effective) beneficiary for tax purposes was created (Article 16).

Part A: Applicable Taxpayers

- Resident individuals with assets located in Colombia and abroad.
- Non-resident individuals with their assets located in Colombia (either with or without permanent establishment).
- Non-residents with non-cash assets in Colombia.
- Foreign entities that are not income taxpayers in Colombia but who possess assets located in Colombia, other than shares of Colombian companies, accounts due from Colombian entities, mining or oil rights and/or portfolio investments (i.e., investing through a foreign funds administration account (FFAA)), provided that these entities have complied with the foreign exchange regime in respect of such excluded assets.

[Table of Contents](#)

Part B: Tax Accrual Rules

The wealth tax at a rate of 1%, on January 1 of each fiscal year 2020 and 2021. The taxable base is the taxpayer's net equity on each of the accrual dates (gross equity less liabilities and certain exclusions, including a portion of the value of the dwelling house and 50% of the goods repatriated to normalization). In any case, the taxable base for fiscal year 2021 may not vary by more than 25% of the prior year's inflation. This wealth tax applied for Colombian resident individuals. For 2022, there is no wealth tax due.

Thin capitalization: A 2:1 debt-to-equity ratio determines the amount of deductible interests on loans with related parties.

Law 2010 and 2155 maintain the tax regime for profits derived from indirect transfer of Colombian assets.

As of 2020, the transfer (or disposal) of real estate whose value is higher than 29,800 UVT (approximately COP\$ 1,081,978,400) will no longer be subject to the real estate consumption (excise) tax (formerly applied at 2%). This tax was specifically repealed by the Constitutional Court and was not re-introduced by Congress in Law 2010.

As of 2021, the above remain the same, as this tax was not re-introduced by Congress in Law 2155.

A special regime (the Mega Investments Regime) was created for taxpayers who (i) generate at least 400 direct jobs and (ii) make new investments in Colombia in an amount equal to or greater than 30,000,000 UVT (COP\$ 1,089,240,000,000) by 2021, with a view for them to calculate and settle their income tax liability for the next 20 years using the following metrics and/or policies:

- (i) 27% income tax rate;
- (ii) Two-year term for the depreciation for fixed assets;
- (iii) Exclusion from the presumptive income regime;
- (iv) Exclusion from the wealth tax; and
- (v) 0.75% premium over the investment value to be paid on an annual basis.

In addition, legal taxpayers who qualify for this Mega Investment Regime are required to enter into agreements with the tax authority.

These rules do not apply to taxpayers engaged in the exploration of non-renewable natural resources.

4.3.2. Exchange Rate Variation

The functional currency of each of the companies of Ecopetrol Group is determined in relation to the main economic environment where each company operates; however, our consolidated financial results are reported in Colombian Pesos, which is the Ecopetrol Group's functional and presentation currency. A substantial part of our consolidated revenues comes from the Ecopetrol Group's companies whose functional currency is the Colombian Peso. The conversion effect from U.S. dollar to Colombian Peso is mainly due to local sales and exports of crude oil, natural gas, and refined products, whose prices are based on benchmarks quoted in U.S. dollars. Therefore, they are exposed to foreign currency exchange risk on revenues, capital expenditures and financial instruments that are denominated in a currency other than its functional currency.

Fluctuations in the U.S. dollar-Colombian Peso exchange rate have effects on our consolidated financial statements. As crude oil is priced in U.S. dollars, fluctuations in the exchange rate of the Colombian Peso against the U.S. dollar may have a significant impact on revenues, cost, monetary assets, and liabilities held in foreign currency.

[Table of Contents](#)

An appreciation of the Colombian Peso has a negative impact on our results of operations because our revenues from exports of crude oil, natural gas, and refined products are primarily expressed in U.S. dollars. Costs of imported products and contracted services expressed in U.S. dollars will also be lower when expressed in Colombian Pesos, but on balance, our operating income in Colombian Pesos tends to decline when the Colombian Peso appreciates, other factors being equal. The appreciation of the Colombian Peso against the U.S. dollar will also decrease the debt service requirements of our Companies with the Colombian Peso as their functional currency and with indebtedness in U.S. dollars, as the amount of the Colombian pesos necessary to pay principal and interest on foreign currency debt decreases with the appreciation of the Colombian Peso.

Conversely, when the Colombian Peso depreciates against the U.S. dollar, our reported revenues, costs related to imported products and services, operating income, and debt service requirements of foreign-denominated debt all tend to increase.

With the acquisition of ISA, an amount of our revenues is now generated in currencies other than the Colombian peso, and some of the operating and other expenses we incur are paid in the local currency of the countries where ISA operates. As a result, we may be exposed to foreign exchange and translation risk when local currency financial statements are translated to Colombian pesos. In addition, around 80% of ISA's debt is denominated in foreign currency. Therefore, our consolidated financial results could be affected by an increase in financial costs due to the devaluation of the currencies in the jurisdictions where ISA operates. As a result, the devaluation of the Colombian peso would lead to the recognition of currency translation losses due to the increase in the affected debt balance upon the translation of U.S. dollar-denominated debt or other currencies to Colombian pesos.

During 2021, the Colombian Peso depreciated on average 1.52% against the U.S. dollar. During 2020 and 2019, the Colombian Peso depreciated on average 12.46% and 11.02%, respectively, against the U.S. dollar. Additionally, as of December 31, 2021, 2020, and 2019, the Colombian Peso/U.S. dollar exchange rate had depreciated 15.98%, 4.74% and 0.84% respectively from the rate a year earlier.

In 2021, our consolidated debt in foreign currency increased by a total of US\$ 9,170 million, mainly due to: (i) the effect of the ISA's debt consolidation, equivalent to US\$ 5,749 million for the year ended 2021, and (ii) the Acquisition Loan, which was then partially prepaid with the proceeds from the SEC-registered bonds in an aggregate amount of US\$2,000 million issued by Ecopetrol in connection with the acquisition of ISA and cash on hand. In 2020, our consolidated debt in foreign currency increased by a total of US\$ 2,420 million as Ecopetrol S.A. entered into committed lines of credit in an aggregate principal amount of US\$ 665 million and issued a SEC-registered bond in an aggregate amount of US\$2,000 million. In 2019, our consolidated debt in foreign currency decreased by a total of US\$ 159 million mainly as a result of amortization of foreign currency capital expenditures.

As of December 31, 2021, our U.S. dollar denominated total debt was US\$ 21,898 million, recognized in our financial statements at its amortized cost, which corresponds to the present value of cash flows, discounted at the effective interest rate of each loan. Out of the total U.S. dollar denominated debt, US\$ 15,993 million are in Ecopetrol S.A.'s balance sheet, whose functional currency is the Colombian Peso. Therefore, when the Colombian Peso depreciates against the U.S. dollar, Ecopetrol S.A. is exposed to an exchange rate loss. In contrast, when the Colombian Peso appreciates against the U.S. dollar, Ecopetrol S.A. has an exchange rate gain. Some of the Ecopetrol Group's companies have the U.S. dollar as their functional currency and are not exposed to a material exchange rate risk resulting from fluctuations in the Colombian Peso against the U.S. dollar. When the financial statements of the Ecopetrol Group are consolidated, the exchange rate differential of the subsidiaries' assets and liabilities whose functional currency is the U.S. dollar is recognized directly in equity, as part of other comprehensive income.

Since 2015, Ecopetrol S.A. adopted hedge accounting, using two types of natural hedges with its U.S. dollar debt as a financial instrument: (i) a cash flow hedge for exports of crude oil, and (ii) a hedge of the net investment in foreign operations. As a result of the implementation of both hedges, 82.4% (US\$ 13,180 million) of Ecopetrol S.A.'s debt in U.S. dollars, as of December 31, 2021, was designated as a hedge. With the adoption of hedge accounting, the effect of the volatility of the foreign exchange rate on the hedged portion of the debt is recognized directly in equity, as part of other comprehensive income.

The remaining portion of Ecopetrol S.A.'s U.S. dollar-denominated debt, as well as the financial assets and liabilities denominated in foreign currency, continues to be exposed to the fluctuation in the exchange rate, which means that an appreciation of the Colombian Peso against the U.S. dollar could generate a loss for companies whose functional currency is the Colombian Peso that have a net asset position in U.S. dollars or a gain if they have a net liability position in U.S. dollars. Conversely, a depreciation of the Colombian Peso against the U.S. dollar could generate a gain for companies whose functional currency is the Colombian peso that have a net asset position in U.S. dollars or a loss if they have a net liability position in U.S. dollars.

[Table of Contents](#)

As of December 31, 2021, the Ecopetrol Group's companies have the equivalent of a net U.S. dollar liability position of US\$ 413 million after the implementation of the accounting hedges previously mentioned above, minimizing the effect of exchange rate fluctuations in their results for the year.

4.3.3. Effects of Inflation

The average annual rate of inflation in Colombia for the past ten years is 3.89%. Inflation increased by 0.19% in 2021, as compared to 2020. As measured by the general consumer price index, average annual inflation in Colombia for the years ended December 31, 2021, 2020 and 2019 was 5.62%, 1.61% and 3.80%, respectively. The increase in inflation in 2021 is mainly due to: (i) roadblocks associated with public order disruptions in the second quarter of 2021, (ii) an upward trend in international oil prices and (iii) the recovery in domestic oil and crude demand.

The economic performance in Latin American countries was positive since the effects of the COVID-19 pandemic diminished and government measures in some countries supported private consumption. COVID-19 cases and deaths fell thanks to progress in vaccination campaigns and limited exposure to the new variants. As a result, countries such as Chile, Brazil, Peru, and Ecuador continued to reopen their economies, leading to improvements in monthly economic activity indicators or labor markets, although unemployment rates remain above pre-pandemic levels.

Cost inflation in the prices of goods, raw materials, debt interest expenses denominated in local currency indexed to inflation and services for the operation of oil and gas producing assets can vary over time and between each market segment.

4.3.4. Effects of Crude Oil and Refined Product Prices

The average price of ICE Brent crude in 2021 was US\$ 70.9 per barrel as compared to US\$ 43.2 per barrel in 2020 and US\$ 64.2 per barrel in 2019. See section Strategy and Market Overview.

Our average crude oil basket price was US\$ 66.8 per barrel in 2021, as compared to US\$ 34.4 per barrel in 2020 and US\$ 58.6 per barrel in 2019. The increase in 2021 as compared to 2020 was mainly due to the increase in the average price of ICE Brent and a better negotiated oil spread supported by a proactive commercial strategy focused on diversifying clients both in specific locations, such as the Gulf of Mexico, and different markets, such as the Chinese and the European markets. There was also an increase in "delivery at place" sales volume to various locations including South Korea, India, Brunei, Sweden, and the US Gulf Coast.

In addition, our average product basket price was US\$ 79.6 in 2021, US\$ 49.2 in 2020, and US\$ 69.8 in 2019. The increase in 2021 as compared to 2020 was primarily due to the strengthening of the international reference price, our commercial efforts, as well as improved refined products indicators in line with the reactivation of demand.

In the Operating Results section below, we present the impact of the price decrease on our revenue and cost of sales. Additionally, fluctuations in the price of oil had an impact on the value of our oil and gas reserves. Reserves' valuation is made in accordance with SEC price regulations. Volatility in hydrocarbon prices, refining margins and reserves, as well as changes in environmental regulations may lead to the recognition of impairment or recovery of non-current assets.

For additional information about impairment charges and reversals, see sections Operating Results—Consolidated Results of Operations—Impairment of Non-Current assets, Segment Performance and Analysis and Note 18 to our consolidated financial statements.

4.4. Accounting Policies

Our consolidated financial statements for the years ended December 31, 2021, 2020 and 2019 were prepared in accordance with IFRS. The detail of the accounting policies is described in Note 4 to our consolidated financial statements.

We adopted IFRS 16 – Leases as from January 1, 2019. Also, we adopted IFRS 9 – Financial Instruments and IFRS 15 – Revenue from Contracts and Customers as from January 1, 2018. The adoption of such standards did not generate a material impact in our results. For more information regarding the adoption of new accounting standards and their effects on our financial statements, see Note 5.1 New standards adopted by the Ecopetrol Group to our consolidated financial statements included in this annual report.

[Table of Contents](#)

4.5. Critical Accounting Judgments and Estimates

Critical accounting policies are those policies that require us to exercise judgment or involve a higher degree of complexity in the application of the accounting policies that currently affect our financial condition and results of operations. The accounting judgments and estimates we make in these contexts require us to calculate variables and make assumptions about matters that are highly uncertain. In each case, if we had made other estimates, or if changes in the estimates occur from period to period, our financial condition and results of operations could be materially affected.

See Note 3 to our consolidated financial statements for a summary of the critical accounting judgments and estimates applicable to us. There are many other areas in which we use estimates about uncertain matters, but we believe the reasonably likely effect of changes or differences within critical accounting judgments and estimates would not have a material impact on our financial statements.

4.6. Operating Results

The following discussion is based on information contained in our audited consolidated financial statements and should be read in conjunction therewith.

4.6.1. Consolidated Results of Operations

The following table sets forth components of our income statement for the years ended December 31, 2021, 2020 and 2019.

Table 57 – Consolidated Income Statement

<i>Income Statement (COP\$Million)</i>	For the year ended December 31,			% Change	
	2021	2020	2019	2021/2020	2020/2019
Revenue	91,881,204	50,223,393	71,488,512	82.9	(29.7)
Cost of sales	55,581,776	37,567,472	44,972,360	48.0	(16.5)
Gross Profit	36,299,428	12,655,921	26,516,152	186.8	(52.3)
Operating expenses	6,568,370	4,841,000	3,726,557	35.7	29.9
Impairment of non-current assets, net	33,351	633,156	1,762,437	(94.7)	(64.1)
Operating Income	29,697,707	7,181,765	21,027,158	313.5	(65.8)
Finance results, net	(3,698,054)	(2,481,587)	(1,670,494)	49.0	48.6
Share of profit of companies	426,164	76,336	366,904	458.3	(79.2)
Income before income tax	26,425,817	4,776,514	19,723,568	453.2	(75.8)
Income tax	(8,795,263)	(2,038,661)	(4,718,413)	331.4	(56.8)
Net Income	17,630,554	2,737,853	15,005,155	544.0	(81.8)
Net income attributable to:					
Company's shareholders	15,649,143	1,586,677	13,744,011	886.3	(88.5)
Non-controlling interest	1,981,411	1,151,176	1,261,144	72.1	(8.7)
Net Income	17,630,554	2,737,853	15,005,155	544.0	(81.8)

[Table of Contents](#)

4.6.1.1. Total Revenues

The following table sets forth our principal sources of third-party revenues by business segment for the years ended December 31, 2021, 2020 and 2019. An explanation of how we classify our operations into business segments is included in section 4.6.1.8 below.

Table 58 – Third-Party Revenues by Business Segment

Revenue by segment	2021			2020			2019			Change Sales Revenues (%)	
	Volume (barrels equivalent)	Average price US\$/barrels	Sales revenues (COPS Million)	Volume (barrels equivalent)	Average price US\$/barrels	Sales revenues (COPS Million)	Volume (barrels equivalent)	Average price US\$/barrels	Sales revenues (COPS Million)	2021/2020	2020/2019
Local Crude oil	858,085	59.5	193,476	2,208,356	28.6	230,520	2,232,087	48.6	356,857	(16.1)	(35.4)
Foreign Crude oil ⁽¹⁾	137,149,375	66.8	34,768,509	153,185,623	34.4	19,498,553	147,692,547	58.7	28,461,601	78.3	(31.5)
Natural gas local	33,577,157	25.3	3,200,069	31,391,611	24.5	2,845,155	28,798,105	23.8	2,256,123	12.5	26.1
Foreign natural gas	1,181,357	16.0	71,529	554,742	8.6	17,231	506,556	16.6	27,255	315.1	(36.8)
Other income ^(2,3)	6,151,816	—	318,989	5,409,528	—	263,466	3,788,550	—	193,282	21.1	36.3
Exploration and production sales	178,917,790	—	38,552,572	192,749,860	—	22,854,925	183,017,845	—	31,295,118	68.7	(27.0)
Local refined products ⁽¹⁾	112,638,375	111.1	36,138,729	90,659,046	54.1	17,745,376	111,095,596	74.5	27,170,498	103.7	(34.7)
Foreign refined products ⁽¹⁾	34,614,613	70.7	9,174,488	39,668,072	42.4	6,165,364	44,007,684	62.3	8,977,662	48.8	(31.3)
Foreign Crude Oil	—	—	—	—	—	29	289,289	62.6	61,995	(100.0)	(100.0)
Other income ^(2,3)	—	—	1,344,979	—	—	894,118	—	—	183,315	50.4	387.7
Refining and petrochemicals	147,252,988	—	46,658,196	130,327,118	—	24,804,887	155,392,569	—	36,393,470	88.1	(31.8)
Transportation services	—	—	2,557,238	—	—	2,563,581	—	—	3,799,924	(0.2)	(32.5)
Transportation and logistics	—	—	2,557,238	—	—	2,563,581	—	—	3,799,924	(0.2)	(32.5)
Electric Power	—	—	—	—	—	—	—	—	—	—	—
Transmission and Toll Roads Concessions	—	—	4,113,198	—	—	—	—	—	—	0.0	0.0
Electric Power	—	—	4,113,198	—	—	—	—	—	—	0.0	0.0
Transmission and Toll Roads Concessions⁽⁴⁾	—	—	4,113,198	—	—	—	—	—	—	0.0	0.0
Total sales	326,170,778	—	91,881,204	323,076,978	—	50,223,393	338,410,414	—	71,488,512	82.9	(29.7)
Crude Oil	138,007,460	66.8	34,961,985	155,393,979	34.4	19,729,102	150,213,923	58.6	28,880,453	77.2	(31.7)
Natural gas	34,758,514	24.9	3,271,598	31,946,353	24.3	2,862,386	29,304,661	23.7	2,283,378	14.3	25.4
Refined products	153,404,804	79.6	45,632,206	135,736,646	49.2	24,174,206	158,891,830	69.8	36,341,442	88.8	(33.5)
Transportation services and others	—	—	8,015,415	—	—	3,457,699	—	—	3,983,239	131.8	(13.2)
Total sales	326,170,778	—	91,881,204	323,076,978	—	50,223,393	338,410,414	—	71,488,512	82.9	(29.7)

- (1) Includes strategic and tactical hedges, which are related to crude oil, fuel oil and Diesel.
- (2) Since 2020, Invercolsa's sales are recognized as income from gas service without associated volume. In order to give comparability to our financial information, the values reported as residential gas were classified as "other income" in 2019.
- (3) In the case of the exploration and production segment, other income corresponds mostly to services and sales of refined products (mainly LPG and asphalt). In the case of the refining and petrochemicals segment, other income corresponds mostly to industrial services.
- (4) The electric power transmission and toll roads concessions segment's revenues mainly include: (i) electricity transmission services, (ii) designing, building, operating and maintaining road concessions infrastructure roads, and (iii) telecommunications services.

In 2021, total revenues increased by 82.9% as compared to 2020, primarily as a result of: (i) a COP\$ 33,357,735 million increase in revenues mainly due to a 94.2%, or US\$ 32.4 per barrel increase of our average crude oil basket price and a 61.8%, or US\$ 30.4 per

[Table of Contents](#)

barrel increase of our average refined products basket price, which in turn was primarily due to the strengthening of the international reference prices, a better negotiated oil spread as a result of our commercial efforts, and improved refined products indicators, (ii) a COP\$ 4,165,354 million increase in the service revenue, primarily due to the consolidation of ISA's revenues from September 2021, (iii) a COP\$ 2,797,025 million increase in revenues resulting from a 1.52% depreciation of the Colombian Peso against the U.S. dollar, from an average exchange rate of COP\$ 3,691.27/US\$ 1.00 in 2020 to an average exchange rate of COP\$ 3,747.24/US\$ 1.00 in 2021, resulting in an increase in revenue from exports, and (iv) a COP\$ 1,337,697 million increase in revenues attributable to an increase in our sales volume (as further explained below).

The increase of our sales volume in 2021 as compared to 2020 was the result of: (i) a 13.0%, or 17.7 mboe increase in refined products volumes, which in turn was primarily due to the recovery in domestic demand which exceeded pre-COVID-19 pandemic levels, and (ii) a 8.8%, or 2.8 mboe increase in natural gas sales volume, which resulted from higher production by Hocol and Permian. This increase was partially offset by a 11.2%, or 17.4 mboe decrease in our crude sales, primarily associated with lower availability due to lower production and higher throughput at our refineries.

In 2020, total revenues decreased by 29.7% as compared to 2019, primarily as a result of: (i) a COP\$ 21,330,388 million decrease in revenues mainly due to a 41.3%, or US\$ 24.2 per barrel decrease of our average crude oil basket price and a 29.5%, or US\$20.6 per barrel decrease of our average refined products basket price, which in case in turn was primarily the result of the decrease in the international crude oil and product reference prices, (ii) a COP\$ 4,246,388 million decrease in revenues attributable to the decrease in our sales volume (as further explained below) and (iii) a COP\$ 723,744 decrease in revenues attributable to a decrease in the service revenue of our transportations and logistics segment, which in turn was primarily due to a decrease in transported volumes. These decreases were partially offset by a COP\$ 5,035,401 million increase in revenues resulting from a 12.46% depreciation of the Colombian Peso against the U.S. dollar, from an average exchange rate of COP\$ 3,282.39/US\$1.00 in 2019 to an average exchange rate of COP\$3,691.27/US\$1.00 in 2020, resulting in an increase in revenue from exports.

The decrease of our sales volume in 2020 as compared to 2019 was the result of a 14.6%, or 23.2 mboe, decrease in refined products volumes, which in turn was primarily due to the contraction in demand caused by the COVID-19 pandemic. This decrease was partially offset by (i) a 3.4%, or 5.2 mboe increase in our crude sales volume which was resulting from higher availability associated with lower throughput at our refineries and (ii) a 9.0%, or 2.6 mboe increase in natural gas sales volume due to Hocol's acquisition of 100% of Chevron Petroleum Company's participation in the Guajira association contract (which corresponds to 43% of the total contract) and the entry into operation of the Cupiagua LPG plant.

4.6.1.2. Cost of Sales

Our cost of sales was principally affected by the factors described below. See Note 26 to our consolidated financial statements for more detail.

Cost of sales in 2021 was COP\$ 55,581,776 million, representing a COP\$ 18,014,304 million or 48.0% increase as compared to 2020, primarily as a result of the following factors:

- A COP\$ 18,111,853 million increase in the purchase costs of crude oil, natural gas and refined products, which were purchased for sales or for refining, resulting primarily from (i) higher average purchase prices by COP\$ 14,531,550 million, which in turn was primarily due to the increase in international benchmark prices for crude oil and refined products, (ii) a COP\$ 2,841,612 million increase in volumes purchased, primarily due to an increase in our imports of refined products to ensure domestic supply given the economic reactivation, as well as an increase in our domestic purchases of crude oil associated with new commercialization contracts in line with the commercial strategy, and (iii) a COP\$ 738,691 million increase in costs in Colombian Peso terms due to the depreciation of the average exchange rate of the Colombian Peso against the U.S. dollar, mentioned above.
- A COP\$ 1,740,738 million increase as a result of our consolidation of ISA's cost of sales from September 2021, which includes services, depreciation, labor, taxes, and general costs.
- A COP\$ 692,509 million increase in contributions and taxes mainly due to: (i) an increase in non-deductible VAT associated with higher purchase levels in 2021, and (ii) an increase in gas royalties due to higher production levels in 2021.

[Table of Contents](#)

- A COP\$ 642,088 million increase in contracted services, maintenance activities, operation supplies and other operational activity costs, as a result of execution of activities related to the economic reactivation, greater participation in fields such as Nare and Piedemonte and higher tariffs and inflation effect in contracts.
- A COP\$ 327,591 million increase in depreciation, amortization, and depletion expenses primarily due to: (i) a higher level of capital investment, and (ii) the increase in the production of our subsidiaries in the Permian. The above was partially offset by a lower depreciation rate associated with decreased levels of production in Ecopetrol S.A.'s fields.
- A COP\$ 63,673 million increase in labor cost related to: (i) a 3.31% salary increase in 2021 as compared to 2020, and (ii) an increase in medical services.
- A COP\$ 103,186 million increase in other minor items.

The factors mentioned above were partially offset by a COP\$ 3,667,334 million decrease in inventory fluctuation primarily due to: (i) the valuation of the price of crude oil and products purchased given the recovery of international reference prices, (ii) higher inventory of crude oil in transit, associated with higher "delivery at place" sales scheduled for 2021 compared against "free on board" sales during the previous year, and (iii) higher inventory levels due to crude oil evacuation restrictions and maintenance activities in some refining units.

Cost of sales in 2020 was COP\$ 37,567,472 million, representing a COP\$ 7,404,888 million or 16.5% decrease as compared to 2019, primarily as a result of the following factors:

- A COP\$ 8,857,293 million decrease in the purchase costs of crude oil, natural gas and refined products, which were purchased for sales or for refining, resulting from: (i) lower average purchase prices by COP\$ 7,178,744 million due to the decrease in international benchmark prices for crude oil and refined products and (ii) a COP\$ 3,339,573 million decrease in volumes purchased primarily due to lower national demand for products, which in turn was due to the lockdown measures taken by the Colombian Government to control the COVID-19 pandemic, a decrease in our imports of diluent given the decrease in our crude production and a decrease in our imports of crude oil, which in turn was due to the decrease of activity of our refineries. This decrease was partially offset by a COP\$ 1,661,024 million increase in costs in Colombian Peso terms due to the depreciation of the average exchange rate of the Colombian Peso against the U.S. dollar, mentioned above.
- A COP\$ 545,907 million decrease in maintenance and contracted services, associated with the optimization plan performed during 2020, a renegotiation of rates and lower activity in general.
- A COP\$ 30,862 million decrease in other minor items.

The factors mentioned above were partially offset by: (i) a COP\$ 1,333,903 million increase in our consumption of inventories given a greater consumption of refined products and the effect of lower prices and (ii) a COP\$ 695,271 million increase in depreciation, amortization and depletion expenses primarily due to a higher level of capital investment and the devaluation of the average exchange rate of the Colombian Peso against the U.S. dollar in subsidiaries with the US dollar as their functional currency (which was partially offset by a lower depreciation rate associated with decreased levels of production).

4.6.1.3. Operating Expenses before Impairment of Non-Current Assets Effects

Operating expenses, which include selling, general and administrative expenses before impairment of non-current assets amounted to COP\$ 6,568,370 million in 2021, a COP\$ 1,727,370 million or 35.7% increase as compared to 2020, mainly as a result of the following factors (see Notes 27 and 28 to our consolidated financial statements for more detail):

- A lower effect of COP\$ 1,370,398 million from profit on acquisition of participations and interests resulting from Hocol's acquisition in 2020 of 100% of Chevron Petroleum Company's participation in the Guajira association contract, which generated: (i) a COP\$ 1,284,372 million revaluation gain of the assets that Hocol already had in the Guajira association at Ecopetrol, and (ii) a COP\$ 86,026 million gain at Hocol, as its acquisition of the remaining 43% stake was considered a bargain purchase.

[Table of Contents](#)

- A COP\$ 510,948 million increase in provisions, mainly associated with environmental aspects and the public works contribution process.
- A COP\$ 270,475 million increase in exploration expenses mainly due to: (i) increased exploratory activity mainly associated with seismic in Brazil, (ii) updating of dry well abandonment costs, and (iii) recognition of the exploratory activity of unsuccessful wells.
- A COP\$ 236,528 million increase in depreciation, amortization, and depletion expenses primarily due to a recognition of fixed cost of some plants in the Cartagena refinery that suspended its production, and the consolidation of ISA's depreciation cost starting in September 2021.
- A COP\$ 213,781 million increase in other operating expenses mainly in social investment projects, especially those carried out for the *Misión Internacional de Sabios*, aimed at the advancement of science, technology and innovation, which was convened by the National Government and communities, among others.
- A COP\$ 188,860 million increase in other minor items, which mainly includes transaction costs related to the acquisition of ISA and other professional services.

These results were partially offset by:

- A COP\$ 672,145 million increase in other income, as a result of the approval of the Frontera settlement agreement by the Administrative Court of Cundinamarca as further described in *Business Overview—Transportation and Logistics—Marketing of Transportation Services—Developments with certain clients of Bicentenario and Cenit*.
- A COP\$ 391,475 million decrease in labor expenses was mainly due to the lower recognition of the voluntary retirement plan in 2021 compared to 2020.

Operating expenses, which include selling, general and administrative expenses before impairment of non-current assets amounted to COP\$ 4,841,000 million in 2020, a COP\$ 1,114,443 million or 29.9% increase as compared to 2019, mainly as a result of the following factors (see Notes 27 and 28 to our consolidated financial statements for more detail):

- A COP\$ 806,730 million increase in labor expenses was mainly due to: (i) the recognition of the voluntary retirement plan of 421 people in 2020, which despite the current increase in expenses, is expected to result in approximately COP 0.4 trillion in future cash savings, and (ii) the salary increase in 2020 as compared to 2019.
- A COP\$ 283,373 million increase in general expenses mainly due to: (i) the recognition of the fixed costs of some plants at the Barrancabermeja refinery that temporarily suspended their production during the COVID-19 pandemic, and (ii) expenses incurred in connection with humanitarian aid and other initiatives to strengthen the Colombian health system to address the COVID-19 pandemic.
- A COP\$ 224,239 million decrease in other income primarily due to an income recognized in 2019 associated to a favorable litigation related to the fill-up of the line in the transportation segment and compensation received in 2019 relating to certain environmental events and no similar events occurred in 2020.
- A COP\$ 115,626 million increase in other operating expenses mainly by the write-off of assets that were recognized as projects in progress, due to the completion of economic feasibility studies.
- A COP\$ 80,313 million increase in other minor items.

These results were partially offset by:

- A higher positive effect of COP\$ 321,473 million from profit on acquisition of participations and interests resulting from: (i) Hocol's acquisition in 2020 of 100% of Chevron Petroleum Company's participation in the Guajira association contract,

[Table of Contents](#)

which generated (a) COP\$ 1,284,372 million at Ecopetrol, a revaluation gain of the assets that Hocol already had in the Guajira association and (b) COP\$ 86,025 million at Hocol, a gain as its acquisition of the remaining 43% stake was considered a bargain purchase, and (ii) the effect of the increase in Invercolsa's valuation recognized in 2019 when we became their controlling shareholder which was not present in 2020.

- A COP\$ 74,365 million decrease in exploratory expenses mainly as a result of lower drilling in 2020 and less seismic reprocessing.

=Each of our operating segments bears the costs and expenses incurred for product use and marketing and each segment assumes administrative expenses and all non-operational transactions related to its activity. Discussion of operating expenses by business segment is included in the section *Financial Review—Operating Results—Consolidated Results of Operations—Segment Performance and Analysis*.

4.6.1.4. Impairment of Non-Current Assets

The impairment of our non-current assets includes losses (or recovery) of impairment of property, plant and equipment and natural resources, investments in companies, goodwill, and other non-current assets. The Company is exposed to future risks derived mainly from variations in: (i) oil prices outlook, (ii) refining margins and profitability, (iii) cost profile, (iv) investment and maintenance expenses, (v) amount of recoverable reserves, (vi) market and country risk assessments reflected in the discount rate, and (vii) changes in domestic and international regulations, (viii) future cash flows expected, among others.

Any change in the foregoing variables used to calculate the recoverable amount of a non-current asset can have a material effect on the recognition of either losses or recovery of impairment charges in the profit or loss statement in any given fiscal year. In our business segments highly sensitive variables can include, among others: (i) in the exploration and production segment, variations of the hydrocarbon prices outlook, (ii) in the refining segment, changes in product and crude oil prices, discount rate, refining margins, changes in environmental regulations, cost structure and the level of capital expenditures; (iii) in the transportation and logistics segment, changes in tariffs regulation and transported volumes; (iv) in the electric power transmission and toll roads concessions segment, changes in expected future cash flows.

In 2021, we recognized impairment losses of non-current assets of COP\$ 33,351 million as compared to impairment losses of COP\$ 633,156 million in 2020 and COP\$ 1,762,437 million in 2019. These impairments are a non-cash accounting effect and consequently do not involve any disbursement or cash inflow. Further, any cumulative impairment amount of non-current assets, except for goodwill, is susceptible to reversion when the fair value of the asset exceeds its book value. On the contrary, in the event that the book value exceeds the fair value of the asset, an additional impairment expense could be recognized.

The 2021 impairment losses, net of non-current assets of COP\$ 33,351 million, corresponds to the net result of:

- (i) A recovery of impairment of non-current assets in the exploration and production segment of COP\$ 438,020 million, mainly due to favorable outlook of international prices and increase in reserves.
- (ii) An impairment of non-current assets in the refining and petrochemicals segment of COP\$ 305,466 million, primarily related to the Barrancabermeja refinery modernization plan which led to an impairment of COP\$ 340,019 million, considering the progress in technical analysis of the project and to other minor adjustments in the amount of COP\$ 97 million. The foregoing was partially offset by a reversal of impairment in the Cartagena refinery of COP\$ 34,650 million, primarily due to operating and financial management improvements that permitted capturing greater refining margins in the short and medium-term.
- (iii) An impairment of non-current assets in the transportation and logistics segment of COP\$ 165,901 million, primarily due to a lower volume outlook for the Southern Cash Generating Unit, which is comprised of the Tumaco Port and the Transandino pipeline (OTA).
- (iv) An impairment of non-current assets in the electric power transmission and toll roads concessions segment of COP\$ 4 million.

[Table of Contents](#)

The 2020 impairment losses, net of non-current assets of COP\$ 633,156 million, corresponds to the net result of:

- (i) An impairment of non-current assets in the exploration and production segment of COP\$ 192,693 million, mainly due to the decrease in crude oil price forecast in the short and long term.
- (ii) An impairment of non-current assets in the refining and petrochemicals segment of COP\$ 781,528 million, primarily related to the lower refining margins at the Cartagena refinery by COP\$ 440,525 million and the Barrancabermeja refinery Modernization Plan by COP\$ 341,000 million, considering the progress in technical analysis of the project.
- (iii) A reversal of impairment of non-current assets in the transportation and logistics segment of COP\$ 341,065 million, primarily as a result of a recovery in transported volumes in 2020 through: (i) South CGU, which includes the Transandino pipeline (OTA) and the port of Tumaco and (ii) North CGU, which includes the Banadía-Ayacucho's pipeline, part of the Caño Limón-Coveñas system.

The 2019 impairment loss, net of non-current assets of COP\$ 1,762,437, corresponds to the net result of:

- (i) An impairment of non-current assets in the exploration and production segment primarily due to the decrease in estimations of short-term hydrocarbon price outlook, in spite of the incorporation of new reserves and technical and operational information variables and lower discount rate.
- (ii) An impairment of non-current assets in the transportation and logistics segment, primarily associated with the south generating unit, comprised of Puerto Tumaco and the Transandino pipeline (OTA), and the north generating unit, comprised of the Caño Limón – Coveñas Pipeline, which was especially affected by damages to its infrastructure attributed to attacks by third-parties.
- (iii) A reversal of impairment of non-current assets in the refining and petrochemicals segment, primarily related to the net effect of (i) a reversal of impairment of the Cartagena refinery due to a lower discount rate associated with external market factors, (ii) an impairment loss in Bioenergy primarily due to the decrease in availability of cane, partially offset by an improvement in the projection of the realization price of ethanol and a decrease in the discount rate and (iii) an impairment loss associated with the modernization plan for the Barrancabermeja refinery, considering the state of the technical alternatives analysis of possible future increases in conversion.

For more information regarding impairment by segment, see section *Financial Review—Operating Results—Consolidated Results of Operations—Segment Performance and Analysis*.

4.6.1.5. *Finance Results, Net*

Finance results, net, mainly includes exchange rate gains or losses, interest expense, yields and interest from our investments and non-current liabilities financial costs (asset retirement obligation and post-benefits plan).

Finance results, net, amounted to a loss of COP\$ 3,698,054 million in 2021 as compared to a loss of COP\$ 2,481,587 million in 2020. This loss was mainly due to:

- (i) A COP\$ 710,882 million increase in interest expenses, primarily due to (i) the increase in Ecopetrol's debt in 2021, which in turn was due to the Acquisition Loan and the SEC-registered bonds in an aggregate amount of US\$2,000 million issued in connection with the acquisition of ISA, and (ii) the consolidation of ISA's debt.
- (ii) A COP\$ 218,175 million decrease in valuation to fair value and lower yields of the securities portfolio, primarily as a result of low market rates and a lower average cash position in 2021 as compared to 2020.
- (iii) A COP\$ 170,741 million increase in financial expenses related to long term obligations, which in turn was mainly to the increase in our asset retirement and pension obligations.

[Table of Contents](#)

- (iv) A COP\$ 16,772 million decrease in foreign exchange primarily driven by the negative impact that the depreciation of the Colombian Peso against the U.S. dollar in 2021 had on our U.S. dollar net liability position. In 2021, our exchange rate loss was COP\$ 31,726 million, as compared to a gain of COP\$ 346,774 million in 2020. This decrease was partially offset by a revenue from the realization in our equity results of the accumulated exchange rate valuation (conversion adjustment), resulting from the US dollar sale of our investment in Savia.

Finance results, net, amounted to a loss of COP\$ 2,481,587 million in 2020 as compared to a loss of COP\$ 1,670,494 million in 2019. This increase in loss was mainly due to:

- (i) A COP\$ 489,852 million increase in interest expenses, primarily as a result of the increase in the Ecopetrol Group's financial debt in 2020 given that Ecopetrol S.A. entered into committed credit lines in an aggregate principal amount of US\$ 665 million and issued a SEC-registered bond in an aggregate amount of US\$2,000 million, and the negative effect of the devaluation of the Colombian peso against the US dollar in 2020 had on our foreign currency debt.
- (ii) A COP\$ 327,194 million decrease in valuation to fair value and lower yields of the securities portfolio, as a result of low market rates and a lower average cash position in 2020 as compared to 2019.
- (iii) A COP\$ 147,458 million decrease in financial income related to retroactive dividends and interest received by us in respect of Invercolsa's profits in 2019, before we acquired control of this entity in November 2019.
- (iv) A COP\$ 152,724 million increase in financial expenses related to long term obligations, which in turn was mainly to the increase in our asset retirement and pension obligations.

This increase was partially offset by the positive impact resulting from the strong appreciation of the Colombian Peso against the U.S. dollar in the last quarter of 2020 had on our U.S. dollar net liability position. In 2020, our exchange rate gain was COP\$ 346,774 million, as compared to a gain of COP\$ 40,639 million in 2019.

For more details on our financial income and expenses see Note 29 to our consolidated financial statements.

4.6.1.6. Income Tax

Income taxes amounted to COP\$ 8,795,263 million in 2021, COP\$ 2,038,661 million in 2020 and COP\$ 4,718,413 million in 2019. The above is equivalent to an effective tax rate of 33.3%, 42.7% and 23.9% in 2021, 2020 and 2019, respectively.

The decrease in the effective tax rate from 2020 to 2021 was mainly due to: (i) the effect of the tax reform issued in 2021 under net deferred tax (increase in the nominal tax rate from 2022, which will go from 30% to 35%), (ii) a positive net effect resulting from a lower tax rate for some of the Company's subsidiaries compared to the tax rate of the parent company, and the effect of exchange rate variations on taxable profits in 2021, and (iii) the effect on deferred tax liabilities during the corresponding period in 2021 of the devaluation of the peso against the U.S. dollar on our subsidiaries whose functional currency is the U.S. dollar but pay their taxes in Colombian pesos. This decrease was partially offset by the net effect between non-deductible expenses and non-taxed income. See Note 10 to our consolidated financial statements for more details.

The increase in the effective tax rate from 2019 to 2020 was mainly due to: (i) the recognition of a deferred tax asset in the amount of COP\$ 1,550,152 in 2019 as a result of the expectation to recover the historical tax losses of Ecopetrol America that were not recognized up until that time, and (ii) higher losses in the Ecopetrol Group's companies that are taxed under a special regime. This increase was partially offset by Ecopetrol S.A.'s presumptive income in 2020 being taxed at a lower nominal rate.

See Note 10 to our consolidated financial statements for more details.

4.6.1.7. Net Income (Loss) Attributable to Owners of Ecopetrol

As a result of the foregoing, in 2021, net income attributable to owners of Ecopetrol was COP\$ 15,649,143. In 2020, net income attributable to owners of Ecopetrol was COP\$ 1,586,677, whereas in 2019 net income attributable to owners of Ecopetrol was COP\$ 13,744,011 million.

[Table of Contents](#)

4.6.1.8. Segment Performance and Analysis

In this section, including the tables below, we present our financial information by segment: Exploration and Production, Refining and Petrochemicals, Transportation and Logistics, and Electric Power Transmission and Toll Roads Concessions. See section [Business Overview](#) for a description of each segment.

The following tables present our revenues and net income by business segment for the years ended December 31, 2021, 2020 and 2019:

Table 59 – Revenues by Business Segment

	For the year ended December 31,			% Change	
	2021	2020	2019	2021/2020	2020/2019
	(COPSMillion)				
Exploration and Production	63,248,952	36,839,997	52,667,990	71.7	(30.1)
Third parties	38,552,572	22,854,925	31,295,118	68.7	(27.0)
Local crude oil	193,476	230,520	356,857	(16.1)	(35.4)
Foreign crude oil	34,768,509	19,498,553	28,461,601	78.3	(31.5)
Local natural gas	3,200,069	2,845,155	2,256,123	12.5	26.1
Foreign natural gas	71,529	17,231	27,255	315.1	(36.8)
Other income	318,989	263,466	193,282	21.1	36.3
Inter-segment net operating revenues	24,696,380	13,985,072	21,372,872	76.6	(34.6)
Refining and Petrochemicals	50,976,385	26,104,351	38,770,806	95.3	(32.7)
Third parties	46,658,196	24,804,887	36,393,470	88.1	(31.8)
Local refined products	36,138,729	17,745,376	27,170,498	103.7	(34.7)
Foreign refined products	9,174,488	6,165,364	8,977,662	48.8	(31.3)
Foreign crude oil	—	29	61,995	(100.0)	(100.0)
Other income ⁽¹⁾	1,344,979	894,118	183,315	50.4	387.7
Inter-segment net operating revenues	4,318,189	1,299,464	2,377,336	232.3	(45.3)
Transportation and Logistics	12,158,466	12,194,440	13,070,736	(0.3)	(6.7)
Third parties	2,557,238	2,563,581	3,799,924	(0.2)	(32.5)
Inter-segment net operating revenues	9,601,228	9,630,859	9,270,812	(0.3)	3.9
Electric Power Transmission and Toll Roads Concessions⁽²⁾	4,113,198	—	—	100.0	—
Third parties	4,113,198	—	—	100.0	—
Eliminations of consolidations	(38,615,797)	(24,915,395)	(33,021,020)	55.0	(24.5)
Total revenues	91,881,204	50,223,393	71,488,512	82.9	(29.7)

- (1) Since 2020, Invercolsa's sales are recognized as income from gas service without associated volume. In order to give comparability to our financial information, the values reported as residential gas were classified as "other income" in 2019.
- (2) The electric power transmission and toll roads concessions segment's revenues mainly include: (i) electricity transmission services, (ii) designing, building, operating and maintaining road concessions infrastructure roads, and (iii) telecommunications services.

Total revenues by segment include exports and local sales to third-parties and inter-segment sales. See section [Financial Review—Operating Results—Consolidated Results of Operations—Total Revenues](#) for prices and volumes to third parties.

[Table of Contents](#)

Table 60 – Operating and Net Income by Business Segment

	For the year ended December 31,			% Change	
	2021	2020	2019	2021/2020	2020/2019
	(COP\$Million)				
Exploration and Production					
Operating Income	18,863,444	1,149,291	11,601,485	1,541.3	(90.0)
Net income	11,829,119	(139,279)	9,382,129	(8,593.1)	(101.0)
Refining and Petrochemicals					
Operating Income	417,450	(2,185,511)	1,142,204	(119.1)	(291.0)
Net income	(1,198,619)	(2,848,511)	117,708	(57.9)	(2,520.0)
Transportation and Logistics					
Operating Income	8,462,604	8,218,724	8,366,747	3.0	(2.0)
Net income	4,635,354	4,574,800	4,244,860	1.3	8.0
Electric Power Transmission and Toll Roads Concessions					
Operating Income	1,921,037	—	—	100.0	—
Net income	386,438	—	—	100.0	—
Eliminations of consolidations					
Operating Income	33,172	(739)	(83,278)	(4,588.8)	(99.0)
Net income	(3,149)	(333)	(686)	845.6	(51.0)
Ecopetrol consolidado					
Operating Income	29,697,707	7,181,765	21,027,158	313.5	(66.0)
Net income	<u>15,649,143</u>	<u>1,586,677</u>	<u>13,744,011</u>	<u>886.3</u>	<u>(88.0)</u>

4.6.1.9. Exploration and Production Segment Results

In 2021, exploration and production segment sales were COP\$ 63,248,952 million, compared to COP\$ 36,839,997 million in 2020. In 2021, our segment sales increased by 71.7% as compared with 2020 mainly as a result of:

- (i) A 68.7% increase in sales of crude oil to third parties in 2021 as compared to 2020 primarily due to: (i) an increase in the price of our crude oil basket of US\$ 32.4 per barrel, (ii) an increase in the crude oil basket spread compared against the Brent price of US\$ 5 per barrel, (iii) the depreciation of the Colombian Peso against the U.S. dollar, resulting in an increase in sales revenue recorded in U.S. dollars, and (iv) an increase in sales of natural gas (8.4 mboed) primarily due to higher production by Hocol and a higher production related with a demand recovery. This increase was partially offset by a decrease in local and exports sales of crude oil (48.9 mboed) mainly due to the company's lower production as a result of operational and public order issues, including roadblocks and strikes.
- (ii) A 76.6% increase in inter-segment revenues in 2021 as compared to 2020 mainly due to: (i) a higher refinery load due to global demand recovery, and (ii) the depreciation of the Colombian Peso against the U.S. dollar.

In 2020, exploration and production segment sales were COP\$ 36,839,997 million, compared to COP\$ 52,667,990 million in 2019. In 2020, our segment sales decreased by 30.1% as compared with 2019 mainly as a result of:

- (i) The 27.0% decrease in sales of crude oil to third parties in 2020 as compared to 2019 primarily due to: (i) a decrease in the price of our crude oil basket of US\$ 21.0 per barrel, (ii) an increased spread in our crude oil basket versus the Brent price, (iii) lower production levels, primarily due to lower demand as a result of the mobility restrictions and lockdown that were imposed throughout the year because of the COVID-19 pandemic and impacts due to public order issues. This decrease was partially offset by (i) the depreciation of the Colombian Peso against the U.S. dollar, resulting in an increase in revenue recorded in U.S. dollars, (ii) an increase in crude oil sales of 5.2 mmbbls, which in turn was primarily related to an increase in availability associated with lower throughput at our refineries, (iii) an increase in natural gas sales of 2.6 mmbbls, which in turn was primarily due to Hocol's acquisition of 100% of Chevron Petroleum Company's participation in the Guajira association contract (which corresponds to 43% of the total contract), positive results of our United States Permian

[Table of Contents](#)

operations, the reversion of the Pauto and Floreña fields from Equión to Ecopetrol and the start-up of the Cupiagua LPG Plant.

- (ii) The 34.6% decrease in inter-segment revenues in 2020 as compared to 2019 mainly due to: (i) the decrease in the price of our crude oil basket and a worsening spread as compared to the Brent price and (ii) lower refineries throughputs due to the global contraction in demand as a result of the COVID-19 pandemic. This decrease was partially offset by the impact of the depreciation of the Colombian Peso against the U.S. dollar.

Cost of sales affecting our exploration and production segment are mainly related to: (i) the amortization and depletion of our production assets, (ii) contracted services and (iii) costs related to maintenance, operational services, electric power, projects, and labor cost. In addition, this segment's costs are impacted by the purchases of crude oil from ANH and third parties, naphtha for dilution and transportation services.

In 2021, the cost of sales for this segment increased by 22.6% as compared with 2020 due to the net effect of:

- (i) Fixed costs increasing by 4.0%, or COP\$ 382,670 million in 2021 as compared to 2020, mainly due to: (i) reactivation of the operational activity resulting in an increase in well interventions, maintenance, process material, integrity work and activities to support the operation, (ii) higher rates in contracts given the economic reactivation, inflation and higher COP\$/US\$ exchange rate, and (iii) the shutdown of generators to reduce carbon footprint increasing energy consumption.
- (ii) Variable costs increasing by 30.1%, or COP\$ 7,044,043 million in 2021 as compared to 2020, as a result of (i) increased oil basket price resulting in a higher cost of oil and nafta purchases to third parties and impacting the economic rights contracts clause in certain fields and inventory valuation, and (ii) higher transportation costs due to Caño Limón - Coveñas pipeline un-availability during the second half of the year, pipelines tariffs annual update and the depreciation of the Colombian Peso against U.S. dollar. This increase was partially offset by (i) less transported volume due to a lower production, (ii) transit of sales to third parties in the Asian market to be recognized in January 2022, and (v) decrease in nafta purchase volume to third parties.

In 2020, the cost of sales for this segment decreased by 9.5% as compared with 2019 due to the net effect of:

- (i) Fixed costs decreasing by 1.1%, or COP\$ 108,644 million, in 2020 as compared to 2019 mainly due to the optimization plan adopted by the Ecopetrol Group, which was reflected in fewer contracted services, lower process materials usage and lower general costs. This decrease was partially offset by higher fixed transportation costs, primarily due to the depreciation of Colombian Peso against U.S. dollar.
- (ii) Variable costs decreasing by 12.5%, or COP\$ 3,356,802 million in 2020 as compared to 2019, as a result of (i) the decrease in the price of our crude oil basket resulting in a lower cost of oil, (ii) a decrease in volume of naphtha purchased for dilution as a consequence of lower production of heavy oil and (iii) non-execution of reversal cycles in the Bicentenario pipeline and lower transported volume. The latter was partially offset by (i) an increase in crude oil volume purchases due to a strategy that enabled further optimization of the supply chain, (ii) the decrease in the price of our crude oil basket that impacted the inventory valuation and (iii) higher energy purchases given operative issues in our self-generating plants.

In 2021, operating expenses before impairment of non-current assets increased by 73.3% as compared to 2020 primarily as a result of: (i) higher exploratory expenses in 2021 mainly as a result of the recognition of spending on exploratory activity at the Moyote, Silver Back, Ceará fields and the update of the cost of abandonment of dry wells, (ii) the impact from the updating process of tax and environmental provisions, (iii) increase in freight costs for exports to China and Korea under the "delivery at place" model, and (iv) loss of crude due to damages by third parties to our infrastructure. This increase was partially offset by lower labor expenses due to a recognition of the voluntary retirement plan in 2020 and no similar recognition in 2021.

In 2020, operating expenses before impairment of non-current assets decreased by 4.5% as compared to 2019 primarily as a net result of: (i) recorded gain/losses on interests derived from Hocol's acquisition of 100% of Chevron Petroleum Company's participation in the Guajira Contract (which corresponds to 43% of the total contract) and (ii) a decrease in exploratory activity mainly as a result of lower drilling and seismic activity. The latter was partially offset by (i) higher labor expenses due to certain employees choosing to accept a voluntary retirement plan we offered in 2020, (ii) the write off of certain assets due to the completion of economic feasibility studies,

[Table of Contents](#)

(iii) higher environmental provisions and asset retirement obligations for noncommercial wells, (iv) social investment costs associated with our support to the country to combat the COVID-19 pandemic, and (v) increase in fees and freight costs for exports to China and Korea.

In 2019, operating expenses before impairment of non-current assets decreased by 10.3% as compared to 2018 primarily as a net result of: (i) a decrease in exploratory expenses mainly as a result of the recognition of spending on exploratory activity at Ecopetrol America's León 1 and 2 wells in 2018, (ii) an increase in depreciation and amortization related to retirement costs of three fields without reserves, (iii) an increase in social investments made by the Company, (iv) higher taxes mainly the industry and trade tax due to a sales increase and (v) an increase in the level of seismic acquisition compared to 2018, with the COL5 and Saturn programs in Brazil.

There was a recovery of impairment of non-current assets recognized in the exploration and production segment in 2021, totaling COP\$ 438,020 in 2021 as compared to a COP\$ 192,693 million in 2020. The recovery impairment in this segment in 2021 was mainly due to the better perspective of the projection of international prices and an increase in the reserve balance.

There was an impairment of non-current assets recognized in the exploration and production segment in 2020, totaling COP\$ 192,693 million in 2020 as compared to a COP\$ 1,982,044 million in 2019. The impairment loss in this segment in 2020 was mainly due to the decrease in the crude oil price forecast in the short and long term.

There was an impairment of non-current assets recognized in the exploration and production segment in 2019, totaling COP\$ 1,982,044 billion in 2019 as compared to the net reversal of COP\$ 785,940 million in 2018. The impairment loss in this segment in 2019 was mainly due to (i) a decrease in the price projection of our crude oil and (ii) an increase in net book value as a result of higher asset short-term retirement obligations.

Because of all the above, the segment recorded a net income attributable to owners of Ecopetrol of COP\$ 11,829,119 million in 2021 as compared to net loss attributable to owners of Ecopetrol of COP\$ 139,279 million in 2020 and net income attributable to owners of Ecopetrol of COP\$ 9,382,129 million in 2019.

Lifting and Production Costs

The aggregate average production cost, on a Colombian Peso basis, increased to COP\$ 31,685 per boe during 2021 from COP\$ 28,634 per boe during 2020. The aggregate average production cost increased to US\$ 8.46 per boe in 2021 from US\$7.75 per boe in 2020, primarily due to a 1.52% depreciation of the Colombian Peso against the U.S. dollar in 2021.

The aggregate average lifting cost, on a Colombian Peso basis, increased to COP\$ 31,075 per boe during 2021 from COP\$27,555 per boe during 2020. On a dollar basis, the aggregate average lifting cost increased to US\$ 8.30 per boe in 2021 from US\$7.46 per boe in 2020 due to a 1.52% depreciation of the Colombian Peso against the U.S. dollar in 2021.

In 2021, both the aggregate average production cost and the aggregate average lifting cost increased compared to 2020, mainly due to:

- (i) Increase in costs due to external events such as the public order situation and third-party blockades.
- (ii) Greater cost execution in subsoil maintenance, due to an increase in the number and complexity of well interventions and services, mainly to support and improve basic production curve.
- (iii) Greater number of operation maintenance, civil works, and integrity as part of the reactivation.
- (iv) Increase in electricity costs primarily due to: (i) higher global energy rates, and (ii) increased consumption of the National Interconnected System.
- (v) Increase in labor costs due to: (i) the actuarial calculation, and (ii) the voluntary retirement plan.
- (vi) Increase in costs related to operational support areas given our increased activity.

[Table of Contents](#)

The difference between the aggregate average lifting cost and aggregate average production cost is that lifting costs does not include costs related to consumption of hydrocarbons by the Company in our production process or the output that the Company sells to our refineries and natural gas liquid plants.

The following table sets forth crude oil and natural gas average sales prices, the aggregate average lifting costs and aggregate average unit production cost for the years ended December 31, 2021, 2020 and 2019.

Table 61 – Crude Oil and Natural Gas Average Prices and Costs

	2021	2020	2019
Crude Oil Average Sales Price (US\$per barrel) ⁽¹⁾	66.8	34.4	58.6
Crude Oil Average Sales Price (COP\$per barrel) ⁽¹⁾	253,334	126,962	192,262
Natural Gas Average Sales Price (US\$ per million standard cubic feet per day)	4.4	4.3	4.2
Natural Gas Average Sales Price (COP\$ per million standard cubic feet per day) ⁽²⁾	16,513	15,719	13,670
Aggregate Average Unit Production Costs (US\$per boe) ⁽³⁾	8.46	7.75	8.92
Aggregate Average Unit Production Cost (COP\$per boe) ⁽³⁾	31,685	28,634	29,275
Aggregate Average Lifting Costs (US\$per boe) ⁽⁴⁾⁽⁵⁾⁽⁶⁾	8.30	7.46	8.56
Aggregate Average Lifting Costs (COP\$per boe) ⁽⁴⁾⁽⁵⁾⁽⁶⁾	31,075	27,555	28,100

(1) Corresponds to our average sales price on a consolidated basis.

(2) Since 2020, Invercolsa's sales are recognized as income from gas service without associated volume. In order to give comparability to our financial information, the values reported as residential gas were classified as "other income" in 2019.

(3) Unit production costs correspond to consolidated average costs on total production volumes net of royalties. Production costs do not include costs related to transport, commercialization and administrative expenses.

(4) Lifting costs per barrel are calculated based on total production (excluding production tests and discovered undeveloped fields), which are net of royalties, and correspond to our lifting costs on a consolidated basis.

(5) The cost indicator is calculated by using the cost of production (does not include costs related to hydrocarbons consumption by Ecopetrol in the production process, such as by our refineries and natural gas liquid plants) and dividing by the net produced volume (excluding royalties) as the denominator.

(6) As a result of the evaluation of control over companies under IFRS, Ecopetrol does not consolidate Savia Perú and Equión.

4.6.1.10. Transportation and Logistics Segment Results

In 2021, our transportation and logistics segment sales were COP\$ 12,158,466 million compared to COP\$ 12,194,440 million in 2020. The 0.3% decrease in 2021 as compared with 2020 was mainly due to: (i) lower crude transported volumes as a result of the reduction in production, and (ii) the termination of the receipt of the Continuity Plan Margin (charge included in the hydrocarbon price structure, corresponding to the recovery of the investment of the Pozos Colorados – Galán multi-purpose pipeline) by Cenit in the pricing structure for refined products as of April 2021. These effects were partially offset by an increase in revenues associated with increased refined products transported volumes, which in turn was primarily due to the recovery of demand and higher reversal cycles in the Bicentenario pipeline.

In 2020, our transportation and logistics segment sales were COP\$ 12,194,440 million compared to COP\$ 13,070,736 million in 2019. The 6.7% decrease in 2020 as compared with 2019 was mainly due to: (i) lower volumes of crude oil transported through our pipelines which was primarily due to a decrease of oil production at the national level, including production by third parties, (ii) a decrease in the volumes of refined products transported mainly due to lower demand as a result of the mobility restrictions and quarantines that were imposed throughout the year in order to combat the of the COVID-19 pandemic, (iii) the impact of IFRS 15 in revenue recognition from contracts with customers given that during 2020 the revenue associated with our ship or pay contracts in the Bicentenario and Caño Limón- Coveñas pipelines were not recognized due to the ongoing legal process we were under with some of their shippers (See Note 23.3 to our consolidated financial statements for more details) and (iv) a decrease in our sales of services due to zero reversal cycles through the Bicentenario pipeline during the year as result of a stable operation of the Caño Limón - Coveñas pipeline throughout 2020. This decrease was partially offset by the positive effect on our U.S. dollar-indexed transportation fees resulting from the depreciation of the Colombian peso against the U.S. dollar, previously mentioned.

[Table of Contents](#)

The cost of sales for our transportation and logistics segment is mainly related to: (i) project costs associated with the maintenance of transportation networks, and (ii) operating costs related to these systems, including the costs of labor, energy, fuels and lubricants and others.

The cost of sales amounted to COP\$ 3,260,309 in 2021 as compared to COP\$ 3,381,357 million in 2020. The cost of sales for this segment decreased by 3.6% in 2021 as compared with 2020 mainly due to: (i) lower depreciation due to the extension of the useful lives of Bicentenario and ODL pipelines, and (ii) a reduction in the variable costs of materials, mainly related to lower crude transported volumes.

The cost of sales amounted to COP\$ 3,381,357 in 2020 as compared to COP\$ 3,738,194 million in 2019. The cost of sales for this segment decreased by 9.5% in 2020 as compared with 2019 mainly due to: (i) a decrease in costs associated with lower transported volumes, (ii) lower fixed costs mainly as a result of contract renegotiations, (iii) a decrease in depreciation as a result of an adjustment in the useful life of some of our transportations systems, and (iv) a decrease in costs related to the rescheduling of maintenance activities throughout the year, which in turn was primarily due to the effects of the COVID-19 pandemic.

In 2021, operating expenses before the impairment of non-current assets decreased by 71.2% as compared to 2020 due to the effect of the settlement agreement in which Frontera recognized to Bicentenario the value equivalent to a portion of the syndicated debt, as well as a compensation in favor of Cenit for the early termination of the contracts.

In 2020, operating expenses before the impairment of non-current assets increased by 27.6% as compared to 2019 due to: (i) an increase in labor expenses given that certain of the segment's employees chose to take the voluntary retirement plan we offered in 2020 and (ii) an extraordinary income recognized in 2019 associated to a favorable litigation related to Ocesa's line filled and no similar income in 2020. This increase was partially offset by a decrease in the expenses associated to the remediation of the damages caused by terrorist attacks and illicit taps into our transportation infrastructure.

The impairment of non-current assets recognized in the segment in 2021 was COP\$ 165,901 million, compared to the reversal of impairment losses of non-current assets of COP\$ 341,065 million in 2020. This impairment loss was primarily due to the South Cash Generating Unit, which includes the Transandino pipeline – (OTA) and the port of Tumaco, which in turn was primarily due to a decrease in our estimate of its long term volume capability.

The reversal of impairment of non-current assets recognized in the segment in 2020, totaled COP\$ 341,065 million as compared to impairment losses of non-current assets of COP\$ 232,556 million in 2019. This reversal in the impairment of this segment was primarily by a recovery in transported volumes in 2020 through: (i) South Cash Generating Unit, which includes the Transandino pipeline (OTA) and the port of Tumaco and (ii) North Cash Generating Unit, which includes the Banadia-Ayacucho pipeline, part of the Caño Limon- Coveñas system.

The segment recorded net income attributable to owners of Ecopetrol of COP\$ 4,635,354 million in 2021 as compared to a net income of COP\$ 4,574,800 million in 2020 and COP\$ 4,244,860 million in 2019.

4.6.1.11. Refining and Petrochemicals Segment Results

In 2021, the refining and petrochemical segment sales were COP\$ 50,976,385 million compared to COP\$ 26,104,351 million in 2020. In 2021, sales of refined products and petrochemicals increased by 95.3% as compared with 2020, mainly due to: (i) an increase of our volumes of gasoline and diesel sales in line with the general increase in demand due to the reactivation of the economy, and (ii) higher prices of the product basket given external market factors. Invercolsa's revenues increased as a result of the higher commercialization of: (i) natural gas volumes, primarily due to progress in campaigns to encourage gas consumption in commercial and vehicular natural gas, and (ii) installation strategies for residential users to increase their volumes. Additionally, Esenttia's sales volume remained stable compared to 2020, while its total cumulative margin increased, primarily due to favorable market conditions associated with: (i) increased demand that favored prices, (ii) lower Asian product availability due to logistic constraints, (iii) the stable operation of the main polymer grade polypropylene raw material supplier, and (iv) the implementation of a sales strategy to strengthen relations with traditional clients and increase market share in countries with higher profitability.

In 2020, the refining and petrochemical segment sales were COP\$ 26,104,351 million compared to COP\$ 38,770.806 million in 2019. In 2020, sales of refined products and petrochemicals decreased by 32.7% as compared with 2019, mainly due to: (i) a decrease of our

[Table of Contents](#)

volumes of gasoline and diesel sales due to a drastic worldwide drop in demand as a result of the COVID-19 pandemic and (ii) lower prices of the product basket given external market factors. This decrease was partially offset by: (i) the depreciation of the Colombian Peso against the U.S. dollar, resulting in an increase in sales revenue recorded in U.S. dollars, (ii) higher volumes of polypropylene produced by Esenttia and the strengthening of its international margins and (iii) the consolidation of Invercolsa into our consolidated results of operations as from November 2019.

The cost of sales for our refined products and petrochemicals segment is mainly related to the purchase of crude oil and natural gas for our refineries, imported crude oil and products to supply local demand, feedstock transportation services, services contracted for maintenance of the refineries and the amortization and depreciation of refining assets.

Cost of sales amounted to COP\$ 48,535,388 million in 2021, compared to COP\$ 25,825,555 million in 2020 and COP\$ 37,856,219 million in 2019. In 2021, the cost of sales for this segment increased 87.9% as compared with 2020, principally due to (i) increased in volume purchases of crude oil to be used by our refineries primarily due to higher throughput, (ii) higher average purchase prices, (iii) increase in diesel and gasoline imports associated with the higher demand caused by the economic recovery and major maintenance at our refineries. This increase was partially offset by the inclusion of a higher percentage of domestic crude in the Cartagena refinery, which resulted in a more cost-effective crude slate.

In 2020, the cost of sales for this segment decreased 31.8% as compared with 2019, principally due to (i) decreased in volume purchases of crude oil for use by our refineries primarily due to lower throughput, which in turn was caused by the COVID-19 pandemic (ii) lower average purchase prices, (iii) a decrease in diesel imports associated with the lower demand caused by COVID-19 national lockdowns and (iii) the inclusion of a higher percentage of domestic crude in the Cartagena refinery, which resulted in a more cost-effective crude slate.

In 2021, operating expenses before the impairment of non-current assets increased by 2.1% as compared to 2020, mainly due to: (i) an in commercialization expenses directly tied to the increase in sales, and (ii) the recognition of the fixed cost of plants temporarily halted at the Cartagena refinery, which in turn was primarily as a result of: (a) operational events and public order related obstructions, (b) continuing restrictions resulting from the continuation of the COVID-19 pandemic, and (c) scheduled major maintenance and operational events.

In 2020, operating expenses before the impairment of non-current assets increased by 649% as compared to 2019, mainly due to: (i) an increase in income as a result of our recognition of the Invercolsa's valuation in 2019 once we became their controlling shareholder and no similar recognition in 2020, (ii) recognition of the fixed cost of plants temporarily halted at the Barrancabermeja refinery given the COVID-19 pandemic and decrease in product demand, (iii) the consolidation of Invercolsa during the entire year of 2020 versus two months in 2019 and (iv) higher labor expenses due certain of the segment's employees choosing to accept our voluntary retirement plan, previously mentioned.

In 2021, we recognized an impairment loss of non-current assets in this segment totaling COP\$ 305,466 million, as compared to an impairment loss of COP\$ 781,528 million in 2020. The impairment loss recorded in 2021 is primarily the result of an impairment loss of COP\$ 340,116 million attributable to the Barrancabermeja refinery modernization plan, considering the progress in the technical analysis and fit of the project under current market conditions and challenges. The above was partially offset by a reversal of impairment of COP\$ 34,650 million attributable to the Cartagena refinery, mainly due to higher refining margins.

In 2020, we recognized an impairment loss of non-current assets in this segment totaling COP\$ 781,528 million, as compared to a reversal of impairment of COP\$ 452,163 million in 2019. The impairment loss we observed in 2020 is primarily the result of: (i) an impairment loss of COP \$ 440,525 million attributable to the Cartagena refinery, which in turn was mainly due to lower refining margins, and (ii) an impairment loss of COP \$341,000 million attributable to the Barrancabermeja Refinery Modernization Plan, taking into account progress in the technical analysis of the project.

As mentioned earlier, the refining segment is highly sensitive to changes in product prices and feedstock in the international market, discount rate, refining margins, changes in environmental regulations and cost structure and the level of capital expenditures, among others.

The refining and petrochemicals segment recorded net loss attributable to owners of Ecopetrol of COP\$1,198,619 million in 2021 compared to a net loss of COP\$2,848,511 million in 2020 and a net gain of COP\$117,708 million in 2019.

[Table of Contents](#)

4.6.1.12. Electric Power Transmission and Toll Roads Concessions Segment Results

As mentioned above, we only created our Electric Power Transmission Toll Roads Concessions Segment in September 2021 and as such the information below presents the results as of such date, without a comparison to 2020.

In 2021, the electric power transmission and toll roads segment revenues from contracts with customers were COP\$ 4,113,198 million, which included COP\$ 2,556,089 million for electricity transmission, COP\$ 1,348,322 million for toll road concessions and COP\$ 208,787 million for telecommunication technologies and other operating revenues. Electricity transmission revenues were positively affected by the entry into operation of certain energy transmission projects, the consolidation with *Piratiniga-Bandeirantes Transmissora de Energia* (PBTE) in March 2021, and the positive impact of macroeconomic variables in Brazil and Colombia. Toll road concession revenues were positively affected by higher returns on contract assets and higher revenues from maintenance of concessions and toll management in Chile, partially offset by the negative effects of the termination of the Ruta del Maule concession contract. Telecommunication technologies were positively affected by higher sales of connectivity services given the increase in internet consumption, sales of capacity and other telecommunications services in Colombia and Peru.

The operating costs for our electric power transmission and toll roads concessions segment is mainly related to construction costs of concession contracts, operation and maintenance costs, which amounted to COP\$ 1,817,491 million in 2021. Administrative expenses of our electric power transmission and toll roads concessions segment includes depreciation, commissions and fees, impairment of non-current assets and services, including acquisition costs related to our acquisition of ISA, which amounted to COP\$ 374,670 million in 2021.

In 2021, the share of profit of associates and joint ventures caused a positive effect in our results of COP\$ 214,698 million, which corresponds to the participation in the results mainly of *Transmissora Aliança de Energia Elétrica*, *Interligação Elétrica do Madeira* and *Interligação Elétrica Ivaí*, energy transport companies in Brazil.

The electric power transmission and toll roads concessions segment recorded net income attributable to owners of Ecopetrol of COP\$ 386,438 million in 2021.

4.7. Liquidity and Capital Resources

Our principal sources of liquidity in 2021 were: (i) cash flows from our operations amounting to COP\$ 22,536,021 million, (ii) cash flow from financing activities amounting to COP\$ 13,399,252 million, and (iii) cash flows from net sales of securities investment portfolio amounting to COP\$ 1,282,903 million.

Our main uses of cash in 2021 were: (i) COP\$ 13,294,962 million in capital expenditures, which included investments in property, plant and equipment, natural and environmental resources and intangibles, (ii) the acquisition of ISA, net of acquired cash, amounting to COP\$ 8,951,587 million, (iii) dividend payments amounting to COP\$2,771,287 million, which included dividends of COP\$ 696,387 million to Ecopetrol's shareholders, including the Nation, and dividends paid to the non-controlling shareholders of our subsidiaries totaling COP\$ 2,074,900 million, and (iv) COP\$ 336,030 million in lease payments. For more information regarding our debt, see section Financial Review—Financial Indebtedness and Other Contractual Obligations.

4.7.1. Review of Cash Flows

Cash from operating activities

Net cash provided by operating activities increased by 145.3% in 2021 as compared to 2020, mainly as a result of:

- (i) A 132.7% increase in our operating income before depreciation, depletion and amortization (DD&A) and impairment of non-current assets primarily due to: (i) a favorable Brent price environment and notable commercial management that allowed us to materialize better crude, product and petrochemical price spreads, (ii) higher product and gas sales volumes, associated with higher domestic demand as a result of the economic reactivation, (iii) a solid operating performance in all business segments despite the public and social order situation in Colombia that continued in 2021, (iv) the increased contribution of our subsidiaries in the Permian to our consolidated production, and (v) the acquisition of ISA and subsequent consolidation of its positive operating results since September 2021.

[Table of Contents](#)

- (ii) Higher working capital needs mainly due to an increase in accounts receivable from the FEPC, (ii) increase of inventories by sales in transit and price effect, and (iii) increase in tax assets give that income tax advances did not offset the charged taxes of Ecopetrol S.A.

Net cash provided by operating activities decreased by 66.8% in 2020 as compared to 2019, mainly as a result of:

- (i) A 45.4% decrease in our operating income before depreciation, depletion and amortization (DD&A) and impairment of non-current assets primarily due to (i) lower sales volumes associated with the decrease in demand and weighted average sale prices which in turn primarily reflects the effects of the COVID-19 pandemic as previously discussed, and (ii) expenses in 2020, such as the voluntary retirement plan we offered certain of our employees and aid granted to support Colombian Government efforts to mitigate the health and other social impacts of the COVID-19 pandemic. This decrease was partially offset by (i) lower operational costs given the decrease in our activity levels generally, (ii) new businesses integrated into the Ecopetrol Group's consolidated results, such as Invercolsa and Permian, and our increased participation in the Guajira association contract and (iii) good results of our performance of subsidiaries that are not sensitive to the Brent price, such as Esenttia and Cenit.
- (ii) Higher working capital expenditures needs mainly due to the decrease in operating activity generated by the COVID-19 pandemic, which derived into lower accounts payable with suppliers and an increase in tax assets give that income tax advances did not offset charged taxes as Ecopetrol S.A. will be taxed at the presumptive income tax rate given its decreased income results for 2020. The factor mentioned was partially offset by a decrease in accounts receivable and inventories, which in turn was due to the decrease in sales.

Cash used in investing activities

In 2021, net cash used in investing activities increased by 140.6% as compared to 2020, mainly as a result of: (i) a 19.6% increase in capital expenditures, mainly in development wells in Rubiales, Castilla, Middle Magdalena Valley, and Permian in upstream segment, investments in pipelines infrastructure's integrity and reliability in midstream segment and focused on operational continuity in downstream segment, and (ii) the acquisition of ISA for COP\$ 8,951,587 million, net of acquired cash.

In 2020, net cash used in investing activities decreased by 15.0% as compared to 2019, mainly as a result of: (i) a 20.5% decrease in investments in capital expenditures, mainly due to the work restrictions implemented to contain the cases of contagion of COVID-19 (under the concept of operational vital minimum), that was reflected in temporary closure of some wells and negatively affected our production. All the above primarily affected our capital expenditures in the Rubiales, Caño Sur, Casabe, Sur and Recetor assets as well as the Cartagena refinery, (ii) blockages by the communities in the Rubiales, Apiay and Tibu fields, and (iii) a decrease in our securities investment levels in order to conserve liquidity given the lower generation of cash from the operations.

Cash used in financing activities

Net cash provided by financing activities increased by 364.7% in 2021, as compared to 2020, due to: (i) an increase in cash from borrowings, net of related repayments of principal and payments of interest, of COP\$ 10,065,697 million as compared to an increase of COP\$ 6,455,835 million in 2020, which in turn primarily reflects Ecopetrol S.A. entering into committed lines of credit for the purchase of ISA by COP\$ 14,232,966 million in August 2021 which were partially repaid with the issuance of SEC-registered bonds in an aggregate amount of US\$2,000 million, and (ii) a COP\$ 5,963,064 million decrease in dividend payments in 2021 as compared to 2020.

Net cash used in financing activities decreased by 84.7% in 2020, as compared to 2019, due to: (i) an increase in cash from borrowings, net of related payments of principal and interest, of COP\$6,455,835 million as compared to a decrease of COP\$ 3,002,977 million in 2019, which in turn primarily reflects Ecopetrol S.A. entering into committed credit lines in an aggregate principal amount of US\$ 665 million and issuing a SEC-registered bond in an aggregate amount of US\$2,000 million in 2020, and (ii) a COP\$ 5,132,678 million decrease in dividend payments in 2020 as compared to 2019.

[Table of Contents](#)

4.7.2. Capital Expenditures

Our consolidated capital expenditures in 2021, 2020 and 2019 were COP\$ 13,294,962 million, COP\$ 11,116,861 million and COP\$ 13,979,141 million, respectively. These investments were distributed by business segment on average, for the past three years as follows: 79.0% for the exploration and production segment, 9.9% for refining and petrochemicals, 9.7% for the transportation and logistics segment and 1.4% for the electric power transmission and toll roads concessions segment. See Note 33.3 to our consolidated financial statements for more detail about capital expenditures by segment.

Our investment plan approved for 2022 is a range of between US\$ 4,800 million and US\$ 5,800 million. See section Strategy and Market Overview—2022 Investment Plan for further information and implicit Brent prices.

The resources required for the investment plan can be funded through internal cash generation and cash surpluses existing at the beginning of the year.

4.7.3. Dividends

On March 30, 2022, our shareholders at the ordinary General Shareholders Assembly approved a distribution of ordinary dividends for the fiscal year ended December 31, 2021, amounting to COP\$ 11,512,675 million, or COP\$ 280 per share, based on the number of outstanding shares as of December 31, 2021. Of the total dividends that will be paid, COP\$ 243 per share corresponds to an ordinary dividend pursuant to our current dividend policy and COP\$ 37 per share corresponds to an extraordinary dividend given the strong operational results of the Company in 2021. The dividend payment was approved to be made in one installment for the minority shareholders of Ecopetrol in April, 2022 and installments for the Nation during 2022.

In 2021, we paid dividends of COP\$ 696,387 million to our shareholders, including the Nation, and dividends paid to non-controlling shareholders of our subsidiaries totaling COP\$ 2,074,900 million.

In 2020, we paid dividends of COP\$ 7,369,499 million to our shareholders, including the Nation, and dividends paid to non-controlling shareholders of our subsidiaries totaling COP\$ 1,364,852 million.

In 2019, we paid dividends of COP\$ 12,910,611 million to our shareholders, including the Nation, and dividends paid to non-controlling shareholders of our subsidiaries totaling COP\$ 956,418 million.

[Table of Contents](#)

4.8. ***Summary of Differences between Internal Reporting (Colombian IFRS and IFRS)***

We prepare our interim and annual statutory financial information in accordance with our internal reporting policies, which follow Colombian IFRS and differ in certain significant aspects from IFRS. The following table sets forth our consolidated net income and equity for years ended December 31, 2021, 2020 and 2019, in accordance with Colombian IFRS and IFRS:

Table 62 – Consolidated Net Income and Equity

	For the year ended December 31,			% Change	
	2021	2020	2019	2021/2020	2020/2019
	(COP\$Million)				
Net income attributable to owners of Ecopetrol (IFRS)	15,649,143	1,586,677	13,744,011	886.3	(88.5)
Cash flow hedge for future company exports	(108,198)	(122,375)	(419,275)	(11.6)	(70.8)
Exchange rate effects on tax bases – Deferred tax	1,153,739	223,775	(73,253)	415.6	(405.5)
Net income Attributable to owners of Ecopetrol (Colombian IFRS)	16,694,684	1,688,077	13,251,483	889.0	(87.3)
Net Equity (IFRS)	90,583,772	53,499,363	58,231,628	69.3	(8.1)
Cash flow hedge for future company exports	—	—	(10,099)	—	(100.0)
Exchange rate effects on tax bases – Deferred tax	3,459,908	2,319,907	2,122,593	49.1	(9.3)
Purchase Price Allocation ISA	(291,608)	—	—	—	—
Net Equity (Colombian IFRS)	93,752,072	55,819,270	60,344,122	68.0	(7.5)

As noted above, certain differences exist between our net income and equity as determined in accordance with our internal reporting policies, which follow Colombian IFRS, which are used for management reporting purposes, as presented in the business segment information, and our net income and equity as determined under IFRS, as presented in our consolidated financial statements.

The primary differences between Colombian IFRS and IFRS as they apply to our results of operations are summarized below:

Cash flow hedge for future company exports. In September 2015, in order to hedge the effect of exchange rate volatility on our foreign currency debt, Ecopetrol S.A.'s Board of Directors approved a cash flow hedge for future crude oil exports. According to IAS 39 – Financial Instruments, we implemented this hedge beginning on October 1, 2015, the date on which we formally completed the related hedging documentation.

Under Colombian IFRS, the General Accounting Office of the Nation (CGN for its Spanish acronym) issued Resolution 509, which allows companies to apply hedge accounting for non-derivative financial instruments from any date within the transition period or the first period of application of International Accounting Standards in Colombia, even if such company has not yet formally documented the hedging relationship, the objective or the risk management strategy. Under these rules, we applied cash flow hedge accounting from January 1, 2015 in our financial statements under Colombian IFRS.

As a result of this accounting policy difference, for the year ended December 31, 2021, our net income as reported under IFRS was COP\$108,198 million higher than our net income as reported under Colombian IFRS.

Exchange rate effects on tax bases – Deferred tax. According to IAS 12.41, companies with a U.S. dollar functional currency and profit or tax loss in Colombian Pesos are required to recognize deferred taxes attributable to the difference between the carrying amounts of non-monetary assets in their financial statements and their respective tax bases converted from Colombian Pesos to U.S. dollars using the exchange rate on the closing date. The effect of the temporary difference is charged to profit and losses without a cash outflow expected in the future. Under local accounting principles (The General Accounting Office opinion No. 20162000000781 dated January 18, 2016), the result attributable to the aforementioned difference in accounting policies does not generate any deferred taxes.

Our functional currency is the Colombian Peso and it consolidates some subsidiaries whose functional currency is the U.S. dollar but who settled their taxes in Colombian Pesos. As a result of the application of paragraph 41 – IAS 12, such subsidiaries are required to calculate deferred taxes under IFRS.

[Table of Contents](#)

As a result of this accounting policy difference, for the year ended December 31, 2021, our net income attributable to owners of Ecopetrol as reported under IFRS was COP\$1,153,739 million lower than our net income attributable to owners of Ecopetrol as reported under Colombian IFRS.

The application of IAS12.41 also generated adjustments to our goodwill and investments in companies impairments of COP\$ 0 million in 2021, COP\$ 12,435 million in 2020 and COP\$ 14,865 million in 2019 in connection with our purchase of subsidiaries whose functional currency is the U.S. dollar as well as adjustments to our revenue from the equity method of COP\$ 0 million in 2021, COP\$ 12.091 million in 2020 and COP\$ 12.630 million in 2019 in connection with our associates and joint ventures whose functional currency is the U.S. dollar.

As a result of these accounting policy differences described above, for the year ended December 31, 2021, we reported net income attributable to the owners of Ecopetrol under IFRS of COP\$ 15,649,143 million as opposed to a net income attributable to the owners of Ecopetrol of COP\$ 16,694,684 million reported under Colombian IFRS for the same period. For the year ended December 31, 2020, we reported net income attributable to the owners of Ecopetrol under IFRS of COP\$ 1,586,677 million as opposed to a net income attributable to the owners of Ecopetrol of COP\$ 1,688,077 million reported under Colombian IFRS for the same period. For the year ended December 31, 2019, these same accounting differences led us to report net income attributable to the owners of Ecopetrol under IFRS of COP\$ 13,744,011 million as opposed to a net income attributable to the owners of Ecopetrol of COP\$ 13,251,483 million reported under Colombian IFRS for the same period.

Purchase price allocation – PPA. Corresponds to the update of local financial figures as of December 31, 2021 such as intangibles, deferred tax and non-controlling interest in connection with Ecopetrol S.A.'s acquisition of 51.41 % of ISA.

[Table of Contents](#)

4.9. ***Financial Indebtedness and Other Contractual Obligations***

As of December 31, 2021, we had outstanding consolidated indebtedness of COP\$23.2 billion, which corresponded primarily to the following long-term transactions:

Table 63 – Consolidated Financial Indebtedness

[Table of Contents](#)

Company	Type	Initial Date	Original Amount	Maturity	Interest Rate	Amortization
Ecopetrol S.A.	Bonds	September 18, 2013	US\$ 1,300 million	September 18, 2023	5.875 %	Bullet
		September 18, 2013	US\$ 850 million	September 18, 2043	7.375 %	Bullet
		May 28, 2014	US\$ 2,000 million	May 28, 2045	5.875 %	Bullet
		September 16, 2014	US\$ 1,200 million	January 16, 2025	4.125 %	Bullet
		June 26, 2015	US\$ 1,500 million	June 26, 2026	5.357 %	Bullet
		June 15, 2016*	US\$ 500 million	September 18, 2023	5.875 %	Bullet
		December 1, 2010	COP\$ 284,300 million	December 1, 2040	Floating	Bullet
		August 27, 2013	COP\$ 168,600 million	August 27, 2023	Floating	Bullet
		August 27, 2013	COP\$ 347,500 million	August 27, 2028	Floating	Bullet
		August 27, 2013	COP\$ 262,950 million	August 27, 2043	Floating	Bullet
		April 29, 2020	US\$ 2,000 million	April 29, 2030	6.875 %	Bullet
		November 02, 2021	US\$ 1,250 million	November 02, 2031	4.625 %	Bullet
		November 02, 2021	US\$ 750 million	November 02, 2051	5.875 %	Bullet
	Bank Loans	December 30, 2011**	US\$ 440 million	December 20, 2025	Floating	Semi-annual
		April 15, 2020	US\$ 665 million	September 20, 2023	Floating	Semi-annual
	ECAs	August 17, 2021	US 3,672 million	August 17, 2023	Floating	Quarterly
		December 30, 2011**	US\$ 2,650 million	December 20, 2027	Fixed	Semi-annual
		December 30, 2011**	US\$ 100 million	December 20, 2027	Floating	Semi-annual
		December 30, 2011**	US\$ 97 million	December 20, 2027	Fixed	Semi-annual
		December 30, 2011**	US\$ 210 million	December 20, 2027	Floating	Semi-annual
Invercolsa & Subsidiaries	Bank Loans	Various	COP\$ 361,999 million	Various	Various	Various
Ocensa	Bond	July 14, 2020	US\$500 million	July 14, 2027	4.000 %	Bullet
Oleoducto Bicentenario	Bank Loan	July 5, 2012	COP\$2.1 trillion	July 5, 2024	Floating	Quarterly
ODL	Lease	November 5, 2015	COP\$308,221 million	November 4, 2032	Floating	Monthly
ISA & Subsidiaries	Bonds	Various	US\$ 6.0 billion	Various	Various	Various

[Table of Contents](#)

Bank Loans	Various	US\$ 1.74 billion	Various	Various	Various
------------	---------	-------------------	---------	---------	---------

* Reopening of bond due to 2023.

** Debt originally obtained by Reficar for the Refinery modernization and voluntarily assumed by us. In prior annual reports on form 20-F, there was a typographical error in respect of the original amount outstanding of the Bank Loan. It was listed as US\$321 million and the correct amount as listed in the table above is US\$ 440 million.

The Colombian Superintendence of Finance, through Resolution 1379 of October 10, 2019, authorized the renewal of the term of the Issuance and Placement Program of Internal Debt Bonds and Commercial Papers of the Company for three (3) additional years, until October 10, 2022. This authorization itself do not constitute an approval for the issuance of securities or any financing transaction.

On April 4, 2022, Consorcio Transmantaro S.A. ("CTM"), one of ISA's electric power transmission subsidiaries in Perú issued 5.200% amortizing notes due 2038 in an aggregate amount of US\$500 million under an unregistered Rule 144A/Regulation S notes offering (COP\$ 1.89 trillion according to the COP\$/US\$ exchange rate as of April 04, 2022). The notes were listed on the Official List of the Luxemburg Stock Exchange. This follows CTM's announcement on March 22, 2022, of an any and all tender offer with allocation codes and consent solicitation to holders of CTM's 4.375% senior notes due 2023. For other short and long-term debt transactions executed so far in 2022, see [Financial Statements - Subsequent and relevant events](#).

The short and long-term debt transactions executed in 2021 were as follows:

- On August 17, 2021, we entered into a committed line of credit for up to US\$1.2 billion with Banco Bilbao Vizcaya Argentaria, S.A. New York Branch, Banco Santander, S.A., JPMorgan Chase Bank, N.A., Mizuho Bank, Ltd., Sumitomo Mitsui Banking Corporation and The Bank of Nova Scotia, as lenders. As of the date of this annual report, no disbursements have been made from this line of credit.
- On August 17, 2021, we entered into a loan agreement for an amount of up to US\$4.0 billion with Banco Santander, S.A., Citibank, N.A., JPMorgan Chase Bank, N.A. and The Bank of Nova Scotia, from which US\$3,672,000,000 were disbursed to finance the acquisition of ISA. The loan is payable at maturity on August 18, 2023, and bears an interest rate of 3-month LIBOR plus 80 basis points. As of the date of this annual report, the outstanding balance on this loan is US\$1,672,000,000.
- On November 2, 2021, we issued 4.625% Notes due 2031 in an aggregate amount of US\$1.25 billion (COP\$4.98 trillion according to the COP\$/US\$ exchange rate as of December 31, 2021) and 5.875% Bonds due 2051 in an aggregate amount US\$750 million (COP\$ 2.99 trillion according to the COP\$/US\$ exchange rate as of December 31, 2021) in a SEC-registered transaction. The notes and bonds were listed on the NYSE. The proceeds thereof were used to partially refinance the loan described above disbursed in connection with the Acquisition.
- On November 26, 2021, ISA issued 3.825% Notes due 2033 in an aggregate amount of US\$ 330 million (COP\$ 1.31 trillion according to the COP\$/US\$ exchange rate as of December 31, 2021) under an unregistered Rule 144A/Regulation S notes offering. The notes were listed on the Official List of the Singapore Exchange Securities Trading Limited.

The short and long-term debt transactions executed in 2020 were as follows:

- Between March and April 2020, Ecopetrol S.A. executed short term debt transactions (trade finance and short-term loans) in Colombian pesos and US dollars, for an aggregate of COP\$ 775 billion and US\$ 221.5 million, respectively (totaling COP\$ 1.7 trillion according to the COP\$/US\$ exchange rate as of the day of execution of each transaction). All loans were prepaid in September 2020.
- On April 15, 2020, Bank of Nova Scotia and Mizuho Bank disbursed an aggregate amount of US\$ 665 million (COP\$ 2.3 trillion according to the COP\$/US\$ exchange rate as of December 31, 2020) under a committed credit facility due in September 2023.

[Table of Contents](#)

- On April 24, 2020, Ecopetrol S.A issued 6.875% Notes due 2030 in an aggregate amount of US\$ 2 billion (COP\$ 6.9 trillion according to the COP\$/US\$ exchange rate as of December 31, 2020) in an SEC-registered transaction. The notes were listed on the NYSE.
- On July 14, 2020, Ocesa issued 4% Notes due 2027 in an aggregate amount of US\$ 500 million (COP\$ 1.7 trillion according to the COP\$/US\$ exchange rate as of December 31, 2020) in an unregistered Rule 144A/Regulation S notes offering. The notes were listed on the Luxembourg Stock Exchange. The proceeds were used to redeem, on September 18, 2020, Ocesa's bonds originally due on May 7, 2021.

We did not incur any short-term or long-term bank loans or bonds in 2019.

Contractual Obligations

We enter into various commitments and contractual obligations that may require future cash payments. The following table summarizes our contractual obligations as of December 31, 2021.

Table 64 – Our Material Contractual Obligations

COP\$Millions	Payments due by period		
	Total	Short Term (Less than 1 year)	Long Term (More than 1 year)
Employee Benefit Plan	36,844,929	1,799,529	35,045,400
Contract Service Obligations	23,460,212	4,682,294	18,777,918
Natural Gas Supply Agreements	14,226,625	12,488,343	1,738,282
Purchase Obligations	1,907,304	1,086,023	821,281
Energy Supply Agreements	1,624,804	10,855	1,613,949
Capital Expenditures	25,772,644	9,624,479	16,148,165
Financial Sector Debt	20,867,409	3,868,063	16,999,346
Bonds	71,544,719	3,565,996	67,978,723
Total	196,248,646	37,125,582	159,123,064

Note: As a result of the ISA Acquisition, there has been a material increase in our commitments as compared to the information reported in our annual report on Form 20 F for the year ended December 31, 2020 filed with the SEC on April 8, 2021.

4.10. Off Balance Sheet Arrangements

As of December 31, 2021, we did not have off-balance sheet arrangements of the type that is required to be disclosed under Item 5.E of Form 20-F.

4.11. Trend Analysis and Sensitivity Analysis

We updated our 2022 – 2024 Business Plan and launched our 2040 Strategy on February 8, 2022. See sections Strategy and Market Overview—Our Corporate Strategy—2040 Strategy: Energy that Transforms and Strategy and Market Overview—Our Corporate Strategy—2022–2022 Business Plan for a discussion of the trends recognized in the development of those plans.

Sensitivity Analysis

Sensitivity Analysis of Reserves

The following table provides information about the sensitivity analysis conducted on our oil and gas reserves as of December 31, 2021, considering ICE Brent crude oil prices that reasonably reflect management's view of crude oil prices given prevailing market conditions, and management portfolio costs.

[Table of Contents](#)

Table 65 – Sensitivity Analysis of Reserves

	Oil and NGL (mmb)	Natural Gas (bcf)	Total Oil and Gas (mmbae)
Reserves as of December 31, 2021	1,205.0	2,544.0	1,651.0
Sensitivity Scenario	1,170.0	2,530.0	1,614.0
Difference (mmb)	(35.0)	(14.0)	(37.0)
Difference (%)	(3.0)	(1.0)	(2.0)

The conversion rate used is 5,700 cf = 1 boe.

Assumptions for the Sensitivity Analysis of Reserves:

- The sensitivity analysis assumes a constant ICE Brent price of US\$ 76 per barrel in 2022, between US\$ 62 and US\$ 68 per barrel in the period 2023-2030, and between US\$ 60 and US\$ 63 onwards, and costs of management portfolio.
- The base scenario on which our sensitivity analysis is made corresponds to 82% of our oil, NGL and natural gas reserves, as of December 31, 2021, as presented elsewhere in this annual report.
- Other variables such as the operating costs, capital costs and portfolio price remain unchanged for purposes of the analysis.

Sensitivity Analysis of our Results

The following table provides information about the sensitivity of our results as of December 31, 2021, due to variations of US\$ 1 in the price of ICE Brent crude and of 1% in the COP\$/US\$ exchange rate.

Table 66 – Sensitivity Analysis of our Results

	Income Statement 2021	Income Statement Case ICE Brent ⁽¹⁾ + US\$1	Difference Between Real 2021 and Case ICE Brent	Income Statement Case TRM ⁽²⁾ +1%	Difference Between Real 2021 and Case TRM
COP\$Million					
Revenue	91,881.20	92,971.98	1,090.78	92,730.36	849.16
Cost of sales	55,581.78	56,040.39	458.61	55,918.55	336.77
Gross Income	36,299.42	36,931.59	632.17	36,811.81	512.39
Operating expenses	6,568.37	6,568.37	—	6,568.37	—
Impairment of non-current assets	33.35	33.35	—	33.35	—
Operating income	29,697.70	30,329.87	632.17	30,210.09	512.39
Finance results, net	(3,698.05)	(3,698.05)	—	(3,698.05)	—
Share of profit of associates and joint ventures	426.16	426.16	—	426.16	—
Income before income tax	26,425.81	27,057.98	632.17	26,938.20	512.39
Income Tax	(8,795.26)	(9,005.66)	(210.40)	(8,965.80)	(170.54)
Net Income	17,630.55	18,052.32	421.77	17,972.40	341.85

(1) ICE Brent = US\$ 71 per barrel

(2) Exchange rate (TRM) = COP\$ 3,743/US\$ 1.00

Assumptions for the Sensitivity Analysis of our Results:

- Our sensitivity analysis is based on the Consolidated Statement of Profit or Loss for 2021, as presented elsewhere in this annual report.

[Table of Contents](#)

- The sensitivity of the ICE Brent price index is in reference to an increase of US\$1 per barrel of crude oil in the average ICE Brent reference price based on a 365-day year for 2021. Prices assumed correspond to realized prices for crude oil, natural gas and refined products for 2021, adjusted to account for the differences between such realized prices and the ICE Brent reference price.
- The sensitivity of our results to changes in the exchange rate is in reference to a 1% average depreciation of the Colombian Peso against the U.S. dollar during 2021. Prices are the realized prices of crude oil, natural gas and refined products in 2021 and are expressed for the sensitivity using the adjusted exchange rate (i.e., a 1% average depreciation of the Colombian Peso against the U.S. dollar during 2021).
- The income tax for each of our sensitivity analyses (price of ICE Brent and COP\$/US\$ exchange rate) is estimated using the effective corporate tax rate of 33% for 2021.
- This sensitivity analysis keeps everything constant. In the case of significant variations of the ICE Brent price, we will perform interventions in our operating expenditures.

The table below sets forth the line items that are being affected by the variation on the reference prices or the average exchange rate.

Table 67

VARIATION ON ICE BRENT REFERENCE PRICE	VARIATION ON AVERAGE EXCHANGE RATE
REVENUE	
Sales of crude oil	Sales of crude oil
Sales of refined products	Sales of refined products
Sales of natural gas	Sales of natural gas
COST OF SALES	
Local purchases from business partners	Local purchases from business partners
Local purchases of hydrocarbons from the ANH	Local purchases of hydrocarbons from the ANH
Local purchases of natural gas	Local purchases of natural gas
Imports of products	Imports of products

[Table of Contents](#)

5. **Risk Review**

5.1. **Risk Factor Summary**

The following is a summary of the principal risks we face:

Risks Related to Our Business

1. Our crude oil and natural gas reserve estimates involve some degree of uncertainty and may prove to be incorrect over time, which could adversely affect our ability to generate revenue.
2. Achieving our long-term growth depends on our ability to execute our strategic plan — specifically, the discovery and/or successful development of additional reserves and our capacity to adapt our business to the transition to a low carbon economy and climate change and our ability to successfully diversify our portfolio.
3. Our business depends substantially on international prices for crude oil and refined products. The prices for these products are volatile; a sharp decrease could adversely affect our business prospects and results of operations.
4. Foreign currency exchange rate fluctuations may affect our financial results given the amount of U.S. dollar denominated debt held by us and the fact that most of our revenues are derived from sales of products quoted in or with reference to U.S. dollars.
5. Increased competition from local and foreign oil companies may have a negative impact on our ability to gain access to additional crude oil and natural gas reserves in Colombia and abroad.
6. If operational risks to which we are exposed in Colombia or overseas materialize, the health and safety of our workforce, the local community and the environment may be affected. In addition, we may suffer a disruption or shutdown of our operational activities.
7. Our involvement in deep-water drilling either as direct operator or in conjunction with our business partners involves risks and costs, which may be out of our control.
8. We are exposed to the credit, political and regulatory risks of our customers and any material nonpayment or nonperformance by our key customers could adversely affect our cash flow and results of operations.
9. Our ability to access the credit markets as well as the debt and equity capital markets on favorable terms to obtain funding to finance our operations or refinance our debt maturities may be limited due to the deterioration of these markets, any change to our credit ratings and the authorizations we need before incurring any financial indebtedness or executing any equity offering.
10. We may be exposed to increases in interest rates, thereby increasing our financial costs.
11. Our interest rate expense may be subject to uncertainty associated with the replacement or reform of benchmark indices, particularly London Interbank Offered Rate (“LIBOR”).
12. Our current and planned investments and business activities outside Colombia are exposed to political and economic risks.

[Table of Contents](#)

13. Our future performance depends on the successful selection, development and deployment of new technologies and the knowledge to operate, maintain and improve them.
14. Our performance could be negatively affected by the lack of employees with the skills needed to execute our business strategy.
15. If the strategic plans associated to natural gas and NGL failed to yield the expected results, our operations may not be able to keep pace with the increasing domestic demand for these products.
16. Our operations could be affected by reactions of labor unions, social organizations, communities and contractors to Colombia's political and social environment, environmental and climate change concerns and organizational changes
17. Our activities may be interrupted or affected by external factors, such as abnormal weather conditions and natural disasters that can be exacerbated by climate change.
18. Our business operations and financial condition could be negatively affected by the COVID-19 or other pandemic diseases and health events.
19. Our operations, including our activities in areas classified as indigenous reserves and Afro-Colombian lands, are subject to opposition from members of various communities.
20. We have made significant investments in acquisitions and divestments and we may not realize the expected value.
21. We might be required to provide financial support to our subsidiaries in Colombia or abroad.
22. Ongoing Colombian State control entities investigations regarding our subsidiary Reficar and our former subsidiary Bioenergy could adversely affect us.
23. Our results may be affected by supply chain disruptions and high price volatility impacting the performance of our suppliers, our business partners or their third-party service providers.
24. Our insurance policies do not cover all liabilities and may not be available for all risks.
25. New trends in the insurance sector in the face of climate change may bring additional costs or create new conditions to be addressed by our corporate insurance program.
26. A failure in our information technology systems or cyber security attacks may adversely affect our financial results.
27. We are exposed to behaviors incompatible with our ethics and compliance standards.
28. The reliability and capacity of national power supply systems may affect or limit the continuity of our operations or limit growth.
29. Rising water production levels may affect or constrain our crude oil production.

Risks Related to Colombia's and the Region's Political Environment

30. Changes in economic policies in Colombia, Peru, Brazil and Chile could materially adversely affect our business, financial condition and results of operations.
31. The worldwide economic effects of the outbreak and economic shutdown caused by the COVID-19 pandemic is adversely affecting Colombia's economy, and the impact could be material.

[Table of Contents](#)

32. The Colombian government could seize or expropriate our assets under certain circumstances for fair compensation.
33. Colombia has experienced internal security issues that have had or could have a negative effect on the Colombian economy and on us.
34. Despite the peace agreement between the Colombian government and the FARC and the peace negotiation process attempts with the National Liberation Army (the ELN), some illegal and terrorist activities of guerrilla groups or their members may continue.
35. There have been certain events in Colombia and abroad, which have resulted in political tensions between Colombia and some of its neighboring countries.
36. Companies operating in Colombia, including us, are subject to the prevailing economic conditions and the investment climate in Colombia, which may be less stable than the prevailing economic conditions and investment climate in developed countries.

Legal and Regulatory Risks

37. Our operations are subject to extensive regulation, which is subject to change from time to time by the applicable regulatory authorities.
38. More stringent environmental requirements or commitments imposed through regulation or public demand may lead to potential increased expenses or reduced demand for our products, as well as hardship in achieving timely permits and licenses.
39. We may not be able to keep pace with changing requirements to reduce impacts to Colombia's biodiversity.
40. Our operations might be affected by rising climate change and energy transition regulatory developments.
41. New or higher taxes resulting from changes in tax regulations or the interpretation thereof in Colombia could adversely affect our results of operations and financial condition.
42. We may incur losses and spend time and money defending pending lawsuits and arbitrations and responding to administrative investigations.

Risks Related to Our ADSs

43. Holders of our ADSs may encounter difficulties in protecting their interests.
44. Our ADS holders may be subject to regulations on foreign investment in Colombia.
45. Holders of our ADSs may not be able to effect service of process on us, our directors or executive officers within the United States, which may limit your recovery in any foreign judgment you obtain against us.
46. The protections afforded to minority shareholders in Colombia are different from those in the United States, and may be difficult to enforce.
47. ADSs do not have the same tax treatment as other equity investments in Colombia.
48. Judgments of Colombian courts with respect to our ADSs will be payable only in Colombian Pesos.
49. The relative volatility and illiquidity of the Colombian securities markets may substantially limit our investors' ability to sell our ADSs at the price and time they desire.

[Table of Contents](#)

50. We are not required to disclose as much information to investors as a U.S. issuer is required to disclose.

Risks Related to the Controlling Shareholder

51. Our controlling shareholder's interests may differ, from time to time, from those of certain minority shareholders.

5.2. Risk Factors

The risks discussed below could have a material adverse effect, separately or in combination, on our business's operating results, cash flows, liquidity and financial condition. Investors should carefully consider these risks.

5.2.1. Risks Related to Our Business

This section describes the most significant potential risks to our business.

Our crude oil and natural gas reserve estimates involve some degree of uncertainty and may prove to be incorrect over time, which could adversely affect our ability to generate revenue.

Reserves estimates are prepared using generally accepted geological and engineering evaluation methods and procedures. Estimates are based on geological, topographical, and engineering facts. Actual reserves and production may vary materially from estimates shown in this annual report, and downward revisions in our reserve estimates could lead to lower future production which could affect our results of operations and financial condition.

Hydrocarbon reserves presented in this annual report were calculated in accordance with SEC regulations. As required by those regulations, reserves were valued based on the unweighted average of closing prices for the first day of each month in the 12-month periods ended December 31, 2021, 2020 and 2019, as well as other conditions in existence at those dates. The average of closing prices of ICE Brent crude oil for the first day of each month in the 12-month periods was US\$ 63/Bbl in 2019, US\$ 43/Bbl in 2020 and US\$69 in 2021. In 2021, the Company recognized an increase in oil and gas proven reserves of 13% as compared to 2020, to 2,002 mmbbl in 2021 from 1,770 mmbbl in 2020. For more information, see section Business Overview—Exploration and Production—Reserves.

Furthermore, at least once a year, or more frequently if the circumstances require, the Company ascertains whether there are indicators of impairment to its assets or cash-generating units (CGUs) due to the difference between the carrying amount of such assets or CGUs against to their recoverable amounts, using reasonable assumptions, based on internal and external factors, which reflect market conditions. The recoverable amount is considered to be the higher of the fair value less costs of disposal and value in use, based on the free cash flow method, discounted at the Weighted Average Cost of Capital (WACC). Whenever the recoverable amount of an asset or CGU is lower than its net carrying amount, such amount is reduced to its recovery amount, recognizing a loss for impairment as an expense in the consolidated statement of profit or loss. External and internal sources of information may indicate that an impairment loss recognized for an asset, other than goodwill, may no longer exist or may have decreased, in this case, the reversal is recognized as an impairment recovery in the consolidated statement of profit or loss.

The 2021 impairment losses, net of non-current assets of COP\$ 33,351 million, corresponds to the net result of:

- A recovery of impairment of non-current assets in the exploration and production segment of COP\$ 438,020 million, mainly due to the favorable outlook of international prices and increase in reserves.
- An impairment of non-current assets in the refining and petrochemicals segment of COP\$ 305,446 million, primarily related to the Barrancabermeja refinery modernization plan which led to an impairment of COP\$ 340,019 million, considering the progress in technical analysis of the project and to other minor adjustments in the amount of COP\$ 97 million. The foregoing was partially offset by a reversal of impairment in the Cartagena refinery of COP\$ 34,650 million primarily due to operating and financial management improvements that permitted capturing greater refining margins in the short and medium-term.
- An impairment of non-current assets in the transportation and logistics segment of COP\$ 165,901 million, primarily due to a lower volume outlook for the Southern Cash Generating Unit, which is comprised of the Tumaco Port and the Transandino pipeline (OTA).

[Table of Contents](#)

- An impairment of non-current assets in the electric power transmission and toll roads concessions segment of COP\$ 4 million.

Any significant change in estimates and judgments could have a material effect on the quantity and present value of our proved reserves and subsequently on the recognition or recovery of impairment charges. Changes to estimations of reserves are applied prospectively to the amounts of depreciation, depletion and amortization charged and, consequently, the carrying amounts of exploration and production assets.

In order to assess the possible impact of current expected oil price scenarios and market conditions, as well as of further developments driven by the economic environment for the oil and gas industry, the Company has performed a sensitivity analysis over its proved reserve balance as of December 31, 2021. Based on these calculations, assuming an average price per barrel of ICE Brent price of US\$ 76 per barrel in 2022, US\$ 62 - US\$ 68 per barrel between 2023 and 2030, and between US\$ 60 and US\$ 63 onwards, Ecopetrol could recognize a decrease in oil and gas proved reserves of approximately 2%. This analysis considers our estimates and expectations regarding the main assumptions used in its proven reserve calculation, which final actual result may fluctuate and differ substantially from those provided herein due to several factors outside of the control of the Company. For additional information see section [Financial Review—Trend Analysis and Sensitivity Analysis](#).

On the contrary, any upward revision in our estimated quantities of proved reserves would indicate higher future production volumes, which could result in lower expenses for depreciation, depletion, and amortization for properties to which we apply the units of production method for calculating these expenses. These lower expenses, and any higher revenues as a result of actual production volumes and realized prices, could benefit our results of operations and financial condition.

Achieving our long-term growth depends on our ability to execute our strategic plan — specifically, the discovery and/or successful development of additional reserves, our capacity to adapt our business to the transition to a low carbon economy and climate change and our ability to successfully diversify our portfolio.

Our long-term growth objectives depend largely on our ability to develop the reserves recovery potential associated with existing fields and to discover and/or acquire new reserves, and in turn develop them successfully. Our exploration activities expose us to the inherent geological and drilling risks including the risk of not discovering commercially viable crude oil or natural gas reserves, and the risk that some exploratory wells initially budgeted for may be drilled at a later stage or not be drilled at all. Despite the effort we make to control costs associated with drilling, these are often uncertain, and numerous factors beyond our control may cause drilling operations to be curtailed, delayed, or cancelled.

Our ability to add and develop reserves also depends on our capacity to structurally reduce costs to maintain the profitability of oil fields already being exploited without compromising infrastructure integrity and HSE performance. Additionally, our strategy envisioned the exploration and development of unconventional reservoirs in Colombia, by using fracking technology. See section [Strategy and Market Overview—2022-2024 Business Plan](#) and section [Strategy and Market Overview—2040 Strategy: Energy That Transforms](#). However, the implementation of this strategy depends, among others, on the outcome of the regulatory framework under implementation by the Colombian Government, the environmental license required for the PPII, and the results of the scientific information to be collected by the execution of the PPII.

If we are unable to achieve expected recovery factors in our existing fields, or successfully discover and develop additional reserves, or if we do not acquire properties having proved reserves, our reserves portfolio will decline. Failure to secure additional reserves may impede us from achieving or maintaining production targets and may have a negative impact on our results of operations and financial condition.

Furthermore, we are subject to risks related to the transition to a low carbon economy and to climate change. In terms of our physical risks, these are related to the exposure we have to Colombia's current climate conditions that might affect water availability and increase the exposure of our assets and operations to potential damages. These conditions could result, among others, in water shortages, floods, fires, storms, and hurricanes, rising sea levels that can change in frequency and intensity because of climate change. Extreme weather events could result in damages to our assets and negatively affect our operations and financial condition.

[Table of Contents](#)

In terms of energy transition risks, we face risks related to our capacity to implement measures to reduce and offset carbon and methane emissions, our adaptation to climate variability and climate change, regulatory risks related to the new climate change regulations implemented in Colombia, such as the carbon tax in place since 2017, the implementation of an emissions trading system (ETS) expected to be implemented in 2022, the updated nationally determined contribution (NDC), and the oil & gas industry's climate change plan that includes new national mitigation and adaptation measures. These changes could lead to increases in our costs and investments in the short term (we have already incurred in costs related with these regulations and it is expected that continuing to comply with this evolving regulatory landscape will bring additional costs and investments for us in the short term). See section [Legal and Regulatory Risks—Our operations might be affected by rising climate change and energy transition regulatory developments](#).

Additionally, we face the risk of having stranded assets across our business segments. Specifically, we define a stranded asset as an asset or investment that loses its capacity to create economic return before ending its life cycle due to the changes brought about by the low carbon energy transition. Stranded asset risk is measured through a stranded asset risk index methodology that takes into account three risk elements: market (increasing uncertainty in price, accelerated peak oil demand); sustainability (reduced probability of developing an asset because of less community and society support to fossil fuels developments, increased pressure from investors to produce cleaner energies, regulatory changes), and capability (lack of technological capabilities to produce in the short term). Assets that have a score over a threshold in this index are considered in high risk. As of the date of this annual report, the index has been applied to all segments. Our analysis resulted in no stranded assets in our upstream segment, with the assets with the highest risk of becoming stranded being just initiating their development (either still in the exploratory stage or having just commenced production). While we have begun to implement a mitigation plan in respect of assets with a high risk of becoming stranded, such as prioritizing short cycle projects, starting projects earlier, making current production cleaner and more efficient, and divesting less strategic assets, we can offer no assurance that certain of our assets will not become stranded in the medium to long term.

In relation with the energy transition, we also face the risks of not being able to successfully incorporate alternative options for our portfolio in the face of traditional businesses or segments that lose the capacity to generate value due to changes in energy consumption patterns at a global or local level. This could impact the achievement of the company growth targets and its resilience in the long term.

To successfully achieve our 2040 Strategy, we are venturing into low-emission energy-diversification businesses, such as hydrogen as source of energy, CCUS and NCS investments to mitigate the effects of climate change. These investments require the development of new technology at competitive costs, and the growth of potential markets, such as demand of this alternative sources in transportation segment or mobility. We cannot assure that the pace of the technological developments, that they will be successful or that growth of demand will occur in the time we expect to achieve the expected returns.

In addition, our business growth and sustainability depend on our ability to manage our capital investments and operate efficiently, in accordance with our corporate strategy guidelines.

See section [Strategy and Market Overview—Our Corporate Strategy](#) for a discussion of our strategic plan.

Our business depends substantially on international prices for crude oil and refined products. The prices for these products are volatile; a sharp decrease could adversely affect our business prospects and results of operations.

In 2021, approximately 92% of the revenues came from sales of crude oil, natural gas, and refined products and 88% of the total volume sold of these products was indexed to international reference prices or benchmarks such as ICE Brent. Consequently, fluctuations in those international indexes have a direct effect on our financial condition and results of operations.

Prices of crude oil, natural gas and refined products have traditionally fluctuated as a result of a variety of factors including, among others, competition within the international oil and natural gas industry, long-term changes in the demand for crude oil, natural gas and refined products, notably associated to the transition to a low carbon economy, the economic policies in the United States, China and the European Union, regulatory changes, changes in global supply, inventory levels, changes in the cost of capital, adverse or favorable economic conditions, global financial crises, substitute sources of energy, development of new technologies, global and regional economic and political developments in the OPEC, the willingness and ability of the OPEC and its members to set production levels, local and global demand and supply for crude oil, refined products and natural gas, trading activity in oil and natural gas; weather conditions, natural events or disasters, which are changing in intensity and frequency due to climate change, and terrorism and global conflict. In addition, due to the disagreement on production cuts between the OPEC and Russia, the OPEC and its capacity and decision to increase production levels to gain market share have impacted the international reference prices in the past.

[Table of Contents](#)

The continuing spread of the COVID-19 continues to lead to periods of instability in the global economy, which in turn could continue to cause instability in crude oil, NGL, and gas demand and prices. Additionally, the level of global oil inventories caused by the COVID-19 pandemic has created surpluses for oil and may result in the cost of exploring for, developing, producing, and transporting oil to go up due to surpluses created by the pandemic. The COVID-19 pandemic may further impact the prices of crude oil, natural gas, and refined products as expectations about future commodity prices become unpredictable due to the inability to forecast the duration scope of impact of the pandemic. See *[Our business operations could be disrupted by the COVID-19 or other pandemic disease and health events](#)* for further information on the effects of the coronavirus pandemic.

Most recently, the Russia-Ukraine conflict has increased volatility in the oil and refining business. Although the conflict is temporarily having a positive effect on crude oil prices and refining margins globally, the global economy will be affected, which could lead to a rapid price correction in the future. Additionally, in the medium term, it could create incentives to accelerate decarbonization strategies, especially in Europe given its intention to cut hydrocarbon imports from Russia, thus potential leading to a deterioration to the outlook for oil demand.

When crude oil, refined products and natural gas prices are low, we earn less revenue, and we generate lower cash flow and less income. Conversely, when crude oil, refined product and natural gas prices are high, we earn more and generate a larger amount of cash and net income. During 2021, our crude oil basket price was US\$ 66.8/Bl versus US\$ 34.4/Bl in 2020, the refined product basket price was US\$ 79.6/Bl versus US\$ 49.2/Bl in 2020; and the natural gas price was US\$ 24.9 per barrel equivalent in 2021 versus US\$ 24.3 per barrel equivalent in 2020. However, it is important to consider that the margin on refined products can result either in higher or lower margins due to a change in price of crude the same way gas prices can be impacted by local conditions, such as local demand and weather conditions.

The difference between the Producer Revenue and the International Parity Price recognized to Ecopetrol S.A. for diesel and gasoline can fluctuate significantly due to: (i) volatility in international oil prices, (ii) the methodology to determine the reference price of gasoline and diesel, and (iii) the sensitivity of the retail price to monthly variations. As a result, these differences generate account receivables or account payables for Ecopetrol to or from the FEPC. In the case of an account receivable, we cannot assure the specific date of payment of such receivable in favor of Ecopetrol, and the delay in doing so could negatively impact our available cash flow. As of March 2022, the account receivables associated with the FEPC for the Ecopetrol Group reached COP 14.1 trillion. While producers' rights are clearly protected by law, we cannot provide any certainty as to when we will receive any such payments due to us. For further information see section *[Regulation Concerning Production and Prices—Fuel Price Stabilization Fund \(FEPC\)](#)*.

In 2021, we had an impairment of non-current assets of COP\$ 33,351 million, as compared to an expense for impairment in an amount of COP\$ 633,156 million in 2020 and COP\$ 1,762,437 million in 2019. These impairments are an accounting effect that does not involve any inflow or outflow of resources and they are susceptible to reversion when the fair value of the asset is above its book value. For additional information about this impairment charges, see section *[Financial Review—Operating Results—Consolidated Results of Operations—Impairment of Non-Current Assets](#)* and Note 18 to our consolidated financial statements.

A reduction of international crude oil prices could also result in a delay or a change in our capital expenditure plan, in particular delaying exploration and development activities, thereby delaying the development of reserves and affecting future cash flows. In order to maintain a profitable operation and preserve the cash flow of the Company at certain oil price levels, some of our producing fields may have to be closed or their operations temporarily suspended which would affect our production levels and expected revenues.

Foreign currency exchange rate fluctuations may affect our financial results.

Most of our revenues are derived from sales of products quoted in or with reference to U.S. dollars. Therefore, when the Colombian Peso depreciates against the U.S. dollar, our revenues converted into Colombian Pesos, increase. Conversely, when the Colombian Peso appreciates against the U.S. dollar, our revenues decrease.

On the other hand, imported goods, oil services and the debt, which is mainly denominated in U.S. dollars, become less expensive when the Colombian Peso appreciates against the U.S. dollar and more expensive when the Colombian Peso depreciates against the U.S. dollar.

[Table of Contents](#)

As of December 31, 2021, our U.S. dollar-denominated total debt aggregate principal amount was US\$ 21.6 billion, which we recognize in our consolidated financial statements at its amortized cost, which corresponds to the present value of cash flows, discounted at the effective interest rate. Out of this total, a principal of US\$ 15.2 billion relate to Ecopetrol S.A., whose functional currency is the Colombian Peso. Therefore, when the Colombian Peso depreciates against the U.S. dollar, Ecopetrol S.A. is exposed to an exchange rate loss. In contrast, when the Colombian Peso appreciates against the U.S. dollar, Ecopetrol S.A. is exposed to an exchange rate gain. Some of the Ecopetrol Group's affiliates have the U.S. dollar as functional currency and are not exposed to a material exchange rate risk resulting from fluctuations in the Colombian Peso against the U.S. dollar. On the asset side, when the financial statements of the Ecopetrol Group are consolidated, the exchange rate differential of the affiliates' assets and liabilities whose functional currency is the U.S. dollar is recognized directly in the equity, as part of other comprehensive income.

The U.S. dollar/Colombian Peso exchange rate has fluctuated during the last several years. On average, the Colombian Peso depreciated 1.52% in 2021, depreciated 12.46% in 2020 and depreciated 11.02% in 2019. Additionally, as of December 31, 2021, the Colombian Peso depreciated 15.98%; as of December 31, 2020, the Colombian Peso depreciated 4.74%; and as of December 31, 2019, the Colombian Peso depreciated 0.84%, in each case from year-end exchange in the previous year. In addition, given the effect of COVID-19 on the world's economies for the next years, rising inflation, interest rate changes in the U.S. and Colombia, different global growth perspectives, commercial and political tensions in the world's largest economies, current and expected crude oil prices in the next few years and political uncertainty in Colombia, there is no clear view of how the U.S. dollar and the Colombian peso will behave in the medium to long-term. Continued market volatility is expected to continue to lead to U.S. dollar fluctuations that will remain difficult to forecast.

A future depreciation in the exchange rate of the Colombian Peso against the U.S. dollar may affect our financial results when converted into Colombian Pesos, given our current net position in U.S. dollars, the fact that most of our revenues are collected in U.S. dollars and the portion of our U.S. dollar debt that is not designated as hedge instrument and the future debt we may acquire. Please see our sensitivity analysis on our results of operation to exchange rate fluctuations in the section [Financial Review—Effect of Taxes, Exchange Rate Variation, Inflation and the Price of Oil on our Results—Exchange Rate Variation](#) and in Note 30.1 to our consolidated financial statements.

Increased competition from local and foreign oil companies may have a negative impact on our ability to gain access to additional crude oil and natural gas reserves in Colombia and abroad.

We must bid for exploration blocks offered by the ANH in Colombia and similar authorities in other countries, which means we compete under the same conditions as other domestic and foreign oil and gas companies and receive no special treatment. Our ability to obtain access to potential fields also depends on our ability for evaluating and selecting potential opportunities and to adequately bid for such opportunities.

We are also exposed to international competition as a result of our international exploratory activities. Currently, we are exploring in Brazil, Mexico, and the United States, where we partner and compete with other oil and gas companies operating in those locations. If we are unable to adequately compete with local and foreign oil companies, or if we cannot enter into joint ventures with market players having high potential exploration projects, our exploration activities may be limited. This could reduce our market share and, in turn, adversely affect our financial condition.

[Table of Contents](#)

If operational risks to which we are exposed in Colombia or overseas materialize, the health and safety of our workforce, the local community and the environment may be affected. In addition, we may suffer a disruption or shutdown of our operational activities.

Our exploration, production, refining, transportation and electric power transmission and toll roads concessions businesses in Colombia and in the foreign countries in which we operate are subject to industry-specific operating risks, some of which, despite our internal procedures and adherence to industry best practices, are beyond our control. Our operations may be curtailed, delayed or cancelled due to adverse or abnormal weather conditions and natural disasters (mainly due to climate variability or climate change), strikes and demonstrations by local actors aimed at blocking operations, equipment failures or accidents, oil or natural gas spills or leaks, shortages or delays in the availability or in the delivery of equipment, delays or cancellation of environmental licenses or other government authorizations or judicial decisions, fires, explosions, ruptures, surface cratering, pipeline failures, sabotage, thefts, damage and attacks to our transportation and production infrastructure caused by terrorist acts of illegal armed groups.

Some of our operations in Colombia and abroad could be conducted in remote and uninhabited locations that involve health and safety risks that could affect our workforce. By our own Company policy and practices, as well as under Colombian law and international industrial safety regulations, we are required to have health and safety practices that minimize risks and health issues faced by our workforce. Failure to comply with health and safety regulations in the jurisdictions where we operate may lead to investigations by health officials that could result in lawsuits or fines.

We may be required to incur in additional costs and expenses to allocate funds to industrial safety and health compliance under Colombian law and international industrial safety regulations. Additionally, if any operational incident occurs that affects local communities and ethnic communities in nearby areas, we will need to incur in additional costs and expenses to return affected areas to normality and to compensate for any damages we may cause. These additional costs may have a negative impact on the profitability of current operations and the projects we may decide to undertake.

The occurrence of any of these operating risks could result in substantial losses or slowdowns to our operations, including injury to our employees, malfunction or destruction of property, equipment and infrastructure, clean-up responsibilities, third-party liability claims, government investigations and imposition of fines, withdrawal of environmental licenses and other government permits, suspension or shutdown of our activities and loss of revenue. The occurrence of any of these events may have a material adverse effect on our financial condition and results of operations.

Our involvement in deep-water drilling either as direct operator or in conjunction with our business partners involves risks and costs, which may be out of our control.

Our deep-water drilling activities present severe risks, such as the risk of spills, explosions on platforms and drilling operations, and natural disasters. The occurrence of any of these events or other incidents could result in personal injuries, loss of life, severe environmental damage with the resulting containment, clean-up and repair expenses, equipment damage and liability in civil and administrative proceedings. As a result, more stringent government regulation may result in increased costs and longer exploration and development timeframes for our deep-water drilling operations and consequently could adversely affect our results of operations and financial condition. Heightened risks and costs associated with deep-water drilling may have a negative effect on our results of operations and financial condition and in our reputation.

See section [Business Overview—Exploration and Production](#) for a summary of our current deep-water drilling activities.

[Table of Contents](#)

We are exposed to the credit, political and regulatory risks of our customers and any material nonpayment or nonperformance by our key customers could adversely affect our cash flow and results of operations.

Some of our customers may experience financial problems that could have a significant negative effect on their creditworthiness. Severe financial problems encountered by our customers could limit our ability to collect amounts owed to us, or to enforce the performance of obligations owed to us under contractual arrangements. In addition, many of our customers finance their activities through their cash flows from operations, short- and long-term debt or equity.

The combination of decreasing cash flows as a result of declines in commodity prices, a reduction in borrowing bases under reserve-based credit facilities, governments sanctions which may include monetary penalties, executive orders and/or trade restrictions, and the lack of availability of debt or equity may result in a significant reduction of our customers' liquidity and limit their ability to make payments or perform their obligations to us according to their contractual terms.

Furthermore, some of our customers may be highly leveraged and subject to their own operating expenses. Therefore, the risk we face in doing business with these customers may increase. Other customers may also be subject to regulatory changes, which could increase the risk of defaulting on their obligations to us. We also could have disagreements with customers regarding tariffs, excusable events, or other aspects of our commercial relations that could lead to contract breaches by our clients. See Note 30.7 to our consolidated financial statements for more details.

Such financial problems experienced by our customers or deterioration in our relations with our customers could result in the impairment of our assets, a decrease in our operating cash flows and may also reduce or restrict our customers' future use of our products and services, which may have an adverse effect on our revenues and our ability to make payments under our existing debt obligations.

[Table of Contents](#)

Our ability to access the credit markets as well as the debt and equity capital markets on favorable terms to obtain funding to finance our operations or refinance our debt maturities may be limited due to the deterioration of these markets, any change to our credit ratings and the authorizations we need before incurring any financial indebtedness or executing any equity offering.

Our and our subsidiaries' ability to access international and local capital markets and finance our operations and potentially refinance our debt maturities on terms acceptable to us could be adversely affected due to the volatility in prices in the oil and gas sector, the escalation of the military conflict between Ukraine and Russia, the disruptions on Russia's energy exports as a result of sanctions, the global economy impacts due to energy supply shocks, the potential impacts on demand of further lockdowns or outbreaks of COVID-19, the lack of consensus among OPEC+ members, the political uncertainty in the region, the discovery of corruption by governments and private companies in emerging markets and further geopolitical disruptions in the world, which could involve developed countries, and in turn could worsen risk perception with respect to the emerging markets, or the occurrence of any of the risks described in the section *Risk Review—Risk Factors—Risks Related to Colombia's Political and Regional Environment*. These conditions, along with significant write-offs in the financial services sector and the re-pricing of credit risk, can make it difficult for us to obtain funding for our capital needs on favorable terms. Our cost and ability to obtain capital might be affected as well if our creditors and potential investors believe that we are not actively responding to the new low carbon economy, integrating TSEG considerations in our operation and management, addressing risks related to climate change and energy transition, and meeting TSEG targets; considering further the evolving restrictions to invest in pure fossil fuels companies announced by certain investors worldwide.

Access to credit and capital markets depends on a number of factors, many of which we cannot control, including changes in: our credit ratings, interest rates, the structured and commercial financial markets, tax rates due to new or changes to existing tax laws, foreign exchange and investment controls and restrictions, market perceptions of the industries in which we operate, which are mainly determined by our financial and operational strength, and the support that could be provided by the Colombian government. We cannot assure that our credit ratings will continue for any given period of time or that the ratings will not be further lowered or withdrawn. An assigned rating may be raised or lowered depending, among other things, on the respective rating agency's assessment of our financial strength. In addition, a downgrade in the rating of the Republic of Colombia could also trigger a downgrade on ours, as it is capped by the rating of the Republic of Colombia and the implicit support that can potentially be provided to the Company. On May 19, 2021, S&P Global Ratings downgraded Colombia's long-term foreign currency debt rating from BBB- to BB+, one level below investment grade. On July 1, 2021, Fitch Rating also downgraded Colombia's long-term foreign currency debt rating from BBB- to BB+. As a result of such sovereign downgrades, our credit rating was also downgraded by (i) S&P Global Ratings from BBB-, with a negative outlook, to BB+, with a stable outlook, while our stand-alone rating was maintained at BBB- and (ii) Fitch Ratings from BBB- to BB+, while maintaining our stand-alone rating (without incorporating government support) at bbb. On August 31, 2021, Moody's Investors Service re-affirmed our rating at Baa3, but changed the outlook from stable to negative.

As a result of these factors, we may be forced to revise the timing and scope of our capital projects as necessary to adapt to existing market and economic conditions, downgrades to our credit ratings or to access the financial markets on terms less favorable, therefore negatively affecting our results of operations and financial condition.

In addition, under applicable regulation, most of our indebtedness must be previously authorized by the Colombian Ministry of Finance and Public Credit and the National Planning Department and local bond issuances by the Financial Superintendency of Colombia. Likewise, our equity offerings must abide to the terms set forth in Law 1118 of 2006 and any operation within the domestic equity capital market must be previously approved by the Financial Superintendency of Colombia. As such, our access to debt and equity funding is subject to the Government's time frames and policies, and we cannot guarantee that such authorizations would be granted in a timely fashion or granted at all.

We may be exposed to increases in interest rates, thereby increasing our financial costs.

We may incur debt locally and in the international capital markets and, consequently, may be affected by changes in prevailing interest rates.

If market interest rates increase, our financing expenses may increase, which could have an adverse effect on our results of operations and financial condition. Our future success depends on our ability to access capital markets and obtain financing at cost effective rates.

[Table of Contents](#)

As of December 31, 2021, approximately 24%, or a principal of US\$ 5.6 billion (COP\$ 22.4 trillion, using a COP\$ 3,981.16 /1.00 U.S. exchange rate as of December 31, 2021), of our total indebtedness consisted of floating rate debt. If market interest rates rise, our financing expenses will increase, which could have an adverse effect on our results of operations and financial condition. In addition, as we refinance our existing debt in the coming years, the mix of our indebtedness may change, specifically as it relates to the ratio of fixed to floating interest rates, the ratio of short-term to long-term debt, and the currencies in which our debt is denominated in or indexed to. We cannot assure that such changes will not result in increased financing expenses borne by us. Finally, as we incur new debt in the future to fund our capital projects or inorganic acquisitions, the prevailing interest rates and spreads at any specific time could be less favorable in terms of cost when compared to our previous financing transactions, which could adversely affect our financial condition and results of operations.

Our interest rate expense may be subject to uncertainty associated with the replacement or reform of benchmark indices, particularly London Interbank Offered Rate ("LIBOR").

Interest rate, equity, foreign exchange rate and other types of indices which are deemed to be "benchmarks," including those in widespread and long-standing use, have been the subject of ongoing international, national, and other regulatory scrutiny and initiatives and proposals for reform. Some of these reforms are already effective while others are still to be implemented or are under consideration. These reforms may cause benchmarks to perform differently than in the past, or to disappear entirely, or have other consequences, which cannot be fully anticipated.

Any of the benchmark reforms that have been proposed or implemented, or the general increased regulatory scrutiny of benchmarks, could also increase the costs and risks of administering or otherwise participating in the setting of benchmarks and complying with regulations or requirements relating to benchmarks. Such factors may have the effect of discouraging market participants from continuing to administer or contribute to certain benchmarks, trigger changes in the rules or methodologies used in certain benchmarks or lead to the disappearance of certain benchmarks.

In this regard, on March 5, 2021, the U.K. Financial Conduct Authority (FCA, the authority that regulates LIBOR) confirmed that all LIBOR settings would either cease to be provided by any administrator or no longer be representative immediately after December 31, 2021, in the case of all sterling, euro, Swiss franc and Japanese yen settings and the 1-week and 2-month US dollar settings; and immediately after June 30, 2023, in the case of the remaining US dollar settings.

It is unclear whether new methods of calculating LIBOR will be established such that it continues to exist after 2021. Similarly, it is not possible to predict whether LIBOR will continue to be viewed as an acceptable market benchmark, what rate or rates may become acceptable alternatives to LIBOR, or what effect these changes in views or alternatives may have on financial markets for LIBOR-linked financial instruments. Regulators and market participants in various jurisdictions have been working to identify alternative reference rates that are compliant with the standards of the International Organization of Securities Commissions. In the U.S., the Alternative Reference Rates Committee (the "ARRC"), a committee convened by the Federal Reserve that includes market participants, has recommended the Secured Overnight Financing Rate ("SOFR"), a new index calculated by short-term repurchase agreements, backed by Treasury securities, as the alternative benchmark rate for U.S. dollar LIBOR. Publication of SOFR began on April 3, 2018, and it therefore has a limited history. In addition, the future performance of SOFR cannot be predicted based on the limited historical performance. The future performance of SOFR is impossible to predict and therefore no future performance of SOFR may be inferred from any of the historical simulations or historical performance.

As of December 31, 2021, 11.9% of our long-term nominal debt was subject to floating interest rates that used LIBOR as the benchmark. All our LIBOR referenced debt uses the 3-month or 6-month US dollar settings, which no longer will be representative after June 30, 2023, as per FCA announcements. Although we began to adapt such contracts as developments relating to a LIBOR replacement have arisen, currently, we cannot reasonably estimate the impact that the transition to alternative reference rates may have on the valuation, pricing and operation of our LIBOR-based financial obligations, however such changes could have a material adverse effect on our financial condition and results of operations.

[Table of Contents](#)

Our current and planned investments and business activities outside Colombia are exposed to political and economic risks.

We began exploration activities outside Colombia in 2006 through our Brazilian subsidiary, Ecopetrol Óleo e Gás do Brasil Ltda. We operate through business partners, subsidiaries, or affiliates outside Colombia. We currently have investments, joint ventures and direct and indirect subsidiaries incorporated in Peru, Brazil, Chile, Bolivia, Mexico, Bermuda, Panama, the Cayman Islands, Switzerland, Spain, the United Kingdom, Singapore, and the United States, and we are analyzing investments in other countries. In connection with making investments, we are and will be subject to risks related to economic and political conditions and governmental economic actions. We cannot predict the positions of foreign governments relating to the oil and gas industry, electricity transmission, toll roads concessions, land tenure, protection of private property, environmental standards, regulation, or taxation; nor can we assure that future governments will maintain policies favorable to foreign investment or repatriation of capital. Additionally, we may face new and unexpected risks involving environmental and other legal requirements beyond those we currently experience.

The results of operations and financial condition of our subsidiaries in these countries also may be adversely affected not only by risks associated with hydrocarbon exploration and production or electricity transmission and toll roads, but also by fluctuations in their local economies, political instability and government actions, including: the imposition of price controls, the imposition of restrictions on hydrocarbon exports, electricity transmission limitations, fluctuation of local currencies against the Colombian peso, the nationalization of oil and gas reserves or electricity transmission, increases in export and income tax rates for crude oil and oil products, electricity transmission, toll roads concessions, and unilateral (governmental) institutional and contractual changes, including controls on investments and limitations on new projects.

Any of these conditions occurring could disrupt or terminate our operations, causing our development activities to be curtailed or terminated in these areas, or our production to decline, limit our ability to pursue new opportunities, affect the recoverability of our assets, or cause us to incur additional costs or delay the timeline of our projects.

Our future performance depends on the successful selection, development and deployment of new technologies and the knowledge to operate, maintain, and improve them.

Technology, knowledge, science and innovation are essential to our business, especially for the addition of reserves in complex settings, reducing operational costs, reducing the carbon footprint of our operations and adapting to the energy transition. If we do not develop the right technology, or do not secure access to required third-party technology, or if we fail to deploy the right technology, do not obtain the expertise to operate our deployed technology or to improve our processes, or do not deploy the knowledge necessary to improve such technology effectively, the achievement of our corporate goals, our profitability, and our earnings may be adversely affected. Furthermore, as we address climate change and the transition to a lower-carbon economy, we face the risk that our progress may be curtailed due to the high cost or limited access to low-carbon and water management technologies. In the case of our enhanced oil recovery program, we depend on the successful selection, adaptation, demonstration, and deployment of appropriate technologies that are also energy and environmentally efficient.

Our performance could be negatively affected by the lack of employees with the skills needed to execute our business strategy.

As the oil and gas industry and the energy sector faces an increasing number of challenges, the ability to react quickly to these challenges has become a key factor in achieving efficiency, profitability, growth, and sustainability. Our ability to achieve these goals could be negatively affected by a lack of key skilled employees that can execute our business strategy and transition to a low carbon economy with competency, creativity, and determination. This situation poses a risk if we are unable to timely strengthen or develop the capacities of management at all levels of the organization or attract new employees with the necessary skills to implement climate-resilient initiatives and to achieve our decarbonization goals.

If the strategic plans associated to natural gas and NGL failed to yield the expected results, our operations may not be able to keep pace with the increasing domestic demand for these products.

According to the latest Natural Gas Supply Plan issued by the Mining and Energy Planning Unit in July 2020 (*Unidad de Planeación Minero Energética-UPME*), there is expected to be a natural gas deficit in Colombia as of January 2024.

Considering the CREG Resolution 186 of 2020, the natural gas market is a physical market, which means that suppliers must comply with the quantities agreed in their contracts with firm gas commitments.

[Table of Contents](#)

Additionally, we are currently party to a number of national gas supply contracts that have firm gas commitments. If we were unable to deliver natural gas to these clients as a result of cuts in operations or higher decline rates in our gas fields, among other reasons, we may be required to compensate our customers for our failure to supply natural gas.

Delays in the implementation of our strategic plans associated to natural gas and NGL could result in us losing market share if clients choose to secure their supply with other sources instead (such as third-party gas suppliers or imports). As a result, our financial condition, results of operations and market share could be impacted.

We depend on others for the construction and availability of natural gas transportation infrastructure for the transport of our gas, which may limit our ability to develop new or existing fields or lead to the deterioration of related assets and may not allow us to recover the cost of capital invested in natural gas discoveries. For example, in 2021 some events materialized in the supply chain that impacted Ecopetrol's total balance of gas availability, such as the unscheduled exit of operation of the Promioriente gas pipeline that impacted production in Gibraltar and or the impact of the public order situation in May.

Ecopetrol S.A. can only hold up to 25% of the equity of any natural gas transportation company according to Article 5 of CREG Resolution 057 of 1996 (except for transportation assets acquired before this Resolution). Therefore, there can be no assurance that the transportation infrastructure necessary to transport natural gas from the fields to distribution points and our customers will be built by third parties or that if built there will be sufficient capacity available to us for the exploitation of new natural gas discoveries or the development of existing fields due to the non-financial closure of transport projects or lack of signed contracts with transporters. The failure to commercially exploit new or existing discoveries may result in impairment of the related assets and our inability to recover the capital expenditures invested to make these natural gas discoveries.

Our operations could be affected by reactions of labor unions, social organizations, communities and contractors to Colombia's political and social environment, environmental and climate change concerns and organizational changes.

Due to Colombia's political and social environment, emerging environmental and climate change concerns and organizational changes, social organizations in the communities where we have operations, communities in general, contractors, and unions, may have reactions and present their demands through social movements or other manners that may affect our operations. For example, in connection with the emerging environmental and climate change concerns, some communities have shown a special interest in avoiding the development of PPIIs, resulting in their representatives presenting bills in recent legislatures to ban PPIIs. Although none of these bills has materialized into a law, we cannot make any assurances that such bills will cease being presented or that none of them could eventually garner substantive attention to become implemented into law. Similarly, on July 1, 2018, a new collective bargaining agreement became effective for a term of four and half years, expiring on December 31, 2022. We cannot assure you that we will not experience strikes or labor unrest in the future.

The occurrence of any of these events could have an adverse effect on our operations and financial condition.

Our activities may be interrupted or affected by external factors, such as abnormal weather conditions and natural disasters that can be exacerbated by climate change.

In the past decade, the "El Niño" and "La Niña" have intensified, increasing the risk of extreme climate events, such as floods, landslides, wildfires, droughts, increased temperature and rising sea and river levels, among others, as well as related water scarcity, which may affect our infrastructure and business operations.

"El Niño" phenomenon is characterized by: (i) the lack of rainfall, may drastically decrease surface waterbodies flows, affecting both freshwater use and wastewater discharges because of the reduction on dilution potential of receiving waterbodies, (ii) increased temperatures, which causes heat waves and could have a direct impact on the health of our workers and cause an increase in epidemics and diseases, and (iii) potential negative impact on energy supply due to the decrease in the level of the rivers that feed the hydroelectric generation system of the country. In addition to the "El Niño" climate phenomenon, some basins in Colombia may be affected by seasonal variability in some periods of the year (normally January to March - June to July), which could reduce water flows, affecting freshwater withdrawals and surface discharges, as mentioned previously. Moreover, such adverse weather events can result in transmission restrictions caused by the increase in a transmission line's load from the coast to the center of the country and negatively impact our electric power transmission business.

[Table of Contents](#)

Furthermore, “La Niña” climate phenomenon is characterized by increased rainfall, which can generate frequent landslides and flooding, which may cause delays on transportation due to road blockades, increase pipeline integrity risks that may cause hydrocarbon spills and limit operations in our production fields and facilities, as well as cause infrastructure losses, such as collapse of transmission towers and lines that restrict our electric power transmission business’ operations.

These risks could result in fatalities, property damage, project delays, production deferrals, loss of revenue, pollution, and harm to the environment, damage roads as well as temporary disruptions to our services, among others. If any of these occur, we may be exposed to economic sanctions, damages, fines, or penalties in addition to the negative effects these events may have on our operations and the costs required to repair or remediate the related damage. These costs, fines and penalties may adversely affect our financial condition, reputation, and results of operations. Natural disasters or similar events could also result in substantial volatility in our results of operations or the interruption of our essential services for our country, such as our ability to transport natural gas and transmit electricity.

Our business operations and financial condition could be negatively affected by the COVID-19 or other pandemic diseases and health events.

Pandemic diseases and health events, such as COVID-19, have the potential to negatively impact economic activities in many countries, including the countries in which we operate or have trade links, with consequent adverse effects on our customers and business. As of the date of this annual report, the spread of the COVID-19 has caused severe disruptions in the world economy, including the demand for energy, the movement of people and services and the visibility into future conditions, which could in turn continue to disrupt our business and operations.

The persistence and variation of the virus could continue to affect the Colombian and global economy more broadly, including our business and operations. As the potential impact from COVID-19 is still difficult to predict, the extent of the impact of the pandemic on our business and financial results will depend largely on future developments, including the duration of the spread of the outbreak (e.g., new variants of the virus, capacity for infection and transmission, treatment developments and vaccination coverage), the impact on capital and financial markets and the related impact on consumer confidence and spending, and the actions taken by authorities to contain it, all of which are highly uncertain and cannot be accurately predicted based on the course of the virus to date.

We cannot forecast the duration of the effects of COVID-19 on our business or when international prices for crude oil and refined products will stabilize.

Our future business results will be affected by the extent and duration of these conditions and the effectiveness of responsive actions that we and others take, including our actions to reduce capital and operating expenses, in respect of oil supply, any cooperation between OPEC member countries. Furthermore, although as of March 31, 2022, 9,206 Ecopetrol’s workers had received vaccines for COVID-19, and 96% had completed their vaccination schedule, our operations remain susceptible to the impact of the COVID-19 vaccination programs, coverage and immunity achieved, the severity and duration of the outbreak, and the actions by national and international government authorities to contain the pandemic and minimize its impact, among other things. We will continue to monitor market developments and evaluate the impacts of decreased demand on our production levels as well as impacts on project development and future production.

See Note 2.8 to our consolidated financial statements for further information.

[Table of Contents](#)

Our operations, including our activities in areas classified as indigenous reserves and Afro-Colombian lands, are subject to opposition from members of various communities.

We currently carry out and plan to continue carrying out activities in areas classified by the Government as indigenous reserves and Afro-Colombian lands. To undertake these activities, we must first comply with prior consultation processes, set forth by Colombian law. These prior consultation processes are required for obtaining environmental licenses to start our projects, works or activities in areas inhabited by ethnic communities. In addition, consultations can be seen as a potential instrument to involve communities in the decision of developing extracting industry and infrastructure projects in their territories. Generally, these consultation processes last between six months to one year depending on the community expectations but may be significantly delayed if we cannot reach an agreement with the communities. We strive to be respectful of the Constitution and laws and the autonomy of indigenous and afro-descendant communities, and we therefore do not enter their territories until we have reached an agreement with them.

In recent years, indigenous communities have also been claiming their ancestral territories and requesting recognition of their right to be consulted about projects already in operation. We may be exposed to operational restrictions as a result of the opposition of these communities.

No certainty can be given that we will be able to reach an agreement with the different communities that do not agree and object to our operations or that such communities will participate in consultation processes if available. We may be exposed to similar delays due to the objection from local communities in other countries where we carry out our activities.

Our activities may be subject to objection, including protests by not-ethnic communities. We are also subject to other participation mechanisms, such as popular consultation “acción popular”, where local communities vote against the development of extractive industry projects. Any such similar situation may affect our future projects.

We have made and may make significant investments in acquisitions and joint ventures and have made and may make significant divestments, and we may not realize the expected value of any such investments.

We have acquired interests in several companies in Colombia and abroad, including a joint venture with Oxy in the U.S. Permian Basin in 2019, and may continue to do so from time to time. For example, in August 2021, as part of our strategy and focus on energy transition, we consummated the ISA Acquisition. See sections [Business Overview—Our Corporate Structure](#) and [Related Party and Intercompany Transactions—ISA Acquisition](#).

Obtaining the expected benefits of the acquisitions, including ISA’s, or joint venture investments, will depend, in part, on our ability to: (i) obtain the expected results of operations and financial condition from these acquisitions or joint venture investments, (ii) manage different sets of assets and operations and integrate distinct corporate cultures or investment goals, (iii) manage our objectives as a corporate group, and (iv) institute our corporate governance rules as well as other factors beyond our control such as the economic and regulatory environment in countries in which we have made acquisitions or joint venture investments, as well as all other risks affecting the oil and gas industry or the industries of the businesses we acquire or invest in. See [Legal Proceedings and Related Matters—Interconexión Eléctrica S.A.](#)

Similarly, in our shale operations in the U.S., the ability to drill and develop different locations is subject to uncertainties such as natural gas and oil prices, drilling and production costs, availability of drilling services and equipment, lease acquisitions and expirations, processing capacity constraints, pipeline transportation bottlenecks, access to and availability of water sourcing and distribution systems, regulatory approvals, among others. We cannot assure that all the well locations we have identified will ever be drilled or if we will be able to produce natural gas or oil at the planned levels. As a result, our efforts may not succeed and our failure to successfully obtain the expected results from our acquisitions or joint venture investments could adversely affect our financial condition and results of operations.

[Table of Contents](#)

In addition, as a result of strategic reassessments of our core operations and portfolio management analysis, in the past we have executed and may determine in the future to execute partial or total divestments in our current businesses and the sale price in these transactions may not be enough to realize the original expected value or recover the value of our initial investment. As majority-owned state entity, Ecopetrol's employees and those from its subsidiaries may be subject to oversight by various administrative control entities in Colombia, which may determine to review such divestments as well as acquisitions or joint venture investments at any moment, which could result in preliminary or formal investigations and/or ultimately subject those employees to litigation, as well as to the imposition of fines or penalties by administrative control entities. Accordingly, investigations stemming from such transactions could represent a reputational risk for Ecopetrol, impacting us negatively.

Furthermore, the occurrence of any of the foregoing in connection with acquisitions or joint venture investments could divert the efforts and attention of our management team from our ordinary business operations and harm our reputation.

We might be required to provide financial support to our subsidiaries in Colombia or abroad.

Although currently we are not the sponsor and have not provided guarantees to third parties to support the financing activities of any of our subsidiaries, some financial support at any point in time might be needed to assure the long-term viability of such subsidiaries when exposed to unexpected conditions, results, or when it is utterly required to support projects in their developing phase, in particular with respect of those pre-operative affiliates.

Any situation that could affect the operations of our subsidiaries, or make them financially non-viable, particularly for those that are about to enter into their development phase or for those that recently entered into operations, may have a negative impact on their profitability as well as on their ability to pay their liabilities, which in turn could adversely affect our financial condition and results of operations.

Ongoing Colombian State control entities investigations regarding our subsidiary Reficar and our former subsidiary Bioenergy could adversely affect us.

Ecopetrol S.A., Bioenergy and Reficar's employees are generally subject to the control and supervision of the Colombian State control entities. See section [Risk Review—Legal Proceedings and Related Matters](#) for additional information. The proceedings concerning Reficar and Bioenergy, as well as other at Ecopetrol S.A., that are described in section [Risk Review—Legal Proceedings and Related Matters](#) remain ongoing. While we are cooperating fully with both cases, adverse developments in connection with these proceedings, could negatively impact us and could divert the efforts and attention of our management team from our ordinary business operations.

In connection with these proceedings or any other investigation carried out by any other authority, there can be no assurance that we will not incur in additional costs and expenses or expose us or our employees to sanctions and lawsuits, any of which could adversely impact our reputation and, in turn, could have adverse effects on our financial condition and results of operations. See section [Risk Review—Risk Factors—Legal and Regulatory Risk—We may incur losses and spend time and money defending pending lawsuits and arbitrations and responding to administrative investigations](#).

[Table of Contents](#)

Our results may be affected by supply chain disruptions and high price volatility impacting the performance of our suppliers, our business partners or their third-party service providers.

Global supply chains have been strongly impacted by different economic factors, logistics disruptions and, most recently due to the conflict between Russia and Ukraine, which has resulted in severe commercial disruption in the flow of goods and services in Europe, as well as a shock in the global oil market. The duration of rising prices as a result of Russia's invasion of Ukraine will depend on the length and intensity of the conflict, as well as how deep the supply chain disruption is. The confluence of all these factors is generating high price volatility, shortages of some materials and/or goods relevant to our operations and have affected the performance of inbound logistics. A set of 26 most relevant supply indexes has been identified and monitored, showing significant growth (greater than 10%) and high volatility in 16 of them, particularly in certain commodities, such as steel, chemicals, and copper, among others. This situation has affected suppliers and agreed commercial conditions and is also expected to contribute to secondary inflation effects in the medium term.

Likewise, the global logistics situation has generated record increases in international freight transport rates, limited capacity in ports, and delays in the delivery times. The combination of inflationary impact and the logistical situation generates complex environment that may affect our results and the performance of our suppliers, subcontractors, and third-party service providers. Some of our suppliers may face financial or operational problems that could led them to a breach of their obligations settled under contractual arrangements. Other suppliers may also be subject to regulatory changes or sanctions that could increase the risk of defaulting on their obligations to us, which could have an adverse effect on our operations and financial condition.

Most of our activity depends on suppliers, sub-contractors and third-party service providers that provide goods and services for our operations and projects. In addition, some of our operations and projects are performed through joint ventures or other contractual arrangements with our business partners or third-party service providers. Consequently, we depend on the performance of our business partners or third-party service providers. The poor performance of our suppliers, in any criteria such as operational efficiency, deadlines, administrative aspects, HSE, or our business partners or third-party providers, especially in those projects in which we do not act as operator, could negatively impact the execution of projects and operating performance, which in turn could have a negative impact on our results of operations and financial condition. We are exposed to the risk of not finding business partners or suppliers with the appropriate skills and performance we require for our projects. We are also indirectly exposed to supply agreements and other third-party services contracted by our business partners acting as operators under joint venture agreements.

Our insurance policies do not cover all liabilities and may not be available for all risks.

Our insurance policies do not cover all liabilities, and insurance may not be available for all risks. There can be no assurance that incidents will not occur in the future, that insurance will adequately cover the entire scope or extent of our losses or that we will not be found liable in connection with claims arising from these and other events, which could adversely affect our financial condition and results of operations.

Additionally, due to worldwide market conditions and limitations associated to interpretations and decisions made by the Colombian Surveillance and the Office of the Comptroller General with regards to director and officer insurance, in recent years the terms and conditions of our director and officer insurance policy have been affected, including through a decrease in limits and coverages, which could affect future decisions expected to be made by such directors and officers and could lead to an adverse effect on our financial condition and results of operations.

[Table of Contents](#)

New trends in the insurance sector in the face of climate change may bring additional costs or create new conditions to be addressed by our corporate insurance program.

We have identified three main insurance trends arising from the transition to a lower carbon economy and climate change that could have a negative impact on the Company: (i) insurance and reinsurance companies are considering retiring from the oil and gas industry or are imposing new demands regarding decarbonization targets, which may affect the insurability of assets or higher premiums, (ii) policy coverage may change as climate risk modeling and assessment advance, leading to changes in underwriting policies and new policy exclusions, and (iii) increase frequency or intensity of climate related events may lead to increase in premium prices. While we plan to address these trends by quantifying their financial impact and in assessing the need for new risk transfer and risk retention strategies, including strengthening our communication in relation to the T ESG strategy and investments with clear goals to show our commitment and support our corporate insurance program, we cannot make any assurances that these trends will not increase our insurance costs or reduce our insurance coverage, which could adversely affect our financial condition and results of operations.

A failure in our information technology systems or cyber security attacks may adversely affect our financial results.

We depend on the reliability and security of our information technology systems to conduct certain exploration, development and production activities, process financial records and operating data and communicate with our employees and business partners, and for many other activities related to our business. Our information technology systems may fail or have other significant shortcomings due to operational system flaws or employee misuse, tampering or manipulation. In addition, we may become the target of cyber-attacks or information security breaches that could result in the unauthorized release, gathering, monitoring, misuse, loss, or destruction of proprietary and other information. Any of these occurrences could disrupt our business, result in potential liability or reputational damage, or otherwise have an adverse effect on our financial results.

During 2021, our internal cyber security systems identified and contained cyber security attacks such as malware, phishing, and denial of service. We did not have any critical incidents during the year and although we have not experienced any material losses relating to failure of our information technology systems or cyber incidents, there can be no assurance that we will not suffer such losses in the future.

For the electric power transmission and toll roads concessions businesses, information and processing systems are vital to the ability to monitor the operation and network performance of assets, achieve operating efficiencies, and meet service targets and standards. Any failure of any of these information and processing systems could have a material adverse effect on our financial condition and results of operations. In addition, we may become the target of cyber-attacks or information security breaches that could result in the unauthorized release, gathering, monitoring, misuse, loss or destruction of proprietary and other information. Any of these occurrences could disrupt our business, result in potential liability or reputational damage or otherwise have an adverse effect on our financial results.

[Table of Contents](#)

We are exposed to behaviors incompatible with our ethics and compliance standards.

Given the large number of contracts that we are a party to in Colombia and abroad with local and foreign suppliers, the geographic distribution of our operations and the great variety of actors that we interact within the course of business, we are subject to the risk that our employees, contractors, or any person having relations with us may misappropriate our assets, manipulate our assets or information or engage in money laundering, the financing of terrorism and the proliferation of weapons of mass destruction, for such person's personal or business advantage. Our systems for identifying and monitoring these risks may not be effective to fully mitigate them in all situations. Such acts may result in material financial losses or reputational harm to the Company.

The reliability and capacity of national power supply systems may affect or limit the continuity of our operations or limit growth.

Our average energy consumption in 2021 was 6,793 GWh/year, of which 64% was supplied through self-generation, and the remaining 36% through power grid. Our demand is 9.2% of the total energy demand in Colombia. Our self-generation is subject to fuel and solar availability. In addition, several producing fields are connected to the national transmission system and depend on its expansion and reliability to keep steady production levels. The national electricity market is volatile due to changes in hydrology and availability of fuels (natural gas, diesel, etc.), bringing uncertainty to prices. If energy were to become unavailable or difficult to obtain, our results of operation and financial condition could be adversely affected.

Rising water production levels may affect or constrain our crude oil production.

During 2021, the Ecopetrol Group produced approximately 11.3 barrels of water per day. Taking into account the nature of our reservoirs, the water production levels to be managed by the Company may increase in the future. In order to achieve our oil and gas production goals and to avoid any production restrictions going forward, we will need to secure the required capacity to manage water levels. Factors that may trigger a possible constraint in our crude oil production due to the rising water production levels are: (i) ineffective project management of the required facilities, (ii) the Company's and its partners' ability to timely obtain the environmental permits related to water management, (iii) social and community interactions that could affect the development and operation of these projects, and (iv) the availability of capital to execute the required projects.

5.2.2. Risks Related to Colombia and the Region's Political and Regional Environment

This section discusses potential risks related to our extensive operations in Colombia, as well as our operations in other countries of Latin America.

Changes in economic policies in Colombia, Peru, Brazil and Chile could materially adversely affect our business, financial condition and results of operations.

Our financial condition and results of operations may be adversely affected by changes in the political climate of Colombia, Peru, Brazil and Chile to the extent that such changes affect the economic policies, growth, stability, outlook or regulatory environment of these countries.

With respect to Colombia, for the year ended December 31, 2021, revenues derived from Colombia represented 94% of our total revenues. During the second quarter of 2021, Colombia went through a wave of social mobilizations across all its territory as a response to the government tax reform proposal, by means of which the government of Colombia was trying to increase its revenues to lower the fiscal deficit, which for the fiscal year ended on December 31, 2021, was equivalent to 7.1% of GDP. Subsequently, on September 14, 2021, the Social Investment Law, a new tax reform, was enacted. The Colombian government has historically exercised substantial influence on the local economy, and governmental policies are likely to continue to have an important effect on companies operating in Colombia and on market conditions. The President of Colombia and the Colombian Central Bank have considerable power to determine governmental policies and actions relating to the economy and may adopt policies that may negatively affect us. We cannot predict which policies will be adopted by the government and whether those policies would have a negative impact on the Colombian economy or our business and financial performance.

[Table of Contents](#)

The Colombian parliamentary elections were held on March 13, 2022, with more than 99% of votes counted, results suggest a fragmented Congress with left-wing parties increasing their overall representation. However, the power configuration could remain relatively unchanged, given that no party will hold a clear majority. Left-wing parties are expected to control 21% of the total seats in the Senate. A coalition between center-right and right-wing parties ("*Centro Democrático*", "*Partido Conservador*", "*Cambio Radical*" and "*Mira*") are expected to have control of 42% of the total seats in the Senate, while center and center-left parties are expected to control 36% of the total seats.

Meanwhile, in the three presidential primaries held on March 13, 2022, there was a record of 11.7 million votes casted, and Gustavo Petro ("*Pacto Histórico*", left-wing coalition), Federico Gutierrez ("*Equipo por Colombia*", center-right coalition) and Sergio Fajardo ("*Centro Esperanza*" center-left coalition) were chosen to participate in the presidential election. Gustavo Petro led the voting intention tally, followed by Federico Gutierrez and then Sergio Fajardo. The first round of presidential elections will be held on May 29, 2022. If no candidate wins a clear majority in the first round, a runoff election will be held on June 19, 2022. Although throughout history elected governments (and the Colombian Congress as well) have pursued free market economic policies, with almost no economic interventions, we cannot predict which policies will be adopted by the new government or congress and whether those policies would have a negative impact on the Colombian economy or our business and financial performance.

With respect to Brazil, for the year ended December 31, 2021, revenues derived from our consolidated subsidiaries in this country represented 2% of our total revenues. Brazilian markets have experienced heightened volatility due the uncertainties from ongoing investigations on money laundering and corruption conducted by the Brazilian Federal Police and the Office of the Brazilian Federal Prosecutor, including the Lava Jato investigation. These investigations adversely affected the Brazilian economy and political scenario. The effects of the Lava Jato investigation and other investigations of corruption had an adverse impact on the image and reputation of the implicated companies, and on the general market perception of the Brazilian economy, political environment and capital markets. We have no control over and cannot predict whether the ongoing investigations or allegations will result in further political and economic instability, or if new allegations against government officials and/or companies will arise in the future. On January 1, 2019, Jair Bolsonaro took office as Brazil's President. Uncertainties related to the implementation, by the Bolsonaro administration, of changes in monetary, tax and social security policies and relevant laws may contribute to economic instability. These uncertainties and additional measures may heighten the volatility of the Brazilian securities market. Presidential elections will be held in Brazil during 2022, and this may be an additional source of uncertainty and volatility. The last elected Governments and members of the Congress have generally maintained economic policies based on free market, contractual liberty and minimal governmental intervention in the economy. All these principles are also set forth in the Brazilian Constitution. Nevertheless, a new administration may pursue policies that are detrimental to the Brazilian economy and/or negatively affect our industry in general, and our results of operations, in particular.

With respect to Peru, for the year ended December 31, 2021, revenues derived from our consolidated subsidiaries in this country represented 1% of our total revenues. Peru has democratically elected its governments since 1980, and elected governments have often changed policies and frequently play an interventionist role in the national economy. General presidential elections were held in Peru in April 2021. The presidential election, which determined the president and the vice presidents, required a run-off between the two top finishers on June 6, 2021. The congressional elections determined the composition of the Congress of Peru, with all 130 seats contested. The results of the election evidence a strong political fragmentation. Pedro Castillo resulted new president, facing Keiko Fujimori in the run-off and winning the election. There is an environment of political uncertainty due to the intentions of the President to reform the Peruvian Constitution, which is based on free market, contractual liberty, and minimal governmental intervention in the economy, although there is uncertainty if he will obtain the required qualified majorities in order to do so. We cannot assure that policies against free market and minimal intervention of the government in the Peruvian economy will not be taken by the new administration or the new Congress. Any changes in the Peruvian economy or the Peruvian government's economic policies may have a negative effect on our business, financial condition, and results of operations. Changes in economic or other policies by the Peruvian government or other political developments in Peru could adversely affect the business, financial condition, and results of operations of our subsidiaries.

[Table of Contents](#)

With respect to Chile, for the year ended December 31, 2021, revenues derived from our consolidated subsidiaries in this country represented 1% of our total revenues. In 2019, Chile suffered a wave of social mobilizations and, as consequence, the government called for a Constitutional assembly to reform the national constitution. In May 2021, the Chilean government established a constitutional assembly to write a new constitution, which is expected to be submitted for approval on a referendum in the second quarter of 2022. This assembly will be responsible for proposing a new political and economic system, internal administrative organization, structuring of the legislative, executive, and judicial powers, establishing fundamental rights such as freedoms, economic or social rights, defining political participation rights, and governing methods, among other proposals. As our subsidiaries in Chile participate in a highly regulated sector, the assembly may take certain positions that could affect the regulatory framework governing our operations and the way we conduct our business. Furthermore, in December 2021, Chile elected a new President, Gabriel Boric, who took office on March 11, 2022. This was the first time that a representative of the *Apruebo Dignidad* coalition (made up of several political parties from the Chilean left wing) assumes the executive power. Although the last elected governments have generally maintained economic policies based on free market, contractual liberty, and minimal governmental intervention in the economy, we cannot predict which policies will be adopted by the new government and whether those policies would have a negative impact on the Chilean economy or our business and financial performance.

We cannot predict which policies will be adopted by the respective governments and whether those policies would have a negative impact on the economies of the countries where we operate or our business and financial performance. Accordingly, our business and results of operations or financial condition may be adversely affected by changes in government or fiscal policies, and other political, diplomatic, social, and economic developments that may affect Colombia, Peru, Brazil or Chile.

We cannot provide any assurances that political or social developments in Colombia, Peru, Brazil, or Chile over which we have no control, will not have an adverse effect on our respective economic situations and will not adversely affect the business, financial condition and results of operations of our consolidated subsidiaries and their ability to pay dividends or make other distributions to us. This could have a material adverse effect on our business, results of operations, financial condition.

The worldwide economic effects of the outbreak and economic shutdown caused by the COVID-19 pandemic are adversely affecting Colombia's economy, and the impact could be material.

The COVID-19 pandemic continues to have an adverse impact on the world economy. During 2021 various countries in Southeast Asia, Europe, as well as China and the United States, experienced a rise in COVID-19 cases as a result of the Delta variant, a more contagious strain of the virus. Many countries continue to implement various public health measures to control the spread of COVID-19, including mandatory quarantines, forced economic shutdowns and travel restrictions, as well as economic measures to mitigate the impacts of such public health policies on their respective national economy.

As of March 31, 2022, Colombia had 6,085,270 confirmed cases of COVID-19, 5,918,331 recovered cases and 139,636 deaths.

On March 17, 2020, the Government, through Legislative Decree 417 of 2020, first declared a 30 day state of national emergency in light of the health and economic crisis caused by the outbreak of COVID-19. Consistent with 2020, throughout 2021, the Government has continued to implement various economic and public health measures to address the economic crisis and contain the spread, including: (i) mandatory shelter in place orders, (ii) border closure for all non-citizens and non-residents, (iii) short-term and low interest loans for all types of agricultural producers, (iv) payroll subsidies for companies and credit lines for different sectors of the economy, (v) closure of all schools and universities, (vi) incentivizing working from home and a mandatory work from home order for 80% of Government employees, (vii) actions by the Banco de la República, including reductions of its interest rate by 250 basis points in 2020, the provision of non-delivery forwards in the amount of up to U.S. \$1 billion and supplying liquidity auctions up to COP \$20 trillion, (viii) suspension of increases in utility tariffs, (ix) reduction in the prices of gasoline, (x) changes to the general budget and measures to render more flexible certain procedures to enable the Government to access the credit markets, (xi) increased COVID-19 testing of up to 15,000 per day, and (xii) a vaccination plan, among others. The efficacy of certain of these measures cannot yet be evaluated, and their duration and effect remain uncertain.

On December 18, 2020, the Government announced that the country had purchased 40 million doses of COVID-19 vaccines, composed of 10 million doses from Pfizer Inc., 10 million doses from AstraZeneca and 20 million doses from the multilateral Covax agreement. Vaccination began in February 2021 and will have 5 phases, prioritizing those at higher risk, such as health workers and citizens over 80 years old.

[Table of Contents](#)

On January 29, 2021, the Government issued Decree 109 of 2021, which establishes the vaccination plan against COVID-19, consisting of vaccinating the population in two phases and five stages, prioritizing risk groups, and thus progressively reaching 37.8 million vaccinated individuals. In the first phase, the plan will seek to reduce mortality and the incidence of serious cases from the virus, as well as protect health workers. The second phase aims to reduce the contagion to generate herd immunity. Vaccinations started on February 20, 2021.

From a macroeconomic point of view, the COVID-19 pandemic had a negative impact on Colombia with GDP decreasing by 7.0% in 2020. In 2021, Colombia's GDP rebounded by 10.6%, topping 2019 GDP levels. The main industries that were affected by the COVID-19 pandemic were construction, transportation, accommodation, real estate, and food services. The aforementioned sectors, excluding construction, had a solid recovery in 2021, even exceeding 2019 levels. However, the employment level has not fully recovered as compared to pre-pandemic levels. The unemployment rate was 13.7% in 2021, 16.1% in 2020 and 10.5% in 2019.

New severe variants of COVID-19 could emerge going forward, endangering the economic outlook. COVID-19 outbreak resulted in increased volatility in local and international markets and economic indicators, such as exchange rates, interest rates, credit spreads and commodity prices. Any shocks related to new variants or unexpected movements in these market factors could result in financial losses in our investment portfolio.

If the economic and public health crisis caused by the COVID-19 outbreak continues and the Government's measures are not effective, the economic performance of the country may suffer further, as a result of adverse effects on commerce, transportation and foreign investment, among other things, and thus may potentially adversely affect our ability to service our debt. The effects of the COVID-19 pandemic and the economic shutdown may also include an increase in unemployment, a reduction in household income, reduction in Government revenues, increased Government expenditures and a deterioration of our and Colombia's financial position. The sharply lower demand for oil and its derivatives due to decreased demand as a result of the COVID-19 pandemic in turn resulted in lower and more volatile price of oil and gas, which has also negatively affected the Colombian economy and our financial position.

The COVID-19 pandemic, any additional wave or resurgence and/or new pandemic may also have the effect of heightening the other risks described herein, such as those relating to economic, social, and political developments in Colombia and its credit ratings. Consequently, the current COVID-19 pandemic and its potential impact on the global economy may require Colombia to enact additional changes to existing regulations or implement more stringent regulations, which may further adversely impact the Republic's economy, the prices of, and Colombia's ability to make payments on, its outstanding securities or other indebtedness.

[Table of Contents](#)

The Colombian government could seize or expropriate our assets under certain circumstances for fair compensation.

Pursuant to Articles 58 and 59 of the Colombian constitution, the Government can exercise its eminent domain powers in respect of private property assets in the event such action is deemed by the Government to be required in order to protect public interests. According to Law 388 of 1997, eminent domain powers may be exercised through: (i) an ordinary expropriation proceeding, or (ii) an administrative expropriation. In all cases we would be entitled to a fair compensation for the expropriated assets. Also, as a general rule, compensation must be paid before the asset is effectively expropriated. However, the compensation may be lower than the price for which the expropriated asset could be sold in a free-market sale or the value of the asset as part of an ongoing business. The aforementioned Article 59 of the Colombian constitution establishes a temporary expropriation for war reasons, which does not require that compensation be paid before expropriation.

Colombia has experienced internal security issues that have had or could have a negative effect on the Colombian economy and on us.

Colombia has experienced internal security issues, primarily due to the activities of guerrillas, paramilitary groups, drug cartels and criminal bands known as Bacrim. From time to time, guerrillas target crude oil and multi-purpose pipelines, including the Oleoducto Transandino, Caño Limón - Coveñas and Oleoducto Bicentenario pipelines, and other related infrastructure disrupting our activities and those of our business partners.

During 2021, the attacks against our pipeline infrastructure decreased by 33% in relation to 2020 (41 attacks in 2021 compared with 51 attacks in 2020). Nonetheless, the attacks especially affected infrastructure located in the Norte de Santander, Santander, Arauca, and Nariño departments, and the Caño Limón – Coveñas, Transandino and Ayacucho-Galán 8" pipelines. As a result, there was a deferred production of 2,154 barrels directly related to these attacks in 2021, as compared to zero deferred production in 2020. As of March 31, 2022, there were 16 attacks against our pipeline infrastructure.

Guerilla attacks have resulted in unscheduled shutdowns of our transportation systems to repair or replace sections of pipelines that have been damaged, with deferral of production in certain fields, as well as caused us to undertake environmental remediation. In respect of the pipeline infrastructure, the direct cost of repairs due to terrorist attacks in 2021 was approximately COP\$189,749 million (US\$47.66 million using a COP\$3,981.16/1.00 US exchange rate as of December 31, 2021). During 2021 we also experienced three attacks to our production infrastructure in Santander, specifically on the 12" transfer line from station 1 to station 3, on the ELC-GRB DE 12" pipeline line and on the ELC-GRB system, which while not affecting people or the environment, resulted in a rupture.

Likewise, the theft of refined products and crude oil, as a result of security issues, may impact our operating and financial results in the future, as well as our reputation, due to the potential use of these products within the alkaloid chain production and the possible impact to communities and the environment, derived from this illegal practice. Associated with the above, the theft of crude oil has increased from approximately 2,744 bod in 2020 to approximately 3,081 bod in 2021. This situation is directly related to the increase of illicit activities, such as those relating to illegal crops, mining and smuggling, as well as the presence of guerilla dissidents and other illegal groups in the areas of influence of the main crude transportation systems, such as Caño Limón – Coveñas System (Catatumbo and Norte de Santander) and the Trasandino System (Tumaco and Nariño). Furthermore, the theft of refined products is mainly related to the presence of common crime that illegally markets these products, presenting losses of approximately 24.6 bod and 24 bod in the years ended December 31, 2021 and 2020, respectively.

Moreover, in May and June 2021, Colombia experienced a significant public order situation with prolonged social unrest related to a proposed tax reform that was subsequently withdrawn. During the year, there were situations of public order in different regions of the country caused by the presence and consolidation of illegal armed groups in the form of attacks, thefts, sabotages and damages.

The social protests resulted in blockades of the country's main roads and isolated incidents against certain of our infrastructure, which in turn momentarily adversely affected the operations of our upstream, midstream, and downstream and sales and marketing segments, leading to decreases in our crude oil and refined products production and transported volumes, the Barrancabermeja refinery's throughput and demand for fuels. Despite the impact on our operations in the upstream, midstream, and downstream and sales and marketing segments, we adjusted our logistics to minimize the impact on the distribution of fuels to the different regions of Colombia, implemented strategies to maintain operations and maintained a fluid dialogue with the communities where it operates.

[Table of Contents](#)

These activities and their possible escalation and the effects associated with them have had, and may have in the future, a negative impact on the Colombian economy or on us, which may affect our customers, employees, assets, or the environment, with resulting containment, clean-up and repair expenses.

Despite the peace agreement between the Colombian government and the Revolutionary Armed Forces of Colombia (the FARC) and the peace negotiation process attempts with the National Liberation Army (the ELN), some illegal and terrorist activities of guerrilla groups or their members may continue.

On November 30, 2016, the Colombian Congress approved a peace agreement between the Colombian government and the FARC. Since then, the Colombian government has advanced in the process of gradually integrating many of the FARC members into civilian and political life. Despite of these efforts, in August 2019 some former leaders of this guerrilla left the process and announced the resumption of hostilities.

Likewise, the ELN guerrilla group, has increased its actions against the Colombian security forces and the critical infrastructure of the Nation, which we believe is an attempt to show its presence and influence in some regions and put pressure to resume peace negotiations that were interrupted since January 2019, as a result of the terrorist attacks carried out by the ELN. The Colombian Government proclaims that the continuity of the dialogues depends on the cessation of terrorist activities and the release of hostages by this group. It is expected that attacks against critical infrastructure will continue until a new bilateral ceasefire can be agreed upon.

Therefore, it is expected that some guerilla groups, such as the ELN, may continue their illegal and terrorist activities, including attacks on our infrastructure, as well as disputes with other illegal armed groups for territorial control in Arauca, resulting in a deterioration of Colombia's national security and our assets, which consequently may negatively impact our operating results.

There have been certain events in Colombia and abroad, which have resulted in political tensions between Colombia and some of its neighboring countries.

There have been certain events in Colombia and abroad, which have resulted in political tensions between Colombia and some of its neighboring countries.

In particular, the economic, political, and social crisis in Venezuela is having a severe impact on Colombia's economy and social situation. This situation could affect the countries' diplomatic relations, impact border towns and cities, accelerate Venezuelan migration flow into Colombia, affect our borderline operations and therefore may have a negative impact on Colombia's economy, social issues and general security situation as well as in our operating results.

Companies operating in Colombia, including us, are subject to the prevailing economic conditions and the investment climate in Colombia, which may be less stable than the prevailing economic conditions and investment climate in developed countries.

Market prices of securities issued by Colombian companies, including us, are subject to the prevailing economic conditions in Colombia. A large portion of our assets and operations are located in Colombia and most of our sales are currently derived from our local crude oil and natural gas production and the production of our refineries located in Colombia. Accordingly, our financial condition and results of operations depend to a significant extent on macroeconomic and political conditions prevailing from time to time in Colombia and on the exchange rates between the Colombian Peso and the U.S. dollar.

If the perception of improved overall security in Colombia deteriorates or if the investment climate worsens, the Colombian economy may face lower growth rates than the ones posted recently, which could negatively affect our financial condition and results of operations. Additionally, the uncertainty of Colombia's economic recovery due to the COVID-19 pandemic could have an impact on our results.

Furthermore, the market price of our shares and American Depositary Shares, or ADSs, may be adversely affected by changes in governmental policies, particularly those affecting economic growth, exchange rates, interest rates, inflation, and taxes. The Government has changed monetary, fiscal, taxation, labor and other policies over time and has thus influenced the performance of the Colombian economy. We have no control over the extent and timing of government intervention and policies.

[Table of Contents](#)

5.2.3. Legal and Regulatory Risks

This section discusses potential legal and regulatory risks to us, including the risk of having to comply with new laws and regulations.

Our operations are subject to extensive regulation, which is subject to change from time to time by the applicable regulatory authorities.

The Colombian hydrocarbons industry is subject to extensive regulation and supervision by the Government and regulatory agencies in matters including the award of exploration and production blocks by the ANH, the imposition of specific drilling and exploration obligations, restrictions on production, price controls, capital expenditures, liquidation of the Net Position of each refiner or importer with respect to the FEPC and required divestments. Existing regulation applies to virtually all aspects of our operations in Colombia and abroad. The commercialization activities of some of our products also face extensive regulation. Such regulation is subject to change by the applicable regulator affecting our ability to commercialize our products. See section *Business Overview—Applicable Laws and Regulations*. In particular, under current Colombian regulations, the Ministry of Mines and Energy is required to calculate and liquidate each refiner and/or importer of fuel's Participation Differential (i.e., this arises when the International Parity Price is lower than the reference price established by the Ministry of Mines and Energy, leading to a "Net Position" every six months to be paid by the FEPC). Accordingly, Ecopetrol S.A. and Reficar rely on the FEPC settling their respective Net Position each year in connection with amounts due to them from FEPC. However, such amounts have yet to be paid and as of December 31, 2021, Ecopetrol S.A. recorded COP\$6.3 billion in accounts receivable due from FEPC and Reficar recorded COP\$1.5 billion in accounts receivable due from FEPC. We cannot offer any assurance as to when or if Ecopetrol S.A.'s or Reficar's Net Position will be settled by FEPC and such amounts will be paid. If their respective Net Position is not settled, the Ecopetrol Group's consolidated financial statements and results of operations could be adversely impacted. See *Business Overview—Applicable Laws and Regulations—Regulation of Refining and Petrochemical Activities—Regulation Concerning Production and Prices—Fuel Price Stabilization Fund (FEPC)*.

The terms and conditions of the agreements with the ANH under which we explore and produce crude oil and natural gas generally reflect negotiations with the ANH and other governmental authorities and may vary by fields, basins and hydrocarbons discovered. We are required, as are all oil companies undertaking exploratory and production activities in Colombia, to pay a percentage of our production to the Government as royalties. The Colombian Congress has modified the royalty program for crude oil and natural gas production several times in the last 20 years, as it has modified the regime regulating new contracts entered into with the Government. In the future, the Colombian Congress may once again amend royalty payment levels and such changes could have an adverse effect on our future exploration and production in Colombia. See section *Business Overview—Applicable Laws and Regulations—Regulation of Exploration and Production Activities—Business Regulation—Royalties* for a description of the current royalty scheme.

Our operations in Colombia are subject to extensive national, state, and local environmental regulations. Environmental rules and regulations are applicable to our exploration, production, refining, transportation, supply, and marketing activities, as well as the biofuels we produce. These regulations establish, among other things, quality standards for hydrocarbon products, air emissions and greenhouse gases, water discharges and waste disposal, soil remediation, water pollution and the general storage, handling, transportation, and treatment of hydrocarbons in Colombia. Currently, all exploratory drilling projects in areas that do not yet have a license must undergo an environmental impact assessment and must receive an environmental license from the governmental agency responsible for awarding environmental licenses, the ANLA. Environmental authorities with jurisdiction over our activities routinely inspect our crude oil fields, refineries, and other production sites, and they may decide to open investigations or sanction proceedings, which may result in the imposition of fines, restrictions on operations or other sanctions in connection with potential non-compliance with environmental laws.

We are also subject to control and monitoring by the regional autonomous corporations (CAR for its Spanish acronym), which are regional environmental authorities that grant permits for the use and exploitation of natural resources in areas or fields that have an Environmental Management Plan (PMA for its Spanish acronym), in the same way they establish compensation measures for the use of these resources and perform monitoring, control, and impose sanctions as result of investigations.

If we fail to comply with any of these national or regional environmental regulations, we could be subject to administrative and criminal penalties, including warnings, fines, or closure orders of our facilities. Any such criminal penalty would be imposed on the legal representatives of the Company, including any legal representative, director or worker who participated or failed to take action related to the activities that lead to environmental damage. See section *Business Overview—Applicable Laws and Regulations—Regulation of Exploration and Production Activities—Business Regulation—Environmental Licensing and Consultations*.

[Table of Contents](#)

Some of the companies in the business group perform exploratory activities outside of Colombian territory. As such, those companies are subject to foreign environmental regulations for the exploratory activities conducted by the business group outside of Colombia. Failure to comply with foreign environmental regulations may result in investigations by foreign regulators, which could lead to fines, warnings or temporary suspensions of our operations, which could have a negative impact in the consolidated financial statements and results of operations of the Ecopetrol Group.

In addition, the companies of the Ecopetrol Group conducting upstream activities outside Colombia may be subject to foreign health, safety, and environmental regulations. Foreign health and safety regulations may be more severe than those established under Colombian law and, therefore, we may be required to make additional investments to comply with those regulations.

Furthermore, our electric power transmission and toll roads concessions segment, carried on by ISA and its subsidiaries are heavily regulated in Colombia, Brazil, Peru and Chile by government ministries and authorities, as well as various other national, state, and local regulatory agencies. Regulatory actions taken by those agencies and, in particular, tariff reviews and revised compensation terms of transmission investments, could materially adversely affect the profitability of these businesses. In addition, increased regulatory requirements relating to the integrity of our facilities or the quality of the services provided by ISA and its subsidiaries may require additional spending in order to maintain compliance with these requirements.

We are subject to a broad range of environmental laws, which require us to incur ongoing costs and capital expenditures and expose us to substantial liabilities in the event of non-compliance. These laws and regulations require us to, among other things, minimize natural and socio-environmental risks, while maintaining the quality, safety, and efficiency of our facilities. These laws and regulations also require us to obtain and maintain environmental permits, licenses, and approvals for the operation of our business, which can lead to cost overruns or to changes in our investment plans. Some of these permits, licenses and approvals are subject to periodic renewal. Government environmental agencies could take enforcement actions against us for any failure to comply with applicable laws and regulations. Such enforcement actions could include, among other things, the imposition of fines, revocation of licenses, suspension of operations or imposition of criminal liability for non-compliance.

Environmental laws and regulations can also impose strict liability for the environmental remediation of spills and discharges of hazardous materials and waste and require us to indemnify or reimburse third parties for environmental damages. We cannot assure that we will obtain approval for any future projects or that existing approvals, authorizations, licenses, and permits will not be questioned, revoked or otherwise suspended due to any alleged non-compliance or legal action. Environmental regulation has become more stringent in the countries where we operate in recent years. As a result, our operating costs have increased to comply with these new technical environmental requirements as well as the need to strengthen our specialized team in charge of environmental compliance in project and operations. If environmental laws continue to impose additional costs on us, we may need to reduce our investments on strategic projects to allocate funds to environmental compliance, delaying projects or having an adverse effect on our results of operations and financial condition. Moreover, more stringent environmental protection programs in the countries or industries where we operate could impose constraints and additional costs on our operations and require us to make significant capital expenditures in the future. We cannot assure that future legislative, regulatory, international law, industry, trade, or other developments will not have a material adverse effect on our business, properties, results of operations, financial condition or prospects.

Finally, under certain of our credit agreements, we are under an obligation to comply with international environmental standards established by our lenders or by multilateral institutions. Failure to comply with such environmental standards could result in an event of default under the relevant credit agreements that we, or our subsidiaries, have entered into, which would affect our financial condition.

[Table of Contents](#)

More stringent environmental requirements or commitments imposed through regulation or public demand may lead to potential increased expenses or reduced demand for our products, as well as hardship in achieving timely permits and licenses.

In 2021, the Colombian government enacted the Climate Action Law (Law 2169) which advances Colombia's focus on strengthening its strategy and actions against climate change, when considering the initiatives being taken at a global level. The Carbon Neutrality Colombian Strategy launched in April 2021 by the Ministry of Environment and Sustainable Development reaffirmed its commitment to these initiatives and accelerated Colombia's goal to reduce GHG emissions to reach carbon neutrality by 2050. As a response to this, we have also committed to achieve zero net carbon emissions by 2050, with some projects already implemented or under investigation and by 2030, seeking to reduce our CO₂e emissions by 25% as compared to the prior baseline established in 2019. We cannot make any assurances that we will be able to achieve our goals or those set out in government climate change and sustainability initiatives (e.g., proposed Colombian Climate Action Law, COP 26 (Glasgow 2021), tax credits, carbon offsets among others) or meet other stakeholders' expectations with respect to such plans, or that we will be able to apply reliable and cost-effective green alternatives. If we are unable to reach our carbon neutrality goals or governments' or other stakeholders' expectations with respect to such goals, our energy diversification portfolio and strategic priorities would be adversely impacted and could lead to increased expenses related to green initiatives and reduced demand for our core products.

We may not be able to keep pace with changing requirements to reduce impacts to Colombia's biodiversity.

As we operate in a country that is recognized as a megadiverse territory where complexity, fragility, and biological diversity are interwoven with a rich history and a dynamic and complex social, economic, and political landscape, and where the government looks to businesses to participate in the country's sustainability development goals implementation, we may not be able to adequately adapt and align our technology capabilities and strategy (e.g., Nature Based Solutions, Big Data Analytics, Remote Sensing, Robotics and Drones, Artificial Intelligence) to effectively enable, assess, and report on the reduction of its impact to Colombia's biodiversity (e.g., contamination, habitat loss, deforestation, and GHG emissions), considering the increase in Colombian sustainable development commitments leading to increased regulatory scrutiny and impacting our strategic efforts and operations for minimizing its impacts to relevant ecosystems.

Our operations might be affected by rising climate change and energy transition regulatory developments.

The increase in global temperature due to the substantial increase of GHG is a concern worldwide. The Paris Agreement calls for immediate and forceful actions to be taken to limit the increase of global temperature below 1.5°C. In response, government agendas have increasingly been defining normative and regulatory frameworks that determine local actions related to climate change.

As a result, companies are increasingly subject to regulatory risks and public policy changes related to climate change. In Colombia, the climate change regulatory framework has developed substantially, defining goals, measures, and means of implementation that bind companies. In December 2021, the Climate Action Law (Law 2169) was issued, which promotes the low-carbon development of the country through establishing goals and measures related to carbon neutrality and climate resilience. This law is aligned with the country's Nationally Determined Contributions (the "NDCs") (51% GHG reduction by 2030) and its Long-Term Climate Strategy (E2050). The above is binding for Ecopetrol, among other aspects in: (i) mandatory reporting of GHG, (ii) National Registry of GHG Emissions Reduction and Removal, and (iii) low carbon development, carbon neutrality, and climate resilience implementation and monitoring plan. This regulation will be under continuous review by Ecopetrol to mitigate the potential financial effects and the impact on the company's climate goals. To this end, the company has developed a Decarbonization roadmap to achieve medium and long-term goals. However, developments and new regulations could affect the fulfillment of company's climate goals, increasing costs and negatively impacting financial and operational results.

Moreover, the Government recently issued a regulation associated with fugitive emissions and venting and routine flaring (Resolution 40066 of 2022). To this end, the company has been making progress in improving activities to detect and measure these emissions in the different operating areas, through top-down and bottom-up technologies, and in closing these leaks. However, the implementation and enforcement of these regulations could generate additional costs for the company.

[Table of Contents](#)

New or higher taxes resulting from changes in tax regulations or the interpretation thereof in Colombia could adversely affect our results of operations and financial condition.

New tax laws and regulations, and uncertainties in the interpretation with respect to existing and future tax policies pose risks to us. In recent years, the Colombian Congress and tax authorities have enacted modifications to taxes related to financial transactions, income, value added tax (VAT), and taxes on net worth. In December 2019, Congress passed Law 2010 called “*Ley de Crecimiento Económico*” or “Economic Growth Law”, which largely maintains the changes of the previous tax reform (Law 1943 of 2018) along with some changes to tax legislation. On September 14, 2021, the Colombian Congress enacted a tax reform called “*Ley de Inversión Social*” or “Social Investment Law”, which became effective as of January 1, 2022. This law increased the tax rate from 30% to 35%, which generated in Ecopetrol a deferred tax income of COP\$ 306,312 million, recognized in the financial statements for the fiscal year ended 2021.

For a description of taxes affecting our results of operations and financial condition in 2021, see section [Financial Review—Effect of Taxes, Exchange Rate Variation, Inflation and the Price of Oil on Our Results—Taxes](#). Changes in tax-related laws and regulations, and interpretations thereof, can affect tax burdens by increasing tax rates and fees, creating new taxes, limiting tax deductions, and eliminating tax-based incentives and non-taxed income. In addition, tax authorities and tax courts may interpret tax regulations differently than we do, which could result in tax litigation and associated costs and penalties.

Until 2016, for Colombian income tax purposes, dividends that were distributed from profits taxed at the corporate level were not taxed or subject to withholding tax at the shareholder level. However, beginning in 2017, the regulation changed so that dividends paid to non-resident shareholders are subject to a withholding tax. For further detail and a description of such changes, see section [Financial Review—Effect of Taxes, Exchange Rate Variation, Inflation and the Price of Oil on our Results—Taxes](#). Further changes to Colombian tax laws may subject us and our shareholders to higher taxes and could adversely affect our results of operations and financial condition.

We may incur losses and spend time and money defending pending lawsuits and arbitrations and responding to administrative investigations.

We are currently a party to several legal proceedings filed against us. We are also subject to labor-related lawsuits filed by current and former employees in connection with pension plans and retirement benefits. As of December 31, 2021, Ecopetrol S.A. was a party to 5,752 legal proceedings relating to civil, criminal, administrative, environmental, tax, constitutional, arbitration and labor claims, of which 4,071 were filed against us in the Colombian courts and arbitration tribunals and of which 226 had an accrual provision. We allocate substantial amounts of money and time to defend against these claims, in which the claimants often seek substantial sums of money as well as other remedies. See Note 23 to our consolidated financial statements and see section [Risk Review—Legal Proceedings and Related Matters](#). In addition, in accordance with Colombian law, we and our employees are subject to surveillance and investigations by certain administrative control entities in Colombia, which are intended to determine whether public funds have been misused, mismanaged, or misappropriated or whether they have been used in compliance with applicable law. Such investigations may divert the attention of management and subject the Company to reputational risk and increase difficulties in retaining talent. See section [Risk Review—Legal Proceedings and Related Matters](#).

5.2.4. [Risks Related to Our ADSs](#)

This section discusses potential risks associated with an investment in our American Depositary Shares (as opposed to our common shares) by investors outside Colombia.

Holders of our ADSs may encounter difficulties in protecting their interests.

Holders of our ADSs do not have the same voting rights as holders of our common shares. As set forth in the amended and restated deposit agreement, dated January 12, 2018 (as amended on December 30, 2021), among Ecopetrol S.A., JP Morgan Chase Bank, N.A., as depositary (the Depositary), and all holders from time to time of our American Depositary Receipts (as amended and restated, the Deposit Agreement), holders of our ADSs may instruct the Depositary, to vote on shareholder matters prior to a shareholders’ meeting.

Colombian law is not clear about the need to request proxies from existing shareholders. Thus, holders of our ADSs may not become aware of some matters in time to instruct the Depositary to vote their shares.

[Table of Contents](#)

The Deposit Agreement provides holders of our ADSs with the right to instruct the Depositary to vote common shares separately. However, holders of our ADRs should be aware that in Colombia, it is uncertain whether a depositary must vote all common shares of a Colombian corporation in an American Depositary Receipt, or ADR, program in the same manner as a single block or may vote them separately. Accordingly, if either the custodian or the Depositary are not able to vote the common shares (including the right to receive common shares in the form of ADRs) deposited under the Deposit Agreement and any other securities, cash or property from time to time held by the Depositary in respect or in lieu of deposited common shares (the "Deposited Securities") separately, all such Deposited Securities shall be voted based on the majority vote of the voting instructions timely received from holders of ADRs. In the case of such single block voting, all holders of ADRs, including holders of ADRs for which no voting instructions are timely received and holders of ADRs with voting instructions contrary to the voting instructions of a majority of the Deposited Securities timely received, should be aware that the Deposited Securities shall all be voted as a single block and that the voting instructions of such holders of ADRs will be deemed given in the manner stated above.

The Depositary will not itself exercise any voting discretion in respect of any Deposited Securities. The holders of our ADRs will be solely responsible for any exercise of the voting rights of the Deposited Securities represented by the ADRs if such vote is made pursuant to the procedures described in the Deposit Agreement. Holders of ADRs are strongly encouraged to forward their voting instructions as soon as possible as voting instructions will not be deemed received until such time as the ADR department responsible for proxies and voting has received such instructions, notwithstanding that such instructions may have been physically received by the Depositary, prior to such time.

In the future, the Colombian regulatory authorities may clarify their interpretation as to how the voting rights should be exercised by holders of our ADSs, and such possible interpretation could adversely affect the value of the common shares and ADSs.

Our ADS holders may be subject to regulations on foreign investment in Colombia.

Colombia's International Investment Statute (the set of rules and regulations which govern the international investment and the foreign exchange regime, which include Decree 1068 of 2015, Resolution 1 of 2018 and External Circular DCIN-83 issued by the Colombian Central Bank among others), regulates the manner in which non-Colombian residents can invest in Colombia and participate in the Colombian securities market. Among other requirements, Colombian law requires foreign investors to register certain foreign exchange transactions with the Colombian Central Bank and outlines the necessary procedures to authorize certain types of foreign investments. Colombian law requires that certain foreign exchange transactions, including international investment in foreign currency between Colombian residents and non-Colombian residents, must be made through the foreign exchange market, either through authorized intermediaries for the foreign exchange market or compensation accounts, which are regular bank accounts held abroad by Colombian residents and registered with the Colombian Central Bank. Any income or expenses under our ADR program must be made through the foreign exchange market.

Investors acquiring our ADRs are not required to register with the Colombian Central Bank directly, as they will benefit from the registration to be obtained by the custodian for our common shares underlying the ADRs in Colombia. If foreign investors in ADRs choose to surrender their ADRs and withdraw common shares, they must register their investment with the Colombian Central Bank in the common shares as a portfolio investment through their local representative, which may be a brokerage firm, trust company or investment management companies supervised by the Superintendence of Finance. Foreign investors will only be allowed to transfer dividends abroad after their foreign investment registration procedure with the Colombian Central Bank has been completed. Investors withdrawing common shares could incur expenses and/or suffer delays in the application process. The failure of an investor to report or register foreign exchange transactions with the Colombian Central Bank on a timely basis may prevent the investor from remitting dividends abroad or result in the initiation of an investigation and in the imposition of fines.

Colombian residents who acquire ADRs and either receive profits from this investment, surrender their ADRs or liquidate their investment in ADRs, must register their investment by means of the procedures set forth in section 7.4 of the External Regulation of the Circular DCIN-83 of the Colombian Central Bank.

Depending on the upcoming President elections in Colombia and many factors related to a potential change of government, the Government, the Colombian Congress, or the Colombian Central Bank may amend Colombia's International Investment Statute or the foreign investment rules, which could result in more restrictive rules and could negatively affect trading of our ADSs.

[Table of Contents](#)

Colombia currently has a free convertibility system. If a more restrictive convertibility system is implemented, the Depositary may experience difficulties when converting Colombian Peso amounts into U.S. dollars to remit dividend payments. Also, currently Colombia has a floating exchange rate system that might be subject to change in the future. See section [Shareholder Information—Exchange Controls and Limitations](#).

Holders of our ADSs may not be able to effect service of process on us, our directors, or executive officers within the United States, which may limit your recovery in any foreign judgment you obtain against us.

We are a mixed economy company organized under the laws of Colombia. In addition, most of the members of our Board of Directors (Directors) and executive officers reside outside the United States. All or a substantial portion of our assets and the assets of these persons are located outside of the United States. As a result, it may not be possible for ADSs holders to effect service of process within the United States upon us or these persons or to enforce judgments against us or them in U.S. courts obtained in such courts predicated upon the civil liability provisions of the U.S. federal securities laws. Colombian courts determine whether to enforce a U.S. judgment predicated on the U.S. securities laws through a procedural system known as exequatur. For a description of these limitations, see section [Shareholder Information—Enforcement of Civil Liabilities](#).

The protections afforded to minority shareholders in Colombia are different from those in the United States and may be difficult to enforce.

Under Colombian law, the protections afforded to minority shareholders are different from those in the United States. In particular, the legal framework with respect to shareholder disputes is substantially different under Colombian law than U.S. law and there are different procedural requirements for commencing shareholder lawsuits, such as shareholder derivative suits. As a result, it may be more difficult for our minority shareholders to enforce their rights against us or our Directors or controlling shareholder than it would be for shareholders of a U.S. company.

ADRs do not have the same tax treatment as other equity investments in Colombia.

Although ADRs represent Ecopetrol S.A.'s common shares, for Colombian tax purposes, ADRs are securities different from their underlying assets. Therefore, ADR holders are not entitled to the tax treatment granted to holders of the common shares. Such tax treatment includes, among others, benefits relating to dividends and to profits derived from sale of Colombian common shares. For further information, see section [Shareholder Information—Taxation—Colombian Tax Considerations](#).

Judgments of Colombian courts with respect to our ADSs will be payable only in Colombian Pesos.

If proceedings are brought in the courts of Colombia seeking to enforce the rights of ADS holders of common shares, we will be required to discharge our obligation amounts in Colombian Pesos. Colombian law provides that an obligation in Colombia to pay amounts denominated in foreign currency may only be satisfied in Colombian currency at the Representative Market Exchange Rate of the date the judgment is rendered, and such amounts are then adjusted to reflect exchange rate variations through the effective payment date.

The relative volatility and illiquidity of the Colombian securities markets may substantially limit our investors' ability to sell our ADSs at the price and time they desire.

Investing in securities that are traded in emerging markets, such as Colombia, often involves greater risk when compared with other world markets, and these investments are generally considered to be more speculative in nature. The Colombian securities market is substantially smaller, less liquid, more concentrated and can be more volatile than other securities markets in the United States. As of December 31, 2021, the Colombian Stock Exchange (BVC) had a market capitalization of approximately COP\$ 370,319 billion (US\$ 92.03 billion using the closing rate for 2021), a 1.27% increase when compared with the amount at the end of 2020. By comparison, the New York Stock Exchange (the NYSE) had a market capitalization of US\$ 38.6 trillion as of December 31, 2021, and a daily trading volume of approximately US\$ 194 billion in 2021.

As of December 31, 2021, our shares represented the highest market capitalization of the BVC accounting for 13.66% of the total COLCAP index, which reflects the price volatility of the 20 most-liquid stocks.

[Table of Contents](#)

Given the current ownership structure of our shares, it may be difficult for you to purchase large quantities of shares from a single shareholder. We cannot assure you that a liquid trading market for our ADSs will develop or, if developed, that it will be maintained. Without a liquid trading market, the ability of investors in our ADSs to sell them at the desired price and time could be substantially limited.

We are not required to disclose as much information to investors as a U.S. issuer is required to disclose.

We are subject to the reporting requirements set by Law 964 of 2005, the Superintendence of Finance and the *Bolsa de Valores de Colombia* (BVC), the Colombian Stock Exchange. The corporate disclosure requirements that apply to us may not be equivalent to the disclosure requirements that apply to a U.S. issuer and, as a result, you may receive less interim information about us than you would receive from a U.S. issuer.

5.2.5. Risks Related to the Controlling Shareholder

Our controlling shareholder's interests may differ, from time to time, from those of certain minority shareholders, or that may affect our long-term strategy.

The Nation currently holds 88.49% of our outstanding capital stock, making it our controlling shareholder. The Nation as our controlling shareholder has majority voting rights at the General Shareholders Assembly to elect the members of our Board of Directors and may propose and approve decisions that may be in its own interest and that may not necessarily benefit minority shareholders or be aligned with our long-term strategic goals.

For example, our controlling shareholder may suggest and approve dividend proposals at the ordinary General Shareholders Assembly, notwithstanding the interest of certain minority shareholders, in an amount that results in us having to reduce our capital expenditures or increase our debt levels. In addition, our controlling shareholder may support decisions to undertake projects that may diverge resources from the company's long-term strategic goals or make announcements about its intentions related to its holding of the Company's stock, which may not be in our best interest or in the best interest of our minority shareholders, including holders of our ADSs, and could affect the price of our shares or ADSs. Consequently, to the extent permitted by law, the actions of our controlling shareholder may thereby negatively affect our prospects, results of operations and financial condition. See section Shareholder Information—Dividend Policy.

5.3. Risk Management

5.3.1. Integrated Risk Management System and Internal Control System

Under the leadership of the Vice-Presidency of Compliance and its Corporate Integrated Risk Office, in 2021 Ecopetrol S.A. continued strengthening its Integrated Risk Management System based on the international technical standard ISO 31000, which establishes a set of principles, frame of reference and process or cycle that allow the organization to manage the effects of uncertainty on meeting objectives, to maximize opportunities and assist in establishing strategies and making informed decisions.

Our risk management approach is based on the risk management which consists of four main stages: planning, identifying, evaluating, and managing risks, as well as cross-cutting stages of communication and consulting, record and reporting and monitoring. This cycle is supported by the principles of risk management: integration, continuous improvement, structure, information, culture, organizational structure, and normative and management tools.

Three of our most important tools within our risk management approach are:

- (i) Risk Assessment Methodology: In order to properly prioritize mitigation, treatment and monitoring efforts of risk management at the process level, a standardized methodology was established to assess inherent and residual risk levels. The risk level (Very High, High, Medium, Low or None) is obtained from the combination of the risks (impacts) and the probability of occurrence of those consequences. According with the level of risk, action plans for management and mitigation are defined.
- (ii) Mitigation Plans: Each year, by performing the stages of the risk management cycle, we define and implement mitigation plans in order to reduce the levels of exposure to risk through mitigation or elimination of some of its causes. Metrics and goals must

[Table of Contents](#)

be defined during the development of each plan to ensure its effectiveness and to prioritize our efforts on those with the greatest impacts.

- (iii) **Monitoring Indicators:** As part of the monitoring stage of the risk management cycle, we have implemented Key Risk Indicators (KRIs) which are metrics used to provide early signals of increasing risk exposures. These signals constitute information for preventative decision making in order to avoid risk materialization.

The Integrated Risk Management System establishes the definition of risk as the effect of uncertainty on the fulfillment our objectives, considering the effect as the deviation positive, negative or both, compared to what is expected. Our risks can be classified as:

- (i) **Enterprise Risks:** Risks that are directly associated with the business strategy plan of the Company and are systematically monitored by the Management Committee. When defining the enterprise risks, the analysis of the internal and external environment is carried out to determine the topics and trends that could have potential or real impact on our strategy. The management of those risks is led by the person accountable for the process and each risk has a defined treatment plan and monitoring indicators. Further information can be found in our 2021 Enterprise Risk Map on our website.
- (ii) **Processes Risks:** Risks that tend to identify potential failures in the activities related to our core and support business processes that drive us to achieve our objectives. At this level, our processes have identified risks with their respective mitigation methods, including financial and non-financial controls, treatment plans and/or monitoring indicators.
- (iii) **Operational Risks:** Risks that are at an operational level of detail and occur in our day-to-day activities and tasks.

On the other hand, emerging risks are those that are expected to have a long-term future impact on the company (three to five years and beyond) or, in some cases, have already started to impact Ecopetrol. Emerging risks are considered those that meet some of the following characteristics: (i) the risk is new, developing, or significantly increasing in relevance, (ii) a known risk in a new or unknown context or under re-emerging conditions, (iii) the potential financial or reputational impact of the risk is long-term and significant, (iv) it is an external risk arising from events outside the company's influence or control, (v) the risk and its impact on the company are specific, and (vi) it has a high potential impact to Ecopetrol S.A. and may require it to adapt its strategy and/or business model.

We have also continued consolidating our internal control systems into a unified system that integrates the best practices called for by the Committee of Sponsoring Organizations of the Treadway Commission (COSO 2013), Sarbanes-Oxley Act (SOX), governance and management of enterprise IT (COBIT), Enterprise Risk Management (COSO 2017) and our ethics and compliance rules, with the aim of establishing an integrated management system for all control components, thereby allowing us to strengthen all of our control system.

We have also defined guidelines and implemented an Internal Control System (which includes subsidiaries), the main purpose of which is to provide reasonable assurance regarding the achievement of all the Company's objectives relating to operations, strategy, reporting and compliance, through the appropriate risks management and ensuring the effectiveness of our controls and the scope of which includes our subsidiaries. Under those guidelines, each subsidiary must implement and report the performance of its Internal Control System to Ecopetrol S.A. to ensure compliance with the above measures, and the subsidiaries have methodological support from Ecopetrol S.A. when requested. Ecopetrol S.A. also performs preventive monitoring in selected subsidiaries to assure all the components and principles of their Internal Control Systems are present and operating. The system performance is systematically monitored by the Board of Directors.

The risk management component of our Internal Control System is in charge of identifying negative events or situations that may affect our defined objectives, assessing and prioritizing them to implement the most appropriate response. This component has been designed and implemented across the organization, with a two-level focus: Enterprise Risk and Processes Risks.

Ecopetrol S.A.'s Internal Control System is aligned to the Company's strategy and business processes and gives responsibility to all employees to manage risk, to maintain the effectiveness of controls, to report incidents in order to preventively correct possible deficiencies and to provide reasonable assurance of achieving corporate objectives and goals. The scope of this system includes the Company's subsidiaries who must implement and report on the performance of its internal control system to the Company to ensure compliance with the above measures.

[Table of Contents](#)

5.3.2. Managing Low Carbon Economy and Climate Change Risks

To manage and mitigate the risks related to the transition to a low carbon economy and climate change, Ecopetrol, as part of its long term strategy “Energy that Transforms” and in line with its T ESG agenda, expects to invest approximately US\$ 1.4 billion in projects for comprehensive water management, decarbonization, energy efficiency, use of energy and alternative sources, fuel quality improvements, and studies and pilots in green and blue hydrogen for applications in refineries and mobility. Additionally, we have set a shadow price on carbon at US\$20/TCO₂ in 2021, 30 US\$/TCO₂ from 2025, and 40 US\$/TCO₂ from 2030 onwards, which will be used to assess and evaluate current and future projects and investments. See Strategy and Market Overview—Our Corporate Strategy—2040 Strategy: Energy that Transforms for detailed information on our strategy and carbon shadow price.

To properly adapt the Ecopetrol Group’s business strategy to the transition to a low carbon economy for ensuring long-term value creation, we have been conducting an energy transition scenario analysis since 2018. These analyses are being updated and refined reflecting two elements: (i) the acceleration of the transition in recent years given a reduction of costs of electrification and renewables earlier than expected, accompanied by increasing oil price volatility and decreased investment appetite in the hydrocarbon sector, and (ii) a decrease in the demand in the oil and gas business brought by the COVID-19 pandemic. We have assumed a peak oil scenario (globally in the late 2020s and in Colombia between the 2030s and 2040s), to reflect more ambitious actions and goals in the decarbonization path and to seize the opportunities of the transition. Our climate risk strategy is being aligned with the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD) and includes the addition of a new climate-related risk to our 2021 enterprise risks, in respect of inadequate management of climate change and water.

5.3.3. Managing Information Security and Cybersecurity

Ecopetrol S.A. has a dedicated management team focused on information security issues such as risk analysis, treatment of information, safe information management practices and classification of critical business information, control systems compliance and effectiveness of available information security technologies, all of which are articulated with the ERM system at the enterprise level. The Cybersecurity unit is part of the Digital Vice-presidency, reporting to senior management and to the Company’s Board of Directors.

Ecopetrol S.A. has included cybersecurity risk as one of the key enterprise risks. Based on that, a working group formed in 2014, coordinated by the cybersecurity area with the participation of industrial control systems and information technology specialists, has been understanding the new challenges of cybersecurity risk, developing activities to identify and protect critical digital assets.

During 2019, Ecopetrol S.A., as a NOC (National Oil Company), provided updates to the Cyber Defense Command Unit (an entity under the control of the Colombian Ministry of Defense) regarding the inventory of its critical cybernetic infrastructure that was included in the classified catalogue of national critical cybernetic infrastructure. In 2021, no such updates were required or provided.

Our cybersecurity team established a plan to continue the incorporation of cybersecurity practices to enhance the awareness about these risks at an operational level and adjust current information security practices considering the cyber-threat context. Likewise, as a result of this process, we are currently continuing the incorporation of elements relative to management of the cyber security threat, including proper configuration of storage devices, overall control of information security, policies and procedures that address trading information security, control mechanisms for remote work, specialized monitoring and cyber threat services, vulnerability management, cyber incident response management and cybersecurity insurance coverage, among others.

Ecopetrol S.A. has a Security Operations Center (SOC) service, in order to enhance the ability to foresee and identify trends in attacks in Ecopetrol S.A.’s information technology infrastructure and to monitor our reputation on the internet. During 2021, we kept the capacities of the SOC up and running, expanding the scope of services to Operational Technology (OT) digital assets, conducting red team exercises and improving our monitoring coverage. While there were cyber-attacks during 2021, every event reported was controlled and there were no material effects on processes, equipment, products, services, relationships with customers or suppliers, competitive conditions or critical information. Ecopetrol S.A. does not have any current proceedings that relate to cyber breaches.

Furthermore, during 2021, the internal audit department conducted audits on cybersecurity processes following up on our prior enhancement plans. As a result of the aforementioned, an action plan was developed during 2021 with main objectives to strengthen identification of threats, access to management and improve certain technical components of our cybersecurity program. Ecopetrol S.A. has continuously updated its cybersecurity policies and response procedures for cyber incidents, which was tested in several wargame exercises that covered all business segments and their subsidiaries.

[Table of Contents](#)

During 2021, in response to the requirements arising from the COVID-19 pandemic, Ecopetrol S.A. kept its cybersecurity risk profile and its cybersecurity strategy updated, by continuing to ensure connectivity for remote work and the alignment to the cloud migration for critical applications. Likewise, Ecopetrol S.A. continued to strengthen its capabilities to monitor and respond to malicious activities.

Ecopetrol S.A. uses the ONG-C2M2 (Oil & Gas - Cybersecurity Capability Maturity Model) as a framework to manage its cybersecurity maturity and to establish its Cybersecurity Program and its Cybersecurity Management System, implementing practices and capabilities those covers the following domains: Risk Management, Asset Change and Configuration Management, Identity and Access Management, Threat and Vulnerability Management, Situational Awareness, Information Sharing and Communications, Event and Incident Response - Continuity of Operations, Supply Chain and External Dependencies Management, Workforce Management and Cybersecurity Program Management.

Ecopetrol S.A. has also strengthened its cybersecurity capabilities in 2021 by incorporating "Zero Trust" foundational practices and a set of advanced protection controls for critical information in order to reduce the level of cyber risk in the business units. Increasing cultural awareness in terms of cyber security was another key initiative during 2021.

Finally, in order to keep strengthening our cybersecurity strategy for 2022 to 2024, a quantitative model for cyber risks was applied defining the following priority fronts to guide cybersecurity and cyberdefense actions in the coming years: operational technology (OT), critical data flows, supply chain, business continuity and technological obsolescence.

5.3.4. Managing Financial Risk

We are exposed to certain risks associated with the nature of our operations and the financial instruments we use. Among the risks that affect our financial assets, liabilities and expected future cash flows are changes in commodity prices, currency exchange rates, interest rates and the credit quality of our counterparties.

Commodity price risk is associated with our day-to-day operations as we export and import crude oil, natural gas, and refined products. We occasionally use hedges to partially protect our financial results from price fluctuations taking into account that part of our financial exposure under purchase contracts for crude oil and refined products depends on international oil prices. We believe that the risk of such exposure is partially naturally hedged since we are an integrated group (with operations in the upstream, midstream, downstream, and electric power transmission and toll roads concessions segments) and either export crude oil at international market prices or sell refined products at prices that are correlated to international market prices. During 2021, Ecopetrol S.A. executed strategic and tactical hedging operations due to its exposure to pricing indices different from the commercialization benchmark and different pricing periods between the buying and the selling of physical barrels. We do not use derivative financial instruments for speculative or profit-generating purposes. A total of 1.6 million barrels were the subject of strategic hedges oriented to secure the value promise of Ecopetrol Permian. A total of 36.8 million barrels were the subject of tactical hedges oriented at mitigating risks associated with storage marketing strategies, anticipated purchases of raw materials, supply to refineries, international sales delivered at the destination port and maritime freights.

Currency risk arises in our operations given the fact that most of our revenues are derived from sales of products quoted in or with reference to U.S. dollars. Therefore, when the Colombian Peso depreciates against the U.S. dollar, our revenues converted into Colombian Pesos increase. Conversely, when the Colombian Peso appreciates against the U.S. dollar, our revenues decrease. On the other hand, imported goods, oil services and the debt, which is mainly denominated in U.S. dollars, become less expensive when the Colombian Peso appreciates against the U.S. dollar and more expensive when the Colombian Peso depreciates against the U.S. dollar.

As of December 31, 2021, our U.S. dollar-denominated total debt principal was US\$ 21.6 billion, which we recognize in our consolidated financial statements at its amortized cost, which corresponds to the present value of cash flows, discounted at the effective interest rate. Out of this total, a principal US\$ 15.2 billion relate to Ecopetrol S.A., whose functional currency is the Colombian Peso. Therefore, when the Colombian Peso depreciates against the U.S. dollar, Ecopetrol S.A. is exposed to an exchange rate loss. In contrast, when the Colombian Peso appreciates against the U.S. dollar, Ecopetrol S.A. is exposed to an exchange rate gain. Some of the Ecopetrol Group's subsidiaries have the U.S. dollar as functional currency and are not exposed to a material exchange rate risk resulting from fluctuations in the Colombian Peso against the U.S. dollar. On the asset side, when the financial statements of the Ecopetrol Group are consolidated, the exchange rate differential of the subsidiaries' assets and liabilities whose functional currency is the U.S. dollar is recognized directly in equity, as part of other comprehensive income.

[Table of Contents](#)

Taking previous considerations into account, we seek to identify and manage currency risk in a comprehensive manner, using an integrated analysis of natural hedges in order to benefit from the correlation between incomes or investments in a foreign operation and debt denominated in foreign currency. We adopted hedge accounting as part of our risk management strategy, using two types of natural hedges with its U.S. dollar denominated debt as a financial instrument: (i) cash flow hedge for exports of crude oil, and (ii) hedge of a net investment in a foreign operation. In addition, we may involve the use of financial derivative instruments, and non-derivative financial instruments. As a part of its risk management strategy, using the natural hedge between exports and dollar-denominated debt, on October 2015, US\$ 5.4 billion of Ecopetrol S.A.'s debt in U.S. dollars was designated as hedge instrument of its future export sales for the period 2015 – 2023. In June 2016, Ecopetrol S.A. continued its hedge accounting strategy, using the natural hedge between some of its foreign investments and its dollar-denominated debt in an amount of US\$ 5.2 billion. Likewise, during the second half of 2021 Ecopetrol S.A. hedged a new portion of the dollar-denominated debt against future revenues in an amount of US\$ 3.7 billion and during 2021 Ecopetrol S.A. hedged US\$ 4.9 billion with its foreign investments and future revenues.

As of December 31, 2021, the outstanding value of the natural accounting hedges was US\$ 13.2 billion. With the adoption of hedge accounting, the effect of the volatility of the foreign exchange rate on the hedged portion of the debt is recognized directly in equity, as part of other comprehensive income. In addition, the Company entered into financial derivative instruments in order to mitigate the impact of exchange rate volatility on its financial statements by selling US dollars in order to fulfil Colombian peso denominated debt obligations.

The remaining portion of our dollar-denominated debt, as well as the financial assets and liabilities denominated in foreign currency continue to be exposed to the fluctuation of the exchange rate, which means that an appreciation of the Colombian peso against the U.S. dollar could generate a loss if companies whose functional currency is the Colombian peso have an active net position in U.S. dollars or a gain if they have a net liability position in U.S. dollars. Conversely, a depreciation of the Colombian peso against the U.S. dollar could generate a gain if companies whose functional currency is the Colombian peso have a net active position in U.S. dollars or a loss if they have a net liability position in U.S. dollars. Finally, the Company maintains enough cash in Colombian pesos and U.S. dollars to meet its expenses in each currency (see Note 4.1.5 to our financial statements for further explanation of our accounting policy and Note 30.1 for details of the hedge accounting adopted). With the adoption of hedge accounting, the effect of volatility of foreign exchange rate on the effective hedged portion of the debt is recognized directly in equity, as part of other comprehensive income.

Interest rate risk arises from our exposure to changes in interest rates mainly as a result of the issuances of floating rate debt linked to LIBOR, DTF, CPI, IBR, IPCA, CDI, TJLP, and TAB (with a participation of 11.9%, 0.6%, 5.1%, 0.8%, 3.2%, 2.2%, 0.3% and 0.1%, respectively, of the nominal debt balance as of December 31, 2021). Thus, volatility in interest rates may affect the fair value of and cash flows related to our investments and floating rate debt. In 2021, our analysis of credit risk events and global financial markets drove us to decide not to hedge interest rate risk. Nevertheless, our capital markets office continuously monitors the performance of interest rates and the effect of interest rates on our financial statements.

The trust funds linked to Ecopetrol S.A.'s pension obligations (PAP for its acronym in Spanish) are also exposed to changes in interest rates, as they include fixed- and floating-rate instruments that are mark to market. This exposure is continuously monitored by our treasury office given the potential impact volatility may have on our financial results. The treasury office's information is gathered from reports provided by the asset managers. These reports refer to regulatory limits as well as market, credit and liquidity risks. The investment guidelines with respect to the PAPs are issued by the Colombian regulation for pension funds, as stipulated in the Decree 941 of 2002 and the Decree 1913 of 2018, where it is indicated that they have to follow the same regime as the regular obligatory pension funds in their moderate (i.e., neither conservative nor aggressive) portfolio. For further information regarding the trust funds linked to the pension obligations of the company, see Note 22.2 to our consolidated financial statements.

Regarding liquidity risk, Ecopetrol S.A. forecasts and monitors its cash position on a daily basis in order to review updated expectations for liquidity conditions and the capacity to attend short term obligations. This forecast mainly includes operational income and expenses, capital expenditures expectations, debt and dividend related cash-flows, and other financial cash movements. Additionally, on a monthly basis, management reviews cash evolution, availability and forecasts under different scenarios.

Finally, counterparty risk is the potential probability that a borrower or counterparty defaults on any obligation. In our case, we are exposed to this risk as we invest in different financial instruments and receive letters of credit in order to mitigate our exposure with our commercial counterparties. We manage this risk by monitoring and analyzing the counterparty's creditworthiness, stock price behavior, spreads on credit default swaps, probability of default, among others.

[Table of Contents](#)

Hedging guidelines for Ecopetrol S.A. and its subsidiaries

Ecopetrol S.A.'s management established a set of guidelines for hedging strategies for Ecopetrol S.A. and its subsidiaries. These guidelines allow us to use financial instruments in order to mitigate the impacts in our financial statements as a result of the fluctuation of risk factors, such as commodity prices, exchange rate, interest rate and others.

These guidelines determine general principles governing hedging operations, corporate governance, the process for implementing operations which includes the identification of risk exposition as an integrated group, the identification and design of the financial structures, and execution and monitoring, among others.

The guidelines also include a list of allowable financial assets, such as forwards, futures, options, and swaps and describe the differences between strategic and tactical hedging, where the former focus on protecting our financial results from market volatility and the latter is mainly designed to hedge the market risk of specific trading in physical markets.

Investment Guidelines Ecopetrol S.A.

Ecopetrol S.A.'s management established guidelines for our investment portfolios. These guidelines determine that investments in Ecopetrol S.A.'s U.S. dollar portfolio and the Colombian Peso portfolio may be invested in fixed income securities issued by entities with a rating equal to or greater than Ecopetrol S.A.'s credit risk rating, but which at all times must be a minimum of investment grade as rated by any of the internationally recognized rating agencies (Standard & Poor's, Moody's, and Fitch Ratings). In order to diversify risk in both our U.S. Dollar and Colombian Peso portfolios, Ecopetrol S.A.'s management will determine both short- and long-term limits by issuer and issuance based on internal analyses and external risk ratings.

Additionally, the portfolios in U.S. Dollar and Colombian Peso of Ecopetrol S.A. will be segmented in the tranches determined by Ecopetrol S.A.'s management, meeting the Company's working capital and liquidity needs, benchmarks and cash flow projections.

5.4. Legal Proceedings and Related Matters

We are a party to various legal proceedings in the ordinary course of business. Other than the proceedings disclosed in this annual report, we are not involved in any pending (or, to our knowledge, threatened) litigation or arbitration proceeding that we believe will have a material adverse effect on our Company. Other legal proceedings that are pending against or involve us and our subsidiaries are incidental to the conduct of our and their business. We believe that the ultimate disposition of such other proceedings individually or in an aggregate basis will not have a material adverse effect on our consolidated financial condition or results of operations.

As of December 31, 2021, Ecopetrol S.A. was a party to 5,752 legal proceedings relating to civil, criminal, administrative, environmental, tax, constitutional, arbitration and labor claims, out of which 4,071 were filed against us in the Colombian courts and arbitration tribunals, of which 226 had an accrual provision. We allocate sufficient amounts of money and time to defend these claims. Historically, we have been successful in defending lawsuits filed against us. Other than the environmental administrative proceedings described in the last paragraph of this section, based on the advice of our legal advisors, it is reasonable to assume that the litigation procedures brought against us will not materially affect our financial position or solvency regardless of the outcome. See Note 23 to our consolidated financial statements included in this annual report for a discussion of our legal proceedings.

Caño Limón – Coveñas Crude Oil Pipeline Spill

On December 11, 2011, the Caño Limón - Coveñas oil pipeline ruptured and caused the spill of approximately 3,267 barrels of crude oil into the Iscala creek, which connects with the Pamplonita River that provides water to the city of Cúcuta. The incident did not cause any fatalities or injuries.

A class action lawsuit has been filed against Ecopetrol S.A. and against employees of the company, and the First Administrative Court has jurisdiction to conduct the case, which is in the evidentiary stage, pending a first instance judgment.

The Regional Environmental authority of Norte de Santander, or *Corporación Autónoma Regional de la Frontera Nororiental* (CORPONOR) has filed a lawsuit against Ecopetrol S.A. before the Administrative Court of Norte de Santander claiming for (i) the environmental loss caused by the incident and (ii) for compensation costs relating to the environment damage for approximately COP\$

[Table of Contents](#)

33 billion. Ecopetrol S.A.'s legal counsel filed a motion to dismiss the lawsuit on June 2, 2014, based on three grounds: (i) there is no proof of environmental loss, (ii) CORPONOR does not have the authority to file this lawsuit and (iii) CORPONOR's petition for direct compensation is not the proper legal action according to the applicable procedural rules. In July 2020 the evidentiary stage closed, and we are awaiting a ruling in the first instance.

Ecopetrol S.A. and national and local authorities agreed to develop a project consisting of an alternative to the water supply intake of the aqueduct in Cúcuta. The Company's Board of Directors in December 2011 approved the participation of Ecopetrol S.A. in the project as part of the support of its contingency plans and the relationship with its stakeholders. On November 10, 2017, an agreement was signed with the purpose of building the alternative water supply at a cost of approximately COP\$ 385 billion. According to the agreement Ecopetrol S.A. will be in charge of the construction of the aforementioned infrastructure. As of the date of this annual report, the construction projects continue their progress.

BT Energy Challenger

On October 22, 2014, we were served with a class action suit against us seeking monetary damages of approximately COP\$7.4 trillion related to an incident that occurred on August 21, 2014, during the loading operations of the BT Energy Challenger vessel. The claimants alleged possible damage to the port area of Ecopetrol S.A.'s terminal in Coveñas, as well as of marine and submarine areas and beaches that form the geographical area of the Morrosquillo Gulf. This allegation is currently under investigation by the Harbor Master of Coveñas. Ecopetrol S.A. filed a motion requesting the judge to require the claimants to amend their claim to more precisely set forth the facts and evidence that allegedly support Ecopetrol S.A.'s liability.

On March 3, 2015, Ecopetrol S.A. filed its statement of defense arguing the exclusive fault of a third party. On October 20, 2015, the Court denied a class action of more than 100 informal traders in the region because there is no common identity with the initial class (hotel employees). However, during 2016 the Sucre Administrative Court accepted another 1,208 informal traders and fishermen as claimants.

On March 10, 2017, a mandatory settlement hearing was held in order to seek an agreement, but it failed.

In January 2018, a judicial order was issued to commence the evidence production phase, a decision which was objected by the parties.

In September 2018, all the ordered statements were made, the evidentiary stage was finalized and the parties filed their final closing arguments.

As of the date of this annual report, the claims have decreased to COP\$7.3 trillion, as a result of the reconsideration of the amount initially requested and the inclusion of new claimants in the process.

As of the date of this annual report, a first instance judgment is pending.

Salgar-Cartago Multi-purpose Pipeline Spill

On December 23, 2011 our Salgar-Cartago pipeline ruptured. Internal and external experts believe this incident occurred as a result of creep movement of soil caused by severe weather conditions, causing the soil surrounding the pipeline to exert strong pressure on the pipeline and rupture it. As of the date of this annual report, there are three lawsuits related to this incident with possible damages of approximately COP\$6.95 billion.

Class action of the AWA Indigenous Community

On April 2, 2018, a class action lawsuit was filed against Ecopetrol S.A. and Cenit by the Inda Guacaray and Inda Sabaleta reservations of the AWA Indigenous community who claim damages to their communities by environmental contamination and damage to natural resources that the defendants supposedly caused by act or omission during various environmental incidents. In August 2018 Ecopetrol S.A. answered the complaint. The parties are currently waiting for the evidentiary stage to start.

[Table of Contents](#)

On November 14, 2020, the Administrative Court of Cundinamarca declared that an inadequate claim was filed by the AWA community, considering that the claims related to the reestablishment of measures specific to restitution, rehabilitation, satisfaction and guarantees of non-repetition, could not be sought through a class action.

The foregoing implies that Ecopetrol S.A., along with the National Agency for Legal Defense of the State (Agencia Nacional de Defensa Jurídica del Estado or ANDJE) and Cenit, need to recalculate the amount of the claims based on the decision of the Administrative Court of Cundinamarca.

Although the plaintiffs did not clearly determine the amount of their claims, Ecopetrol S.A. and the National Agency for Legal Defense of the State (Agencia Nacional de Defensa Jurídica del Estado or ANDJE) had initially estimated the amount to be approximately COP\$358,201,371,800. However, based on the November 14, 2020 decision, Ecopetrol S.A., ANDJE and Cenit, need to recalculate the amount of the claims.

As of the date of this annual report, a compliance agreement hearing was still pending.

Foncoeco

On March 18, 2019, Ecopetrol S.A. received judicial notice of a lawsuit filed by workers and former workers alleging that between 1997 and 2017 the company allocated part of its profits for the wellbeing of their workers. The plaintiffs considered that they had the right to receive those profits up to COP \$ 3,157,461,510,000. This lawsuit is similar the one that was ruled in favor of Ecopetrol S.A. in 2011.

The final arguments and sentencing hearing were held on March 2, 2022, in which a first instance ruling was issued in favor of Ecopetrol. The plaintiff's attorney filed an appeal against the ruling.

Environmental Administrative Proceedings

As of December 2021, Ecopetrol S.A. S.A. was part of 195 environmental administrative proceedings, of which 184 were initiated before 2020 and 11 during 2021. It is not possible for us to determine whether the pending proceedings could have a material effect on Ecopetrol S.A. During 2021, 27 proceedings were concluded, in 3 of them we were subject to monetary fines through resolution 0290 of 2021, for the total amount of COP \$3,863,918,267, resolution PS.GJ.1.2.6.21.2094 of 2021 for the total amount of COP \$18,170,520 (amount equivalent to 20 legal minimum wages per month in the current period), resolution 2458 of 2021, for the aggregate amount of COP\$57,237,138 (amount equivalent to 63 legal minimum wages per month in the current period); Furthermore, a non-monetary fine was imposed pursuant to resolution PS-GJ.1.2.6.21.0127 of 2021, imposing the closure of the facility (Apiay field bioremediation yard), with a reforestation of 26.5 hectares as compensation.

Reficar Investigations

Reficar is a wholly owned subsidiary of Ecopetrol. According to Colombian regulations, Ecopetrol and Reficar employees are considered public servants, and as such can be held liable for negligent use or management of public resources. In this context, given that Ecopetrol is majority owned by the Colombian Government and Reficar is a wholly owned subsidiary of Ecopetrol, Ecopetrol and Reficar administer public resources.

As a result, Ecopetrol and Reficar employees are generally subject to the control and supervision of the following control entities, among others:

The Office of the Comptroller General (Contraloría General de la República) oversees the adequate use of public resources and has the authority to investigate public employees or private sector employees that use or manage public resources.

The Attorney General's Office (Procuraduría General de la Nación) supervises compliance with applicable law by public employees and private sector employees that carry out public functions. The Attorney General's Office investigates and disciplines individuals for compliance failures.

The Prosecutor's Office (Fiscalía General de la Nación) investigates potential crimes and prosecutes alleged crimes before the court in judicial proceedings.

[Table of Contents](#)

The following are the most significant investigations and proceedings carried out by the aforementioned state entities:

1. The Office of the Comptroller General's investigations and proceedings.

- 1.1 Because of the modifications of the schedule and budget related to Reficar's expansion and modernization project (the "Project"), the Office of the Comptroller General initiated a special audit action of the Project in 2016 and delivered a final report to Reficar on December 5, 2016. The report detailed 36 findings most of which were related to increased costs compared to budget for services, labor and materials. As required, Reficar executed an action plan addressing the 36 findings. In relation to the 36 findings the Attorney General's Office did not open a formal investigation and the term has already expired.
- 1.2 As a result of the findings described above, on March 10, 2017, the Office of the Comptroller General opened actions for financial responsibility (*proceso de responsabilidad fiscal*) against 36 individuals and the six companies involved in the Project, including former members of Ecopetrol S.A.'s Board of Directors, former members of Reficar's Board of Directors, former employees of Ecopetrol S.A., and former employees of Reficar, as well as Chicago Bridge & Iron Company N.V., CBI - Chicago Bridge & Iron company (CB&I) Americas Ltd., Chicago Bridge & Iron Company CB&I UK Limited, CBI Colombiana S.A., Foster Wheeler USA Corporation and Process Consultants Inc.

These actions were initiated based on the Office of the Comptroller General's theory that lower than expected profitability at Reficar could have been caused by (i) modifications to the schedule and, (ii) the increase of the budget for the Project.

On June 5, 2018, the Office of the Comptroller General split the initial proceeding in two different proceedings. The first one is related to the increase of the Project's budget and the second one is related to the modifications in the Project's schedule.

The Office of the Comptroller General also ordered the commencement of an investigation in relation to amounts executed in the Project and its source of funding. On August 24, 2021, the Comptroller's Office filed the preliminary investigation.

Regarding the first proceeding, on June 5, 2018, the Office of the Comptroller General issued charges for violation of financial responsibility against (i) 15 individuals, which include former members of Reficar's Board of Directors, a former employee of Ecopetrol, and former employees of Reficar, as well as against (ii) CBI - Chicago Bridge & Iron company (CB&I) Americas Ltd., Chicago Bridge & Iron Company CB&I UK Limited, CBI Colombiana S.A., Foster Wheeler USA Corporation and Process Consultants Inc, and the following insurance companies, Compañía Aseguradora de Fianzas S.A., Coaseguro Confianza S.A., Liberty Seguros S.A., CHUBB de Colombia Compañía de Seguros S.A., Seguros Colpatría S.A. and Mapfre Seguros Generales de Colombia S.A., as third parties with joint liability.

As for the other 21 individuals initially investigated in 2017, the Office of the Comptroller General closed the investigations.

On April 26, 2021, the Office of the Comptroller General issued a decision on the charges for violation of financial responsibility for an amount of COP 2.95 trillion in connection with the approval of the capital expenditure modifications to the Project. This decision was against 7 former members of Reficar's Board of Directors, 5 former Reficar employees, 4 contractors that rendered their services during the execution of the Project and 4 insurance companies. Charges are related among others, with: (i) having approved additions to the Project's capital expenditures, knowing that the value proposition and profitability of the investment would be affected; (ii) not having ensured the adequate application of the business group investment guidelines. See [The Attorney General's Office investigations](#) below, which describes the Attorney General's Office pronouncement on May 4, 2021.

Nonetheless, in the ruling there was no allegation related to acts of corruption, bribery or fraud. As of the date of this annual report, no current or former member of Ecopetrol's Board of Directors has been charged or found guilty in the first proceeding related to the increase in the Project budget.

In the second proceeding, regarding the loss of profits, on February 3, 2022, the Intersectoral Delegate Comptroller's Office closed the process in favor of the individuals that were under investigation.

[Table of Contents](#)

On August 24, 2021, the Comptroller's Office indicated a new financial responsibility proceeding pursuant to which eight former employees of the Cartagena Refinery (three former presidents and five former financial vice presidents, one of whom is Ecopetrol S.A.'s current CFO) are under investigation. The Office of the Comptroller General is reviewing the supporting documentation provided related to financial cost destination, among others. There currently is no allegation related to acts of corruption, bribery or fraud.

While the content and status of the proceedings remains confidential, Reficar and several of its employees have cooperated with and provided the information required by the Office of the Comptroller General in charge of leading the proceedings.

As of the date of this annual report, both Ecopetrol and Reficar have no liability under these proceedings.

From 2017 until 2021 the Office of the Comptroller General has performed special and financial audits in Reficar and has delivered final reports, in which it concluded that, in its opinion, Reficar's financial statements from 2016 to 2020 do not reasonably represent the entity's financial position as of the end of each year. This situation originates in the different interpretation, by Reficar and the Comptroller General, of the applicable accounting principles. Historically, Reficar's external independent auditors have issued unqualified opinions on Reficar's financial statements during and after the Project. As of the date of this annual report, such auditors have not informed Reficar that there has been any change to their opinions to the financial statements. As of the date of this annual report, to the best of Ecopetrol's knowledge, the financial statements continue to fairly represent the financial and operational condition of the Company in all material aspects and its internal controls remain effective.

As of the date of this annual report, the current Boards of Directors of Ecopetrol and Reficar are not part of the Comptroller General proceedings.

2. The Attorney General's Office investigations:

Reficar has been officially informed that the Attorney General's Office has initiated four investigations, only one of which is ongoing related to the Project.

Regarding one of these four investigations, on September 12, 2017, the Attorney General's Office issued a list of charges against certain former members of Reficar's Board of Directors, as well as certain former officers of Reficar. The charges were related to the failure to fulfill some of their duties as administrators and/or for acting "ultra vires" in the exercise of their functions against: (i) Javier Genaro Gutiérrez (Ecopetrol CEO, 2007-2015); (ii) Felipe Laverde (Reficar General Counsel, 2009-March 2017); (iii) Pedro Rosales (Ecopetrol Downstream Executive Vice President, 2008-2015); (iv) Diana Constanza Calixto (Ecopetrol Head of the Corporate Finance Unit, 2009-2014), (v) Orlando José Cabrales (Reficar CEO, 2009-2012) and (vi) Reyes Reinoso Yanes (Reficar CEO, 2012-2016). The Attorney General's Office closed the case against the rest of the certain former members of Reficar's Board of Directors and the rest of the certain former officers of Reficar.

On January 17, 2020, the Attorney General's Office issued its judgment against Reyes Reinoso Yanes for acting "ultra vires" in the exercise of his functions promoting a special billing procedure without the due diligence required to protect Reficar's resources. As for the other four individuals initially investigated, they were acquitted of the charges. Mr. Reinoso submitted an appeal against the decision.

On June 29, 2021, the appeal against the first instance ruling was resolved, declaring the disciplinary action in favor of Reyes Reinoso and the other individuals that were under investigation. With this ruling, the process was formally closed.

In another investigation, on October 21, 2020, the Attorney General's Office issued its judgment against a former employee of Reficar, Nicolas Isaksson Palacios, related to the failure to fulfill some of his duties for acting "ultra vires" in the exercise of his functions. The Attorney General's Office closed the case against the rest of the former members of Reficar's Board of Directors and the other Reficar employees.

[Table of Contents](#)

On May 4, 2021 the Attorney General's Office filed the proceeding related to the increase of the budget of the Project, against former members of the Board of Directors and former employees of Ecopetrol considering, amongst others, whether or not: (i) the capital expenditure modifications that were approved during the execution of the Project were necessary and that the public servants who approved them acted in accordance with their duties, (ii) the costs and schedule presented to Reficar by CB&I were wrong, and (iii) if the capital expenditure modifications had not been approved, the mega-project could not have been completed. As of the date of this annual report, there have been no allegations related to acts of corruption, bribery or fraud.

As of the date of this annual report, no member of Ecopetrol's current management team, nor the current Boards of Directors of Ecopetrol or Reficar are subject to Attorney General's Office processes.

3. The Prosecutor's Office investigations:

The Prosecutor's Office has been conducting the following legal proceedings in which Ecopetrol S.A. has been recognized as a victim:

- 3.1 Between July 25 and August 2, 2017, the Prosecutor's Office indicted the following individuals with charges, the majority of which are related to offenses against the public administration and illegal interest in the execution of agreements: (i) Orlando José Cabrales Martínez (Reficar CEO, 2009-2012); (ii) Reyes Reinoso Yanes (Reficar CEO, 2012-2016); (iii) Felipe Laverde Concha (Reficar General Counsel, 2009-March 2017); (iv) Pedro Alfonso Rosales Navarro (Ecopetrol S.A. Downstream Executive Vice President, 2008-2015); (v) Masoud Deidehban (CBI Executive Project Director); (vi) Phillip Asherman (CBI CEO) and (vii) Carlos Lloreda (Reficar's statutory auditor from 2013-2015). The arraignment hearing began on May 30, 2018 and concluded on August 22, 2019.

The Prosecutor's Office has already made public the factual basis for such charges, which is based on the theory that: (i) executing a cost reimbursable engineering, procurement and construction contract (EPC) and not a lump sum agreement favored CBI interests, and (ii) executing special invoicing procedures (MOA –Memorandum of Agreement and PIP –Project Invoicing Procedure) with CBI allowed the payments of unreasonable amounts not duly verified by the Joint Venture Foster Wheeler USA Corporation and Process Consultant Inc (FPJVC). The defense attorneys have not yet had an opportunity to present their case against such facts in a court of law.

On May 9, 2017, Ecopetrol's Audit and Risk Committee retained a U.S.-based outside law firm to commence a third-party investigation into the matters set forth in the Prosecutor's Office announcement. The results were presented in December 2017 to Ecopetrol's Audit and Risk Committee. This investigation concluded that to date there has been no evidence of possible unlawful acts that affect Ecopetrol's internal control over the financial reporting of the Company, on the allegations made by the Prosecutor's Office.

As of the date of this annual report, the preparatory hearing for the oral trial is still ongoing. No member of the current management team of Ecopetrol, nor the current Boards of Directors of Ecopetrol or Reficar are part of the process.

- 3.2 On October 22 and 23, 2018, the Prosecutor's Office indicted the following individuals with charges related to improper management and obtaining false public documents: Javier Genaro Gutiérrez Pemberthy (Ecopetrol S.A. CEO, 2007-2015), Reyes Reinoso Yáñez (Reficar CEO, 2012-2016), Pedro Alfonso Rosales Navarro (Ecopetrol S.A. Downstream Executive Vice President, 2008-2015), and Diana Constanza Calixto Hernández (Ecopetrol S.A. Head of the Corporate Finance Unit, 2009-2014). The arraignment hearing took place on August 5, 2019.

The Prosecutor's Office made public the factual basis of the charges, which is based on the theory that the indicted directors hid necessary information from Ecopetrol's Board of Directors before the approval of amendment No. 3 of the EPC contract. The defense attorneys have not yet had an opportunity to present their case against such facts in a court of law.

On January 27, 2020, during the indictment hearing, Ecopetrol and Reficar were recognized as victims.

As of the date of this annual report, the preparatory hearing for the oral trial is still ongoing. No member of the current management team of Ecopetrol, nor the current Boards of Directors of Ecopetrol or Reficar are part of the process.

[Table of Contents](#)

3.3 On March 18, 2019, the Prosecutor's Office indicted the following individuals with charges related to entering into agreements without compliance with legal requirements: Orlando José Cabrales Martínez (Reficar CEO, 2009-2012) and Felipe Castilla (Reficar CEO, 2009). The arraignment hearing took place on January 27, 2020.

The Prosecutor's Office has already made public the factual basis of the charges, which is based on the theory that hiring FPJVC as the PMC of the Project through a sole source process violated the objective selection principle.

On October 13, 2021, the preparatory hearing ended, and the oral arguments began on February 7, 2022. As of the date of this annual report, the oral arguments are still ongoing.

Ecopetrol and Reficar have cooperated closely and extensively with the control entities in furthering their investigations and will continue to monitor the status and development of these investigations.

As of the date of this annual report, the current Boards of Directors of Ecopetrol and Reficar and the current employees are not part of the above proceedings. None of the legal proceedings described in this paragraph are related with bribery charges.

As of the date of this annual report, Ecopetrol and Reficar have no knowledge of any legal proceeding in the United States regarding the project.

4. Arbitration Tribunal

On March 8, 2016, Reficar filed a Request for Arbitration before the International Chamber of Commerce (the "ICC"), against Chicago Bridge & Iron Company N.V., CB&I (UK) Limited, and CBI Colombiana S.A. (jointly "CB&I") concerning a dispute related to the Engineering, Procurement, and Construction Agreements entered into by and between Reficar and CB&I for the expansion of the Cartagena Refinery in Cartagena, Colombia. Reficar is the Claimant in the ICC arbitration and seeks no less than US\$2 billion in damages plus lost profits.

On May 25, 2016, CB&I filed its Answer to the Request for Arbitration and Counterclaim for approximately US\$106 million and COP\$324,052 million. On June 27, 2016, Reficar filed its reply to CB&I's counterclaim denying and disputing the declarations and relief requested by CB&I. On April 28, 2017, CB&I submitted its Statement of Counterclaim increasing its claims to approximately US\$116 million and COP\$387,558 million. On March 16, 2018, CB&I submitted its Exhaustive Statement of Counterclaim further increasing its claims to approximately US\$129 million and COP\$432,303 million (including in each case interest), and also filed its Exhaustive Statement of Defense to Reficar's claims. On this same date, Reficar filed its Exhaustive Statement of Claim seeking, among others, US\$139 million for provisionally paid invoices under the Memorandum of Agreement ("MOA") and Project Invoicing Procedure ("PIP") Agreements and the EPC Contract.

On June 28, 2019, CB&I submitted its Reply to the Non-Exhaustive Statement of Defence to Counterclaim increasing its claims to approximately US\$137 million and COP\$503,241 million (including in each case interest, respectively). On this same date, Reficar filed its Reply to CB&I's Non-Exhaustive Statement of Defense and its Exhaustive Statement of Defense to CB&I's counterclaim, updating its claim for provisionally paid invoices under the MOA and PIP Agreements and the EPC Contract to approximately US\$137 million.

In January 2020, McDermott International Inc., CB&I's parent company, filed for bankruptcy and announced that it would initiate a reorganization plan pursuant to Chapter 11 of the United States Bankruptcy Law. In response to this situation, Reficar has implemented actions to protect its interests and is being advised by a group of experts with whom it will continue to analyze other available measures under these new circumstances.

On January 21, 2020, Comet II B.V., the successor in interest to Chicago Bridge & Iron Company N.V., commenced a bankruptcy case under Chapter 11 of the United States Code in the United States Bankruptcy Court for the Southern District of Texas. Upon the bankruptcy filing, an automatic stay of the commencement or continuation of any action or proceeding, or the enforcement of any judgment or award, against Comet II B.V. became effective, staying the arbitration against Comet II B.V. On January 23, 2020, Comet II B.V. obtained an order from the Bankruptcy Court permitting it to, in its discretion, modify the automatic stay to permit it to proceed with litigation or other contested matters. On March 14, 2020, the Bankruptcy Court entered an order confirming a plan of reorganization, and the order provides for the stay against the arbitration to end upon the earlier of the effective date of the plan and August 30, 2020.

[Table of Contents](#)

As a consequence of the bankruptcy filing, the arbitration was stayed until July 1, 2020, as described below.

In respect of the arbitration involving Reficar, the confirmation order provides that the proper forum for adjudication of the merits of the arbitration is an International Tribunal under the arbitration rules of the International Chamber of Commerce, the arbitration claims will not be subject to estimation in the Bankruptcy Court, and the stay will not be violated if the parties discuss logistical items with the International Chamber of Commerce tribunal or each other. The order reserves all rights and arguments of the parties related to the arbitration schedule, hearing location, and arbitration logistics and recognizes that, without waiving any arguments, including but not limited to the Debtors' objections to alternative hearing locations and long gap(s) between hearing dates. On June 30, 2020, McDermott International Inc. notified the relevant parties of the occurrence of the effective date of the plan of reorganization, and thus the stay on the arbitration was lifted on July 1, 2020.

On May 6, 2020, the Superintendence of Corporations ordered the liquidation of CBI Colombiana S.A., a respondent in the arbitration against CB&I. On October 22, 2020, Reficar submitted a proof of claim in the liquidation proceeding to seek recognition as a creditor of CBI Colombiana S.A. for the amounts of its claims in the arbitration. On January 15, 2021, the liquidator of CBI Colombiana S.A. accepted Reficar's petition.

On September 22, 2020, the Tribunal scheduled the commencement of the hearing in May 2021.

Between May 17, 2021, and June 16, 2021, the first two blocks of the merits hearing took place. On June 16, 2021, the Tribunal ordered the parties to submit two post-hearing briefs, the first one on October 15, 2021, and the second one on November 5, 2021. Additionally, the Tribunal scheduled the hearing for the parties to present their closing arguments on November 18 and 19, 2021.

The post-hearing briefs were submitted on October 22, 2021, and November 10, 2021, respectively and on November 18, 2021, the parties presented their closing arguments.

Later, on December 20, 2021, Reficar filed its Statement on Costs, and on February 11, 2022, CB&I filed its Statement on Costs.

Until the Tribunal renders its final decision (which is still pending as of the date of this annual report), the outcome of this arbitration is unknown.

Bioenergy Special Audit

The Office of the Comptroller General, in exercise of its fiscal monitoring duties and authority as set forth in Article 267 of the Political Constitution, has undertaken audits of the performance of the Bioenergy S.A.S. and Bioenergy Zona Franca S.A.S. investments.

On February 6, 2017 the Office of the Comptroller General initiated a Special Intervention (Special Audit) in order to evaluate the use of public funds in the project carried out by Bioenergy Zona Franca S.A.S. and Bioenergy S.A.S. On July 10, 2017 the Office of the Comptroller General issued its final report with 15 findings related to: (i) acquisition, lease payments and the use of agricultural lands, (ii) loss of profits due to the project's delay; and (iii) execution of contracts related with the building, commissioning and start-up of the industrial plant and the agricultural component of the project. On December 28, 2018, Bioenergy completed all of the activities set forth in the remediation plan to address the 15 findings.

As a result of some of the findings, the Office of the Comptroller General opened several actions of fiscal liability (*proceso de responsabilidad fiscal*) against former members of Bioenergy's administration and third-party companies.

In 2018, the Office of the Comptroller General initiated a financial audit of Bioenergy's financial statements for the year ended December 31, 2018. On May 21, 2019, the Comptroller General delivered its financial audit final report, issuing: (i) an unqualified opinion on Bioenergy's financial statements, (ii) an efficient and effective internal control process opinion, and (iii) a reasonable opinion, since the budget was prepared and executed, in all relevant matters, according to Bioenergy's budgeting internal regulation. Finally, the Office of the Comptroller General determined three findings related to: (i) plots of land pending to legalize, (ii) ethanol imports and (iii) the leasing agreement of the Casa Roja plot of Land. On December 31, 2020, Bioenergy completed all of the activities set forth in the remediation plan to address the three findings.

[Table of Contents](#)

In 2019, the Office of the Comptroller General initiated and ended a compliance audit of Bioenergy S.A.S for the period starting July 1, 2017 to May 31, 2019. The Comptroller General notified Bioenergy on February 4, 2020 its compliance audit final report determining seven findings related to: (i) agricultural lands productivity, (ii) incomes and expenses from rental payments of subleased agricultural lands, (iii) Balanced scorecard results for 2017-2018, (iv) update of laboratory procedures, (v) transport contract number 0029-17 settlement, (vi) document handling and (vii) Campo Victoria plot of Land. Bioenergy filed the remediation plan on February 25, 2020.

Until June 24, 2020, when the Superintendence of Companies of Colombia gave the order to start the Bioenergy's liquidation proceeding, Bioenergy S.A.S. completed activities as scheduled in the remediation plan according to the June 30, 2020 deadline. Any pending activities related to the aforementioned remediation plan, are in charge of the liquidator appointed by the Superintendence of Companies of Colombia in Bioenergy's liquidation proceeding.

During 2021, such judicial liquidation proceeding continued under surveillance and instruction of the Superintendence of Companies of Colombia, in compliance of the applicable law. On December 15, 2021, the adjudication hearing for both companies (Bioenergy SAS and Bioenergy Zona Franca SAS) was started by Superintendence of Companies of Colombia, continued on March 4, 2022, and was completed on March 9, 2022 with the approval of (i) the Adjudication Agreement of Bioenergy SAS; and (ii) the Reorganization Agreement of Bioenergy Zona Franca SAS respectively.

On December 16, 2021, a reorganization agreement of Bioenergy Zona Franca SAS was filed in the Superintendence of Companies of Colombia, with favorable vote of 75% of the creditors, to be authorized by such Superintendence. On January 24, 2022, Superintendence of Companies of Colombia authorized the continuity of the activities and corporate purpose of Bioenergy Zona Franca SAS until April 2022.

After the fulfillment of the agreement for the administrative liquidation of Bioenergy and the agreement regarding Bioenergy Zona Franca, neither Ecopetrol S.A. nor any of its affiliates will be considered shareholders of the aforementioned companies. Therefore, legal contingencies associated to those companies are now limited.

Interconexión Eléctrica S.A.

On July 21, 2021, Ecopetrol S.A. was served as defendant within a public action (*acción popular*). The *acción popular* was filed before the First Section of the Administrative Court of Cundinamarca (the "Cundinamarca Court") by *Fundación Defensa de la Información Legal y Oportunidad – Dilo Colombia* ("*Fundación Dilo*") This action invokes three collective rights (public funds, antitrust and public ethical behavior) and demands their protection. According to the law, the courts have a wide range of options to protect such rights, provided it determines they were violated. The complaint sought, among other things, to prevent the MHCP from selling its ownership stake in ISA to Ecopetrol S.A. unless a competitive bid was undertaken. Accordingly, *Fundación Dilo* as plaintiff requested preliminary injunctive relief to suspend all actions aimed to close the Acquisition. On July 28, 2021, Ecopetrol S.A. filed a statement in opposition to the request for preliminary injunctive relief and, on August 6, 2021, formally filed its response to the *acción popular*. In its responses, Ecopetrol S.A. opposed the injunctive relief and the *acción popular* on the grounds that the claim has no legal basis. In its statement, Ecopetrol S.A. presented the technical, financial, and legal arguments that show that *Fundación Dilo* did not comply with the legal requirements for said preliminary injunctive relief measure to be granted. In addition, Ecopetrol S.A. argued that the potential sale of the Nation's ownership in ISA does not contravene the Colombian legal regime. Furthermore, the consummation of the Acquisition is expected to generate benefits to both the Nation and Ecopetrol S.A., and does not threaten or contravene any of the collective rights invoked by the claimant. The MHCP also filed a similar response. On September 13, 2021, the Cundinamarca Court rejected the plaintiff's request for interim relief and scheduled a settlement hearing, which took place on September 28, 2021. The parties did not reach an agreement at the settlement hearing. On February 3, 2022, the Cundinamarca Court issued a first instance ruling, rejecting all claims. According to the information available as of the date of this annual report, the plaintiff has not filed an appeal.

Similarly, on January 28, 2022, the Administrative Court of Antioquia ("Antioquia Court") admitted a new public action (*acción popular*) filed by Jaime Aristizábal Tobón, acting as president of the National Union of Electric Interconnection Workers S.A. (SINTRAIISA, for its Spanish acronym), Samuel Guillermo Roldán Escobar as president and legal representative of the Energy Industry Workers Union (SINTRAE, for its Spanish acronym), and Gonzalo Álvarez Henao, as representative of the Civic Movement of Medellín and the Metropolitan Area, against Ecopetrol S.A. and the MHCP. The plaintiffs consider that, with the transfer of ISA's shares to Ecopetrol, the defendants violated the collective rights to administrative morality and public property.

[Table of Contents](#)

Faced with an order admitting the lawsuit, Ecopetrol filed an appeal, which as of the date of this annual report has not been resolved. Nevertheless, on February 17, 2022, Antioquia Court declared all actions under this process void and rejected the lawsuit. According to the Antioquia Court, the decision in the popular action process brought on by Fundacion Dilo had a *res judicata* effect. According to the information available as of the date of this annual report, the plaintiff has not filed an appeal.

If there is an order to unwind the Acquisition while Ecopetrol S.A. is the owner of the ISA shares acquired from the MHCP, a court may order Ecopetrol S.A. to return the ISA shares to the MHCP and the MHCP would have to reimburse Ecopetrol S.A. the purchase price paid for such shares. Such reimbursement may be subject to delays and the MHCP may not have the ability to reimburse such purchase price. In the Inter-Administrative Share Purchase Agreement, the MHCP and Ecopetrol S.A. agreed to a damages cap equivalent to the purchase price of the Acquisition.

6. Shareholder Information

6.1. Shareholders' General Assembly

Our Shareholders' General Assembly was held on March 30, 2022 and the following matters were approved, among others:

- The plan for distribution of the Company's profits, which establishes the distribution of an ordinary dividend per share of COP\$ 243 and an extraordinary dividend per share of COP\$ 37, for a total dividend of COP\$ 280 per share, is as follows: a payment of 100% of the dividend to minority shareholders to be made on April 21, 2022 and the payment to the majority shareholder, to be made during the course of the 2022 fiscal year but in any event no later than September 30, 2022, following the recommendations from CONPES (*Consejo Nacional de Política Económica y Social*).
- The establishment of an occasional reserve of COP\$ 8.9 trillion in order to support Ecopetrol S.A.'s financial sustainability and flexibility in the execution of its strategy.
- The legal assistance program for members of the Board of Directors of Ecopetrol S.A.
- Amendment of our bylaws. For further information please see section Corporate Governance—Bylaws.

6.2. Dividend Policy

In 2018, the Board of Directors approved a dividend policy consisting of the ordinary distribution of between 40% and 60% of the adjusted net income of the Company of each fiscal year. For this purpose, the Board of Directors shall assess overall delivery against the Company's financial targets, as well as the macroeconomic environment, projected cash requirements for delivering on our Business Plan and strategy, while maintaining appropriate financial flexibility in keeping the Company's debt metrics in line with an investment grade rating. The policy does not preclude the distribution of extraordinary dividends above the 40% to 60% range, under exceptional circumstances and with due consideration of the above criteria. The maximum amount to be distributed is the profits available to shareholders (net income after release and appropriation for legal, fiscal and occasional reserves).

Pursuant to Colombian law, dividend distribution to our shareholders must be approved by a 78% majority of the shares represented in the corresponding General Shareholders Assembly. In the absence of this special majority, at least 50% of the net profits must be distributed.

On March 30, 2022, our shareholders at the ordinary General Shareholders' Assembly approved an ordinary dividend of 59.8% of our net income for the fiscal year ended December 31, 2021 amounting to COP\$ 9,991,356 million, or COP\$ 243 per share, and an extraordinary dividend of 9.1% of our net income for the abovementioned fiscal year, amounting to COP\$ 1,521,317 million, or COP\$ 37 per share; both based on the number of outstanding shares as of December 31, 2021. The payment will be made on April 21, 2022 to our minority shareholders and no later than September 30, 2022 to the majority shareholder.

On March 26, 2021, our shareholders at the ordinary General Shareholders' Assembly approved an ordinary dividend of 41.41% of our net income for the fiscal year ended December 31, 2020 amounting to COP\$698,984 million, or COP\$17 per share, based on the number of outstanding shares as of December 31, 2020. The payment date was made on April 22, 2021 to 100% of our shareholders.

[Table of Contents](#)

On March 27, 2020, our shareholders at the ordinary General Shareholders' Assembly approved an ordinary dividend of 56% of our net income for the fiscal year ended December 31, 2019. At the Extraordinary General Shareholders' Meeting held on December 16, 2019, the Company's Shareholders approved the following: i) the change in the destination of the Company's occasional reserve that had been constituted in the General Shareholders' Meeting held on March 29, 2019 and ii) its subsequent distribution as an extraordinary dividend of 89 Colombian pesos (COP\$89) per share.

On March 29, 2019, our shareholders at the ordinary General Shareholders Assembly approved an ordinary dividend of 60% of our net income or COP\$169 per share (within the dividend policy of 40% and 60% of net income), for the fiscal year ended December 31, 2018 and an extraordinary dividend of 20% of our net income or COP\$56 per share, given our strong operational and robust cash position in 2018, for a total dividend per share of COP\$225. On March 23, 2018, our shareholders at the ordinary General Shareholders Assembly approved an ordinary dividend of 55% of our net income for the fiscal year ended December 31, 2017. On March 31, 2017, our shareholders at the ordinary General Shareholders Assembly approved an ordinary dividend of 40% of our net income before the impairment of non-current assets (net of taxes) for the fiscal year ended December 31, 2016. See section *Financial Review—Liquidity and Capital Resources—Dividends*.

Ecopetrol S.A. S.A. is required to have legal reserves equal to 50% of its subscribed capital. If the legal reserves are less than 50% of subscribed capital, we will contribute 10% of net income to our legal reserves every year until our legal reserves meet the required level.

6.3. Market and Market Prices

Registration and Transfer of Shares

Under Colombian law, transfers of shares must be registered on the issuer's stock ledger. Only those holders registered on the stock ledger are considered by law as shareholders. Ecopetrol S.A.'s shares are in electronic form, other than those shares held by the Nation, which are in physical form.

Transfers of electronic shares is required to be negotiated through the Colombian Stock Exchange. In Colombia, only the relevant stockbrokers called Sociedades Comisionistas de Bolsa are authorized to make the transfer of shares through the Colombian Stock Exchange. The transfer of shares is registered in the Centralized Security Deposit (*Depósito Centralizado de Valores*) or DECEVAL, through the relevant stockbrokers. DECEVAL records the share transfer on its systems, in order to make the corresponding registration in the issuer stock ledger.

Under Colombian legislation, if a transfer of shares has a value equivalent to or higher than 66,000 UVR (the UVR was COP\$ 288.6191 as of December 31, 2021) it must be made through the BVC if the shares are registered with the BVC. Otherwise, shareholders can freely negotiate a transfer of shares.

Nevertheless, pursuant to Decree 2555 of 2010 Article 6.15.1.1.2 the following transfers are not required to be performed through the BVC:

- Transfers between shareholders who are considered to be the same beneficial owner;
- Transfer of shares owned by financial institutions, under supervision of the Superintendence of Finance, that are in a liquidation process;
- Repurchases of shares by the issuer;
- Property delivered in lieu of payment, or payment of money or other valuable property, different than the amount owed or demanded, in exchange for the payment of the debt;
- Transfer of shares made by the Nation or the Financial Institutions Warranty Fund (*Fondo de Garantías de Instituciones Financieras*) or FOGAFIN;
- Transfer of shares issued abroad by Colombian companies, provided they take place outside Colombia;

[Table of Contents](#)

- Transfer of shares issued by foreign companies, offered through a public offering in Colombia, provided that they take place outside Colombia;
- Transfers made by the Central Counterparty Risk Chamber, in accordance with the provisions of paragraph 2 of Article 2.13.1.1.1. of this Decree; and
- Any other transaction specifically authorized by the Superintendence of Finance to take place outside the BVC.

For the purposes described above, multiple transfer transactions made within one hundred twenty (120) calendar days, between the same parties on shares of the same issuer and under similar conditions, are considered a single transfer.

6.4. Description of Ecopetrol Registered Debt Securities

Ecopetrol S.A. has issued the following classes of registered notes under an indenture (the Indenture), dated as of July 23, 2009, and amended as of June 26, 2015, between the Company and the Bank of New York Mellon, as trustee:

5.875% Notes due 2023
4.125% Notes due 2025
5.375% Notes due 2026
6.875% Notes due 2030
4.625% Notes due 2031
7.375% Notes due 2043
5.875% Notes due 2045
5.875% Bonds due 2051

Please refer to Exhibits 4.10, 4.11, 4.12, 4.13, 4.14, 4.15, 4.16, 4.17, 4.18 and 4.19 to this Annual Report for the information relating to these debt securities required by Item 12.A of Form 20-F.

6.5. Description of Ecopetrol ADRs

Fees and Charges That a Holder of Our ADSs May Have to Pay, Either Directly or Indirectly

JPMorgan Chase Bank, N.A., our Depositary, may charge each person to whom ADSs are issued, including, without limitation, issuances against deposits of shares, issuances in respect of share distributions, rights and other distributions, issuances pursuant to a stock dividend or stock split declared by us or issuances pursuant to a merger, exchange of securities or any other transaction or event affecting the ADSs or Deposited Securities, and each person surrendering ADSs for withdrawal of Deposited Securities in any manner permitted by the Deposit Agreement or whose ADSs are cancelled or reduced for any other reason, US\$5.00 for each 100 ADS (or any portion thereof) issued, delivered, reduced, cancelled or surrendered, as the case may be. The Depositary may sell (by public or private sale) sufficient securities and property received in respect of a share distribution, rights and/or other distribution prior to such deposit to pay such charge.

The Depositary collects its fees for issuance and cancellation of ADSs directly from investors depositing common shares or surrendering ADSs for the purpose of withdrawal or from intermediaries acting for them. The Depositary collects fees for making distributions to investors by deducting those fees from the amounts distributed or by selling a portion of distributable property to pay the fees. The Depositary may collect its annual fee for Depositary services by deduction from cash distributions, or by directly billing investors, or by charging the book-entry system accounts of participants acting for them. The Depositary may generally refuse to provide services to any holder until the fees and expenses owing by such holder for those services or otherwise are paid.

The following additional charges may be incurred by holders of ADRs, by any party depositing or withdrawing common shares or by any party surrendering ADSs and/or to whom ADSs are issued (including, without limitation, issuance pursuant to a stock dividend or stock split declared by us or an exchange of stock regarding the ADRs or the Deposited Securities or a distribution of ADSs), whichever is applicable:

- A fee of US\$0.05 or less per ADS for any cash distribution made pursuant to the Deposit Agreement;

[Table of Contents](#)

- A fee for the distribution of securities (or the sale of securities in connection with a distribution), such fee being in an amount equal to the fee for the execution and delivery of ADSs which would have been charged as a result of the deposit of such securities (treating all such securities as if they were common shares) but which securities or the net cash proceeds from the sale thereof are instead distributed by the Depositary to those holders of ADRs entitled thereto;
- An aggregate fee of up to US\$0.05 per ADS per calendar year (or portion thereof) for services performed by the Depositary in administering the ADRs (which fee may be charged on a periodic basis during each calendar year and shall be assessed against holders of ADRs as of the record date or record dates set by the Depositary during each calendar year and shall be payable in the manner described in the next succeeding provision);
- A fee for the reimbursement of such fees, charges and expenses as are incurred by the Depositary and/or any of the Depositary's agents (including, without limitation, the custodian and expenses incurred on behalf of holders of ADRs in connection with compliance with foreign exchange control regulations or any law or regulation relating to foreign investment) in connection with the servicing of our common shares or other Deposited Securities, the sale of securities (including, without limitation, Deposited Securities) and the delivery of Deposited Securities or otherwise in connection with the Depositary's or its custodian's compliance with applicable law, rule or regulation (which fees and charges shall be assessed on a proportionate basis against registered holders of ADRs as of the record date or dates set by the Depositary and shall be payable at the sole discretion of the Depositary by billing such holders of ADRs or by deducting such charge from one or more cash dividends or other cash distributions);
- Stock transfer or other taxes and other governmental charges;
- SWIFT, cable, telex and facsimile transmission and delivery charges incurred at the request of a holder of ADRs;
- Transfer or registration fees for the registration of transfer of Deposited Securities on any applicable register in connection with the deposit or withdrawal of Deposited Securities; and
- In connection with the conversion of foreign currency into U.S. dollars, the Depositary shall deduct out of such foreign currency the fees, expenses and other charges charged by it or the Depositary's agent (which may be a division, branch or affiliate) so appointed in connection with such conversion. The Depositary and/or the Depositary's agent may act as principal for such conversion of foreign currency. Such charges may at any time and from time to time be changed by agreement between us and the Depositary.
- We will pay all other charges and expenses of the Depositary and any agent of the Depositary (except the custodian) pursuant to agreements from time to time between us and the Depositary. The fees described above may be amended from time to time.

Fees and Other Direct and Indirect Payments Made by the Depositary to Us

Our Depositary has agreed to reimburse us for certain expenses we incur that are related to establishment and maintenance of the ADR program, including investor relations expenses and exchange application and listing fees. In 2019, reimbursements were made in the amount of approximately US\$2,458,847. In 2020, reimbursements were made in the amount of approximately US\$ 2,020,472. In 2021, reimbursements were made in the amount of approximately US\$ 1,411,363.

Other

Please refer to Exhibit 2.1 to this annual report for the remaining information relating to our American Depositary Shares required by Item 12.D of Form 20-F.

[Table of Contents](#)

6.6. Taxation

6.6.1. Colombian Tax Considerations

The following is a general description of the Colombian tax considerations for investments in common shares in Colombia or for the purchase of ADSs, in a foreign securities market. This description is based on applicable law in effect as of the date of this annual report is issued, which may be subject to changes.

Prospective purchasers of common shares or ADSs should consult their own tax advisors for a detailed analysis of the tax consequences in Colombia, resulting from the acquisition, ownership and disposition of common shares or ADSs.

General Rules

Colombian entities and individuals who are deemed to be residents within the Colombian national territory for Colombian tax purposes are subject to Colombian income tax on their worldwide income. Foreign entities and individuals who are not deemed to be residents in Colombia, are subject to income tax in Colombia only with respect to their Colombian-source income, which is generally defined as income obtained from (i) the rendering of services inside Colombian territory, (ii) the exploitation of tangible and intangible assets in Colombia, and (iii) the sale of tangible or intangible assets that are located inside Colombian territory at the time of the sale among others. Double taxation treaties signed by Colombia, if applicable, may provide for special regulations regarding income taxation. Until 2018, foreign residents deriving income through a permanent establishment were subject to Colombian income tax on the Colombian source income attributable to their permanent establishment only. As of 2019, foreign tax residents deriving income through a permanent establishment will be subject to Colombian income tax on their global source income attributable to their permanent establishment in Colombia.

Dividends paid by Colombian companies, as well as profits distributed by branches/permanent establishments of foreign entities, are deemed as a dividend and as Colombian income. However, the applicable tax depends on an imputation system set forth in Articles 48 and 49 of the Colombian Tax Code (hereinafter “CTC”). For more information related to the Colombian dividends tax regime, see Risk Review—Risk Factors—Risks Related to Colombia’s Political and Regional Information.

As mentioned above, Law 1819 of 2016 created a new dividends tax that applies on all dividend distributions to Colombian individuals or to any type of non-resident shareholder, absent any specific treaty or exception, regardless that dividends are paid from taxed or non-taxed profits. According to the aforementioned law, dividend payments made to foreign shareholders out of profits accrued at the corporate level as of 2017 were subject to a 5% withholding. That rate was subsequently modified by Law 1943 of 2018, which increased it to 7.5% and extended dividend taxation to intercompany dividends between Colombian resident companies (with certain exceptions).

From fiscal year 2022 onwards, a withholding tax on dividends paid applies as follows:

- (i) Dividends paid to non-resident shareholders: (i) a 10% dividend tax on dividends distributed from profits taxed at the corporate level (except that dividends paid to non-resident shareholders out of profits taxed at the corporate level prior to and including December 31, 2016, are not subject to this tax); or (ii) 35% withholding tax rate on dividends distributed from profits not taxed at the corporate level, plus an additional 10% dividend tax after applying the initial 35% withholding tax rate (i.e., 41.5% in 2022).
- (ii) For Colombian individuals: dividend income in excess of 300 UVT are taxed at a 10% rate, , in respect of profits taxed at the corporate level; and 31% withholding tax rate on dividends distributed from profits not taxed at the corporate level, plus an additional 10% dividend tax after applying the initial 35% withholding tax rate.

Relief or reduced tax rates may apply under an applicable treaty to avoid double taxation, but the application of any such rules must be analyzed on a case-by-case basis.

For Colombian tax purposes, an individual is considered to be a Colombian resident when he/she meets any of the following criteria:

- (i) He/she remains in Colombia continuously or discontinuously for more than 183 calendar days within any given 365-consecutive-day term;

[Table of Contents](#)

- (ii) He/she is related to the Colombian government's foreign service or to individuals who are in the Colombian government's foreign service and who, by virtue of the Vienna Conventions on diplomatic and consular relations, are exempted from taxes during the time of their service; or
- (iii) He/she is a Colombian national and:
 - Has a spouse or permanent companion, or dependent children, who are tax residents in Colombia, or
 - 50% or more of his or her total income is Colombian source income, or
 - 50% or more of his or her assets are managed in Colombia, or
 - 50% or more of his or her assets are deemed to be located or possessed in Colombia, or
 - Has failed to provide proof of residency in another country (different from Colombia) upon previous official request by the Colombian tax office, or
 - He/she has a tax residency in a country considered by the Colombian government to be a low tax jurisdiction or a tax haven.

Law 1739 of 2014 clarifies that Colombian nationals who meet any of the following requirements will not be deemed as tax residents:

- (i) If more than 50% of his or her annual income has its source in the jurisdiction where he or she is domiciled and whose country of domicile is not Colombia.
- (ii) If more than 50% of his/her assets are located in the jurisdiction where he or she is domiciled and whose country of domicile is not Colombia.

For purposes of Colombian taxation, an entity is deemed to be a "national" or a "Colombian entity" and, therefore, subject to taxation in Colombia on its worldwide income, if it meets any of the following criteria:

- (i) It has its place of effective management, in Colombia during the corresponding year or taxable period;
- (ii) It has its main domicile in the Colombian territory; or
- (iii) It has been incorporated in Colombia, in accordance with Colombian laws.

Pursuant to the Colombian Tax Code, a foreign company or non-resident individual has a permanent establishment in Colombia when said company or individual performs activities in Colombia through: (i) a fixed place of business (i.e., branches, factories or offices), or (ii) an individual who is not an independent agent empowered to execute agreements on behalf of the foreign company. As noted above, until 2018 permanent establishments were considered Colombian taxpayers in connection with their Colombian source income. As of fiscal year 2019, foreign residents deriving income through a Colombian permanent establishment are subject to Colombian income tax on the worldwide income attributable to the Colombian permanent establishment. A foreign company or entity will not be deemed to have a permanent establishment by the sole fact that it acts through a broker or any other independent agent. In addition, passive-income generating activities, such as dividends, royalties and interests, typically do not qualify as entrepreneurial and are not deemed to create permanent establishments.

[Table of Contents](#)

Tax Treatment of a Non-Colombian Entity and a Non-Resident Individual of Colombia Who Purchases an ADS in a Foreign Securities Market

Dividends

As a general rule, dividends paid to foreign companies, foreign entities or non-resident individuals who are investing in ADSs which underlying assets are Colombian shares are treated as Colombian-source income and are thus subject to Colombian income tax.

To avoid double taxation, dividends paid by Colombian entities are not subject to income tax at the shareholder level when they are paid out of corporate profits that have been previously taxed at the corporate level. For fiscal years 2017 and 2018, a withholding tax on dividends was triggered for dividends paid to non-resident shareholders. Withholding tax rates on dividends were as follows: (i) a 5% dividend tax for dividends distributed out of profits already taxed at the company's level; (ii) 35% withholding tax rate for dividends distributed out of profits that were not taxed at the company's level, plus a 10% dividend tax rate after having applied and deducted the initial 35% withholding. Note that dividends paid to non-resident shareholders out of profits taxed at the corporate level until December 31, 2016, are not subject to the aforementioned 10% dividend tax or any other income tax. As of 2021, the withholding tax rates applicable to dividends paid to resident companies and non-resident shareholders (companies and individuals) are: i) a 7.5% or 10% tax on dividends, as applicable, distributed from profits taxed at the corporate level (except that dividends paid to non-resident shareholders out of profits taxed at the corporate level prior to and including December 31, 2016, are not subject to this tax); and (ii) 35% withholding tax rate on dividends distributed from profits not taxed at the corporate level, plus an additional 7.5% or 10%, as applicable, dividend tax after applying the initial 35% withholding tax rate.

Further to the above, non-resident entities or non-resident individuals whose investment qualifies as portfolio investments (i.e., investing through a Foreign Funds Administration Account - FFAA) will be taxed upon distribution by means of a withholding tax mechanism. In this case, pursuant to Article 18-1 of the Colombian Tax Code, the applicable withholding tax rate on taxable dividends is 25%, assuming that the dividends cannot be attributed to a permanent establishment in Colombia belonging to the shareholder and were not subject to taxation at the corporate level. The abovementioned 10% dividend tax applies on the balance of dividends to be distributed to the shareholder investing through an FFAA, or on the gross amount in such cases the dividend is paid out of profits that were subject to taxation at the corporate level. These foreign shareholders subject to this withholding tax are not required to file an income tax return in Colombia.

Taxation of Capital Gains from the Sale of ADSs

Capital gains obtained from the sale of ADSs by non-Colombian entities, Colombian individuals who are non-residents in Colombia and foreign non-resident individuals, are not subject to income tax in Colombia, as such sale does not generate Colombian-source income to the extent that the ADSs are not deemed to be sourced in Colombia. If the holder of the ADSs who is a non-resident entity, a Colombian individual who is not a resident in Colombia or a foreign non-resident individual, decides to surrender the ADSs and withdraw the underlying common shares, it is arguable that such transaction does not generate a capital gain subject to income tax in Colombia. However, different interpretations may be adopted by the Colombian Tax Authorities on this matter.

Tax Treatment in Colombia of a Non-Colombian Entity and a Non-Resident Individual of Colombia Who Purchases Ecopetrol's Shares in Colombia's Securities Market.

Dividends

As a general rule, dividends paid to foreign companies, foreign entities, or to non-resident individuals in Colombia, who are investing in Colombian shares directly or through a FFAA, are treated as national-source income; thus, they are subject to Colombian income tax.

The dividend tax regime was modified and, as of 2022, is as follows:

- (i) Dividends paid to non-resident shareholders: (i) a 10% dividend tax on dividends distributed from profits taxed at the corporate level (except that dividends paid to nonresident shareholders out of profits taxed at the corporate level prior to and including December 31, 2016, are not subject to this tax); or (ii) 35% withholding tax rate on dividends distributed from profits not taxed at the corporate level, plus an additional 10% dividend tax after applying the initial 35% withholding tax rate (i.e., 41.5% in 2022).

[Table of Contents](#)

- (ii) Dividends paid to Colombian companies: (i) a 7.5% dividend tax on dividends distributed from taxed profits, or (ii) a 35% withholding tax on dividends distributed from non-taxed profits, plus an additional 7.5% dividend tax on the balance of the dividend amount after the initial 35% withholding.
- (iii) For Colombian resident individuals: dividend income in excess of 300 UVT is taxed at a rate of 10%, for fiscal years 2021 onwards in respect of profits taxed at the corporate level; and 35% withholding tax rate on dividends distributed from profits not taxed at the corporate level, plus an additional 10% dividend tax after applying the initial 35% withholding tax rate.

Non-resident entities or non-resident individuals whose investment qualifies as portfolio investment (i.e., investing through a FFAA), will be taxed upon distribution by means of the withholding tax mechanism. In this case withholding will apply at 25% on dividends that are distributed by the Colombian entity are not taxed at the corporate level. Pursuant to Article 18-1 of the Colombian Tax Code, assuming that the dividends cannot be attributed to a permanent establishment in Colombia belonging to the shareholder. These foreign shareholders subject to this withholding tax are not required to file an income tax return in Colombia, nevertheless those rules would not apply to foreign investments whereby the final beneficiary is a tax resident in Colombia who has control over such investments. This treatment was modified by Law 1943/2018 and Law 2010/2019. See section *Financial Review—Effect of Taxes, Exchange Rate*.

Variation, Inflation and the Price of Oil on our Results—Taxes—Taxes.

In addition to the above, the new dividend tax will apply at a 5% rate over dividends distributed from profits taxed at the corporate level. This treatment was modified by Law 1943 of 2018 and Law 2010 of 2019 (7.5% in 2019 and 10% from 2020 onwards). See section *Financial Review—Effect of Taxes, Exchange Rate Variation, Inflation and the Price of Oil on our Results—Taxes—Taxes.*

Taxation of Capital Gains for the Sale of Shares

Pursuant to Article 36-1 of the Colombian Tax Code, capital gains derived from the sale of shares listed on the BVC and owned by the same beneficial owner, are deemed as non-taxable income in Colombia, provided that the shares sold during the same taxable year do not represent more than 10% of the outstanding shares of the listed company. Pursuant to Section 1.6.1.13.2.19 of Regulatory Decree 1625 of 2016, sellers of shares are not required to file an income tax return for the transfer of securities that are listed in the National Registry of Securities and Issuers (*Registro Nacional de Valores y Emisores*) as long as the foreign investment is treated as a portfolio investment according to Article 3 of Decree 2080 of 2000 (currently compiled in Article 2.17.2.2.1.2 of Decree 1068 of 2015) and the abovementioned 10% threshold is not surpassed.

If the abovementioned requirements are not met, the capital gain obtained in the sale of shares is subject to income tax or capital gains tax, under the following rules:

- (i) The gain or loss arising therefrom will be the difference between the sale price and the tax basis of the shares. As a general rule, the tax basis of shares is equal to the price paid for such shares (i.e., cost of acquisition).
- (ii) The applicable tax rate and the withholding tax rate have to be determined on a case-by-case basis. Generally, if the shares have been owned for at least two years and qualify as fixed assets (i.e., they are not sold within their ordinary course of business), the profits from the sale will qualify as capital gains taxable at 10%; otherwise, profits will qualify as ordinary income, subject to a 33% income tax for fiscal year 2021 (2022 onwards – 35%).

Tax Treatment of Non-Residents Who Purchase Ecopetrol's Shares in the BVC Market and Exchange Them for ADSs

Dividends

Payment of dividends by Colombian entities to foreign companies, foreign entities or to non-resident individuals who are investing in ADSs which underlying assets are Colombian shares or in Colombian shares directly are subject to the tax treatment described above.

[Table of Contents](#)

Taxation on Capital Gains for the Sale of Shares

If the holder of the Colombian shares is a non-resident entity, a Colombian individual who is not a resident in Colombia or a foreign non-resident individual, and such holder decides to exchange such common shares for ADSs, it is arguable that such transaction should not generate a capital gain subject to income tax in Colombia. However, different interpretations may be adopted by the Colombian tax authorities on this matter. For instance, assuming that the exchange of securities is treated as a sale of Ecopetrol S.A.'s shares, the seller would be subject to the tax treatment described above in connection with the taxation of capital gains for the sale of shares. Absent any specific rules or regulations addressing this specific situation, a case-by-case analysis would be necessary.

6.6.2. U.S. Federal Income Tax Consequences

This summary describes the principal U.S. federal income tax consequences of the ownership and disposition of common shares or ADSs, but it does not purport to be a comprehensive description of all of the U.S. tax consequences that may be relevant to a decision to hold or dispose of common shares or ADSs. This summary applies only to purchasers of common shares or ADSs who will hold the common shares or ADSs as capital assets for U.S. federal income tax purposes and does not apply to special classes of holders such as dealers in securities or currencies, holders whose functional currency is not the U.S. dollar, holders of 10% or more of our shares (taking into account shares held directly or through depositary arrangements) by vote or by value, tax-exempt organizations, financial institutions, holders liable for the alternative minimum tax, securities traders who elect to account for their investment in common shares or ADSs on a mark-to-market basis, partnerships or other pass-through entities or arrangements and investors therein, insurance companies, U.S. expatriates, persons that purchase or sell common shares or ADSs as part of a wash sale for tax purposes, and persons holding common shares or ADSs in a hedging transaction or as part of a straddle, conversion or other integrated transaction for U.S. federal income tax purposes. The statements regarding U.S. tax law set forth in this summary are based on the Internal Revenue Code of 1986, as amended, the "Code," its legislative history, existing and proposed U.S. Treasury regulations, published rulings and court decisions, all as in force on the date of this annual report, and changes to such law subsequent to the date of this annual report may affect the tax consequences described herein (possibly with retroactive effect). This summary is also based in part on the representations of the Depositary and the assumption that each obligation in the Deposit Agreement and any related agreement will be performed in accordance with its terms.

Each holder is encouraged to consult such holder's tax advisor concerning the overall tax consequences to it, including the consequences under laws other than U.S. federal income tax laws, of an investment in common shares or ADSs. In this discussion, references to a "U.S. Holder" are to a beneficial owner of a common share or an ADS that is for U.S. federal income tax purposes (1) an individual citizen or resident of the United States, (2) a corporation, or any other entity taxable as a corporation, organized under the laws of the United States, any state thereof or the District of Columbia, (3) an estate whose income is subject to U.S. federal income tax regardless of its source, or (4) a trust if (i) a United States court can exercise primary supervision over the trust's administration and one or more United States persons are authorized to control all substantial decisions of the trust or (ii) it has in effect a valid election under applicable U.S. Treasury regulations to be treated as a U.S. person.

For U.S. federal income tax purposes, holders of ADSs generally will be treated as owners of the common shares represented by such ADSs.

This discussion does not address any aspect of U.S. federal taxation other than U.S. federal income taxation (such as the estate and gift tax or the Medicare tax on net investment income). Holders of common shares or ADSs should consult their own tax advisor regarding the U.S. federal, state and local and other tax consequences of owning and disposing of common shares and ADSs in their particular circumstances.

[Table of Contents](#)

Distributions on Common Shares or ADSs

A distribution to U.S. Holders made by us of cash or property with respect to common shares or ADSs generally will be treated as a dividend for U.S. federal income tax purposes to the extent paid out of our current or accumulated earnings and profits (as determined under U.S. federal income tax principles). Distributions in excess of our current or accumulated earnings and profits, as determined for U.S. federal income tax purposes, will be treated first as a tax-free return of capital reducing such U.S. Holder's adjusted tax basis in the common shares or ADSs. Any distribution in excess of such adjusted tax basis will be treated as capital gain and will be either long-term or short-term capital gain depending upon whether the U.S. Holder held the common shares or ADSs for more than one year. Distributions of additional common shares or ADSs to U.S. Holders that are part of a pro rata distribution to all of our shareholders generally will not be subject to U.S. federal income tax. We do not maintain calculations of our earnings and profits under U.S. federal income tax principles, and, therefore, except as described in the previous sentence, U.S. Holders should expect that any distributions generally will be reported as dividends for U.S. federal income tax purposes. As used below, the term "dividend" means a distribution that constitutes a dividend for U.S. federal income tax purposes. The amount of any distribution will include the amount of any Colombian tax withheld on the amount distributed, and the amount of a distribution paid in Colombian Pesos will be measured by reference to the exchange rate for converting Colombian Pesos into U.S. dollars in effect on the date the distribution is received by the Depositary (or by a U.S. Holder in the case of a holder of common shares) regardless of whether the payment is in fact converted into U.S. dollars. If the Depositary (or U.S. Holder in the case of a holder of common shares) does not convert such Colombian Pesos into U.S. dollars on the date it receives them, generally, any gain or loss resulting from currency exchange fluctuations during the period from the date the dividend payment is included in income to the date the payment is converted into U.S. dollars will be treated as ordinary income or loss and will not be eligible for the special tax rate applicable to qualified dividend income (as discussed below). The gain or loss generally will be income or loss from sources within the United States for foreign tax credit limitation purposes. Dividends paid by us will not be eligible for the dividends received deduction allowed to corporations under the Code.

If you are a non-corporate U.S. Holder, dividends that constitute qualified dividend income will be taxable to you at the preferential rates applicable to long-term capital gains, provided that you meet certain holding requirements. Dividends paid on the ADSs will be treated as qualified dividend income if (1) the ADSs are readily tradable on an established securities market in the United States and (2) we were not, in the year prior to the year in which the dividend was paid, and are not, in the year in which the dividend is paid, a passive foreign investment company (PFIC). The ADSs are listed on the New York Stock Exchange, and will qualify as readily tradable on an established securities market in the United States, as long as they are so listed. Based on our audited financial statements and relevant market and shareholder data, we believe that we were not treated as a PFIC for U.S. federal income tax purposes with respect to our 2021 taxable year. In addition, based on our audited financial statements and our current expectations regarding the value and nature of our assets, the sources and nature of our income, and relevant market and shareholder data, we do not anticipate becoming a PFIC for the 2022 taxable year. However, this conclusion is a factual determination that is made annually and thus may be subject to change. Based on existing guidance, it is not clear whether dividends received with respect to the common shares will be treated as qualified dividends. In addition, the U.S. Treasury has announced its intention to promulgate rules pursuant to which holders of ADSs or common shares and intermediaries through whom such securities are held will be permitted to rely on certifications from issuers to treat dividends as qualified for tax reporting purposes. Because such procedures have not yet been issued, it is not clear whether we will be able to comply with them. Holders of ADSs and common shares should consult their own tax advisers regarding the availability of the reduced dividend tax rate in the light of the considerations discussed above and their own particular circumstances.

A U.S. Holder will be entitled, subject to a number of complex limitations and conditions, to claim a U.S. foreign tax credit in respect of any Colombian income taxes withheld on dividends received on common shares or ADSs. U.S. Holders who do not elect to claim a credit for any foreign income taxes paid during the taxable year may instead claim a deduction in respect of such Colombian income taxes, provided the U.S. Holder elects to deduct (rather than credit) all foreign income taxes for that year. Dividends received with respect to the common shares or ADSs will be treated as foreign source income, subject to various classifications and other limitations. For the purposes of the U.S. foreign tax credit limitations, the dividends paid with respect to our common shares or ADSs generally will constitute "passive category income" for most U.S. Holders. The rules relating to computing foreign tax credits or deducting foreign income taxes are extremely complex, and U.S. Holders are urged to consult their own independent tax advisers regarding the availability of foreign tax credits with respect to any Colombian income taxes withheld.

[Table of Contents](#)

Sale, Exchange or Other Taxable Dispositions of Common Shares or ADSs

A U.S. Holder generally will recognize capital gain or loss upon the sale, exchange or other taxable disposition of common shares or ADSs in an amount equal to the difference between the U.S. dollar value of the amount realized on the sale, exchange or other taxable disposition of the common shares or ADSs and the U.S. Holder's adjusted tax basis, determined in U.S. dollars, in the common shares or ADSs. Any gain or loss will be long-term capital gain or loss if the common shares or ADSs have been held for more than one year. Certain non-corporate U.S. Holders (including individuals) may be eligible for preferential rates of U.S. federal income tax in respect of long-term capital gains. The deductibility of capital losses is subject to limitations under the Code.

If you are a U.S. Holder of common shares or ADSs, the initial tax basis of your common shares or ADSs will be the U.S. dollar value of the Colombian Peso-denominated purchase price determined on the date of purchase. If the common shares or ADSs are treated as traded on an "established securities market," a cash basis U.S. Holder, or, if it elects, an accrual basis U.S. Holder, will determine the dollar value of the cost of such common shares or ADSs by translating the amount paid at the spot rate of exchange on the settlement date of the purchase. Such an election by an accrual basis U.S. Holder must be applied consistently from year to year and cannot be revoked without the consent of the Internal Revenue Service (IRS). If you convert U.S. dollars to Colombian Pesos and immediately use that currency to purchase common shares or ADSs, such conversion generally will not result in taxable gain or loss to you. With respect to the sale or exchange of common shares or ADSs, the amount realized generally will be the U.S. dollar value of the payment received determined on (1) the date of receipt of payment in the case of a cash basis U.S. Holder and (2) the date of disposition in the case of an accrual basis U.S. Holder. If the common shares or ADSs are treated as traded on an "established securities market," a cash basis taxpayer, or, if it elects, an accrual basis taxpayer, will determine the U.S. dollar value of the amount realized by translating the amount received at the spot rate of exchange on the settlement date of the sale.

Deposits and withdrawals of common shares in exchange for ADSs, and of ADSs for common shares, generally will not result in the realization of gain or loss for U.S. federal income tax purposes.

Backup Withholding and Information Reporting

In general, dividends on common shares or ADSs, and payments of the proceeds of a sale, exchange or other taxable disposition of common shares or ADSs, paid within the United States, by a U.S. payer through certain U.S.-related financial intermediaries to a U.S. Holder are subject to information reporting and may be subject to backup withholding at a current rate of 24%, unless the holder (1) establishes that it is a corporation or other exempt recipient or (2) with respect to backup withholding, provides an accurate taxpayer identification number and certifies that it is a U.S. person and that no loss of exemption from backup withholding has occurred.

Backup withholding is not an additional tax. The amount of any backup withholding tax from a payment to a U.S. Holder will be allowed as a credit against the U.S. Holder's U.S. federal income tax liability, provided that the required information is timely furnished to the IRS. U.S. Holder generally may obtain a refund of any amounts withheld under the backup withholding rules that exceed its U.S. federal income tax liability by timely filing a refund claim with the IRS.

U.S. Tax Considerations for Non-U.S. Holders

A holder or beneficial owner of common shares or ADSs that is not a U.S. Holder for U.S. federal income tax purposes (a "non-U.S. Holder") generally will not be subject to U.S. federal income or withholding tax on dividends received on common shares or ADSs, unless the dividends are "effectively connected" with the non-U.S. Holder's conduct of a trade or business within the United States. In such a case, a non-U.S. Holder generally will be taxed in the same manner as a U.S. Holder. In the case of "effectively connected" dividends received by a corporate non-U.S. Holder, the corporate non-U.S. Holder may, under certain circumstances, be subject to an additional "branch profits tax" at a 30% rate.

A non-U.S. Holder of common shares or ADSs will not be subject to U.S. federal income or withholding tax on gain realized on the sale of common shares or ADSs, unless (i) the gain is "effectively connected" with the non-U.S. Holder's conduct of a trade or business in the United States or (ii) in the case of gain realized by an individual non-U.S. Holder, the non-U.S. Holder is present in the United States for 183 days or more in the taxable year of the sale and certain other conditions are met. In the case of "effectively connected" gains realized by a corporate non-U.S. Holder, the corporate non-U.S. Holder may, under certain circumstances, be subject to an additional "branch profits tax" at a 30% rate.

[Table of Contents](#)

Although non-U.S. Holders generally are exempt from backup withholding and information reporting requirements, a non-U.S. Holder may be required to comply with certification and identification procedures in order to establish its exemption from information reporting and backup withholding.

6.7. Exchange Controls and Limitations

The compliance of certain foreign exchange transactions with foreign exchange control restrictions including international investments and some transactions between Colombian residents and non-Colombian residents must be conducted through the foreign exchange market. In Colombia, the foreign investment is a transaction subject to foreign exchange control restrictions, and the acquisition of ADRs by non-residents are considered a type of portfolio investment. Therefore, any foreign currency income or expense under the ADRs must be transferred through the appropriate methods of the foreign exchange market, which means using an intermediary of the foreign exchange market or a bank account opened abroad of Colombia and registered as compensation account before the Colombian Central Bank.

Transactions conducted through intermediaries of the foreign exchange market are made at market rates freely negotiated with authorized intermediaries (local banks, financial corporations, administrators and others) or using a bank accounts opened abroad and registered as compensation account (in this case, without effective conversion of the currencies into Colombian Pesos. Since September 25, 1999, the Colombian foreign exchange regime is structured under the system of free flotation of the exchange rate, whereby market forces determine the level of exchange rate from time to time.

Foreign portfolio investments must be made through authorized foreign exchange investment management companies, that will act as the administrator. Only brokerage firms, trust companies and investment management companies, subject to the inspection and supervision of the Superintendence of Finance, are allowed to act in the local Colombian stock market on behalf of foreign investors. Such brokerage firms, trust companies and investment management companies also act as the foreign investors' local representatives for tax, foreign exchange purposes, remittance of information and any other purposed defined by the supervisory entity.

Colombian law provides that the Colombian Central Bank may regulate the foreign exchange regime at its own discretion at any time (i.e., it is allowed to temporarily limit the remittance of dividends from abroad whenever the international reserves of the Colombian Central Bank fall below an amount equal to three months of imports or those reserves are at the highest allowable level). Additionally, from time to time, the Colombian government introduces amendments to the International Investment Statute. Hence, we cannot assure you that the Colombian Central Bank will not intervene in the future imposing restrictions to the free convertibility system currently applicable in Colombia. See section *Risk Review—Risk Factors—Risks Related to Colombia's Political and Regional Environment*.

Registration of Foreign Investment Represented in Underlying Shares

Colombia's International Investment Statute and the regulations issued by the Colombian Central Bank, which have been amended from time to time through decrees and regulations, govern the manner in which non-Colombian resident entities and individuals can invest in Colombia and participate in the Colombian securities markets. Among other requirements, the International Investment Statute and Colombian Central Bank regulations establish the liability of registration of foreign investment transactions with the Colombian Central Bank and specify procedures to authorize and administer such foreign investment transactions. Additionally, pertinent information related to foreign investment transactions must be updated on a regular basis (on a monthly basis by the administrator).

Under the International Investment Statute and Colombian Central Bank regulations, the failure of a foreign investor to report or register with the Colombian Central Bank foreign exchange transactions relating to investments in Colombia on a timely basis may (i) prevent the investor from obtaining remittance rights, (ii) constitute an exchange control infraction and (iii) result in economic fines.

Notwithstanding the regulations described above, foreign investors who acquire ADRs are not required to directly register this investment with Colombian authorities as such registration is made in the name of the ADR program administrator. Holders of ADRs will benefit from the registration to be obtained by the local custodian for our common shares underlying the ADRs in Colombia. Such registration allows the custodian to convert dividends and other distributions with respect to the common shares into foreign currency and remit the proceeds abroad. If investors in ADRs choose to surrender their ADRs and withdraw common shares, they must retain an administrator, who will act as a local representative for the investments and register their investments in common shares as a portfolio investment through said local representative. The local representative is the brokerage firm, trust company or investment management company that acts on behalf of the holders of the ADRs in Colombia, and the request for registration is made by them.

[Table of Contents](#)

Colombian residents who acquire ADRs and either receive profits from this investment, surrender their ADRs or liquidate their investment in ADRs, are considered as a type of financial investment and/or in assets located abroad by resident in Colombian and in that case, may be registered with the Colombian Central Bank depending on whether the payment was performed using the foreign exchange market.

In case of obtaining its own foreign investment registration, an investor who surrenders its ADRs and sells common shares may incur expenses and/or suffer delays in the application process. Investors would only be allowed to transfer dividends abroad or transfer funds received as distributions relating to our common shares after their foreign investment registration procedure with the Colombian Central Bank has been completed. In addition, the Depositary's foreign investment registration may also be adversely affected by future legislative changes, but its rights to transfer dividends abroad or profits arising from distributions relating to our common shares must be maintained according to Colombian law and foreign investment treaties entered into by Colombia in force at the time of the registration of the investment, except when Colombia's international reserves fall below an amount equivalent to three months' worth of imports. Prospective purchasers of common shares or ADSs should consult their own foreign exchange advisors.

6.8. Exchange Rates

On April 18, 2022, the Representative Market Exchange Rate was COP\$ 3,737.32 per US\$1.00. The Federal Reserve Bank of New York does not report a noon-buying rate for Colombian Pesos. The Superintendence of Finance calculates the Representative Market Exchange Rate based on the weighted averages of the buy and sell foreign exchange rates quoted daily by foreign exchange rate market intermediaries including financial institutions for the purchase and sale of U.S. dollars. The Superintendence of Finance also calculates the Representative Market Exchange Rate for each month for purposes of preparing financial statements and converting amounts in foreign currency to Colombian Pesos.

6.9. Major Shareholders

The following table sets forth the names of our major shareholders, and the number of shares and the percentage of outstanding shares owned by them on March 31, 2022:

Table 68 – Major Shareholders

Shareholders	As of March 31, 2022	
	Number of shares	% Ownership
Nation ⁽¹⁾ – Ministry of Finance and Public Credit	36,384,788,417	88.49
Public float	4,731,906,273	11.51
Total	41,116,694,690	100.00

(1) Includes 1,600 shares owned by other state entities.

All our common shares have identical voting rights.

As of February 17, 2022, the registration date of our annual general shareholders' meeting, 1.08% or 447,393,500 of our common shares were held of record in the form of American Depositary Shares, we had 34 registered holders, and 11,759 beneficiaries of common shares, or ADSs representing common shares, in the United States.

[Table of Contents](#)

Changes in the Capital of the Company:

There are no conditions in our bylaws governing changes in our capital stock that are more stringent than those required under Colombian law, with the exception that the Nation must hold a minimum of 80% in any stock issuance undertaken under Law 1118 of 2006.

On August 27, 2021, our Board of Directors approved the framework for the Third Round of the Program for the Issuance and Placement of Common Stock (the "Program"), in accordance with Law No. 1118 of 2006 ("Law 1118"). As provided by Law 1118, to the extent any potential public offerings of common shares are carried out under the Program, the Nation will at all times continue to maintain at least 80% of the common equity interest of Ecopetrol S.A. The Program contemplates a 5-year term during which we may carry out one or more public offerings of common shares for the specific purposes set forth therein. On October 13, 2021, the SFC approved the Program. Any offerings to be undertaken pursuant to the Program remain subject to approval by the SFC and any such approvals, if and when granted, do not imply any commitment or obligation on Ecopetrol S.A. to issue common shares.

6.10. Enforcement of Civil Liabilities

We are a Colombian company. Most of our Directors and executive officers and some of the experts named in this annual report reside outside the United States. All or a substantial portion of our assets and the assets of these persons are located outside of the United States. As a result, it may not be possible for you to affect service of process within the United States upon us or these persons who are residents in Colombia or to enforce against us or these persons who are residents in Colombia judgments in U.S. courts obtained in such courts predicated upon the civil liability provisions of the U.S. federal securities laws. Colombian courts will enforce a U.S. judgment predicated on the U.S. securities laws through a procedural system known under Colombian Law as "exequatur." The Colombian Supreme Court will enforce a foreign judgment, without reconsideration of the merits only if the judgment satisfies the requirements set forth in Articles 605 through 607 of Law 1564 of 2012 (Código General del Proceso) which entered into force on January 1, 2016, pursuant to Acuerdo No. PSAA15-10392, of October 1, 2015, issued by the Colombian Superior Council of the Judiciary (*Consejo Superior de la Judicatura*), as follows:

- A treaty exists between Colombia and the country where the judgment was granted relating to the recognition and enforcement of foreign judgments or, in the absence of such treaty, there is reciprocity in the recognition of foreign judgments between the courts of the relevant jurisdiction and the courts of Colombia;
- The foreign judgment does not relate to "in rem rights" vested in assets located in Colombia at the time the lawsuit was filed;
- The foreign judgment does not contravene or conflict with Colombian laws relating to public order other than those governing judicial procedures;
- The foreign judgment, in accordance with the laws of the country where it was rendered, is final and is not subject to appeal;
- A duly legalized copy of the judgment (together with an official translation into Spanish if the judgment is issued in a foreign language) has been presented to the Supreme Court of Colombia;
- The foreign judgment does not refer to any matter upon which Colombian courts have exclusive jurisdiction;
- No proceeding is pending in Colombia with respect to the same cause of action, and no final judgment has been awarded in any proceeding in Colombia on the same subject matter and between the same parties;
- In the proceeding commenced in the foreign court that issued the judgment, the defendant was served in accordance with the laws of such jurisdiction and in a manner reasonably designated to give the defendant an opportunity to defend against the action; and
- The legal requirements pertaining to the exequatur proceedings have been observed.

[Table of Contents](#)

The United States and Colombia do not have a bilateral treaty providing for automatic reciprocal recognition and enforcement of judgments in civil and commercial matters. The Colombian Supreme Court has in the past accepted that reciprocity exists when it has been proven that either a U.S. court has enforced a Colombian judgment or that a U.S. court would enforce a foreign judgment, including a judgment issued by a Colombian court. However, such enforceability decisions are considered by Colombian courts on a case-by-case basis.

Proceedings for enforcement of a money judgment by attachment or execution against any assets or property located in Colombia are within the exclusive jurisdiction of Colombian courts, and such proceedings are conducted in Spanish. All parties affected by a foreign judgment in exequatur proceedings must be summoned to the exequatur proceedings in accordance with the rules that apply to the Colombian courts. In the course of such proceedings, both the plaintiff and the defendant are afforded the opportunity to request that evidence to be produced in connection with the requirements listed above. In addition, before the judgment is rendered, each party may file final allegations in support of such party's position regarding the abovementioned requirements.

Assuming that a foreign judgment complies with the standards set forth in the preceding paragraphs and the absence of any condition referred to above that would render a foreign judgment not subject to recognition under Colombian law, such foreign judgment would be enforceable in Colombia in an enforcement proceeding under the laws of Colombia, provided that the Colombian Supreme Court has previously granted exequatur upon the foreign judgment.

7. Corporate Governance

Since 2004, Ecopetrol S.A. has voluntarily adopted transparency, governance and control practices to facilitate corporate governance in order to generate confidence among stakeholders and ensure the sustainability of its business. The corporate governance practices at Ecopetrol S.A. aim to:

- Promote and guarantee all stakeholders transparency, objectivity and competitiveness;
- Add value to the company and attract investors;
- Protect shareholders, investors and stakeholders' rights;
- Encourage financial markets confidence; and
- Accomplish the highest corporate governance standards.

Ecopetrol as corporate governance benchmark

In recent years, Ecopetrol's commitment to the implementation of best corporate governance standards has been recognized by certain independent third parties.

In 2021, the ALAS20 Sustainable Leaders Agenda, an initiative sponsored by a Chilean think tank that encourages companies and investors to incorporate ESG criteria into their processes, ranked Ecopetrol among the top 3 Colombian companies in the following categories: Corporate Governance (second place), Sustainability (third place), and Investor Relations (third place).

Similarly, S&P Global Rating, the leading credit rating agency, conducted an analysis on Ecopetrol's ESG areas, based on public information for 2020 and 2021, as well as based on interviews with some of Ecopetrol's business leaders. According to S&P's analysis, in terms of Corporate Governance, Ecopetrol's Board of Directors and management have vast experience and awareness of ESG issues, which is considered above average for the Colombian and regional Oil & Gas industry peers according to S&P. S&P also considers that Ecopetrol's corporate governance is robust in terms of structure, control, transparency and reporting and that its governance structure is efficient in managing sustainability risks with solid governing bodies and the implementation of variable remuneration schemes associated with ESG targets for senior management and certain other key employees, as described below.

[Table of Contents](#)

Corporate Governance System

Corporate governance is the system of rules and practices that govern the decision-making process and delegation of authority between the governing bodies of the Ecopetrol Group, as well as the relationships between the companies that comprise it. Corporate Governance in Ecopetrol is more than a key element for organizational management—it is a strategy enabler that our stakeholders value and monitor continuously, as it generates trust, sustainable results over time and results in long-term value relationships.

Our model is structured based on the law, international standards, good practices that enable and support the execution of the strategy of the Ecopetrol Group. Our corporate governance provides safeguards for adequate decision-making of the governing bodies of the Ecopetrol Group in terms of agility, clarity and consistency, as well as the promotion of the realization of synergies between Ecopetrol S.A. and the Ecopetrol Group companies.

To leverage the business strategy, Ecopetrol has a Corporate Governance System that aims to provide a consistent, sustainable and objective framework for action to safeguard Ecopetrol's governance as well as generate synchrony and articulation with the companies of the Ecopetrol Group. The main elements of this system are:

- (i) Boards of Directors: Ecopetrol and Subsidiaries
 - a. Promote best management practices in the Boards of Ecopetrol and in the other Ecopetrol Group's companies.
 - b. Ensure alignment of the strategy under the Ecopetrol Group's management by segments.
- (ii) Senior Management Committees
 - a. Establish the structure of the Senior Management Committees (operating, monitoring and improvement mechanisms).
 - b. Optimize Ecopetrol senior management time.
- (iii) Matrix of Decisions and Attributions
 - a. Define the key or more relevant decisions of the Ecopetrol Group.
 - b. Establish which governing bodies are responsible for making key decisions.
 - c. Define how these decisions are made.
- (iv) Relationship Model
 - a. Establish the way in which the areas within the Ecopetrol Group's scope are related to the Ecopetrol Group's companies.
 - b. Capture the Ecopetrol Group's synergies.
 - c. Manage articulation through management or administration by segments.

Statement of the Nation as Majority Shareholder

Ecopetrol's majority shareholder (the Nation, represented by the Ministry of Finance and Public Credit), is unilaterally committed to protect the interests of the minority shareholders in the following topics:

- Composition of Board of Directors: including in its list of candidates a Representative for hydrocarbon producing departments operated by Ecopetrol and a Representative for the minority shareholders, who will be chosen by the 10 shareholders with the largest stock participations. According to corporate governance practices recommended by the OECD, an organization to which Colombia has been a member since 2018, the Government implemented the practice of eliminating the participation of Directors with a ministerial level in the company's Board of Directors. Therefore, since 2019 the Government has nominated one (1) non-independent Director without ministerial rank. The current Board of Directors is composed by eight (8) independent members and one (1) non-independent member.
- Dividend policy: guaranteeing the right of each shareholder to receive his pro rata dividends in accordance with Colombian law.

[Table of Contents](#)

- Issues not included in the agenda of extraordinary meetings of the General Shareholders Assembly: permitting a vote on those initiatives submitted by one or more shareholders representing at least 2% of the subscribed shares of the company.
- Asset disposal: ensuring that any asset disposal of an amount equal or higher than 15% of the stock exchange capitalization of Ecopetrol S.A. is discussed and decided by the General Shareholders' Assembly and that the Nation will only vote affirmatively if the vote of minority shareholders is equal to or exceeds 2% of the shares subscribed by shareholders other than the Nation.

7.1. Bylaws

The Bylaws of Ecopetrol S.A. are contained in Public Deed No. 5314 of December 14, 2007, issued by the Second Notary of Bogotá; amended by Public Deed No. 560 of May 23, 2011, issued by the Notary Forty-Six of Bogotá, Deed No. 666 of May 7, 2013, issued by the Notary Sixty-Five of Bogotá, Deed No. 1049 of May 19, 2015, issued by the Notary Second of Bogotá, Deed No. 0685 of May 2, 2018, issued by the Notary Twenty of Bogotá and Deed No. 888 of May 28, 2019 issued by the Notary Twenty Third of Bogotá, Deed No. 6527 issued by the Notary Twenty Nine of Bogotá of June 08, 2020 , Deed No. 10976 of May 6, 2021 issued by the Notary Twenty Nine of Bogotá. In addition, the bylaws were amended in the ordinary meeting of the General Shareholders Assembly held on March 30, 2022. The text of the amended bylaws is yet to be recorded in public deed and registered before the mercantile registry, which in Colombia corresponds to the Chamber of Commerce. An English translation of the amended bylaws is included as Exhibit 1.1 to this annual report.

This summary does not purport to be complete and is qualified by reference to our bylaws, which are filed as an exhibit to this annual report. For a description of the provisions of our bylaws relating to our Board of Directors and its committees, see sections Corporate Governance—Board of Directors—Board Practices and Corporate Governance—Board of Directors—Board Committees.

General Shareholders' Meeting

Shareholders' meetings may be ordinary or extraordinary. Ordinary meetings will take place in our legal domicile located in Bogotá, Colombia, within the first three months following the end of each fiscal year, on the day and at the time set forth in the notice for the General Shareholders' Meeting. The call for the General Shareholders' Meeting is published on the Ecopetrol S.A. website and in a newspaper of national circulation, in physical or digital form, 30 calendar days prior to the date on which the meeting will take place on the Sunday previous to the meeting, must be published at Ecopetrol S.A.'s website www.ecopetrol.com.co.

The Annual General Shareholders' Meeting provides shareholders with the opportunity to make key management decisions reserved to shareholders. At the General Shareholders' Meeting, our Board of Directors and the external auditor are appointed. Decisions are taken regarding the company's annual financial statements, profit distribution, audit and management reports, including our corporate governance report and sustainability report, and any other matter provided under applicable law or our corporate bylaws.

Extraordinary Shareholders' Meetings are summoned by our Board of Directors, by our president or chief executive officer, by our external auditor, or by shareholders holding at least 5% of the outstanding shares, or when unforeseen or urgent needs of the Company require it. An Extraordinary Shareholders' Meeting should be called no later than 15 calendar days prior to the date of the meeting. The only exception is when the Law requires a greater time between the summons and the meeting. Such notice to the Extraordinary Shareholders' Meeting is published on the Ecopetrol S.A. website and in a newspaper of national circulation, in physical or digital form. The notice informs the agenda for the meeting to the company's shareholders.

For both the ordinary and extraordinary meetings, the quorum required is a plural number of shareholders representing 50% plus one of the subscribed shareholders entitled to vote. Decisions are approved with a majority of the members present. This quorum is exempted in the case of "second-call meetings," which may take place when a meeting fails to obtain the required quorum and is called within a period between 10 business days and 30 business days from the first date, in which case decisions may be adopted by a majority of the shares present regardless of the number represented.

Decisions made at ordinary and extraordinary shareholders' meeting must be approved by a plural number of shareholders representing the majority of the shares present. Colombian law requires higher majorities in the following cases:

- The vote of at least 70% of the shares present and entitled to vote at the ordinary shareholders' meeting is required to approve the issuance of stock not subject to preemptive rights;

[Table of Contents](#)

- The vote of at least 78% of the shares represented entitled to vote is required to approve the distribution of the annual net profits. In the absence of this special majority, at least 50% of the net profits must be distributed. If the sum of all legal reserves (statutory, legal and optional) exceeds the amount of the outstanding capital, the Company must distribute at least 70% of the annual net profits;
- The vote of at least 80% of the shares represented is required to approve the payment of dividends in shares; and
- The vote of 100% of the outstanding and issued shares is required to replace a vacancy on the Board of Directors without applying the electoral quotient system.

Shareholders may be represented by proxies, provided that the proxy: (i) is in writing (faxes and electronic documents are valid), (ii) specifies the name of the representative, (iii) specifies the date or time of the meeting for which the proxy is given and (iv) includes other information specified by the applicable law. Proxies granted abroad do not require legalization or an apostille.

During our ordinary annual shareholders' meeting, our employees and Directors are only allowed to represent their own shares, unless they act as legal representatives.

In 2021, due to the exceptional situation arising from the COVID-19 pandemic, our annual shareholders' meeting was held virtually for the second time. Additionally, to guarantee the active participation and rights of the shareholders, the Company provided channels for the submission of proposals that were included in the agenda and a virtual and in-person system to inspect our books and documents. Our shareholders were able to follow the meeting through our website and the live broadcast on the National Institutional Channel. We had 2,388 connections via streaming and 122,630 viewers through the National Institutional Channel.

To facilitate the correct representation of its shareholders, Ecopetrol S.A., after review and authorization by the Financial Superintendence of Colombia and the Superintendence of Corporations, provided a digital proxy system through which our shareholders were represented by attorneys provided by the Company, and enabled them to submit their voting decisions. The instructions for the use of this system, the list of proxies, and the forms, were available on our website.

Our 2022 annual shareholders' meeting was held in-person at the Corferías (*Centro Internacional de Negocios y Exposiciones*) adhering to strict biosafety protocols. Additionally, we implemented a digital voting process for the first time and, to guarantee the rights of the shareholders, we allowed in-person appointments for shareholders to exercise their right to inspect our books and documents. For the 2022 meeting, there were 3,333 on-site participants and 3,670 viewers through social media platforms.

Preference Rights and Restrictions Attaching to Our Shares

There are only ordinary shares, and these carry no special rights or restrictions (ordinary shares). Our current shareholders do not have any type of preemptive rights. However, in the case of a future equity offering, we will review whether or not existing shareholders would be entitled to preemptive or similar rights and, if that were the case, the corporate approvals and offering documents for any such equity offering would regulate the subject matter accordingly. In connection with any future public offering of ordinary shares within the 5-year Program for the Issuance and Placement of Common Stock authorized by the Superintendency of Finance of Colombia on October 13, 2021, we have determined that preemptive rights will be available to our registered holders of common shares to purchase additional common shares in Colombia, in accordance with applicable regulations.

Under Commercial Colombian law, our shareholders have the following economic privileges and voting rights:

- to participate and vote on the decisions of the General Shareholders Assembly;
- to receive dividends based on the financial performance of the Company in proportion to their share ownership;
- to transfer and sell shares according to our bylaws and Colombian law;
- to inspect corporate books and records with 15 business days prior to the ordinary shareholders' meeting where the year-end financial statements are to be approved;

[Table of Contents](#)

- upon liquidation, to receive a proportional amount of the corporate assets after the payment of external liabilities; and
- to sell the shares, known as right of withdrawal (*derecho de retiro*), if a corporate restructuring affects the economic or voting rights of the shareholders in the terms and conditions established under Colombian law.

Ecopetrol S.A.'s bylaws provide additional rights to our minority shareholders. These rights include:

Sale of Assets. For a ten-year period counted from the date of subscription of the declaration of the Nation dated February 16, 2018 or until the Nation loses its status as majority shareholder, the Nation guarantees that any sale of 15% or more of our assets requires the approval of the General Shareholders Assembly and that the Nation would only be allowed to vote its shares in favor of the proposal if 2% or more of our minority shareholders accept the proposal.

Candidate List. Pursuant to our bylaws and Law 1118 of 2006, the Nation will include in its candidate list for election of members of the Board of Directors one member selected by the departments that produce hydrocarbons. In addition, pursuant to the declaration of the Nation dated February 16, 2018, the Nation will include in its candidate list for election of members of the Board of Directors one member selected by the ten largest minority shareholders. The minority shareholders' right to select a candidate loses its effect when minority shareholders, according to their share participation, name a member to our Board of Directors.

Extraordinary Shareholders Meetings. Our bylaws provide that the entity exercising permanent control over Ecopetrol S.A. must instruct the Company's CEO or External Auditor to call an extraordinary meeting of the Company's shareholders when so requested by a plurality of shareholders holding at least 5% of the total number of outstanding shares. Such requests shall be made in writing and must clearly indicate the purpose of the meeting.

Investor Relations Office. Ecopetrol S.A. has an investor relations office, a specialized unit responsible for our shareholders. Pursuant to our bylaws, shareholders holding at least 5% of the total number of shares outstanding may request that the investor relations office conduct a special audit, provided that such audit does not hinder the day-to-day operations of the Company, of the following documents: the income statement; the proposal for the distribution of profits; the report of the Board of Directors as to the economic and financial status of our Company; the report from our general counsel as to the legal status of our Company; and the report from the independent auditors. Special audits cannot be made of documents that contain scientific, technological or statistical information of our Company, or agreements that give us competitive and economic advantages over our competitors, or in respect of any document related to intellectual property. Shareholders also have the right to propose good corporate governance recommendations to the office for the protection of investors.

Others. Pursuant to our bylaws, shareholders holding at least 5% of the total number of shares outstanding may propose recommendations to our Board of Directors pertaining to the management of our Company. Any shareholder may file a written petition to our Board of Directors to investigate corporate governance violations that the shareholder believes to have been committed.

Amendments to Rights and Restrictions to Shares

We have only one class of stock and it has no special rights or restrictions (ordinary shares). Our shareholders do not have any type of preemptive rights. The rights given to our shareholders by law are described in our bylaws and may only be modified through an amendment to the law.

The additional rights given to our minority shareholders in our bylaws and corporate governance code may only be modified through an amendment of those internal documents.

[Table of Contents](#)

Limitations on the Rights to Hold Securities

There are no limitations in our bylaws or Colombian law on the rights of Colombian residents or foreign investors to own the shares of our Company, or on the right to hold or exercise voting rights with respect to those shares, except in cases of legal representation.

Restrictions on Change of Control, Mergers, Spin-offs or Transformations of the Company

Under Colombian law and our bylaws, the General Shareholders Assembly has full authority to approve any mergers, spin-offs or transformations, subject to compliance of applicable law. Corporate restructurings are subject to the requirement that the Nation must hold a minimum of 80% of our common stock in any issuance of stock pursuant to Law 1118 of 2006.

Ownership Threshold Requiring Public Disclosure

The Corporate Governance Code, Title III, Chapter 1, Section 5, states: Identification of Major Shareholders. The shareholding composition of the Company, indicating at least the twenty (20) people with the greatest number of shares, is disclosed on Ecopetrol's website at www.ecopetrol.com.co. Colombian securities regulations set forth the obligation to disclose any material event or *hecho relevante*. Any transfer of shares equal or greater than 5% of our capital stock, or any legal entity or individual acquiring a percentage of shares that would make him the beneficial owner of 5% or more of our capital stock, is a material event, and therefore, must be disclosed to the Superintendence of Finance. The regulation includes other criteria in order to identify when to report a material event other than the situations described in the previous sentence.

External Auditor

Pursuant to our bylaws, the external auditor will be appointed for periods of four (4) years and may be reelected consecutively for up to ten (10) years, and it may once again be hired after one (1) period away from the position. The partner assigned to the Company must be replaced after a term of five (5) years holding this position.

7.2. Code of Ethics and Conduct

Our Code of Ethics and Conduct considers, as ethical principles of the organization, the integrity, responsibility, respect and commitment to life. Our Code of Ethics and Conduct also states that we must comply with the provisions contained in the applicable national and international laws in the countries where we have operations, including the U.S. and Colombia.

In our Code, we define the guidelines for the following aspects: conflict of interest; ethical conflict; prohibition of bribery, other forms of corruption and violations of the FCPA; integrity in accounting; prevention of money laundering and financing of terrorism; gifts, amenities and hospitalities; protection and use of resources; information management; security and confidentiality; prohibition of insider trading and use of inside information, environmental policy, social responsibility, respect for human rights and rejection of discrimination, antitrust and anticompetitive practices and sexual harassment in the workplace; whistleblowing channel; and examples of ethical behaviors. As part of the Ethics guidelines of Ecopetrol, facilitation payments, political contributions and donations, diversion of money from social investment activities or sponsorships towards political activities or other than the purposes established by the Company and lobbying are prohibited.

Our Code of Ethics and Conduct applies to our Board of Directors, our Chief Executive Officer, our Chief Financial Officer, principal accounting officer, persons performing similar functions, to all of the other employees of the company and its affiliates and all individuals or legal entities that have any relationship with it, including beneficiaries, shareholders, contractors, suppliers, agents, partners, customers, allies (included joint ventures) and suppliers, in addition to the personnel and companies that the contractors engage for the execution of the agreed activities.

All our agreements with suppliers or third parties include a provision relating to compliance with applicable anti-bribery and anti-corruption regulations. These agreements also require our suppliers and third parties to accept our Code of Ethics and Conduct and our compliance manuals.

Our Code of Ethics and Conduct is available on our website.

[Table of Contents](#)

7.3. Board of Directors

The current Board of Directors was elected at the General Shareholders Ordinary Meeting held on March 26, 2021, for a two-year term beginning on April 9, 2021. At the General Shareholders Ordinary Meeting held in 2022, there were no new elections for the Board of Directors. However, the General Shareholders Ordinary Meeting held on 2022 increased the term of the Board of Directors to a four-year institutional term, adding the possibility for members to be re-elected more than once for the same four-year term without exceeding a total of three terms. The shareholders decided that the new term would be applied retroactively such that it will be deemed to have begun as of the 2021 board election and last until the General Shareholders Ordinary Meeting to be held in 2025. Additionally, the current period will be the first one for purposes of the re-election and maximum permanence in the Board of Directors.

The current Board of Directors is composed as follows:

Non-independent member:

- Germán Eduardo Quintero Rojas

Independent members:

- Cecilia María Vélez White
- Luis Guillermo Echeverri Vélez
- Juan Emilio Posada Echeverri
- Sergio Restrepo Isaza (as financial-accounting expert)
- Luis Santiago Perdomo Maldonado
- Esteban Piedrahita Uribe
- Hernando Ramírez Plazas (nominated by the oil producing departments in which Ecopetrol S.A. operates)
- Carlos Gustavo Cano Sanz (nominated by ten (10) minority shareholders with major shareholding)

The information below sets forth the names and business experience of each of the Directors elected at the General Shareholders Ordinary Meeting held on March 26, 2021:

Germán Eduardo Quintero Rojas has served as General Director of Fogafin, President of the National Hydrocarbons Agency, Secretary General of the Ministry of Mines and Energy, Interior and Finance and Public Credit, as well as Secretary General and Advisor to the Ministry of Commerce, Industry and Tourism, and Advisor to the Secretary General of the Office of the President of the Republic of Colombia. He has also served as Director General and Secretary General of Acción Fiduciaria S.A. and Head of the Legal Office of the Ministry of Finance of Public Credit, among other positions in the public and private sectors. He is an attorney with a degree from Sergio Arboleda University, and studies in Administrative Law from Javeriana University. He also carried out studies for a doctorate in an administrative law program from San Pablo CEU University of Madrid, where he was a doctorate candidate. He was a member of the drafting commission of the current Code of Administrative Procedures and Administrative Litigation. He has been a member of several top-level national Boards of Directors, highlighting his directorship in Ecopetrol (from 2019 until January 2021) and the Financiera de Desarrollo Nacional (FDN) as well as his service as Chairperson of the Boards of Directors of Bancoldex S.A., Gecelca S.A. E.S.P., Urrá S.A. and Cisa, among others. He is a current Director of the Board of Directors of FDN and is Legal Secretary to the Office of the President of the Republic. Mr. Quintero was a non-independent member of the Board of Directors of Ecopetrol S.A. from April 2019 until January 12, 2021. In March 2021, he was again elected as non-independent member of the Ecopetrol's Board of Directors.

[Table of Contents](#)

Mr. Quintero Rojas has experience in i) government affairs and public policy; ii) administration, senior management and leadership; iii) finance and securities markets; iv) human resources and talent development; v) legal affairs and corporate governance; and vi) business strategy and project design. In respect of the energy industry, he acquired specific expertise through positions in the Ministry of Mines and Energy the National Hydrocarbons Agency. In respect of energy transitioning expertise, he served as member of the Board of Directors of Gecelca S.A. E.S.P., and Urrá S.A. while such companies were undergoing energy transition projects. With respect to the fields of technology, innovation and cybersecurity, Mr. Quintero Rojas acquired relevant experience by serving as the Secretary General of four Ministries, where he was responsible for the technological direction thereof, and the oversight of the personnel who executed the cybersecurity and defense programs. On issues of water and wastewaters, as a specialized professional he directed the regulation and licensing division within the jurisdiction of the Regional Autonomous Corporation of Cundinamarca. He is periodically trained in ethics, compliance, and risk management matters.

Cecilia María Vélez White has extensive professional experience, having occupied the following positions in the public sector: Minister of Education of Colombia, Secretary of Education of Bogota, Minister Counselor for Economic Affairs at the Embassy of Colombia in the United Kingdom, Deputy Director and Head of the Territorial Development Unit at the National Planning Department, Head of Planning of the Urban Development Fund at Banco Central Hipotecario, and Deputy Director of Planning at Banco de la República (National Central Bank). She has served as Dean of Universidad Jorge Tadeo Lozano and was Visiting Professor at the Graduate School of Education at the same University. She studied Economics at Universidad de Antioquia from 1972-1976 and received her degree from Universidad Jorge Tadeo Lozano in 1977. She also holds a Master's degree in Economics from the University of Louvain in Belgium and was a Fellow at the Special Urban and Regional Studies program (SPURS) at Massachusetts Institute of Technology (MIT) in Boston. She is currently a member of several Boards of Directors and Advisory Boards, including: Suramericana de Seguros, Fundación Luker, United Way, *Empresarios por la Educación* and *Fundación Alejandro Angel Escobar*. She assists on the Advisory Board of the Harvard Ministerial Leadership Program and provides advisory and consulting services. Mrs. Vélez has been an independent Director of the Board of Directors of Ecopetrol S.A. since April 2021. She had also been a member of the Board of Directors from October 2004 to April 2007.

Mrs. Vélez White has experience in the energy industry, having served as Private Secretary in the Ministry of Mines and Energy and through her participation in preparing the 1982 National Energy Plan. Additionally, given her abovementioned professional background, she has expertise in: i) administration, senior management and leadership; ii) government affairs and public policy; iii) finance and securities markets; iv) human resources and talent development; v) legal affairs and corporate governance; vi) technology and innovation, including practical experience in cybersecurity; vii) climate change (having transformed the Jorge Tadeo Lozano University into a "green" university); viii) human development in the territories; ix) sustainability; and, x) business strategy and project management. Mrs. Vélez White is periodically trained in ethics, compliance, and risk management matters.

Luis Guillermo Echeverri Vélez has over 30 years of experience in the development, marketing, stimulation and performance of international business, exports and imports and in the preparation and implementation of public and corporate policies, the development and implementation of conventional projects as well as those relating to information technology, strategic planning, financing of public and private projects and the obtainment of funds and resources. His professional practice includes experience as an international business advisor. He served as Executive Director of the Inter-American Development Bank, the Inter-American Investment Corporation and the Multilateral Investment Fund on behalf of the Governments of Colombia, Peru, and Ecuador. He was Director and Founder of various companies and large projects between 2000 and 2010. He served as Commercial Attaché in Colombia's Diplomatic Mission to the US and Director of the Regional Office of Proexport (now ProColombia) in Miami. Mr. Echeverri is an attorney with a degree from Universidad Pontificia Bolivariana de Medellín and holds a Master in Agricultural Economics from Cornell University in New York. In his position as international business advisor, he has successfully directed business initiatives as well as change, innovation, methodological and technological implementation processes in various companies and organizations. He successfully managed the presidential campaign of Iván Duque Márquez, present President of the Republic of Colombia. Currently, He is the former President of the Board of Directors of the Chamber of Commerce of Bogotá and current board member of Telefónica, Pragma and Colmédica. Mr. Echeverri is President of the Asociación Primero Colombia, a nonprofit think tank dedicated to promoting democratic values and youth leadership; former. He serves as an independent Director and Chairperson of the Board of Directors of Ecopetrol S.A. since April 2019, Chairperson of the same Board and Chairperson of the Technology and Innovation Committee of the Board of Directors.

[Table of Contents](#)

Mr. Echeverri Vélez has experience in: i) administration, senior management, and leadership; ii) government affairs and public policy; iii) finance and securities markets; iv) legal affairs and corporate governance; v) sustainability, business strategy and project management; and vi) human resources and talent development. Mr. Echeverri Vélez is an expert in business risks management, and has served as a regional advisor to various financial and industrial groups, including JLT Re Colombia Corredores Colombianos de Reaseguros S.A. He has experience in technology and innovation, particularly through his positions at Pragma and in the various technology companies he has founded. Additionally, Mr. Echeverri Vélez has experience in cybersecurity, having acted as Conceptual Architecture and Project Manager of several IT companies. Lastly, Mr. Echeverri Vélez is currently developing the conceptual architecture of a technical project called "SEAL THE RAINFOREST" on climate change mitigation and social impact on the Colombian Amazon. Mr. Echeverri Vélez is periodically trained in ethics, compliance, and risk management matters.

Juan Emilio Posada Echeverri has been a Board Member and Advisory Council Member for many public and private, both profit and nonprofit organizations in the areas of infrastructure, air transportation, hospitality, national defense, banking, insurance, securities brokerage, telecommunications, technology, media, education, children's rights, chambers of commerce and business associations, as well as in a Latin American youth orchestra and a national competitiveness program, in which he led the private portion of the initiative. He has held senior management positions at Billiton M & T (then a subsidiary of Royal Dutch Shell Group) in the Netherlands as well as Banco Cafetero in New York and Miami, where he also served as International Vice President and was responsible for its subsidiaries and investments in seven countries. Founder, Executive Chairperson and CEO of Grupo Fast S.A. and Fast Colombia S.A.S. - VivaAir (formerly VivaColombia, the first low cost airline in Colombia); Founder and CEO of Stratis Ltda. (infrastructure projects); Corporate Director of Synergy Aerospace; CEO of Avianca Airlines, Alianza Summa (Avianca-Aces-Sam) and Aces Airlines; CEO of Puerto Brisa, a deep water mega-port in Colombia; Executive Chairperson of Taxisimo Ltd, Chairperson of Direktio and Fundación Plan; Director of Allianz Life and Allianz General in Colombia; Board member of Avianca Holding and Sociedad Hotelera Tequendama (seven hotels in Colombia), Plan International (Brazil) and member of the Nominating and Governance Committee of Plan International's Global Assembly, as well as, a member of the Advisory Councils of Grupo Empresarial del Sector Defensa (GESED), Disán (international fertilizer and chemical products trading company), Flores de la Campiña (producer and exporter of fresh flowers), YPO Gold Colombia (global CEO network), NT3 (real estate project developers), Polymath Ventures, AMROP-Top Management and the Orchestra of the Americas (Washington D. C.). He has been actively involved in fourth industrial revolution ventures and a middle-class housing construction firm. He holds a degree in Business Administration from EAFIT University in Medellín, Colombia, an MBA in International Business and Finance from Pace University in New York graduating with honors in international academic excellence, and a degree in International Finance Law from the London School of Economics. He has also attended graduate studies in International Finance Law. Due to his experience in audit and risk matters, he has been called upon to participate in the finance and audit committees of several different Boards of Directors, including that of the Banco Nacional del Comercio, Corredores Asociados (a stock brokerage firm in Colombia), and is held in high regard by the financial sector in general. He has received numerous awards such as the Cruz de Boyacá, Grado Gran Cruz, EY's 2016 Emerging Entrepreneur Award, multiple medals from the Colombian Armed Forces and 10 Best Junior Chamber of Commerce Executives, among others. The companies under his leadership have also received awards and recognitions in service and quality, such as the Portafolio Award for Service, and recognitions from Fenalco Antioquia, Cotelco and the Government of Antioquia. Currently, he has a consulting contract with the International Cooperation Agency, United Nations Development Program (UNDP), is a member of the Board of Directors of Financiera de Desarrollo Nacional (FDN) and of Sociedad de Acueducto de Alcantarillado y Aseo de Barranquilla S.A. E.S.P. and has been an independent Director of the Board of Directors of Ecopetrol S.A. since April 2019 and is also Chairman of the Remuneration, Appointments and Culture Committee of the Board of Directors.

Mr. Posada Echeverri has experience in: i) administration, senior management and leadership; ii) government affairs and public policy; iii) finance and securities markets; iv) business risk; v) human resources and talent development; vi) legal affairs and corporate governance; vii) technology and innovation; viii) sustainability; and ix) business strategy and project management. He is periodically trained in ethics, compliance, and risk management matters.

[Table of Contents](#)

Sergio Restrepo Isaza served as Vice President of Capital Markets and Executive Vice President of Corporate Development at Grupo Bancolombia. He began his professional career at Corporación Financiera Corfinsura, where he served as CEO, Vice President of Investment Banking and Investment and International Vice President. He has been a member of several Boards of Directors including Cementos Argos, Compañía Nacional de Chocolates, Conavi, Asobancaria, Bolsa de Valores de Colombia, Conglomerado Financiero Internacional Banagrícola S.A., Suramericana Asset management SUAM and several others in the community sector. He holds a degree in Business Administration from EAFIT University in Medellín, Colombia, and an MBA from Stanford University in California. He has extensive experience in audit and risk matters, and has served as member of several audit and risk committees during in different companies, where he played an active role in the analysis of financial information and was also responsible for investor relations. Currently he is partner at Exponencial Banca de Inversión S.A.S., member and Chairperson of the Board of Directors of Grupo BIOS S.A.S., a member of the Board of Directors of Odinsa S.A. Mineros S.A. and Consorcio Financiero. He is an expert in financial, auditing and business risk matters and has been an independent Director of the Board of Directors of Ecopetrol S.A. since April 2019. He is the Chairman of the Audit and Risk Committee of the Board of Directors.

Mr. Restrepo Isaza has experience in: i) administration, senior management, leadership; ii) finance and securities markets; iii) in human resources and talent development; iv) business strategy and project management; v) legal affairs and corporate governance. In respect of corporate governance matters, Mr. Restrepo Isaza has attended courses on this subject at the International Finance Corporation and at the Universidad Católica de Chile. Mr. Restrepo Isaza is periodically trained in ethics, compliance, and risk management matters.

Luis Santiago Perdomo Maldonado has over 40 years of experience in the Colombian banking industry. He has held senior management positions, including that of CEO of Banco Colpatria, part of the Scotiabank Group. He has been a member of several Boards of Directors in Colombian and Latin American companies in various economic sectors including finance, mining and agriculture, in organizations such as Banco Latinoamericano de Comercio Exterior (Bladex), Scotiabank Peru, Asociación Bancaria de Colombia, Deceval, Asociación Nacional de Empresarios de Colombia (ANDI) and Asociación Nacional de Instituciones Financieras (ANIF). He is also a Founding Member of the Colombian Institute of Corporate Governance, and served as CEO of Grupo Mercantil Colpatria S.A. He has been a member of the Boards of Directors of Colegio de Estudios Superiores (CESA), Fundación de Cirugía Reconstructiva (CIREC) and the Plenary Council of Gimnasio Moderno. He has also collaborated with the Fundación Universitaria Minuto de Dios. He holds a degree in Business Administration from the Colegio de Estudios Superiores de Administración (CESA). He is currently a member of the Board of Directors of Mineros S.A., and serves as an independent Director of the Board of Directors of Ecopetrol S.A. since April 2019.

Mr. Perdomo Maldonado has experience in: i) administration, senior management and leadership; ii) finance and securities markets; iii) legal affairs and corporate governance; iv) sustainability; and v) business strategy and project management. He is periodically trained in ethics, compliance, and risk management matters.

Esteban Piedrahíta Uribe previously held the positions of Chamber of Commerce of Cali, General Director at Departamento de Planeación Nacional, Advisor to the President and then Senior Specialist at the Inter-American Development Bank, Economic Editor of *Semana* magazine and General Manager of Endriven Colombia/Gas Meridional S.A.S. E.S.P., among others. He holds a degree in Economics from Harvard University and a master's degree in Philosophy and History of Science from the London School of Economics and Political Science. He is currently the Dean of Icesi and member of the Boards of Directors of Cementos Argos, Compañía de Seguros Bolívar S.A., Seguros Comerciales Bolívar S.A., and Fundación Valle del Lili. He is also a member of the Board of Trustees of Fundación Sidoc and Centro Internacional de Entrenamiento e Investigaciones Médicas (CIDEIM), and of the Advisory Council of the Fundación Panthera, and has been an independent Director of the Board of Directors of Ecopetrol S.A. since April 2019 and Chairman of the Corporate Governance and Sustainability Committee of the Board of Directors.

Mr. Piedrahíta Uribe has experience in: i) the energy industry; ii) energy transition; iii) administration, senior management and leadership; iv) government affairs and public policy; and v) business strategy and project management. In addition to the positions, Mr. Piedrahíta Uribe also has experience in: i) finance and securities markets, having worked as Investment Banker with Salomon Brothers in New York and Estrategias Corporativas in Bogotá; ii) climate change and sustainability, having served as independent member of the Investment Committee of the MGM Sustainable Energy Fund (MSEF) I and II. In respect of technology and innovation, Mr. Piedrahíta Uribe founded two internet companies: Laciudad.com and Zoom Media Group, and participated in Massachusetts Institute of Technology's program "Massachusetts Institute of Digital Business Strategy: Harnessing Our Digital Future". Mr. Piedrahíta Uribe is periodically trained in ethics, compliance, and risk management matters.

[Table of Contents](#)

Hernando Ramírez Plazas has been the Dean of the School of Engineering, Academic Vice-Rector, Rector and Professor at Universidad Sucolombiana. He worked at the National Institute of Health and the Ministry of Health and served as external evaluator of Colciencias in technological development and innovation projects in the area of natural gas. He also participated as a trainer in gas issues for the production staff at Canacol Energy. He holds a degree in Chemical Engineering from the Universidad Nacional de Colombia, a master's degree in Public Health from the same university and a Specialist degree in Gas Engineering from the Universidad de Zulia (Venezuela) and he attended the Negotiation Workshop offered by CMI Interser at the Harvard Faculty Club. He has been an independent Director of the Board of Directors of Ecopetrol S.A. nominated by the Hydrocarbon Producing Departments since April 2018 and is the Chairman of HSE Committee of the Board of Directors.

Mr. Ramírez Plazas has experience in: i) the energy industry; ii) administration, senior management and leadership; and iii) technology and innovation. He is periodically trained in ethics, compliance, and risk management matters.

Carlos Gustavo Cano Sanz holds a degree in Economics from Universidad de los Andes in Bogotá, a master's degree from Lancaster University in England, a postgraduate degree in Government, Business and International Economics from Harvard University in Boston, and a postgraduate degree from the Instituto de Alta Dirección Empresarial (INALDE) in Bogotá. He has been Chairperson of the Federación Nacional de Arroceros (FEDEARROZ), Chairperson of the Sociedad de Agricultores de Colombia (SAC), founder and Chairperson of Corporación Colombia Internacional (CCI), Chairperson of Caja Agraria and Chairperson of *El Espectador* (newspaper). He was Minister of Agriculture in the administration of President Álvaro Uribe, from August 7, 2002 until February 3, 2005, and Director of Banco de la República from February 4, 2005 until January 31, 2017. He is currently a Professor at Universidad de los Andes, member of the Board of Trustees of Universidad EAFIT in Medellín, of the Advisory Committee for Agriculture at Bancolombia, of the Advisory Council for Colombia of The Nature Conservancy (TNC) and hence has expertise in energy transition, climate change and water and wastewater management and of the Board of Directors of Minka S.A.S. His latest published book is "*Mi paso por el Banco: Desaprendiendo y aprendiendo*" published by Banco de la República and Universidad de Ibagué on March 2020. Additionally, since March 31, 2017, he is an independent Director of the Board of Directors of Ecopetrol S.A., nominated by the minority shareholders with the largest shareholding in Ecopetrol, Vice Chairperson of said Board of Directors and Chairperson of its Business Committee.

Mr. Cano Sanz has experience in: i) administration, senior management and leadership; ii) government affairs and public policy; iii) finance and securities markets; iv) human resources and talent development; v) business strategy and project management; and, vii) human development in the territories, having served as specialist in the Regional and Urban Development Unit of the National Planning Department, and as Minister of Agriculture and Rural Development; and viii) sustainability. He has published various works related to sustainability issues, including: "*La sostenibilidad del desarrollo hecha encíclica*", "*Desarrollo Sostenible, impuesto al carbono y pago de servicios ecosistémicos: el caso de la Amazonia*", "*La economía del cambio climático y la opción Amazónica*", "*La economía del cambio climático*" and "*Economía y Agua*". Mr. Cano Sanz is periodically trained in ethics, compliance, and risk management matters.

[Table of Contents](#)

7.3.1. Board Practices

Our Board of Directors is composed of nine members and is responsible for, among other things, establishing our general business policies. The majority of the Board of Directors must be independent, and must be elected pursuant to the criteria set out in paragraph two, Article 44, Law 964, 2005, and in accordance with the procedure determined in Decree 3923, 2006, or any other provisions that regulate, amend, replace or add such regulations. In addition, pursuant to our bylaws and in accordance with the procedures described therein, our majority shareholder must include, in its list of candidates for the last two seats in the Board of Directors, the name of one individual jointly proposed by departments that produce hydrocarbons and one individual jointly proposed by the ten minority shareholders with the highest equity participation. According to Colombian law, the members of the Board of Directors must be elected by the General Shareholders Assembly in accordance with a proportional representation system similar to cumulative voting (through an electoral quota voting system). The number of votes required to fill each position is calculated by dividing the number of possible votes by the number of open board positions. The members of the Board of Directors may be elected without an electoral quota voting system when there is unanimity. Pursuant to our bylaws, (i) positions on our Board of Directors are appointed in a personal capacity, (ii) at least three members appointed for a specific period must be nominated for the following period, (iii) with retroactive effect to 2021, Directors will be elected for a four-year institutional term, and (iv) members of the Board may be re-elected more than once for the same four-year term without exceeding a total of three terms. . Our current Directors were elected at the General Shareholders Assembly held on March 26, 2021. There were no new elections for the Board of Directors at the Ordinary General Shareholders Meeting held in 2022.

Our CEO is appointed by the Board of Directors and will have at least two alternates. The CEO is elected and freely removed by the Board of Directors. In accordance with our bylaws, the Board of Directors must evaluate the annual performance of the CEO, and such results must be published in Ecopetrol's web page or in an alternative media vehicle.

The compensation of our Directors is set exclusively by the shareholders at the General Shareholders Assembly. Directors are compensated for attending board meetings and committee meetings. A Board meeting requires a quorum of at least five members and decisions are approved with a majority of the Directors present. In the practice a consensus decision making operates in the Board.

Under Colombian law, a director or executive officer must abstain from participating in any transaction that may result in a conflict of interest or that involves competing with the company, unless authorized at a General Shareholders Assembly. The general shareholders may approve or reject the participation of the director or executive officer in the transaction giving rise to the conflict of interest with the vote of the majority of the shares present at the General Shareholders Assembly. If the director or executive officer who has the conflict is a shareholder, his or her vote must be excluded. We disclose the number of conflicts of interest of our employees, executive officers and Directors in our annual reports.

Neither our bylaws nor our corporate governance code provide a retirement age for our Directors. Under our bylaws, there is no requirement for a person to have a minimum number of shares to be elected as a Director. Colombian law provides that Directors willing to sell or purchase shares in our Company need prior authorization from the entire Board of Directors. Colombian law does not impose any limitation as to the number of shares that may be acquired by a Director.

Succession policy of the Board of Directors

In 2021 Ecopetrol adopted the Board of Directors' succession policy, with the purpose of (i) ensuring an organized replacement of its members, (ii) minimizing the possible economic and reputational impact that may arise from the change in board membership, (iii) to promote the attraction of human talent and (iv) to ensure the long-term stability and sustainability of the Ecopetrol Group's strategy.

The policy regulates the capacities, obligations, and requirements for the nomination and election of the board members in order to strengthen the transparency of the selection process and guarantee that their capacities contribute to the fulfillment of Ecopetrol's objectives and strategic plans.

This policy complements the Corporate Governance Code and the internal regulations of (i) the General Shareholders' Meeting, (ii) the Board of Directors, (iii) the Corporate Governance and Sustainability Committee, (iv) the Competence Matrix of the members of the Board of Directors, and (v) Ecopetrol's Decisions and Attributions Matrix.

[Table of Contents](#)

Gender diversity

In 2021, Cecilia María Vélez White was appointed to the Board of Directors, consistent with the Company's commitment to meritocracy, as well as diversity and gender inclusion.

Furthermore, Ecopetrol became part of the 30% Club, a global campaign intended to increase gender diversity on boards of directors, whereby Ecopetrol committed itself to boosting efforts to achieve 30% participation of women in senior positions at the Company within a reasonable timeframe; and also on the boards of the other affiliates of the Ecopetrol Group by adopting a progressive plan.

Part of this commitment is reflected in the appointment of women on the boards of directors of the Ecopetrol Group, with an increased participation from 18% in 2020 to 22% in 2021. In 2021, 57 of the 255 positions on the boards of directors of the Group's companies were held by women.

7.3.2. *Board Committees*

Pursuant to our bylaws, our Board of Directors has the ability to constitute the committees it considers necessary. The Board of Directors currently has six committees (audit and risk committee, corporate governance and sustainability committee, remuneration, appointments and culture committee, business committee, HSE (health, security and environment) committee and technology and innovation committee). These committees establish guidelines, set specific actions and evaluate and submit proposals designed to improve performance in the areas under their supervision and control. The committees are comprised of members of the Board of Directors who are also appointed by the same members. The chairman of each of the committees must be an independent Director. In addition to applicable regulations, the committees also have their own specific regulations that establish their purposes, duties and responsibilities.

During 2021, within the context of the ISA acquisition from the Ministry of Finance and Public Credit in ISA, the Board of Directors established a temporary Special Committee that analyzed the valuation of ISA, the price range and/or the price of the transaction. The Special Committee was comprised of independent members and made the necessary recommendations to the Board of Directors to evaluate the acquisition.

Table 69 – Composition of committees of the Board of Directors since April 21, 2021

<p>Audit and Risk Committee Sergio Restrepo Isaza (President and Financial Accounting Expert)</p> <p>Hernando Ramírez Plazas Luis Santiago Perdomo Maldonado Juan Emilio Posada Echeverri</p>	<p>Compensation, Nomination and Culture Committee Juan Emilio Posada Echeverri (President)</p> <p>Luis Santiago Perdomo Maldonado Cecilia María Vélez White Esteban Piedrahita Uribe</p>
<p>Corporate Governance and Sustainability Committee Esteban Piedrahita Uribe (President)</p> <p>Cecilia María Vélez White Carlos Gustavo Cano Sanz Juan Emilio Posada Echeverri Luis Guillermo Echeverri Vélez German Eduardo Quintero Rojas</p>	<p>New Business Committee Carlos Gustavo Cano Sanz (President)</p> <p>Hernando Ramírez Plazas Sergio Restrepo Isaza Juan Emilio Posada Echeverri Esteban Piedrahita Uribe</p>
<p>HSE Committee Hernando Ramírez Plazas (President) (President) Carlos Gustavo Cano Sanz</p>	<p>Technology and Innovation Committee Luis Guillermo Echeverri Cecilia María Vélez White</p>

[Table of Contents](#)

Luis Santiago Perdomo Maldonado
Germán Eduardo Quintero Rojas*

Germán Eduardo Quintero Rojas*
Sergio Restrepo Isaza
Carlos Gustavo Cano Sanz
Luis Santiago Perdomo Maldonado

Special Committee for ISA's Valuation**

Luis Santiago Perdomo Maldonado
(President)
Carlos Gustavo Cano Sanz
Sergio Restrepo Isaza
Esteban Piedrahita Uribe

* Member of this Committee since April 2019 until January 12, 2021. He was elected again at the General Shareholders Ordinary Meeting on March 26, 2021.

** The final session of this committee was held on August 5, 2021.

Audit and Risk Committee

Our audit and risk committee, which must be comprised of at least three members, all of them independent Directors, is our highest internal control body and provides support to our Board of Directors on risk, accounting and financial matters. It is in charge of guaranteeing the design, implementation and supervision of our internal control over financial reporting. It also ratifies the annual hydrocarbons reserves report and provides support for our Board on analyzing topics related to financial matters, risks, control, environment and the assessment of the Company's internal and external auditors.

All committee members are required to be knowledgeable in accounting matters and at least one of them is required to be an expert in financial and accounting matters.

Our Board of Directors has determined that Sergio Restrepo Isaza qualifies as an "audit committee financial expert" and he is independent under the definition of "independent" applicable to us under the rules of the NYSE.

The audit and risk committee approves on a case-by-case basis any engagement of our external independent auditors to provide services different than those related to auditing our financial statements. The audit and risk committee reviews that the additional services do not affect the external auditor's independence.

Remuneration, Appointments and Culture Committee

Our remuneration, appointments and culture committee, which must be comprised of at least three members, including at least one independent director, provides general guidelines for the selection and compensation of our executive officers and employees, and within the framework of the Ecopetrol Group's strategy, oversee matters of organizational culture.

Corporate Governance and Sustainability Committee

Our corporate governance and sustainability committee, which must be comprised of at least three members, including at least one independent director, supports the Board of Directors in the analysis and decision making related to systems for the adoption of best practices in corporate governance for the oil and gas industry and the energy sector, which include matters related to the adoption of specific measures regarding the Ecopetrol Group's governance. This Committee also supports the analysis and makes recommendations related to the Ecopetrol Group's sustainability agenda and TESG topics.

New Business Committee

Our new business committee, which must be comprised of at least five members, including at least one independent Director, assists our Board in analyzing potential business ventures. Based on its delegation of power, the committee studies and analyzes capital expenditure policies, major investment projects, strategy, new business and other matters that would help us move forward in our efforts toward the consolidation of our strategy. The primary criteria used in the committee's decision-making process are the optimization of our portfolio and the proper allocation of our resources.

[Table of Contents](#)

HSE Committee (Health, Safety and Environment)

Our HSE Committee, which must be comprised of at least three members, the majority of which must be independent, supports the management of the Board of Directors with respect to monitoring and management of risks associated with the health and safety of our employees, contractors and partners. The HSE Committee is also responsible for monitoring Ecopetrol's environmental management strategy, which includes matters related to the adoption of specific metrics regarding, for example, decarbonization.

Technology and Innovation Committee

Our technology and innovation committee, which must be comprised of at least three members, the majority of which must be independent, supports the management of the Board of Directors with respect to technological and digital transformation, as well as the cultural change that Ecopetrol is undergoing to transform itself into a leading company in the use of technology and digital innovation in the hydrocarbons sector. Starting in 2020, the Technology & Innovation Committee also reviewed TSEG-related topics starting 2020.

Special Committee for ISA's Valuation

Information about this committee's functions are discussed above.

7.4. Compliance with NYSE Listing Rules

The following is a summary of the significant differences between our corporate governance practices and those required for U.S. companies under the NYSE listing standards.

NYSE Standards

Director Independence

The majority of the board of directors must be independent. §303A.01. "Controlled companies," which would include Ecopetrol if we were a U.S. issuer, are exempt from this requirement. A controlled company is one in which more than 50% of the voting power is held by an individual, group or another company, rather than the public. §303A.00.

Executive Sessions

The non-management directors of each listed company must meet at regularly scheduled executive sessions without management. §303A.03.

Nominating/Corporate Governance and Sustainability Committee

A nominating/corporate governance and sustainability committee composed entirely of independent directors is required. The committee must have a charter specifying the purpose, duties and evaluation procedures of the committee. §303A.04. "Controlled companies" are exempt from these requirements. §303A.00.

Compensation Committee

A compensation committee composed entirely of independent directors is required, which must evaluate and approve executive officer compensation. The committee must have a charter specifying the purpose, duties and evaluation procedures of the committee.

Our Corporate Governance Practices

Pursuant to our bylaws, the majority of the Board of Directors must be independent. As of the date of this annual report, we have eight independent Directors and one non-independent Director without Ministerial rank.

A comparable rule does not exist under Colombian law. Except for our audit and risk committee, our Board of Directors does not meet without management.

Colombian law does not require the establishment of a nominating and a corporate governance and sustainability committee composed entirely of independent directors. Pursuant to our board charter, these committees shall be composed of a majority of independent Directors.

Colombian law does not require the establishment of a compensation committee composed entirely of independent directors. Pursuant to our board charter, this committee shall be composed of a majority of independent Directors.

[Table of Contents](#)

NYSE Standards

§303A.05. "Controlled companies" are exempt from this requirement. §303A.00.

Audit and Risk Committee

An audit committee with a minimum of three independent directors satisfying the independence and other requirements of Rule 10A-3 under the Exchange Act and the more stringent requirements under the NYSE standards is required. §§303A.06 and 303A.07.

Equity Compensation Plans

Equity compensation plans and all material revisions thereto require shareholder approval, subject to limited exemptions. §§303A.08 and 312.03.

Listed companies must adopt and disclose corporate governance guidelines. §303A.09.

Code of Ethics for Directors, Officers and Employees

Corporate governance guidelines and a code of business conduct and ethics is required, with disclosure of any waiver for directors or executive officers. The code must contain compliance standards and procedures that will facilitate the effective operation of the code. §303A.10.

Our Corporate Governance Practices

According to Law 964 of 2005, Colombian companies that are authorized to issue securities by the Superintendence of Finance must have an audit committee that satisfies the requirements of Law 964 of 2005, including its minimum number of members, independence criteria and audit related duties. Our audit and risk committee is composed entirely of independent Directors, and the committee meets the requirements of Law 964 of 2005 and Rule 10A-3 under the Exchange Act.

Under Colombian law, no similar right to vote on equity compensation plans and material revisions thereto is given to shareholders. We do not give our shareholders the right to vote on equity compensation plans and material revisions thereto.

The Superintendence of Finance recommends the adoption of corporate governance guidelines to all Colombian issuers. According to Superintendence of Finance Circular No. 028, 2014, the adoption of corporate governance guidelines is voluntary. Listed companies must annually publish a corporate governance survey comparing their corporate governance standards with those recommended by the Superintendence of Finance. Our corporate governance code and our survey of the adoption of Colombian practices are available on our website at <http://www.ecopetrol.com.co>.

We have adopted a code of ethics which complies with applicable U.S. and Colombian law. Our code of ethics applies to our chief executive officer, chief financial officer, principal accounting officer, persons performing similar functions and to all of the employees, members of the Board of Directors, suppliers, and contractors of Ecopetrol S.A. and its corporate group. Our code of ethics is available on our website at <http://www.ecopetrol.com.co>.

[Table of Contents](#)

7.5. Management

The following presents information concerning our executive officers and senior management. Unless otherwise noted, the majority of these individuals are Colombian citizens.

Executive Officers

Felipe Bayon Pardo has served as the Chief Executive Officer of Ecopetrol S.A. since 2017. He has over 31 years of experience in the energy industry and has led the Ecopetrol Group's transformation and energy transition processes, its TSEG (Technology, Environmental, Social and Governance) strategy, and the positioning of the company in strategic basins in the United States, Brazil and Mexico. Mr. Bayón joined Ecopetrol S.A. in February 2016 as Chief Operating Officer, overseeing the upstream, midstream, downstream, projects and marketing operations, as well as the research and innovation areas. Prior to his tenure at Ecopetrol, he worked for more than 20 years at BP plc, most recently as Senior Vice-President of BP America and Head of Global Deepwater Response. From 2005 to 2010, he was the Regional President of BP Southern Cone (South America). He began his career in 1991 at Hocol (Shell) in Colombia. He holds a degree in mechanical engineering from Universidad de los Andes.

Alberto Consuegra Granger has served as Chief Operating Officer of Ecopetrol S.A. since March 1, 2019. Prior to this role, he was interim CEO of Cenit S.A.S., Ecopetrol S.A.'s midstream subsidiary, since February 2018 and Vice-President of Supply and Services of Ecopetrol S.A. S.A. since August 2016. Mr. Consuegra holds a degree in civil engineering from the Universidad de Cartagena and a master's degree in pavements and construction management from Texas A&M University. Before joining Ecopetrol S.A., he was Vice-President of Exploration and Production at Equión Energía Limited, where he also served as the Vice-President for Projects and Production between 2011 and 2016. Mr. Consuegra began his professional career in 1984 at Morrison Knudsen International as a contract coordinator during the construction of the Cerrejón project. In 1993, he joined Ecopetrol S.A., working in the Projects Group, and then went to BP Exploration, where he worked for 16 years, first as a contract coordinator, then as procurement and contract manager, then human resource manager for the Andean area, and finally as leader of the Colombian Performance Unit until end of 2010.

Jaime Caballero Uribe has served as the Chief Financial Officer of Ecopetrol S.A. since August 2018. Mr. Caballero has over 20 years of international experience in the energy sector. He joined the Ecopetrol Group in 2016 and was the Chief Financial Officer for the Downstream Segment prior to his appointment as the Ecopetrol Group's CFO. Previously, his experience includes 17 years at BP, where he held leadership positions in North and South America, Africa and Europe, and most recently as Regional CFO for Brazil, Uruguay, Colombia and Venezuela. Mr. Caballero holds a law degree from Universidad de los Andes (Bogotá), an MBA in energy business from Fundação Getulio Vargas (Rio de Janeiro) and has completed executive programs in advanced financial management from Duke University and the Wharton School of Business.

Management Team

Jorge Elman Osorio Franco has served as Vice-President for the Upstream since February 2022. Prior to his position, he served as the Development and Production Vice-President of Ecopetrol S.A. from March 2019 to February 2022, Regional Development and Production Vice-President from June 2017 to February 2019. Mr. Osorio holds a degree in chemical engineering from Universidad Nacional de Colombia, graduated from the Operations Academy of the Massachusetts Institute of Technology (MIT) in Boston, United States, and has attended continuing education classes at the same institution. He has over 33 years of experience in engineering, projects and operations in the oil and gas industry. He spent 24 years of his career at BP, where he served as Senior Operations Manager in Major Projects in Indonesia, Operations Excellence Director at Atlantic LNG in Trinidad & Tobago, and Technical Director for Colombia and Venezuela, among other leadership positions.

Elsa Jeanneth Jaimes has been appointed to the position of Vice President of Exploration on May 10, 2021. Mrs. Jaimes graduated as a Geologist from Universidad Industrial de Santander in Colombia, with a master's degree in Petroleum Geology from the University of Texas. She has more than 30 years of professional experience in national and international companies such as Hocol, Lasmo Oil, Petrobras, OGX Petróleo e Gas Ltda and Ecopetrol. She spent seven years at Hocol, as Vice President of Exploration and exploration manager of the southern region.

Jurgen Gerardo Loeber Rojas has served as the Projects & Engineering Vice-President of Ecopetrol S.A. since May 2016. Mr. Loeber holds a degree in business administration from the Universidad del Norte and a specialization in project management. He joined the Army Corps of Engineers as reserve officer and reached the rank of captain. He has over 30 years of experience in the oil and gas

[Table of Contents](#)

industry. He began his career in 1985 in Exxon as financial analyst. From 1992 to 2001, he worked for BP in various countries as project manager, construction manager and project control engineer. For the last 10 years, he worked at Equión Limited (formerly BP Exploration Colombia) as Project Director. From 2001 to 2006, he was Project Director for Wood Group Colombia.

Pedro Fernando Manrique Gutierrez was appointed as the Commercial and Marketing Vice President of the Ecopetrol Group in April of 2017. He is also a member of the Ecopetrol Trading Asia Pte Ltda board of directors. He holds a bachelor's degree in Electrical Engineering from the Industrial University of Santander, holds a Master's degree in Industrial and Systems Engineering from the University of Florida in the United States where he was a Fulbright Scholar and an MBA from the IE Business School in Madrid, Spain. He has 30 years of experience in the oil and gas industry and previously spent 15 years in the upstream business with Chevron Petroleum Company in different locations and his last assignment was as the Commercial and Business Planning Manager for Chevron Latin America where he also served as a member of the Leadership Team for Chevron Latin America. During his career he also worked with Enron Energy Services as a Risk Manager and as a Business Development Manager at Enron International based in Houston, Texas.

Héctor Manosalva Rojas has served as CEO of Cenit S.A.S., Ecopetrol S.A.'s midstream subsidiary since March 1, 2019. He joined Ecopetrol S.A. in 1986 and prior to his appointment as CEO of Cenit, he served as Vice-President for Development and Production since July 2014. Over the course of his career at Ecopetrol S.A., Mr. Manosalva has held various positions, including Executive Vice-President for Production and Exploration, Vice-President of Production, Production Manager of the Central Region, President of Colombia's Advisor for Safety and Security of National Energy Infrastructure, Director of HSE and Corporate Social Responsibility, Production Manager of the Southern Region and Head of the Production Planning Division. Mr. Manosalva holds a degree in petroleum engineering from the Universidad de America (Bogotá) and postgraduate degrees in Finance at the Universidad EAFIT and Executive Management from Universidad de los Andes.

Nicolás Azcuénaga Ramírez has served as Corporate Vice-President for Strategy and Business Development since November 2021. Mr. Azcuénaga is an international executive, with over 20 years of experience across a range of commercial, finance, business development and leadership roles, experienced managing complex joint ventures and negotiations, risks, and delivering value creation opportunities. Since May 2021, he was responsible for leading for Ecopetrol the transaction to buy the MHCP's 51.4% stake in ISA which represented a transformational transaction for Ecopetrol S.A. and a robust response to the energy transition challenge. Previously, Mr. Azcuénaga was the CFO for upstream subsidiaries, accountable for the finance function of seven upstream subsidiaries in five countries. Prior to joining Ecopetrol S.A. Mr. Azcuénaga worked for BP as Business Manager for Brazil and Uruguay, Deputy Transition Manager for Southern Gas Assets and Business Manager in Aberdeen, U.K., and a range of financial, JV management and business development roles in Colombia.

Yeimy Báez has served as the Ecopetrol Group Gas Vice-President since March 2020. In this position, Ms. Báez is responsible for leading the strategy to develop natural gas, LPG, biogas and hydrogen, which being clean energy sources are fundamental for energy transition and closing social gaps in Colombia. She has over 20 years of experience in the oil and gas industry, where she successfully fulfilled a broad range of technical, commercial, strategic and financial roles; including as the Corporate Manager of Financial Planning and Business Performance in Ecopetrol S.A. She holds a degree in Petroleum Engineering from the Industrial University of Santander, an MBA degree from Externado University of Colombia and is highly skillful in Project Management (PMP certified). Prior to her current assignment, she served for recognized players in the industry such as Equión, BP and Weatherford.

Mauricio Jaramillo Galvis has served as Vice-President of Health, Safety and Environment (HSE) since January 2020. Mr. Jaramillo has 26 years of experience in the oil and gas private sector in Colombia and Latin America. He has been appointed to several leadership roles as Vice-President of HSE of BP Colombia, Vice-President of HSE and Engineering at the Andean Unit of BP, Vice-President of Corporate Affairs and HSE, and Vice-President of Human Resources and Sustainability at Equión, among others. Mr. Jaramillo holds an MD from Universidad Javeriana, a specialization in Occupational Health and Safety from Universidad El Bosque and a degree from the Operations Academy at MIT.

Walter Fabián Canova has served as Vice-President of Refining and Industrial Processes since April 16, 2020. Since joining the Ecopetrol Group in March 2017, first as Operations Vice-President and later General Manager for the Cartagena Refinery, Mr Canova has been part of the Ecopetrol Group transformation process. Mr. Canova has almost 30 years of experience in the public and private oil and gas sector, mainly in refining and logistic with a strong focus on strategy and operations. He holds a degree in Chemical Engineer from Universidad Nacional del Litoral, Argentina, completed post-graduate studies in Project Management and Management Program at North Caroline and Houston Universities, and an MBA at Universidad de Belgrano, in Argentina. Prior to joining Ecopetrol S.A., he

[Table of Contents](#)

has worked in several refineries and headquarters for companies such as ExxonMobil, Axion Energy and Puma Energy, where he held positions such as Operations Manager, Project Manager and General Manager.

Fernán Ignacio Bejarano Arias has served as Vice-President of Legal Affairs and General Counsel at Ecopetrol S.A. since March 2016. Mr. Bejarano Arias holds a bachelor's degree in law from Universidad Javeriana in Bogotá and an LLM from American University in Washington D.C. In his more than thirty years of professional experience, he has been a partner at the law firms of Estudios Palacios Lleras S.A, Bejarano Cárdenas y Ospina y Asociados Ltda and OPEBSA Compañía de Abogados S.A.S. and has worked for several years in important positions in the public sector, such as the Vice-Minister of Foreign Affairs, Secretary of the Monetary Board, Secretary of the Board of Directors of the Banco de la República (Colombian Central Bank), Office of Legal Affairs Counselor at the Presidency of the Republic of Colombia, and Vice-President of Legal Affairs and General Counsel at Corporación Financiera Colombiana. Mr. Bejarano Arias is a professor at the Faculty of Law of the Universidad Javeriana, and has been an arbitrator before the Center for Arbitration and Conciliation of the Bogotá Chamber of Commerce.

Mónica Jiménez González has served as Secretary General of Ecopetrol S.A. and counsel to the CEO since July 2016. Monica leads the Corporate Affairs of the company which includes heading the corporate governance initiatives for Ecopetrol Group, the company's Corporate Responsibility programs, and Ecopetrol's corporate communications and institutional relations. Ms. Jimenez is also the Corporate Secretary of the Board of Directors of Ecopetrol S.A. Ms. Jimenez has practiced law in Colombia and Canada on matters related to corporate social responsibility (ESG), corporate law and international arbitration. For more than 15 years she worked as a lawyer in a boutique law firm that specialized in international law and then in Fasken Martineau DuMoulin LLP, a major Canadian law firm in Vancouver, BC. Ms. Jiménez holds a law degree from Universidad de los Andes, a post-graduate degree in Civil Liability and Damages from the Universidad Externado de Colombia and a Master of Science in Development Studies from the London School of Economics and Political Science. She has extensive experience as counsel and tribunal secretary in international commercial and investment arbitrations under the rules of the ICC, ICSID and UNCITRAL. Ms. Jimenez is also a Member of the International Court of Arbitration of the International Chamber of Commerce (ICC).

María Juliana Alban Durán has served as Compliance Vice-President and Compliance Officer since July 2015. Ms. Alban holds a law degree from Universidad Sergio Arboleda with a specialization in commercial and financial Law from the same institution and has completed an executive program in strategic management of regulatory and enforcement agencies at Harvard's Kennedy School of Government and an executive program in Leadership Decision Making from the same institution. Beginning in 2007, Ms. Alban previously worked in the Attorney General's Office (Procuraduría General de la Nación) as Attorney General for State Contracts, General Secretary and Chief of Legal Office, among other positions within the institution.

Alejandro Arango Lopez has served as Vice-President of Human Resources at Ecopetrol S.A. since October 2014. He has more than 20 years of professional experience in different countries and has worked as Vice-President of Human Resources at Banco Santander in Colombia and as Human Resources Director of the Consumer Finance Division, Strategy Division and Cards Division at Banco Santander in Spain. Mr. Arango has also served as Human Resources Director for the Asia Pacific region at Banco Santander in Hong Kong and as Global Human Resources Division T&O, among others. Mr. Arango holds a degree in strategic marketing from CESA School of Business, a bachelor's degree in theology from the Universidad Hochschule Sankt Georgen (Frankfurt) and a bachelor's degree in philosophy from Javeriana University.

Diana Escobar Hoyos has served as Vice-President of Sustainable Development since September 2020. Ms. Escobar is a lawyer from Universidad Pontificia Bolivariana who specialized in Human Rights and International Humanitarian Law at University of Antioquia, with complementary studies in sustainable development and renewable energy. Ms. Escobar has worked as Deputy Commissioner for Legality and Coexistence in the Office of High Commissioner for Peace at Presidency of the Republic, coordinator of programs for economic reintegration of population in social risk in the Mayor's Office of Medellín, consultant in sustainable development for sectors such as agricultural and retail, resource manager in non-governmental entities and external consultant at the Inter-American Development Bank.

Carlos Andrés Santos Nieto has served as Vice-President of Supply and Services since July 23, 2018. Prior to his appointment, he was Procurement and Supply Chain Manager at Ecopetrol. Mr. Santos is an experienced supply chain and shared services executive with more than 19 years of relevant experience in the O&G industry at a local and international level (Colombia, US, and UK). He is an economist with studies in International Economics from the Universidad Externado de Colombia and has extensive formal training in supply chain management and professional negotiations. He started his professional career in 2002 in Quala S.A (a leading mass consumer goods company) where he served in several positions within the supply area (production planning and purchasing assistant)

[Table of Contents](#)

in 2003 he joined BP Colombia where he held different roles within the supply chain department (Business analyst, specialist in both business support and operation/maintenance). In 2007 he was appointed to the BP Alaska Business Unit where he served as a senior specialist in the Drilling and completions category, head of market intelligence and he was responsible for the deflation project management. At the end of 2009 he was relocated to the BP global supply chain team in London, UK; where he worked as a leader of the ESPs and drilling and wells categories in the BP Iraq Business Unit. After this position he served as a Latin America Sourcing Manager in Merc Sharp and Dohme, overseeing the telecommunications and marketing categories. In 2011 he joined Equion Energia (former BP Colombia) as Procurement and supply chain management manager for Drilling, completions, subsurface and offshore. Then he was appointed Offshore Business unit manager for Coremar Group, a Colombian maritime conglomerate, joining Ecopetrol at the end of 2016, as a Procurement and Supply Chain Manager.

Ernesto Gutiérrez de Piñeres has served as Digital Vice-President since October 2018. Mr. Gutierrez de Piñeres is a Systems Engineer and Information Systems Management Specialist from Barranquilla's Universidad del Norte. He holds an Executive MBA from Los Andes University. He has more than 20 years of experience as Director and Manager (CIO) of information technology areas in different multinational corporations. Mr. Gutierrez de Piñeres is an executive with experience in transforming technology areas into business partners and generators of value for organizations through innovation, knowledge, team development and technology strategies that leverage corporate strategy and competitive business. He joined the Ecopetrol as Business Intelligence Manager and has been the Digital Vice President since this area was created. In 2020 and 2021 he was selected as one of the 50 HITEC, which recognizes the 50 most influential leaders of the technology industry in Latin America, Spain and Portugal.

With his leadership, Mr. Gutierrez de Piñeres has launched the digital reinvention process of the company focused on technology and innovation as catalysts of corporate goals to face energy transition challenges.

None of our Directors, Executive Officers or members of senior management has any familial relationship with any other Director, Executive Officer or member of senior management.

7.6. Compensation of Directors and Management

Based on a resolution adopted at our annual shareholders' meeting in 2012, compensation for Directors' attendance at meetings of the Board of Directors and/or committee meetings increased from the equivalent of four to six minimum monthly wage salaries, which totals approximately COP\$ 6 million for 2022 and COP\$5.4 million for 2021. See Note 31.1 to our consolidated financial statements for more details.

During 2021, the total compensation paid to our Directors, executive officers and senior management active amounted to COP\$ 31,492 million. This includes amounts paid to certain of our executive officers and senior management pursuant to a bonus plan under which such persons are entitled to receive variable compensation based on our company results for each full year. The variable compensation ranges from 0% to 150% of each person's base compensation based on our company performance.

None of the current members of our management team are eligible to receive pension and retirement benefits from us. As of December 31, 2021, there was no amount recorded to provide pension and retirement benefits. To align the interests of management and our overall strategy, climate change and water related metrics are now included in the variable compensation program of senior management. In 2021, 55% of the variable compensation was tied to TSEG targets, which include metrics related to climate, water management, renewable energies, and gas strategy.

Implementation of the Long-Term Incentive Plan

Companies have increasingly incorporated incentive compensation plans into their compensation structures, in line with good international practices, driving exceptional and sustainable results to meet stakeholder expectations. Long-Term Incentives Plans (ILPs, by the Spanish acronym) are intended to generate incremental value for shareholders based on the Company's proposed objectives and goals, by offering senior management a compensation mechanism in line with the achievement of those strategic objectives and medium and long-term challenges and align incentives for the beneficiary leaders with the Company's achievement of such strategic objectives.

Ecopetrol's general ILP Plan is managed through a voluntary pension fund administered by a legally authorized financial entity, as required under Colombian law. The fund receives cash contributions from Ecopetrol with the mandate of investing such cash in ordinary shares of the Company, through open market purchases in Colombia. Once the plan expires and provided that the goals are met, the

[Table of Contents](#)

contributions become equity for the beneficiaries, and they will be able to determine the allocation of any earned contributions according to the following options:

- Keep the contributions in the portfolio that invests in Ecopetrol shares and over which Ecopetrol does not exercise investment decisions.
- Monetize the equity to invest the contributions (totally or partially) in other investment portfolios offered by the fund's manager.
- Monetize the equity by withdrawing the cash (totally or partially) from the fund.

Each year, the general ILP is updated through the adoption of specific metrics and objectives associated with the financial results and updating the target population, with such revisions being in effect for a term of three years.

As of the date of this annual report there are two ILP plans in effect: (i) for the 2020-2022 period, for which the objectives are concentrated on Generating more Operating Cash Flow (FCO), reducing Greenhouse Gases (GHG), and the Replacement of Reserves (IRR); and, (ii) for the 2021-2023 period, for which the objectives are FCO, IRR, and energy transition, a metric that includes GHG reduction targets and diversification into low-emission businesses.

Currently, the ILPs are part of the compensation scheme applicable to the CEO, Vice Presidents, equivalent positions, and other positions at Ecopetrol, according to their level of responsibility and relevant performance criteria. This compensation scheme applies to all of Ecopetrol's subsidiaries.

7.7. Share Ownership of Directors and Executive Officers

No individual Director or executive officer beneficially owns more than 1% of our outstanding shares.

The following executive officers and directors own shares of Ecopetrol S.A.:

Table 70 – Executive Officers and Directors owning Ecopetrol's shares

Executive Officer / Director	Number of shares ⁽¹⁾	% Ownership
Felipe Bayón Pardo	8,418	0.00002 %
Jaime Eduardo Caballero Uribe	30,000	0.00007 %
Cecilia María Vélez White	59,833	0.00015 %

(1) As of March 31, 2022.

Under Colombian law, all of our shareholders have the same economic privileges and voting rights.

7.8. Controls and Procedures

Disclosure Controls and Procedures

As required by Rules 13a-15(e) and 15d-15(e) under the Securities Exchange Act of 1934, as of December 31, 2021, we evaluated the design and effectiveness of our financial disclosure controls and procedures under the supervision and participation of our management, including our Chief Executive Officer and Chief Financial Officer. There are inherent limitations to the effectiveness of any system of disclosure controls and procedures, including the possibility of human error and the circumvention or overriding of the controls and procedures. Accordingly, even if effective, disclosure controls and procedures can only provide reasonable assurance of achieving their control objectives.

Based upon this evaluation, our Chief Executive Officer and Chief Financial Officer concluded that as of the end of the period covered by this annual report, our disclosure controls and procedures were effective to provide reasonable assurance that the information required to be disclosed in the reports that we file and submit under the Securities Exchange Act of 1934 is recorded, summarized and reported

[Table of Contents](#)

as and when required and is accumulated and communicated to our management, including our Chief Executive Officer and Chief Financial Officer, or persons performing similar functions, as appropriate to allow timely decisions regarding required disclosure.

Management's Annual Report on Internal Control over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting as defined in Rules 13a-15(f) and 15(d)-15(f) under the Securities Exchange Act of 1934. Our internal control over financial reporting is a process designed under the supervision of our Chief Executive Officer and Chief Financial Officer, and monitored by our board of directors, management and other personnel, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of our financial statements for external reporting purposes in accordance with generally accepted accounting principles, and it includes those policies and procedures that: i) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect transactions and dispositions of our assets; ii) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures are being made only in accordance with authorization of our management and directors; and iii) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use or disposition of our assets that could have a material effect on our financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Therefore, effective control over financial reporting cannot, and does not, provide absolute assurance of achieving our control objectives. Also, projection of any evaluation of the effectiveness of the internal controls to future periods is subject to the risk that controls may become inadequate because of changes in conditions or that the degree of compliance with the policies or procedures may deteriorate.

As of the year ended December 31, 2021, our management conducted an assessment of the effectiveness of our internal control over financial reporting in accordance with the criteria established in the publication "Internal Control – Integrated Framework (2013)," issued by the Committee of the Sponsoring Organizations of the Treadway Commission, as well as the rules set by the SEC in its Final Rule "Management's Report on Internal Control Over Financial Reporting and Certification of Disclosure in Exchange Act Periodic Reports."

Consistent with the guidance issued by the SEC that an assessment of recently acquired businesses may be omitted from management's annual report on internal control over financial reporting in the year of acquisition, management excluded the assessment of the effectiveness of internal control over financial reporting of ISA. ISA, which is included in the 2021 consolidated financial statements of the Company, represented 25.5% and 24.4% of total and net assets respectively as of December 31, 2021, and 4.5% and 6.3% of revenues and net income respectively, for the year then ended. More details regarding ISA's acquisition can be found in note 12 of our 2021 consolidated financial statements.

Based on the assessment performed, management concluded that our internal control over financial reporting was effective as of December 31, 2021.

The effectiveness of our internal control over financial reporting has been audited by Ernst & Young Audit S.A.S., an independent registered public accounting firm, as stated in their audit report accompanying our consolidated financial statements.

Audit and Non-Audit Fees

Our consolidated financial statements for the fiscal years ended December 31, 2021, 2020 and 2019 were audited by Ernst & Young Audit S.A.S. The following table sets forth the fees billed to us by Ernst & Young Audit S.A.S. during the fiscal years ended December 31, 2021 and 2020.

Table 71 – Fees Billed to us by Ernst & Young Audit S.A.S.

COP Millions, excluding 19% Value Added Tax	For the year ended December 31,	
	2021	2020
Audit fees	21,044	12,864
Audit-related fees	12	—
Tax fees	—	—

[Table of Contents](#)

All other fees	88	—
Total	21,144	12,864

Audit Fees. The audit fees listed in the table above are the aggregated fees billed by Ernst & Young Audit S.A.S. in connection with their audits of our annual consolidated financial statements (IFRS), interim consolidated financial statements (under IFRS), statutory audits of Ecopetrol S.A. and its consolidated subsidiaries and some of its associate entities (under local GAAP) and review of periodic documents filed with the SEC. In addition, these audit fees include fees related to our independent auditors' audits of our internal controls over financial reporting.

Audit-related fees. Fees billed by Ernst & Young Audit S.A.S. in connection with the audit of one of our subsidiaries' employment benefit plan.

All Other Fees. The all other fees listed in the table above are the aggregated fees billed by Ernst & Young Audit S.A.S. in connection with the review of our sustainability report.

Changes in Internal Control over Financial Reporting

There were no changes made in our internal control over financial reporting during the year ended December 31, 2021, that have materially affected or are reasonably likely to materially affect the Company's internal controls over financial reporting.

Attestation Report of the Registered Public Accounting Firm

Ernst & Young Audit S.A.S.'s attestation report on our internal control over financial reporting is included in their audit report accompanying our consolidated financial statements. See Report of Independent Registered Public Accounting Firm to the consolidated financial statements.

[Table of Contents](#)

8. Financial Statements

Ecopetrol S.A.

Consolidated Financial Statements

As of December 31, 2021, and 2020 and for the years in the period ended December 31, 2021, 2020 and 2019

Index

Report of Independent Registered Public Accounting Firm (Ernst & Young Audit SAS, Auditor Firm ID 1522)	1
Report of Independent Registered Public Accounting Firm (Ernst & Young Audit SAS, Auditor Firm ID 1522)	6
Consolidated statement of financial position	8
Consolidated statement of profit or loss	9
Consolidated statement of comprehensive income	10
Consolidated statement of changes in equity	11
Consolidated statement of cash flows	13
1. Reporting entity	14
2. Basis for presentation	14
3. Significant estimates and accounting judgments	19
4. Accounting policies	23
5. New standards and regulatory changes	43
6. Cash and cash equivalents	44
7. Trade and other receivables	45
8. Inventories	47
9. Other financial assets	47
10. Taxes	50
11. Other assets	59
12. Business combinations	60
13. Investments in associates and joint ventures	63
14. Property, plant, and equipment	67
15. Natural and environmental resources	68

[Table of Contents](#)

16. Right-of-use assets	71
17. Intangible assets	72
18. Impairment of non-current assets	73
19. Goodwill	79
20. Loans and borrowings	80
21. Trade and other payables	83
22. Provisions for employees' benefits	84
23. Accrued liabilities and provisions	89
24. Equity	98
25. Revenue from contracts with customers	100
26. Cost of sales	103
27. Administrative, operations and project expenses	104
28. Other operating (expenses) income	104
29. Financial result	105
30. Risk management	105
31. Related parties	112
32. Joint operations	115
33. Information by segments	116
34. Supplemental information on oil and gas producing activities (unaudited)	123
35. Subsequent and relevant events	128
Exhibit 1 – Consolidated subsidiaries, associates, and joint ventures	130
Exhibit 2 – Conditions of the most significant debt	136

[Table of Contents](#)

Report of Independent Registered Public Accounting Firm

To the Shareholders and the Board of Directors of Ecopetrol S.A.

Opinion on the Financial Statements

We have audited the accompanying consolidated statements of financial position of Ecopetrol S.A. (the Company) as of December 31, 2021 and 2020, the related consolidated statements of profit or loss, comprehensive income, changes in equity and cash flows for each of the three years in the period ended December 31, 2021, and the related notes and financial statement schedules listed in exhibits 1 and 2 (collectively referred to as the consolidated financial statements). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company at December 31, 2021 and 2020, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2021, in conformity with International Financial Reporting Standards as issued by the International Accounting Standards Board.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the Company's internal control over financial reporting as of December 31, 2021, based on criteria established in Internal Control-Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework) and our report dated April 25, 2022 expressed an unqualified opinion thereon.

Basis for Opinion

These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's financial statements based on our audits. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. Our audits included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audits provide a reasonable basis for our opinion.

Critical Audit Matters

The critical audit matters communicated below are matters arising from the current period audit of the financial statements that were communicated or required to be communicated to the audit committee and that: (1) relate to accounts or disclosures that are material to the financial statements and (2) involved our especially challenging, subjective or complex judgments. The communication of critical audit matters does not alter in any way our opinion on the consolidated financial statements, taken as a whole, and we are not, by communicating the critical audit matters below, providing separate opinions on the critical audit matters or on the accounts or disclosures to which they relate.

Business combination - Acquisition of Interconexión Eléctrica S.A. E.S.P.

Description of the Matter	As described in note 12 to the consolidated financial statements, on August 20, 2021, the Company acquired Interconexión Eléctrica S.A. E.S.P. for COP \$14,236,814. The transaction was accounted for using the acquisition method of accounting whereby the total purchase price was allocated to tangible and intangible assets acquired and liabilities assumed based on the respective fair values at the date of the acquisition.
---------------------------	---

[Table of Contents](#)

Auditing the Company's accounting for the acquisition of Interconexión Eléctrica S.A. E.S.P. was complex due to significant estimation uncertainties in the determination of the fair value of certain identifiable assets, such as property plant and equipment (COP \$17,640,458), as well as certain identifiable intangible assets, such as concessions and rights (COP \$11,910,589), for which the involvement of a third-party specialist was needed to assist in the determination of the fair value of assets acquired and liabilities assumed. Intangible assets related to concessions and rights were determined using discounted cash flow models. The significant assumptions used in cash flow projections of these assets were primarily related to discount rates and the estimated contributory assets charges. Property, plant and equipment was determined by external appraisals and were measured through different valuation techniques such as the market approach and the cost approach. The significant assumptions used in the appraisals of property, plant and equipment were primarily related to application of the replacement cost valuation model and the determination of the useful lives. These significant assumptions are forward looking and could be affected by future economic and market conditions.

How We Addressed the Matter in Our Audit

We obtained an understanding, evaluated the design, and tested the operating effectiveness of controls over the Company's process to review the purchase price allocation. More specifically, management's review and approval of significant assumptions and estimates used by its third-party specialist in the determination of fair value of the assets acquired and liabilities assumed.

Our audit procedures included, among others, reading the purchase agreement and testing the Company's and its third-party specialist's process to determine the fair value of the assets acquired and liabilities assumed. We also involved our valuation specialists to support with our assessment of the valuation techniques used by the Company and the significant assumptions and estimates used in the projections. Additionally, we evaluated the competence and objectivity of the Company's third-party and management's specialist and the competence of the management personnel in charge of reviewing and approving the purchase price allocation.

Furthermore, we evaluated the adequacy of the related disclosures in the consolidated financial statements.

Estimation of fair value amount of long-lived assets in the Cartagena refinery

Description of the Matter

As described in notes 4.12 and 18.2 of the consolidated financial statements, management assesses, at each reporting date, whether there is an indication that long-lived assets may be impaired. If any indication exists, or when annual impairment testing for an asset is required, management estimates the asset's recoverable amount. An asset's recoverable amount is the higher of an asset's or Cash Generating Unit (CGU's) fair value less costs of disposal and its value in use. When the carrying amount of an asset or CGU exceeds its recoverable amount, the asset is considered impaired and is written down to its recoverable amount. A previously recognized impairment loss is reversed only if there has been a change in the assumptions used to determine the assets' or CGU's recoverable amount since the last impairment loss was recognized. In 2021, the Company recognized a reversal of impairment in the Cartagena refinery of COP \$37,655.

Auditing management's estimate related to the determination of the assets' or CGU's recoverable amount was complex and required the involvement of specialists due to the highly judgmental nature of the assumptions used in the model for estimating the asset's recoverable amount. In particular, the estimation to determine the recoverable amount was sensitive to significant assumptions, such as changes in the weighted average cost of capital, sales price of refined products, refining margins and the level of operational expenditures, which are affected by expectations about future market or economic conditions.

[Table of Contents](#)

How We Addressed the Matter in Our Audit

We obtained an understanding, evaluated the design, and tested the operating effectiveness of controls over the Company's process to determine the recoverable amount of the CGUs, including controls over management's review of the significant assumptions described above, projected financial information and methodology used to develop such estimates.

Our audit procedures included, among others, assessing methodologies and testing the significant assumptions described above and the underlying data used by the Company by comparing the significant assumptions used by management to current industry and economic trends. Additionally, we assessed the reasonableness of the Company's projections by comparing them to actual results and internal business plans, and also tested the clerical accuracy of such projections.

We also involved our valuation specialists to assist us in the review of the weighted average cost of capital and projected financial information used in management's estimate and to perform a sensitivity analysis to evaluate the change in the recoverable amount that would result from changes in the underlying assumptions.

Furthermore, we evaluated the related disclosures in the consolidated financial statements.

Determination of depreciation, depletion and amortization and impairment of long-lived assets

Description of the Matter

As described in notes 3.1 and 3.2 to the consolidated financial statements, the computation of the units-of-production method, which is used in the determination of depreciation, depletion and amortization (DD&A) of property, plant and equipment related to exploration and production and natural and environmental resources, as well as in the determination of future cash flows used in the impairment analyses of long-lived assets, is dependent upon the estimation related to oil and gas reserves.

The estimation of oil and gas reserves used to calculate the DD&A and perform the impairment analyses is a complex process and requires professional judgement. Management uses specialized firms (hereinafter "specialists") when estimating the reserves, which are determined based on geological, technical and economic factors. Estimates of oil and gas reserves depend upon a number of variable factors and key assumptions, including, quantities of oil and gas that are expected to be recovered, the timing of the recovery, production levels, operating and capital costs to be incurred, sales price, among others.

Auditing the Company's DD&A and impairment calculation was complex, because of the inherent technical engineering nature of the reserves estimation process, which requires the use of specialists in the performance of the assessment, including in the determining the reasonableness of management's key assumptions previously identified.

How We Addressed the Matter in Our Audit

We obtained an understanding, evaluated the design, and tested the operating effectiveness of controls over the Company's process to calculate the DD&A and to perform its impairment analyses, including management's controls over the completeness and the accuracy of the financial data provided to the specialists for use in estimating oil and gas reserves and methodology used to develop such estimates.

To evaluate the estimated quantity of oil and gas reserves expected to be recovered used in the calculation of DD&A and impairment, we obtained the reports from external specialists hired by management and evaluated the competency and objectivity of the external specialists and management's qualified persons responsible for overseeing the preparation of the reserve estimates by the specialists through the consideration of their professional qualifications, experience and their use of accepted industry practices.

[Table of Contents](#)

In addition, we evaluated the completeness and accuracy of the financial data and inputs described above, which were used by the specialists in estimating oil and gas reserves by agreeing them to the DD&A and cash flows used in impairment analyses. For proved undeveloped reserves, we evaluated management's development plan for compliance with the SEC rule that undrilled locations are scheduled to be drilled within five years, unless specific circumstances justify a longer time, by assessing consistency of the development projections with the Company's drill plan and the availability of capital relative to the drill plan. We also tested the mathematical accuracy of the DD&A computations and reviewed the model of impairment analyses of long-lived assets by assessing the consistency between the estimation of oil and gas reserves prepared by the specialists with volumes of reserves included in the projected financial information, among other procedures.

We also evaluated the related disclosures in the consolidated financial statements.

Recoverability of deferred tax assets

Description of the Matter As described in notes 4.15.2 and 10.2 to the consolidated financial statements, as of December 31, 2021, the Company had deferred tax assets arising from net operating losses carryforwards (NOLs) of COP \$4,399,754. The NOLs were generated primarily by Ecopetrol USA Inc. and Refinería de Cartagena S.A.S. Deferred tax assets are subject to review at the end of each reporting period, and are reduced to their realizable amounts, to the extent it is no longer probable that sufficient taxable profit will be realized in the future.

Auditing management's assessment of the realizability of deferred tax assets involved complex auditor judgment because management's estimate of realizability is based on assessing the probability, timing and sufficiency of future taxable profits, expected reversals of taxable temporary differences and available tax planning opportunities that will create future taxable profits; these projections are sensitive because they can be affected by variabilities in management's projections and future market and economic conditions.

How We Addressed the Matter in Our Audit We obtained an understanding, evaluated the design, and tested the operating effectiveness of controls over the Company's process to determine the realizability of deferred tax assets, including controls over management's projections of future taxable income, scheduled analysis of the future reversal of existing taxable temporary differences and the identification of available tax planning opportunities.

Among other audit procedures performed, we involved our valuation and tax professionals to assist on the review significant assumptions used in the projections of future taxable income by jurisdiction. We also tested the completeness and accuracy of the underlying data used in such projections. We evaluated the reasonableness of such projections by comparing future taxable income to actual results obtained in prior years, as well as evaluating management's consideration of current industry and economic trends and evaluating whether changes to the Company's business model and other factors would significantly affect the projected financial information.

In addition, with the assistance of our tax professionals, we assessed the application of the tax laws, including the Company's future tax planning opportunities and tested the Company's scheduling of the timing and amounts of reversal of taxable temporary differences.

We also evaluated the related disclosures in the consolidated financial statements.

/s/ Ernst & Young Audit S.A.S.
We have served as the Company's auditor since 2016.
Bogotá, Colombia

[Table of Contents](#)

April 25, 2022

F-5

[Table of Contents](#)

Report of Independent Registered Public Accounting Firm

To the Shareholders and the Board of Directors of Ecopetrol S.A.

Opinion on Internal Control over Financial Reporting

We have audited Ecopetrol S.A.'s internal control over financial reporting as of December 31, 2021, based on criteria established in Internal Control-Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework), (the COSO criteria). In our opinion, Ecopetrol S.A. (the Company) maintained, in all material respects, effective internal control over financial reporting as of December 31, 2021, based on the COSO criteria.

As indicated in the accompanying Management's Annual Report on Internal Control Over Financial Reporting, management's assessment of and conclusion on the effectiveness of internal control over financial reporting did not include the internal controls of Interconexión Eléctrica S.A. E.S.P., which is included in the 2021 consolidated financial statements of the Company and constituted 25.5% and 24.4% of total and net assets, respectively, as of December 31, 2021 and 4.5% and 6.3% of revenues and net income, respectively, for the year then ended. Our audit of internal control over financial reporting of the Company also did not include an evaluation of the internal control over financial reporting of Interconexión Eléctrica S.A. E.S.P.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the consolidated statements of financial position of the Company as of December 31, 2021 and 2020, the related consolidated statements of profit or loss, comprehensive income, changes in equity and cash flows for each of the three years in the period ended December 31, 2021, and the related notes and financial statement schedules listed in exhibits 1 and 2 and our report dated April 25, 2022 expressed an unqualified opinion thereon.

Basis for Opinion

The Company's management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting included in the accompanying Management's Annual Report on Internal Control over Financial Reporting. Our responsibility is to express an opinion on the Company's internal control over financial reporting based on our audit. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects.

Our audit included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, testing and evaluating the design and operating effectiveness of internal control based on the assessed risk, and performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

Definition and Limitations of Internal Control Over Financial Reporting

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

[Table of Contents](#)

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

/s/ Ernst & Young Audit S.A.S.
Bogotá, Colombia
April 25, 2022

[Table of Contents](#)

Ecopetrol S.A.

Consolidated statement of financial position

(In millions of Colombian pesos)

		As of December 31,	
	Note	2021	2020
Assets			
Current assets			
Cash and cash equivalents	6	14,549,906	5,082,308
Trade and other receivables	7	18,448,882	4,819,092
Inventories	8	8,398,212	5,053,960
Other financial assets	9	1,627,150	2,194,651
Current tax assets	10	6,273,802	3,976,295
Other assets	11	2,333,091	1,664,036
		51,631,043	22,790,342
Assets held for sale		64,704	44,032
Total current assets		51,695,747	22,834,374
Non-current assets			
Trade and other receivables	7	24,159,716	676,607
Other financial assets	9	1,307,584	877,008
Investment in associates and joint ventures	13	8,357,186	3,174,628
Property, plant, and equipment	14	90,076,526	66,508,338
Natural and environmental resources	15	35,909,844	31,934,159
Right-of-use assets	16	496,678	377,886
Intangible assets	17	15,508,516	555,043
Non-current tax assets	10	9,030,132	8,071,733
Goodwill	19	4,686,324	1,594,279
Other assets	11	1,198,363	1,090,114
Total non-current assets		190,730,869	114,859,795
Total assets		242,426,616	137,694,169
Liabilities			
Current liabilities			
Loans and borrowings	20	9,206,283	4,923,346
Trade and other payables	21	13,568,231	8,449,041
Provisions for employee benefits	22	2,296,253	2,022,137
Current tax liabilities	10	2,152,104	1,243,883
Accrued liabilities and provisions	23	1,590,118	1,221,109
Other liabilities		1,409,534	391,771
		30,222,523	18,251,287
Liabilities related to non-current assets held for sale		26,208	31,156
Total current liabilities		30,248,731	18,282,443
Non-current liabilities			
Loans and borrowings	20	85,854,645	41,808,408
Trade and other payables	21	70,607	21,064
Provisions for employee benefits	22	9,082,792	10,401,530
Non-current tax liabilities	10	12,124,520	1,866,054
Accrued liabilities and provisions	23	12,642,089	11,206,621
Other liabilities		1,819,460	608,686
Total non-current liabilities		121,594,113	65,912,363
Total liabilities		151,842,844	84,194,806
Equity			
Subscribed and paid in capital	24.1	25,040,067	25,040,067
Additional paid in capital	24.2	6,607,699	6,607,699
Reserves	24.3	10,624,229	9,635,136
Other comprehensive income	24.5	11,357,894	7,947,062
Retained earnings		14,859,658	669,900
Equity attributable to owners of parent		68,489,547	49,899,864
Non-controlling interest		22,094,225	3,599,499
Total equity		90,583,772	53,499,363
Total liabilities and equity		242,426,616	137,694,169

[Table of Contents](#)

Ecopetrol S.A.

Consolidated statement of profit or loss

(In millions of Colombian pesos, except for basic and diluted earnings per share, which are expressed in Colombian pesos)

	Note	For the years ended December 31,		
		2021	2020	2019
Sales revenue	25	91,881,204	50,223,393	71,488,512
Cost of sales	26	(55,581,776)	(37,567,472)	(44,972,360)
Gross profit		36,299,428	12,655,921	26,516,152
Administrative expenses	27	(3,342,069)	(3,373,150)	(2,151,599)
Operations and project expenses	27	(3,153,557)	(2,586,016)	(2,631,754)
Impairment of non-current assets	18	(33,351)	(633,156)	(1,762,437)
Other operating (expenses) income	28	(72,744)	1,118,166	1,056,796
Operating income		29,697,707	7,181,765	21,027,158
Financial results	29			
Finance income		403,592	1,101,430	1,623,336
Finance expenses		(4,431,648)	(3,929,791)	(3,334,469)
Foreign exchange gain		330,002	346,774	40,639
		(3,698,054)	(2,481,587)	(1,670,494)
Share of profits of associates and joint ventures	13	426,164	76,336	366,904
Profit before income tax expense		26,425,817	4,776,514	19,723,568
Income tax expense	10	(8,795,263)	(2,038,661)	(4,718,413)
Net profit for the year		17,630,554	2,737,853	15,005,155
Net profit attributable to:				
Owners of parent		15,649,143	1,586,677	13,744,011
Non-controlling interest		1,981,411	1,151,176	1,261,144
		17,630,554	2,737,853	15,005,155
Basic and diluted earnings per share	24.6	380.60	38.59	334.27

[Table of Contents](#)

Ecopetrol S.A.

Consolidated statement of comprehensive income

(In millions of Colombian pesos)

	Note	For the years ended December 31,		
		2021	2020	2019
Net profit for the year		17,630,554	2,737,853	15,005,155
Other comprehensive income				
Other comprehensive income that may be reclassified to profit or loss in subsequent periods -net of taxes:				
Unrealized gain (loss) on hedges:				
Cash flow hedge for future exports	30.3	(808,777)	(722)	238,331
Hedge of a net investment in a foreign operation		(2,871,410)	(364,343)	(61,267)
Cash flow hedge with derivative instruments		(135,666)	55,072	46,451
Foreign currency translation		5,971,549	1,569,996	8,701
Sale of joint ventures	29	(361,728)	—	—
		1,793,968	1,260,003	232,216
Other comprehensive income that will not to be reclassified to profit or loss in subsequent periods - net of taxes:				
Remeasurement gain (loss) on defined benefit plans	22.1	1,777,157	96,221	(1,799,829)
Other losses		—	—	(175,494)
		1,777,157	96,221	(1,975,323)
Other comprehensive income (loss) for the year, net of tax		3,571,125	1,356,224	(1,743,107)
Total comprehensive income for the year, net of tax		21,201,679	4,094,077	13,262,048
Comprehensive income attributable to:				
Owners of parent		19,059,975	2,887,080	11,502,149
Non-controlling interest		2,141,704	1,206,997	1,759,899
		21,201,679	4,094,077	13,262,048

[Table of Contents](#)

Ecopetrol S.A.

Consolidated statement of changes in equity

(In millions of Colombian pesos)

	Note	Attributable to owners of parent						Non-controlling interest	Total equity
		Subscribed and paid-in capital	Additional paid-in capital	Reserves	Other comprehensive income	Retained earnings	Total		
Balance as of December 31, 2020		25,040,067	6,607,699	9,635,136	7,947,062	669,900	49,899,864	3,599,499	53,499,363
Net profit		—	—	—	—	15,649,143	15,649,143	1,981,411	17,630,554
Release of reserves	24.3	—	—	(5,066,156)	—	5,066,156	—	—	—
Dividends declared	24.4	—	—	—	—	(698,984)	(698,984)	(2,008,840)	(2,707,824)
Business combination	12	—	—	—	—	—	—	18,973,080	18,973,080
Change in participation in subsidiaries		—	—	—	—	228,692	228,692	(596,394)	(367,702)
Equity restitution		—	—	—	—	—	—	(14,824)	(14,824)
Appropriation of reserves, net:									
Legal	24.3	—	—	168,808	—	(168,808)	—	—	—
Fiscal and statutory reserves	24.3	—	—	509,082	—	(509,082)	—	—	—
Occasional	24.3	—	—	5,377,359	—	(5,377,359)	—	—	—
Other comprehensive income:									
(Loss) gain on hedging instruments:									
Cash flow hedge for future exports		—	—	—	(808,777)	—	(808,777)	—	(808,777)
Hedge of a net investment in a foreign operation		—	—	—	(2,869,539)	—	(2,869,539)	(1,871)	(2,871,410)
Cash flow hedge with derivative instruments		—	—	—	(105,048)	—	(105,048)	(30,618)	(135,666)
Foreign currency translation		—	—	—	5,812,213	—	5,812,213	159,336	5,971,549
Sale of joint ventures	29	—	—	—	(361,728)	—	(361,728)	—	(361,728)
Remeasurement gains on defined benefit plans		—	—	—	1,743,711	—	1,743,711	33,446	1,777,157
Balance as of December 31, 2021		25,040,067	6,607,699	10,624,229	11,357,894	14,859,658	68,489,547	22,094,225	90,583,772
	Note	Attributable to owners of parent						Non-controlling interest	Total equity
		Subscribed and paid-in capital	Additional paid-in capital	Reserves	Other comprehensive income	Retained earnings	Total		
Balance as of December 31, 2019		25,040,067	6,607,699	3,784,658	6,646,660	12,334,706	54,413,790	3,817,838	58,231,628
Net profit		—	—	—	—	1,586,677	1,586,677	1,151,176	2,737,853
Release of reserves	24.3	—	—	(540,826)	—	540,826	—	—	—
Dividends declared	24.4	—	—	—	—	(7,401,005)	(7,401,005)	(1,425,586)	(8,826,591)
Change in participation in subsidiaries		—	—	—	—	—	—	249	249
Appropriation of reserves, net:									
Legal	24.3	—	—	1,325,148	—	(1,325,148)	—	—	—
Fiscal and statutory reserves	24.3	—	—	509,082	—	(509,082)	—	—	—
Occasional	24.3	—	—	4,557,074	—	(4,557,074)	—	—	—
Other comprehensive income:									
(Loss) gain on hedging instruments:									
Cash flow hedge for future exports		—	—	—	(722)	—	(722)	—	(722)
Hedge of a net investment in a foreign operation		—	—	—	(364,343)	—	(364,343)	—	(364,343)
Cash flow hedge with derivative Instruments		—	—	—	40,443	—	40,443	14,629	55,072
Foreign currency translation		—	—	—	1,528,803	—	1,528,803	41,193	1,569,996
Remeasurement gains on defined benefit plans		—	—	—	96,221	—	96,221	—	96,221
Balance as of December 31, 2020		25,040,067	6,607,699	9,635,136	7,947,062	669,900	49,899,864	3,599,499	53,499,363

[Table of Contents](#)

Ecopetrol S.A.

Consolidated statement of changes in equity

(In millions of Colombian pesos)

	Note	Attributable to owners of parent					Non-controlling interest	Total equity
		Subscribed and paid-in capital	Additional paid-in capital	Reserves	Other comprehensive income	Retained earnings		
Balance as of December 31, 2018		25,040,067	6,607,699	5,138,895	8,380,761	9,970,492	1,969,866	57,107,780
Net profit		—	—	—	—	13,744,011	1,261,144	15,005,155
Release of reserves		—	—	(3,050,703)	—	3,050,703	—	—
Dividends declared	24.4	—	—	(3,659,386)	—	(9,251,256)	(1,010,206)	(13,920,848)
Business combination		—	—	—	—	—	1,606,390	1,606,390
Other movements		—	—	—	—	176,608	(350)	176,258
<u>Appropriation of reserves, net:</u>								
Legal		—	—	1,155,640	—	(1,155,640)	—	—
Fiscal and statutory reserves		—	—	509,082	—	(509,082)	—	—
Occasional		—	—	3,691,130	—	(3,691,130)	—	—
<u>Other comprehensive income:</u>								
Gain (loss) on hedging instruments:								
Cash flow hedge for future exports		—	—	—	238,331	—	—	238,331
Hedge of a net investment in a foreign operation		—	—	—	(61,267)	—	—	(61,267)
Cash flow hedge with derivative Instruments		—	—	—	34,651	—	11,800	46,451
Foreign currency translation		—	—	—	29,507	—	(20,806)	8,701
Remeasurement loss on defined benefit plans		—	—	—	(1,799,829)	—	—	(1,799,829)
Other movements		—	—	—	(175,494)	—	—	(175,494)
Balance as of December 31, 2019		25,040,067	6,607,699	3,784,658	6,646,660	12,334,706	3,817,838	58,231,628

[Table of Contents](#)

Ecopetrol S.A.

Consolidated statement of cash flows

(In millions of Colombian pesos)

	Note	For the years ended December 31,		
		2021	2020	2019
Cash flow in operating activities:				
Net profit for the period		17,630,554	2,737,853	15,005,155
Adjustments to reconcile the net profit to net cash provided by operating activities:				
Income tax expense	10	8,795,263	2,038,661	4,718,413
Depreciation, depletion, and amortization	14,15,16,17	10,159,922	9,324,538	8,582,783
Loss (gain) foreign exchange, net	29	31,726	(346,774)	(40,639)
Realization of other comprehensive income from the sale of a joint venture	29	(361,728)	—	—
Finance cost of loans and borrowings	29	3,095,224	2,384,342	1,894,490
Finance cost of post-employment benefits and abandonment costs	29	1,043,728	872,987	757,509
Write off of exploratory assets and dry wells	15	486,408	448,132	340,271
Loss on disposal of non-current assets		61,846	246,317	121,121
Gain on revaluation of assets in Guajira association		—	(1,284,372)	—
Gain on acquisition of participations and interests		—	(86,026)	(1,048,924)
Gain on loss of control		—	(65,695)	—
Impairment loss of short-term assets	28	83,773	34,416	90,441
Impairment loss of non-current assets	18	33,351	633,156	1,762,437
(Gain) loss on fair value adjustment of financial assets	20.7	(7,431)	(43,948)	18,551
Loss on hedging transactions with derivatives		19,485	—	—
Share of profit of associates and joint ventures	13	(426,164)	(76,336)	(366,904)
Net gain on the sale of assets held for sale		(3,840)	(5,635)	(2,846)
Hedge ineffectiveness	30.3	24,496	9,779	5,173
Realized loss on foreign exchange cash flow hedges	25	249,978	193,374	386,773
Net change in operational assets and liabilities:				
Trade and other receivables		(9,457,451)	678,349	2,381,905
Inventories		(2,980,134)	716,077	(597,552)
Trade and other payables		3,117,982	(2,550,411)	1,389,064
Tax assets and liabilities		(2,448,882)	(1,256,889)	(1,409,334)
Provisions for employee benefits		(222,356)	465,062	(234,629)
Provisions and contingencies		(163,737)	(30,185)	(253,043)
Other assets and liabilities		(523,090)	(392,843)	(492,745)
Income tax paid		28,238,923	14,643,929	33,007,470
Net cash provided by operating activities		22,536,021	9,186,704	27,711,767
Cash flow in investing activities:				
Investment in joint ventures	13	(44,735)	—	—
Acquisition of subsidiaries, net of acquired cash	12	(8,951,587)	—	—
Investment in property, plant, and equipment	14	(6,117,588)	(5,032,317)	(4,012,659)
Investment in natural and environmental resources	15	(6,733,028)	(5,994,462)	(9,798,193)
Acquisitions of intangibles	17	(444,346)	(90,082)	(168,289)
Proceeds from the sale of the other financial asset, net		1,282,903	2,107,856	3,117,549
Interests received	29	266,116	299,246	481,674
Dividends received	13	206,048	157,241	189,169
Proceeds from sales of assets		17,986	23,713	154,780
Net cash used in investment activities		(20,518,231)	(8,528,805)	(10,035,969)
Cash flow in financing activities:				
Proceeds from borrowings		24,666,792	13,805,403	359,876
Repayment of borrowings		(11,267,540)	(5,003,885)	(1,596,630)
Interest payments		(3,333,555)	(2,345,683)	(1,766,223)
Lease payments	16	(336,030)	(350,539)	(300,326)
Dividends paid	24.4	(2,771,287)	(8,734,351)	(13,867,029)
Net cash provided (used) in financing activities		6,958,380	(2,629,055)	(17,170,332)
Exchange difference in cash and cash equivalents	20.7	491,428	(22,294)	258,548
Net increase (decrease) in cash and cash equivalents		9,467,598	(1,993,450)	764,014
Cash and cash equivalents at the beginning of the year		5,082,308	7,075,758	6,311,744
Cash and cash equivalent at the end of the year	6	14,549,906	5,082,308	7,075,758

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

1. Reporting entity

Ecopetrol is a mixed economy company, with a commercial nature, formed in 1948 in Bogotá – Colombia, headquarters of the Ecopetrol Business Group. Its corporate purpose is to develop commercial or industrial activities arising from or related to the exploration, production, refining, transportation, storage, distribution, and selling of hydrocarbons, their by-products, and associated products, as well as the supplying of electric power transmission, design, development, construction, operation and maintenance of roads and projects related to energy infrastructure, and information technology and telecommunications services, directly or through its subsidiaries (collectively referred to “Ecopetrol Business Group”).

An 11.51% of Ecopetrol’s shares are publicly traded on the Stock Exchanges of Colombia and New York, USA. The remaining shares (88.49% of the total outstanding shares) are owned by the Colombian Ministry of Finance and Public Credit.

The address of the main office of Ecopetrol is Bogotá – Colombia, Carrera 13 No. 36 – 24.

2. Basis for presentation

2.1 Statement of compliance and authorization of financial statements

The consolidated financial statements of Ecopetrol and its subsidiaries as of December 31, 2021, and 2020 and for each of the three years in the period ended December 31, 2021, 2020, and 2019 have been prepared in accordance with International Financial Reporting Standards (IFRS), as issued by the International Accounting Standards Board (IASB).

Accounting policies described in Note 4 have been applied consistently in all years presented.

These consolidated financial statements were approved and authorized for issuance by the Board of Directors of Ecopetrol on April 25, 2021.

2.2 Basis for consolidation

The consolidated financial statements were prepared by consolidating all companies set out in Exhibit 1, which are those over which Ecopetrol exercises direct or indirect control. Control is achieved when the Ecopetrol Business Group:

- has power over the investee (including rights to manage relevant activities);
- is exposed, or has the rights, to variable returns from its involvement with the investee; and
- has the ability to use its power to affect its operational returns. This instance occurs when the Ecopetrol Business Group has less than a majority of the voting rights of an investee, and it still has the power over the investee to provide it with the practical ability to direct the relevant activities of the investee unilaterally. The Ecopetrol Business Group considers all relevant facts and circumstances in assessing whether or not the Company’s voting rights in an investee are sufficient or not to give it power, including:
 - a) the percentage of the Ecopetrol Business Group’s voting rights relative to the size and apportionment of the shares of other vote holders;
 - b) potential voting rights held by the Ecopetrol Business Group, other vote holders or other parties;
 - c) rights arising from other contractual arrangements; and
 - d) any additional facts and circumstances that indicate that the Ecopetrol Business Group has, or does not have, the current ability to direct the relevant activities, at the time that decisions need to be made, including voting patterns at previous shareholders’ meetings.

Subsidiaries are consolidated from the date on which control is obtained until the date that such control ceases.

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

All intercompany assets and liabilities, equity, income, expenses, and cash flows relating to transactions between entities of the Ecopetrol Business Group were eliminated on consolidation. Unrealized losses are also eliminated. Non-controlling interest represents the proportion of profit, other comprehensive income and net assets in subsidiaries that are not attributable to Ecopetrol shareholders.

The following subsidiaries had changes in the Group:

2021

Acquisition of Interconexión Eléctrica S.A. E.S.P.

On August 20, 2021, the Ecopetrol acquired 51.4% of the outstanding shares of Interconexión Eléctrica S.A. E.S.P. (ISA), thus obtaining control of the company. See Note 12.

As of December 2021, ISA is a Multi-Latin business group with operations in the electric power transmission, toll roads concessions, and telecommunications businesses, through 50 subsidiaries, 11 joint ventures and 1 associate, in 6 countries in South and Central America. See the subsidiaries in Exhibit 1.

Divestment of Ecopetrol Energía S.A.S. E.S.P.

As a result of the acquisition of ISA and considering the regulatory restrictions, the inter-administrative contract signed for the purchase between Ecopetrol, and the Ministry of Finance and Public Credit includes a clause committing the divestment of Ecopetrol Energía S.A.S. E.S.P. The transactions of this company are not material to the consolidated financial statements.

New companies in Singapore

On July 1, 2021, the constitution of Ecopetrol Singapore Pte Ltd. was concluded, in which Ecopetrol directly owns 100% of its share capital. This subsidiary owns 100% of the share capital of Ecopetrol Trading Asia Pte Ltd., whose main purpose is the international commercialization of crude and refined products of the Ecopetrol Business Group and of third parties in Asia. Both companies are domiciled in Singapore.

2020

ECP Oil and Gas Germany GmbH

The liquidating agency for ECP Oil and Gas Germany GmbH submitted the report and the liquidation balance on December 11, 2020. Therefore, the company is no longer part of Ecopetrol Business Group from the date above on.

Bioenergy S.A.S and Bioenergy Zona Franca S.A.S.

On June 24, 2020, the Superintendence of Companies issued the liquidation orders decreeing on the termination of the reorganization process and the opening of the judicial liquidation process of Bioenergy S.A.S and Bioenergy Zona Franca S.A.S. The latter process will be carried out according to the law on business insolvency – Act 1116/2006, and under the direction of the aforementioned Superintendence. Consequently, as of this date Ecopetrol Business Group does not have control over these companies, and they are no longer part of the consolidated figures. As a result, reduction of net assets was recognized due to the loss of control with an impact on the results of the Business Group for \$65,570. The Group does not recognize additional liabilities related to these companies.

2019

Additional ownership interest in Invercolsa

In November 2019, Ecopetrol obtained an additional 8.53% ownership interest in Invercolsa, through the Supreme Court of Justice final ruling stating that Mr. Fernando Londoño's attempt to acquire Invercolsa's shares owned by Ecopetrol was not valid. As a result, Ecopetrol obtained control of Invercolsa, with a total ownership interest of 51.88%. No consideration was paid for the shares obtained because of the judicial ruling.

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

The subsidiaries that started being consolidated because of obtaining control of Invercolsa are as follows:

- Inversiones de Gases de Colombia S.A., whose main corporate purpose is to hold investments in companies associated with activities in the energy sector; the exploration, exploitation, refining, transformation, transport, distribution and sale of hydrocarbons and their derivatives in the national territory; and to encourage the establishment of new companies and to hold shares or corporate interests therein.
- Alcanos de Colombia S.A. E.S.P., whose main corporate purpose is to provide fuel gas to homes in Neiva and throughout Colombia; to construct and operate gas pipelines, distribution networks, regulation, measurement and compressor stations and any works undertaken necessary for the management and commercialization of public services.
- Metrogas de Colombia S.A. E.S.P., whose main corporate purpose is to commercialize and distribute fuel gas; to explore, store, use, transport, refine, purchase, sell and distribute hydrocarbons and their derivatives in all their forms and representations.
- Gases del Oriente S.A. E.S.P., whose main corporate purpose is to provide fuel gas to homes by distributing gas and performing all activities complementary to the provision thereof.
- Promotora de Gases del Sur S.A. E.S.P., whose main corporate purpose is to promote the affiliation of national or foreign capital, public or private and to achieve the gas massification project in the Huila department, through a gas pipeline from the Neiva municipality to the Hobo municipality.
- Gasoducto de Oriente S.A., whose main corporate purpose is to design and construct hydrocarbon production and treatment plants, such as gas pipelines, oil pipelines and others, as well as to invest in projects related thereto.
- Combustibles Líquidos de Colombia S.A. E.S.P., whose main corporate purpose is to commercialize wholesale fuel gas, to distribute LPG to homes and to carry out complementary activities to this distribution, as well as to store, transport, package, distribute and sell LPG.

New companies in the United States of America

In July 2019, two companies were incorporated to enable the operation between Ecopetrol and Occidental Petroleum Corp. (OXY), whereby it was agreed to form a Joint Operation to execute a joint plan for the development of Unconventional Deposits in the Texas Permian Basin. The two companies incorporated were the following:

- Ecopetrol USA Inc., whose corporate purpose is to participate in any lawful act or activity for which corporations may be organized under the General Corporation Law of Delaware.
- Ecopetrol Permian LLC., whose corporate purpose is to carry out any or all lawful businesses for which limited liability companies can be organized in accordance with the Delaware Limited Liability Companies Act.

New companies in Mexico

Two companies in Mexico were incorporated to provide administrative and technology services to Ecopetrol México. The two companies created were: Topili Servicios Administrativos S. de R.L. de C.V. and Kalixpan Technical Services S. de R.L. de C.V.

2.3 Basis of presentation

The consolidated financial statements have been prepared on a historical cost basis, except for financial assets and liabilities that are measured at fair value through profit or loss and/or changes in other comprehensive income at the end of each reporting period, as explained in the accounting policies included below.

Historical cost is generally based on the fair value of the consideration given in exchange for goods and services.

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

The fair value is the price that would be received from selling an asset or that would be paid for transferring a liability among market participants, in an orderly transaction, on the date of measurement. When estimating the fair value, the Ecopetrol Business Group uses assumptions that market participants would use for pricing an asset or liability at current market conditions, including risk assumptions, which maximize the value (highest and best use) of the asset or liability.

2.4 Functional and presentation currency

The consolidated financial statements are presented in Colombian Pesos, which is the Ecopetrol's functional currency. For each Ecopetrol Business Group entity, its functional currency is determined based on the main economic environment where it operates.

The statements of profit or loss, and cash flows of subsidiaries with functional currencies different from Ecopetrol's functional currency are translated at the exchange rates on the dates of the transaction or based on the monthly average exchange rate. Assets and liabilities are translated at the closing exchange rate, and other equity items are translated at exchange rates at the time of the transaction. All resulting exchange differences are recognized in other comprehensive income. On disposal of all or significant part of a foreign operation, the cumulative translation adjustment related to the foreign operation is reclassified to profit or loss.

The financial statements are presented in Colombian pesos rounded up to the closest million unit (COP\$ 000,000) except when otherwise indicated.

2.5 Foreign currency

Transactions in foreign currencies are initially recorded by the Ecopetrol Business Group's entities at their respective functional currency spot rates at the transactions date. Monetary items denominated in foreign currencies are translated at the functional currency spot rates prevailing at the reporting date. Differences arising on settlement, or translation, or monetary items are recognized in profit or loss, in financial results, net, except those resulting from the conversion of loans and borrowings designated as cash flow hedges or net investment in a foreign operation hedge, which are recognized in other comprehensive income within equity. When the hedged item affects the financial results, exchange differences accumulated in equity are reclassified to profit or loss as part of operating results.

Non-monetary items measured at fair value that are denominated in a foreign currency are translated using the exchange rates prevailing on the date when the fair value is determined. The gain or loss arising on translation of non-monetary items measured at fair value is treated in line with the recognition of the gain or loss on the change in fair value of the item.

2.6 Classification of assets and liabilities as current and non-current

The Ecopetrol Business Group presents assets and liabilities in the consolidated statement of financial position based on whether assets are classified as current or non-current.

An asset or liability is classified as current when:

- It is expected to be realized or intended to be sold or consumed (or expected to be settled, in the case of liabilities) in the ordinary course of business;
- Held mainly for the purpose of trading;
- Expected to be realized (or to be settled, in the case of liabilities) within twelve months after the reporting period; or
- In the case of the assets, it is cash or a cash equivalent, unless the exchange of such asset or liability is restricted or to be used to settle a liability at least twelve months after the reporting period; or
- In the case of a liability, there is no unconditional right to defer settlement of the liability until at least twelve months after the reporting period.

Other assets and liabilities are classified as non-current.

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

Deferred tax assets and liabilities are classified as non-current assets and liabilities.

2.7 Earnings per share

Basic earnings per share is calculated by dividing the profit for the year attributable to equity holders of Ecopetrol, the parent company, by the weighted average number of ordinary shares outstanding during the year. There is no potential dilution of shares.

2.8 Considerations and effects of Covid-19

Adverse impacts continue to evolve globally and domestically, and it is difficult to predict their ramifications. The COVID-19 pandemic forced companies to deal with the crisis not only by taking timely actions to protect the health and safety of their employees and ensure the continuity of operations, sales of products and service provision, but also to reflect in-depth about previously established goals, the impact of the pandemic on mid-term and long-term choices and the creation of new strategic plans.

Throughout the pandemic of Covid-19, the Ecopetrol Business Group has taken the measures to ensure the sustainability of the business, prioritizing the opportunities for cash generation with better equilibrium prices, maintaining growth dynamics with a focus on executing strategic asset development plans, and preserving the value of assets through investments that provide reliability, integrity, and continuity to the current operation in refineries, transportation systems, and production fields.

In 2021, the Ecopetrol Business Group executed the vaccination program for its employees through the mechanism called “Empresarios por la Vacunación”, led by the National Association of Business of Colombia (ANDI), in accordance with the regulations issued by the National Government. In this way, the business sector contributed to speeding up vaccination against Covid-19 and advancing in a safer way of working.

Throughout the year, Ecopetrol also participated in a program for country support, focused on economic reactivation in sustainable development projects. This plan contemplates the execution of resources for social investment against Covid-19 in the areas of operations and communities from areas of influence in Colombia.

The Ecopetrol Business Group will continue monitoring the evolution of the Covid-19 pandemic and the markets, reviewing the indicators of impairment of non-current assets and investments in companies, the behavior of accounts receivables, fair value measurements of financial assets, changes in operating income, reserve levels, among others.

Regarding the oil and gas industry, the behavior of the prices of crude oil and products during the year 2021 showed a recovery due to factors such as i) the efforts of the Organization of Petroleum Exporting Countries (OPEC) to keep the market balanced, ii) the progress of vaccination campaigns in several countries around the world, iii) the strengthening of the demand for fuels, driven by the economic recovery, once the peaks of COVID-19 in Colombia had been overcome and iv) the elimination of restrictions on international routes. Such factors shaped the expectations of a sustained recovery.

On the other hand, ISA's business did not incur in any significant negative effect on service revenues, considering its business nature, management, and hedging policy. ISA has identified and analyzed, for each business unit, impacts on operations and maintenance, execution of projects and procurement as well as the possible impacts on expected growth and business models.

The Ecopetrol Group is subject to mandatory protocols to be able to return to day-to-day activities and mitigate and adequately manage the COVID-19 situation. Considering the spread of coronavirus, the Ministry of Health and Social Protection (Ministerio de Salud y Protección Social) issued Resolution 777 of June 2, 2021, adopting the general biosecurity protocol to mitigate, control and perform the adequate management of COVID-19.

[Table of Contents](#)

Ecopetrol S.A.

Notes to the consolidated financial statements

(Figures expressed in millions of Colombian pesos, unless otherwise stated)

The protocol, which is applicable to all economic and social activities, include: training direct employees and contractors hired by means of services agreements or those for the execution of a specific task about the measures indicated in the biosecurity protocol; implementing the actions that will allow to guarantee the continuity of the activities and the integral protection; adopting administrative control measures for reducing exposure, such as flexible shifts and working schedules, as well as encouraging work from home; incorporating in the official communication channels and attention centers information related to selfcare, prevention, propagation and attention of COVID-19; requesting assistance and technical assessment from the Occupational Risks Insurance Company to verify the measures adopted to their different activities; implementing special protocols for cleaning and disinfection of the facilities; modifications to the workspace to comply with social distancing and comply with the requirements of personal hygiene; use virtual content to strengthen skills and communicate with employees; creating return to work strategies including employees vaccinated and those who decide not to get inoculated, among others.

Additionally, other activities were implemented by the Ecopetrol Business Group to define preventive and protective actions, such as validation protocols with epidemiologists, international benchmarking to share experiences with other companies that are in similar situations, and human factors evaluations with psychologists.

These or similar measures were also adopted in other countries where the Ecopetrol Business Group operates, in accordance with the local regulations.

In the event home office mode is to be imposed indefinitely, we will have to comply with the requirements for teleworking modality established on Law 1221 of 2008 and Decree 884 of 2012. For the adoption of these protocols, we may be required to incur additional costs and expenses to allocate funds to industrial safety and health compliance under Colombian law.

2.9 Conflict Russia - Ukraine

After weeks of intense tensions between Russia and Ukraine, as well as with the West, on February 24, 2022, Russia launched a full-scale military invasion of Ukraine. This war has increased volatility in the capital markets and has caused many commodities to rise due to supply risk (Brent crude oil prices have reached levels above 100 USD per barrel and natural gas prices in Europe have exceeded 30 USD/mmbtu).

The ability of Ecopetrol to access international and local capital markets and finance operations and potentially refinance the debt maturities on terms acceptable to Ecopetrol could be adversely affected due to the volatility in prices in the oil and gas sector, the escalation of the military conflict between Ukraine and Russia, the disruptions on Russia's energy exports as a result of sanctions, the global economy impacts due to energy supply shocks, the potential impacts on demand of further lockdowns or outbreaks of COVID-19, the lack of consensus among OPEC+ members, the political uncertainty in the region, the discovery of corruption by governments and private companies in emerging markets and further geopolitical disruptions in the world, which could involve developed countries, and in turn could worsen risk perception with respect to the emerging markets, or the occurrence of any of the risks described in the section Risk Review—Risk Factors—Risks Related to Our Business of the annual report in Form 20-F. These conditions, along with significant write-offs in the financial services sector and the re-pricing of credit risk, can make it difficult for us to obtain funding for our capital needs on favorable terms. Our cost and ability to obtain capital might be affected as well if the creditors of Ecopetrol and potential investors believe that we are not actively responding to the new low carbon economy, integrating TESG considerations in the operation and management, addressing risks related to climate change and energy transition, and meeting TESG targets; considering further the evolving restrictions to invest in pure fossil fuels companies announced by certain investors worldwide.

3. Significant estimates and accounting judgments

The preparation of the consolidated financial statements requires management to make judgements, estimates and assumptions that affect the reported amounts of assets, liabilities, sales revenues, costs, and commitments recognized in the financial statements and the accompanying disclosures. The Ecopetrol Business Group based its assumptions and estimates on parameters available when these consolidated financial statements were prepared. Uncertainty about these assumptions and estimates could result in outcomes that required a material adjustment to the carrying amount of assets or liabilities affected in future periods. Changes in estimates are adjusted prospectively in the period in which the estimate is revised.

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

In the process of applying the Ecopetrol Business Group's accounting policies, management has made the following judgments and estimates which have the most significant impact on the amounts recognized in the consolidated financial statements:

3.1 Oil and gas reserves

Hydrocarbon reserves are estimates of the amounts of hydrocarbons that can be economically and legally extracted from the Ecopetrol Business Group's oil and gas properties.

The reserves estimation is performed annually as of December 31 in accordance with the United States Securities and Exchange Commission (SEC) definitions and rules set forth in Rule 4–10(a) of SEC Regulation S–X and the disclosure guidelines contained in the SEC final rule – Modernization of Oil and Gas Reporting.

As required by current regulations, the future estimated date on which a field will no longer produce for economic reasons, is based on actual costs and average of crude prices (calculated as the arithmetical average of prices on the first day of the past 12 months). The estimated date for end of production will affect the amounts of reserves, unless the prices have been defined by contractual agreements; therefore, if the prices and costs change from one year to the next, the proved reserves estimate also changes. Generally, our proved reserves decrease as prices go down and increase when prices go up.

Reserves estimation is an inherently complex process, and it involves professional judgments. Reserves estimation is prepared using geological, technical, and economic factors, including projections of future production rates, oil prices, engineering data and duration and amounts of future investments, and they imply a certain degree of uncertainty. These estimations reflect the regulatory and market conditions existing on the date of reporting, which could significantly differ from other conditions during the year or in future periods.

Any changes in regulatory and/or market conditions and assumptions could materially affect the reserves estimation.

Impact of oil reserves and natural gas in depreciation and depletion

Changes to estimations for proven developed reserves may affect the carrying amounts of exploration and production assets, natural resources and environment, goodwill, liabilities for dismantling and depreciation, depletion, and amortization. With all other variables remaining unchanged, a decrease in estimated proven reserves would increase, prospectively, depreciation, depletion, and amortization costs, while an increase in reserves would reduce depreciation and amortization expenses, as depreciation, depletion and amortization charges are calculated using the units of production method.

Information about the carrying amounts of exploration and production assets and the amounts charged to income, including depreciation, depletion, and amortization, is presented in Notes 14 and 15.

3.2 Impairment of non-current assets

Management uses its professional judgment in assessing the existence of evidence of an impairment loss or reversal, based on internal and external factors.

When an indicator of impairment loss or reversal of impairment of prior period impairment exists, the Ecopetrol Business Group estimates the recoverable amount of the cash generating units (CGU), which is considered the greater of fair value less costs of disposal and the value in use.

The assessments require the use of estimates and assumptions, such as, among other factors: (1) future investments, taxes and costs; (2) useful life of assets; (3) future prices, (4) discount rate, which is reviewed annually, and is determined as the weighted average cost of capital (WACC), and (5) changes in regulation. Specifically for crude oil and gas assets, the following are also included: (6) estimation of volumes and market value of oil and natural gas reserves and (7) production profiles of oil fields and future production of refined and chemical products. The recoverable amount is compared with the net book value of the asset, or of the cash-generating unit (CGU), thus determining whether the asset is impaired or if the impairment recognized in prior periods should be reversed.

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

A previously recognized impairment loss is reversed (except over the goodwill), only if there has been a change in the assumptions used to determine the assets or in the CGU's recoverable amount since the last impairment loss was recognized. The reversal is limited so that the carrying amount of an asset or CGU, other than goodwill, does not exceed either its recoverable amount, or the carrying amount that would have been determined (net of amortization or depreciation) had no impairment loss been recognized for the asset or CGU in prior periods.

Future oil and refined products prices assumptions are estimated at current market conditions related to upstream and downstream. For oil and gas asset, expected production volumes, which comprise proven unproved, probable, and possible reserves are used for impairment testing because management believes this to be the most appropriate indicator of expected future cash flows, which would also be considered by market participants. Reserves estimates are inherently imprecise and subject to risk and uncertainty. Furthermore, projections about unproved volumes are based on information that is necessarily less robust than what is available for mature reservoirs.

These estimates and assumptions are subject to risk and uncertainty. Therefore, there is a possibility that changes in circumstances will impact these projections, which may also impact the recoverable amount of assets and/or CGUs, hence, may also affect the recognition of an impairment loss or the reversal of prior period impairment amounts.

3.3 Exploration and evaluation costs

The application of the Ecopetrol Business Group's accounting policy for exploration and evaluation costs requires judgment to determine whether future economic benefits are likely, either from future exploitation or sale, or whether activities have not reached a stage which permits a reasonable assessment of the existence of reserves. Certain exploration and evaluation costs are initially capitalized when it is expected that commercially viable reserves will result. The Ecopetrol Business Group uses its professional judgment of future events and circumstances and makes estimates to assess annually the generation of future economic benefits for extracting oil resources, as well as technical and commercial analyses to confirm its intention of continuing their development. Changes regarding available information, such as drilling success level or changes in the project's economics, production costs, and investment levels, as well as other factors, may result in capitalized exploration drilling costs being recognized in profit or loss for the period. The expenses for dry wells are included in operating activities in the consolidated statement of cash flows.

3.4 Determination of cash generating units (CGU)

The allocation of assets in cash generating units requires significant judgment, as well as assessments regarding integration among assets, the existence of active markets, and similar exposure to market risk, shared infrastructure, and the way in which management monitors the operations. See Note 4.13 – *Impairment of non-current assets* for more information.

3.5 Abandonment and dismantling costs of fields and other facilities

According to environmental and oil regulations, the Ecopetrol Business Group is required to bear the costs for the abandonment of oil extraction, refining plants and transportation facilities, which include the cost of plugging and abandoning wells, dismantling facilities, and environmental remediation in the affected areas.

Estimated abandonment and dismantling costs are recorded at the time of the installation of the assets and are reviewed annually.

The calculations for these estimations are complex and involve significant judgments by Management. The ultimate decommissioning costs are uncertain and cost estimates can vary in response to many factors, including changes to relevant legal requirements, the emergence of new restoration techniques or experience at other production sites. The expected timing, extent and amount of expenditure may also change, for example, in response to changes in internal cost projections, changes in reserve estimates, future inflation rates and discount rates. The Ecopetrol Business Group considers that the abandonment and dismantling costs are reasonable, based on the experience of the Ecopetrol Business Group and market conditions; nevertheless, significant variations in external factors used for the calculation of the estimation could significantly impact the amounts recorded in the financial statements. See Note 4.14 - *Provisions and contingent liabilities* (Obligation to withdraw assets).

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

3.6 Pension plan and other benefits

The determination of expenses, liabilities and adjustments relating to pension plans and other defined retirement benefits makes it necessary for management to use its judgment in the application of actuarial assumptions made in the actuarial calculation. The actuarial assumptions include estimates regarding future mortality, retirement, changes in compensation and discount rate to reflect the time value of money, in addition to the rate of return on the plan's assets. Due to the complexity in the valuation of these variables, as well as their long-term nature, the estimated amounts are quite sensitive to any change in these assumptions.

These assumptions are reviewed on an annual basis and may differ materially from actual results due to changes in economic and market conditions, regulatory changes, judicial rulings, higher or lower retirement rates, or longer or shorter life expectancies among employees.

3.7 Goodwill impairment

In December of each year, the Ecopetrol Business Group performs an annual impairment test on goodwill to assess if its carrying amount may be impaired.

The determination of the recoverable amount is described in Note 4.13, and its calculation requires assumptions and estimates. The Ecopetrol Business Group considers that the assumptions and estimations used are reasonable and supportable based on the current market conditions and are aligned to the risk profile of the related assets. However, if different assumptions and estimations are used, they could lead to different results. Valuation models used to determine fair value are sensitive to changes in the underlying assumptions. For example, sales volumes and prices that will be paid for the purchase of raw materials are assumptions that may vary in the future. Adverse changes in any of these assumptions could lead to the recognition of goodwill impairment.

3.8 Litigation

The Ecopetrol Business Group is subject to claims relating to regulatory and arbitration proceedings, tax assessments and other claims arising in the normal course of business. Management evaluates these claims based on their nature, the likelihood that they materialize, and the amounts involved, to decide on the amounts recognized and/or disclosed in the financial statements.

This analysis, which may require considerable judgment, includes the assessment of current legal proceedings brought against the Ecopetrol Business Group and claims not yet initiated. A provision is recognized when the Ecopetrol Business Group has a present obligation derived from a past event, it is likely that an outflow of resources of economic benefits will be required to settle the obligation, and a reliable estimate of the amount of such obligation can be made.

3.9 Taxes

Calculation of the income tax provision requires interpretation of tax law in the jurisdictions where the Ecopetrol Business Group operates. Significant judgment is required to determine estimates for income tax on taxable profits and to evaluate the recoverability of deferred tax assets, which are based on the ability to generate sufficient taxable income during the periods in which such deferred taxes could be used or deduct.

To the extent that future cash flows and taxable income differ significantly from the estimates, the Ecopetrol Business Group's ability to realize the deferred tax assets recorded could be affected.

Furthermore, changes in tax rules could limit the capacity of the Ecopetrol Business Group to obtain tax deductions in future years, as well as the recognition of new tax liabilities resulting from auditing conducted by the tax authorities.

Tax positions taken involve a thorough assessment by Management and are reviewed and adjusted in response to situations such as expiration in the applicability of laws, closing of tax audits, additional disclosures caused by any legal issue or a court decision relevant to a particular tax issue. The Ecopetrol Business Group records provisions based on estimated potential liabilities that could be derived from a tax audit. The amount of these provisions depends on factors such as previous experience in tax audits and different interpretations of tax legislation. The actual results may differ from the estimates recorded.

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

3.10 Hedge accounting

The process of identifying hedging relationships between hedged items and the underlying instruments (derivative and non-derivative, such as long-term, foreign currency-denominated debt), and their corresponding effectiveness, requires the use of judgment by management. The Ecopetrol Business Group periodically monitors the alignment between its hedge instruments and its risk management policy.

3.11 Provision for significant maintenance and replacement

Ecopetrol Business Group has contractual obligations under its road and electric power transmission concession agreements to provide the replacement and maintenance activities. The amount of the provision is based on qualitative and quantitative analyzes made by Ecopetrol Business Group's maintenance area and an estimate of disbursements for major maintenance and replacements, which considers the current market prices of the components to be replaced at the time to recognize the provision.

3.12 Traffic projections for road concessions

The revenue for the services provided under the road concessions related to certain contracts, which are accounted under the financial asset model of IFRIC 12, is calculated through the present value of future revenue cash flow. This estimation is based on traffic studies made by an independent entity based on GDP projections among other variables according to the concession.

3.13 Energy power transmission concessions agreements

Ecopetrol Business Group operates energy transmission concessions in Colombia, Peru, Chile, Bolivia, and Brazil under public service concession agreements in which the grantor controls or regulates the services provided by the concessionaire, to whom they are provided, and at what price.

3.14 Business combination

According to IFRS 3, Business combinations, applying the acquisition method implies to identify the assets acquired and liabilities assumed and measure them at fair value on the acquisition date, subject to certain exceptions. For each kind of asset or liability, fair value methodologies are applied considering the observable inputs and elements described in IFRS 13 – Fair value measurement.

4. Accounting policies

The accounting policies indicated below have been applied consistently for all the periods presented.

4.1 Financial instruments

A financial instrument is any contract that creates a financial asset for one entity and a financial liability or equity instrument for another entity.

The classification of financial instruments depends on the nature and purpose for which the financial assets or liabilities were acquired and is determined at the time of initial recognition. Financial assets and financial liabilities are initially measured at their fair value.

Transaction costs that are directly attributable to the acquisition or issue of financial assets and financial liabilities (other than financial assets and financial liabilities at fair value through profit or loss) are added to or deducted from the fair value of the financial assets or financial liabilities, as appropriate, on initial recognition. Transaction costs directly attributable to the acquisition of financial assets or financial liabilities at fair value through profit or loss are recognized immediately in profit or loss.

Loans and trade receivables, other receivables and financial assets held-to-maturity are measured subsequently measured at amortized cost using the effective interest method.

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

Additionally, equity instruments are measured at fair value.

Measurements at fair value

Fair value is the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. The fair value measurement is based on the presumption that the transaction to sell the asset or transfer the liability takes place in the principal market of the asset or liability or in the absence of a principal market in the most advantageous market.

The fair value of an asset or a liability is measured using the assumptions that market participants would use when pricing the asset or liability, supposing that the market participants act in their economic best interest.

A fair value measurement of a non-financial asset considers a market participant's ability to generate economic benefits by using the asset for its most profitable use or by selling it to another market participant that would use the asset in its highest and best use.

Ecopetrol Business Group uses valuation techniques that are appropriate for the circumstances and for which the data is available and enough to measure fair value, maximizing the use of relevant observable inputs and minimizing the use of unobservable inputs.

All assets and liabilities for which fair value is measured or disclosed in the financial statements are classified within the following scale, based on the lowest level input that is significant to the fair value measurement, as follows:

- Level 1: Quoted (unadjusted) market prices in active markets for identical assets or liabilities. The fair value of the Ecopetrol Business Group's marketable securities with a quoted market price is based on Level 1 inputs.
- Level 2: Valuation techniques for which the lowest level input that is significant to the fair value measurement is directly or indirectly observed. Level 2 inputs include prices of similar assets, prices obtained through quotations made by stockbrokers, and prices that can be substantially corroborated with other observable data with the same contractual terms.

For derivative contracts for which a quoted market price is not available, fair value estimates are generally determined using models and other valuation methods, the key inputs for which include future prices, volatility estimates, price correlation, counterparty credit risk and market liquidity, as appropriate. For other assets and liabilities, fair value estimations are generally based on the net present value of expected future cash.

- Level 3: Valuation techniques for which the lowest level input that is significant to the fair value measurement is unobservable. The Ecopetrol Business Group does not use Level-3 inputs for the measurement of financial assets and liabilities. The Ecopetrol Business Group may use Level-3 inputs for the calculation the recoverable amount of certain non-financial assets for the purpose of impairment testing.

Effective interest rate method

The effective interest rate method is a method of calculating the amortized cost of a financial instrument and accounting of income or financial cost over the relevant period. The effective interest rate is the discount rate that exactly discounts estimated future cash receipts or payments (including all fees, transaction costs and other premiums or discounts) through the expected life of the financial instrument (or, when appropriate, at a shorter period), to the net carrying amount on initial recognition. This methodology is also applied to the instrument's measurement related to the concession financial assets.

Impairment

The Ecopetrol Business Group evaluates if there is objective evidence that a financial asset or group of financial assets are impaired. Financial assets are evaluated for the impairment indicators at the end of each reporting period. Financial assets are considered impaired when there is objective evidence that, because of one or more events that occurred after initial recognition, the estimated future cash flows of the asset have been affected. For financial assets measured at amortized cost, the amount of the impairment loss recognized is the difference between the asset's carrying amount and the present value of estimated future cash flows, discounted at the financial asset's original effective interest rate.

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

4.1.1 Cash and cash equivalents

Cash and cash equivalents include cash on hand, financial investments that are highly liquid, bank deposits and special funds with original maturity dates of ninety days or less which are subject to an insignificant risk of changes in value.

Restricted cash is a monetary resource with the objective of allocating it to specific and previously determined purposes.

4.1.2 Financial assets

The classification of financial assets at initial recognition depends on the financial asset's contractual cash flow characteristics and the Group's business model for managing them. Except for trade receivables that do not contain a significant financing component or for which the Ecopetrol Business Group has applied the practical expedient, Ecopetrol Business Group initially measures a financial asset at its fair value plus, and, in the case of a financial asset not at fair value through profit or loss, at transaction costs. Trade receivables that do not contain a significant financing component or for which the Ecopetrol Business Group has applied the practical expedient are measured at the transaction price determined under IFRS 15.

The Ecopetrol Business Group classifies its financial assets in the following categories:

- a) Financial assets measured at fair value through profit or loss

Financial assets are held for trading and financial assets designated at the time of the initial recognition at fair value through profit or loss. Financial assets are classified as held for trading if they are acquired to be sold or repurchased in the short term. They are recognized at their fair value and losses or profits arising at the time of re-measurement are recognized in the statement of profit or loss.

- b) Financial assets measured at fair value with changes in other comprehensive income

These are equity instruments of other non-controlled and non-strategic companies not allowing for any type of control or significant influence thereon and where the Ecopetrol Business Group's management does not intend to negotiate with them in the short term. These investments are recorded at their fair value, and unrealized gains or losses are recognized in other comprehensive income.

- c) Financial assets at amortized cost

This category is the most relevant to Ecopetrol Business Group. The Group's financial assets at amortized cost includes trade receivables, other receivables, loans to associates, and loans to employees.

Loans and receivables are non-derivative financial assets with fixed or determinable payments that are not quoted in an active market. Loans and receivables, including trade and other receivables, are measured initially at fair value and then at amortized cost using the effective interest rate method, less impairment.

Loans to employees are initially recorded using the present value of the future cash flows, discounted at the current market rate for similar loans. If the interest rate is less than the current market rate, fair value will be less than the amount of the loan. This difference is recorded as a benefit to employees.

Ecopetrol Business Group measures financial assets at amortized cost if both of the following conditions are met:

- The asset is held within a business model with the objective to hold financial assets to collect contractual cash flows.
- The contractual terms of the asset give rise on specified dates to cash flows that are solely payments of principal and interest on the principal amount outstanding.

Financial assets at amortized cost are subsequently measured using the effective interest (EIR) method and are subject to impairment analysis. Gains and losses are recognized in profit or loss when the asset is derecognized, modified, or impaired.

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

Derecognition of financial assets

The Ecopetrol Business Group derecognizes a financial asset only upon the expiration of the contractual rights to the cash flows of the asset or, when it has transferred its rights to receive such cash flows or has assumed the obligation to pay the cash flows received in full without material delay to a third party and (a) it has transferred substantially all the risks and benefits inherent in the ownership of the financial asset or (b) it has neither transferred nor retained substantially all the risks and benefits of the asset, but has transferred control of the asset.

When the Ecopetrol Business Group does neither transfer nor retain substantially all the risks and benefits of the asset or transfer control of the asset, the Ecopetrol Business Group continues to recognize the transferred asset, to the extent of its continuing participation, and it also recognizes the associated liability.

4.1.3 Financial liabilities

Financial liabilities correspond to the financing obtained by the Ecopetrol Business Group through bank credit facilities and bonds, accounts payables to suppliers and creditors.

Bonds and bank credit facilities (this is the category most relevant to the Group) are initially recognized at their fair value, net of directly attributable transactions cost. After initial recognition, interest-bearing credit facilities and bonds are subsequently measured at amortized cost, using the effective interest rate (EIR) method. The effective interest method amortization is included as a financial expense in the statement of profit or loss. Amortized cost is calculated by considering any discount or premium on acquisition and fees or costs that are an integral part of the EIR. The EIR amortization is included as finance costs in the statement of profit or loss.

Accounts payable to suppliers and creditors are short-term financial liabilities recorded at nominal value since it does not significantly differ from fair value.

Derecognition

A financial liability is derecognized when the obligation specified in the contract is discharged, cancelled, or expires. When an existing financial liability has been replaced by another from the same lender, under substantially different terms, or the terms of an existing liability are substantially modified, such an exchange or modification is treated as the de-recognition of the original liability and recognized as a new liability. The difference between the respective carrying amounts is recognized in the statement of profit or loss.

4.1.4 Derivative financial instruments and hedging activities

Financial instruments are initially recognized at fair value on the date on which a derivative contract is entered into and are subsequently remeasured at fair value. Changes in the fair value of derivatives are recognized as gains or losses in the statement of profit or loss, except for the effective portion of cash flow hedges, which is recognized in other comprehensive income and later reclassified to profit or loss when the hedge item affects profit or loss.

Changes in fair value of derivative contracts, which do not qualify or are not designated as hedges, including forward contracts for the purchase and sale of commodities under negotiation for physical delivery or receipt of the commodity are recorded in profit or loss.

Derivatives embedded in the host contract are accounted for as separate derivatives at fair value if their economic characteristics and risks are not closely related to those of the host contracts and the host contracts are not held for trading or designated at fair value through profit or loss. These embedded derivatives are measured at fair value with changes in fair value recognized in profit or loss.

4.1.5 Hedging operations

For purposes of hedge accounting, hedges are classified as:

- Cash flow hedges: hedges of the exposure to variability in cash flows attributable to a particular risk associated with all, or a component of, a recognized asset or liability or a highly probable forecast transaction, and that could affect profit or loss.

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

- Hedges of net investments in foreign operations.
- Fair value hedges: hedges of the exposure to changes in fair value of a recognized asset or liability or an unrecognized firm commitment, or a component of any such item, that is attributable to a particular risk and that could affect profit or loss.

At the inception of a hedge relationship, Ecopetrol Business Group formally designates and documents the hedge relationship to which it wishes to apply hedge accounting and the risk management objective and strategy for undertaking the hedge. Such hedges are expected to be highly effective in achieving offsetting changes in fair value or cash flows and are assessed on an ongoing basis to determine whether they have been highly effective throughout the financial reporting periods for which they were designated.

4.1.5.1 Cash flow hedge

The effective portion of the gain or loss on the hedging instrument is recognized in Other Comprehensive Income (OCI) in the cash flow hedge reserve, while any ineffective portion is recognized immediately in the statement of profit or loss.

The amounts previously accumulated in OCI are recognized in profit or loss when the hedged transaction affects the statement of profit or loss. If the hedged transaction subsequently results in the recognition of a non-financial item, the amount accumulated in equity is removed from the separate component of equity and included in the initial cost or other carrying amount of the hedged asset or liability.

If the hedging instrument expires or is sold, terminated, or exercised without replacement or rollover, or if its designation as a hedge is revoked or when the hedge no longer meets the criteria for hedge accounting, any cumulative gain or loss previously recognized in other comprehensive income remains separately in equity until the forecast transaction occurs is recognized in the consolidated statement of profit or loss. When it is no longer expected that the initially hedged transaction will occur.

Ecopetrol Business Group designates certain loans as a hedging instrument for its exposure to exchange rate risk in future crude oil exports. Additionally, the Group enters positions with derivative financial instruments such as commodity swaps, cross currency swaps or interest rate swaps to hedge commodity price risks, exchange rate risk and interest rate risk, respectively, which may also be designated as cash flow hedges.

4.1.5.2 Hedge of net investment in a foreign operation

Hedges of a net investment in a foreign operation, including a hedge of a monetary item that is accounted for as part of the net investment, are accounted for similarly to cash flow hedges.

Gains or losses on the hedging instrument relating to the effective portion of the hedge are recognized as OCI while any gains or losses relating to the ineffective portion are recognized in the statement of profit or loss. On the disposal of a foreign operation, the cumulative value of any such gains or losses recorded in equity is transferred to the statement of profit or loss.

Ecopetrol allocates long-term loans as hedging instruments for its exposure to foreign exchange risk on its investment in subsidiaries whose functional currency is the U.S. dollar. See Note 30.4 for further information.

4.1.5.3 Fair value hedge

The gain or loss on the hedging instrument shall be recognized in profit or loss or other comprehensive income if the hedging instrument hedges an equity instrument for which an entity has elected to present changes in fair value in other comprehensive income.

The hedging gain or loss on the hedged item shall adjust the carrying amount of the hedged item (if applicable) and be recognized in profit or loss. If the hedged item is a financial asset (or a component thereof) that is measured at fair value through other comprehensive income, the hedging gain or loss on the hedged item shall be recognized in profit or loss. However, if the hedged item is an equity instrument for which an entity has elected to present changes in fair value in other comprehensive income, those amounts shall remain in other comprehensive income.

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

4.2 Inventories

Inventories are stated at the lower of cost and net realizable value.

Inventories mainly comprise crude oil, fuels and petrochemicals and consumable inventories (spares and supplies).

The cost of crude oil is the production costs, including transportation costs.

The cost required to bring a pipeline into working order, is treated as part of the related pipeline.

The cost of other inventories is determined based on the weighted average cost method, which includes acquisition costs (deducting commercial discounts, rebates, and other similar items), transformation, and other costs incurred to bring inventory to their current location and condition, such as transportation costs.

Consumable inventories (spares and supplies) are recognized as inventory and then charged to expense, maintenance, or project to the extent that such items are consumed.

Ecopetrol estimates the net realizable value of inventories at the end of the period. When the circumstances that previously caused inventories to be written down below cost no longer exist, or when there is clear evidence of an increase in the net realizable value because of a change in economic circumstances, the amount of the write down is reversed. The reversal cannot be greater than the amount of the original write-down, so that the new carrying amount will always be the lower of the cost and the revised net realizable value.

4.3 Related parties

Related parties are considered those in which one party can control, or has joint control of the other, or exercises significant influence over the other party in making financial, or operational decisions, or is a member of key management personnel (or close relative of a member). The Ecopetrol Business Group considers related parties to be associates, joint ventures, key management executives, entities managing resources for payment of employee post-employment benefit plans and Colombian government entities for the purposes of certain relevant transactions, such as the purchase of hydrocarbons and the fuel price stabilization fund (see Note 31 – Related parties).

4.3.1 Investments in associates

An associate is an entity over which the Ecopetrol Business Group has significant influence but not control. Significant influence is the power to participate in the financial and operational policy decisions of the investee, but it is not control or joint control over those policies. Generally, these entities are those in which the Ecopetrol Business Group holds an equity interest with voting rights of 20% to 50%. See Exhibit 1 – Consolidated subsidiaries, associates, and joint ventures.

Investments in associates are accounted for using the equity method. Under this method, the investment in an associate is initially recognized at cost. The carrying amount of the investment is adjusted to recognize changes in the Ecopetrol Business Group's share of net assets of the associate since the acquisition date. Goodwill related to the associate is included in the carrying amount of the investment and it is not tested for impairment separately.

The Ecopetrol Business Group's share of the results of operations of the associate is recognized in the consolidated statement of profit or loss. Any change in other comprehensive income is recognized in other comprehensive income of the Ecopetrol Business Group.

After application of the equity method, the Ecopetrol Business Group determines if it is necessary to recognize an impairment on its investment in its associate. The Ecopetrol Business Group determines whether there is objective evidence that the investment is impaired. If there is such evidence, the amount of the impairment is calculated as the difference between the recoverable amount and its carrying value, and then the impairment is recognized in the consolidated profit or loss statement.

When necessary, the Ecopetrol Business Group adjusts the accounting policies of associates to ensure consistency with the policies adopted by the Ecopetrol Business Group. Additionally, the equity method of these companies is measured on their most recent financial statements.

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

4.3.2 Joint ventures

A joint venture is a type of joint arrangement whereby the parties that have joint control of the arrangement have rights to the net assets of the joint arrangement. Joint control exists only when decisions about the relevant activities require unanimous consent of the parties sharing such control. The accounting treatment for the recognition of joint ventures is the same as investments in associates.

4.4 Joint operations

A joint operation is a type of joint arrangement whereby the parties that have joint control of the arrangement have rights to the assets and obligations for the liabilities, relating to the arrangement.

Joint operation contracts are entered into between Ecopetrol and third parties to share risk, secure capital, maximize operating efficiency and optimize the recovery of reserves. In these joint operations, one party is designated as the operator to execute the operations and report to partners according to their participating interests. Likewise, each party takes its share of the produced hydrocarbons (crude oil or gas), according to their share in production.

When Ecopetrol participates as a non-operator partner, it recognizes the assets, liabilities, sales revenues, cost of sales and expenses based on the operator's report. When Ecopetrol is the direct operator of joint venture contract, it recognizes its percentage of assets, liabilities, sales revenues, costs, and expenses, based on the participation of each partner in the items corresponding to assets, liabilities, sales revenues, costs, and expenses.

When the Ecopetrol Business Group acquires or increases its participation in a joint operation in which the activity constitutes a business combination, such transaction is recognized applying the acquisition method in accordance with IFRS 3 – Business combination. The acquisition cost is the sum of the consideration transferred, which corresponds to the fair value, on the date of acquisition of the assets transferred and the liabilities incurred. Any transaction cost related to the acquisition or increased share in the joint operation that constitutes a business combination is recognized in the consolidated statement of profit or loss.

The excess of the sum of the consideration transferred and the amount paid in the operation is recognized as goodwill. If the result is in an excess value of the net assets acquired over the amount paid in the purchase transaction, the difference is recognized as income in the consolidated statement of profit or loss on the date of recognition of the transaction.

4.5 Non-current assets held for sale

Non-current assets are classified as held for sale if their carrying values will be recovered principally through a sale transaction rather than through continued use. Non-current assets are classified as held for sale only when the sale is highly probable within one year from the classification date and the asset (or group of assets) is available for immediate sale in its present condition. These assets are measured at the lower of their carrying amount and fair value less related costs of disposal.

4.6 Property, plant, and equipment

Recognition and measurement

Property, plant, and equipment are stated at cost less accumulated depreciation and accumulated impairment losses. Tangible components related to natural and environmental resources are part of property, plant, and equipment.

The initial cost of an assets comprises its purchase price or construction cost, including import duties and non-refundable purchase taxes, any costs directly attributable to bringing the asset into operation, costs of employee benefits arising directly from the construction or acquisition, borrowing costs incurred that are attributable to the acquisition and construction of qualifying assets and the initial estimate of the costs of dismantling and abandonment of the item.

Spare parts and servicing equipment are recorded as inventories and recognized as an expense as they are used. Major spare parts and stand-by equipment that the entity expects to use during more than one period are recognized as property, plant, and equipment.

Any gain or loss arising from the disposal of a property, plant and equipment is recognized in profit or loss of the period.

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

Subsequent disbursements

Subsequent disbursements correspond to all payments to be made on existing assets to increase or extend the initial expected useful life, increase productivity or productive efficiency, allow for significant reduction of operating costs, increase the level of reserves in exploration or production areas or replace a part or component of an asset that is considered critical for the operation.

The costs of repair, conservation and maintenance of a day-to-day nature are expensed as incurred. However, disbursements related to major maintenance are capitalized.

Depreciation

Property, plant, and equipment is depreciated using the straight-line method, except for those associated with exploration and production activities which are depreciated using the units-of-production method. Technical useful lives are updated annually considering factors such as: additions or improvements (due to parts replacement or critical components for the asset's operation), technological advances, obsolescence, and other factors; the effect of this change is recognized from the period in which it was executed. Depreciation of an asset starts when it is ready to be used.

Useful lives are determined based on the period over which an asset is expected to be available for use, physical exhaustion, technical or commercial obsolescence and legal limits or restrictions over the use of the asset.

The estimated useful life of assets fluctuates in the following ranges:

Plant and equipment	10 – 55 years
Pipelines, networks, and lines	10 – 63 years
Buildings	10 – 100 years
Other	3 – 35 years

Lands are recognized separately from buildings and facilities, and it is not subject to depreciation.

Depreciation methods and useful lives are reviewed annually and adjusted if appropriate.

4.7 Natural and environmental resources

Recognition and measurement

Ecopetrol uses the successful efforts method to account for exploration and production of crude oil and gas activities, following the provisions of IFRS 6 – Exploration for the evaluation of mineral resources.

Exploration costs

Acquisition and exploration costs are recorded as exploration and evaluation assets until the determination of whether the exploration drilling is successful or not; if determined to be unsuccessful, all costs incurred are recognized as expenses in the statement of profit or loss.

Exploration costs are those incurred with the objective of identifying areas that are considered to have prospects of containing oil and gas reserves, including geological and geophysical, seismic costs, viability, and others, which are recognized as expenses when incurred. Furthermore, disbursements associated with the drilling of exploratory wells and those related to stratigraphic wells of an exploratory nature are charged as assets until it is determined if they are commercially viable; otherwise, they are expensed in the consolidated statement of profit or loss as dry wells expense. Other expenditures are recognized as expenses when incurred.

An exploration and evaluation asset is no longer classified as such when the technical feasibility and commercial viability of extracting a mineral resource are demonstrable. Exploration and evaluation assets are reclassified to the natural and environmental resources account after being assessed for impairment.

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

All capitalized costs are subjected to technical and commercial revisions at least once a year to confirm the evaluation and exploration efforts continue the fields; otherwise, these costs are written off through to profit or loss.

Exploration costs are net of the revenues obtained from the sale of crude oil during the extensive testing period, net of cost of sales since they are considered necessary to complete the asset.

Development costs

Development costs correspond to those costs incurred to obtain access to proved reserves and to provide facilities for extracting, treating, gathering, and storing. When a project is approved for development, the corresponding capitalized acquisition and exploration costs are classified as natural and environmental resources and costs after the exploration phase are capitalized as development costs of the properties that contain such natural resources. All development costs are capitalized, including drilling costs of unsuccessful development wells.

Production costs

Production costs are those incurred to operate and maintain productive wells and are part of the corresponding equipment and facilities. Production activity includes extraction of oil and gas to the surface, its gathering, treatment, and processing as well as storage in the field. Production costs are expenses recorded in the consolidated statement of profit or loss as incurred unless they add oil and gas reserves, in which case they are capitalized.

Production and support equipment is recognized at cost and is part of property, plant, and equipment subject to depreciation.

Capitalized costs also include decommissioning, dismantling, retiring and restoration costs, as well as the estimated cost of future environmental obligations. The estimation includes plugging and abandonment costs, facility dismantling and environmental recovery of areas and wells. Changes arising in new abandonment liability estimations and environmental remediation are capitalized in the carrying amount of the related asset.

Depletion

Depletion of natural and environmental resources is determined using the unit-of-production method per field, using proved developed reserves as a base, except in limited exceptional cases that require greater judgment by Management to determine a better amortization factor of future economic benefits over the useful life of the asset. Depreciation/depletion rates are reviewed annually, based on reserves reports and the impact of any changes is recognized prospectively in the financial statements.

Reserves are independently estimated by internationally recognized external consultants and approved by Ecopetrol's Board of Directors. Proved reserves consist of the estimated quantities of crude oil and natural gas demonstrated with reasonable certainty by geological and engineering data to be recoverable in future years from known reserves under existing economic and operating conditions, that is, at the prices and costs that apply at the date of the estimation.

Impairment

Assets associated to exploration, evaluation and production are subject to review for possible impairment in their carrying amount. See Notes 3.2 — *Impairment of non-current assets* and 4.13 — *Impairment of non-current assets*.

4.8 Capitalization of borrowing costs

Borrowing costs related to the acquisition, construction or production of a qualifying asset that requires a substantial period to get ready for its intended use are capitalized as part of the cost of such asset when it is probable that future economic benefits associated with the item will flow to the Ecopetrol Business Group and costs can be measured reliably. Other borrowing costs are recognized as finance costs. Projects that have been suspended but that the Ecopetrol Business Group intends to continue to pursue their development in the future, are not considered qualifying assets for the purpose of capitalization of borrowing costs.

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

4.9 Intangible assets

Intangible assets with a defined useful life, are stated at cost less accumulated amortization and any impairment loss. Intangible assets are amortized under the straight-line method, over their estimated useful lives. The estimated useful lives and amortization method are revised at the end of each reporting period; any change in estimates is recognized on a prospective basis.

The disbursements related to research activities are expensed as incurred.

Easements

Easements are rights obtained for the use part of land for the installation of a transmission line. This implies restrictions on the use of the land by the owner and authorizations to Ecopetrol Business Group to build, operate, or maintain the transmission lines. These intangible assets are permanent rights with an indefinite term of use. Although the transmission lines to which these easements are related have a finite useful life, the rights do not expire, and Ecopetrol Business Group may replace the transmission lines at the end of their useful life or make use of said rights for any other service related to transmission electricity and telecommunications. Easements have an indefinite useful life, so they are not amortized and are reviewed annually for impairment.

4.10 Concessions

Ecopetrol Business Group operates concessions under public service concession agreements, in which the grantor controls or regulates the services provided by the concessionaire, whom they are provided to, and price of the service.

IFRIC 12, Service Concession Arrangements, establishes general guidelines for the recognition and measurement of rights and obligations related to concession agreements and applies when the granting authority controls or regulates which services the concessionaire should provide with the infrastructure, to whom the services should be provided and at what price, and controls any significant residual interest in the infrastructure at the end of the concession period.

Concessions that meet the above criteria and in which Ecopetrol Business Group has the obligation to return the assets to the grantor or the grantor retains any residual interest in the infrastructure at the end of the concession term are recognized according to IFRIC 12 - Concession Agreements of services.

The Ecopetrol Business Group applies the guidance of IFRIC 12, on concessions that meet the criteria above, otherwise, Ecopetrol Business Group applies the guidance of IFRS 16 - Leases. Revenue from services is measured and recognized according to IFRS 15 - Revenue from contracts with customers. In the other hand, the financial concession assets are measured and recognized according to IFRS 9 - Financial Instruments.

The details of each type of concession by country is disclosed in Note 25.

Intangible asset model

Concessions in which Ecopetrol Business Group does not have a contractual right to receive cash or another financial asset from the grantor but has the right to charge users in exchange for the services provided, are recognized under the intangible asset model. The costs incurred by Ecopetrol Business Group for the construction of the concession infrastructure are on a straight-line basis over the term of the concession period. Revenue from construction or improvement services is recognized according to the level of completion of the construction, based on the costs actually incurred, including at construction margin.

The operation and maintenance costs related to the concession are recognized in the statement of profit or loss once the infrastructure of the concession is ready for its use and Ecopetrol Business Group receives from the grantor the right to receive a fee for the services. Revenues are recognized based on the services provided as established in the concession agreements.

Infrastructure expansions are recognized as intangible asset when they are expected to generate future economic benefits. The renovations costs, improvements and additions are capitalized, while routine maintenance and repairs that do not extend the useful life of the assets are recognized in the profit or loss statement.

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

Financial asset model

Concessions in which Ecopetrol Business Group has a contractual right to receive cash or another financial asset from the grantor for the services provided under the concession agreements and the grantor has little or no power to avoid payment are recognized under financial asset model. In this model the financial asset is classified as a financial asset concession, according to IFRS 9 – Financial Instruments. This asset accrues interest using the effective interest rate method (see Note 4.1).

Mixed model for concessions

This model is applied when the contract simultaneously includes remuneration commitments guaranteed by the grantor and remuneration commitments that depend on the level of use of the concession infrastructure.

Contract asset model

This business model is developed under electric power transmission concession agreement, associated with the obligation to build, and implement the electric power transmission infrastructure and is classified under the contractual asset model according to IFRS 15 – Revenue from contracts with customers (See Note 4.16). The contractual asset is recognized while the obligation to build and implement the infrastructure is satisfied, and revenue is recognized over the life of the project.

The value of Ecopetrol Business Group's contractual asset is measured as the present value of the future cash flows that include the current remuneration allowed. The future cash flows are estimated at the beginning of the concession or in its extension, and the assumptions of its measurement are adjusted in the periodic fee review. Cash flows are defined based on the remuneration clauses identified in the contract, which is the consideration that Ecopetrol Business Group receives for the provision of the public transmission service to users. These received resources amortize the investments in infrastructure.

Under this methodology, the performance of the concession is recognized by the straight-line method based on the implicit discount rate applied to the value of investments in construction, which considers the specifications of each project. The purpose of the rate is defining the financial component of the contractual asset, and it is determined on the initial date of each concession agreement and remains fixed during the term of the concession.

In general, the construction of the infrastructure made by the operator constitutes a service that is provided to the grantor when there are concession agreements to supply public services, different from the operation and maintenance services, and there is a payment by it.

4.11 Goodwill

Goodwill is initially measured at cost (being the excess of the aggregate of the consideration transferred and the amount recognized for non-controlling interest and any previous interest held over the net identifiable assets acquired and liabilities assumed). After initial recognition goodwill is measured at cost less any accumulated impairment loss, which cannot be reversed in subsequent periods according to IAS 36. Goodwill is not amortized but tested for impairment annually.

4.12 Leases

As of January 1, 2019, the Ecopetrol Business Group adopted IFRS 16, “Leases” (“IFRS 16”) applying the modified retrospective scope.

At the beginning of a contract, Ecopetrol Business Group assesses whether a contract is, or contains, a lease. This situation arises if the contract transfers the right to control the use of an identified asset for a period in exchange for a consideration. To assess whether a contract conveys the right to control an identified asset, the regulations of IFRS 16 are used.

Ecopetrol Business Group applies the guidance of IFRS 16 – Leases on concessions contracts that do not meet the criteria of the guidance of IFRIC 12.

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

Ecopetrol Business Group as a lessee

On the commencement date of the lease, Ecopetrol Business Group recognizes lease liabilities to make lease payments and right-of-use assets representing the right to use the underlying asset during the lease term. The interest expense on the lease liability and the depreciation expense on the right-of-use asset are recognized separately.

In subsequent recognition, Ecopetrol business Group makes a remeasurement of the lease obligation upon the occurrence of events such as: a) changes in the lease term, b) changes in future lease payments resulting from variations in an index or in the rate used for determining the payments. The amount of the remeasurement of the obligation will be recognized as an adjustment to the asset for the right of use.

Ecopetrol Business Group as a lessor

Leases in which the Ecopetrol Business Group does not transfer substantially all the risks and rewards incidental to ownership of an asset are classified as operational. Rental income is recognized in the statement of profit or loss on a straight-line basis over the lease terms.

Right-of-use assets

The Ecopetrol Business Group recognizes right-of-use assets on the commencement date of the lease (that is, the date on which the underlying asset is available for use). The right-of-use assets are measured at cost, less any accumulated depreciation and impairment losses, and adjusted for any remeasurement of the lease liabilities. Right-of-use assets are amortized in a straight-line basis during the lease term. Right-of-use assets are subject to impairment assessment. The cost of right-of-use assets includes the amount of lease liabilities recognized, initial direct costs incurred, and lease payments made at or before the commencement date less any lease incentives received.

Lease liabilities

At the commencement date of the lease, the Ecopetrol Business Group recognizes lease liabilities measured at the present value of the lease payments to be made during the term of the lease. The lease payments include fixed payments (including in-substance fixed payments) less any lease incentives receivable, variable lease payments that depend on an index or a rate, and amounts expected to be paid under residual value guarantees. Variable payments that do not depend on an index or rate are recognized as expenses in the period in which an event or condition indicates that the payment will occur.

To calculate the present value of the lease payments, the Ecopetrol Business Group uses the incremental borrowing rate on the lease's commencement date. After the commencement date, the amount of lease liabilities is increased to reflect the accretion of interest and reduced for the lease payments made. In addition, the carrying amount of lease liabilities is remeasured if there is a modification, a change in the lease term, a change in the lease payments or a change in the assessment of an option to purchase the underlying asset.

Short-term leases and low-value asset leases

The Ecopetrol Business Group elected to use the recognition exemptions for lease contracts that, at the commencement date, have a lease term of 12 months or less and do not contain a purchase option (short-term leases), and lease contracts for which the underlying asset is of low value (low-value assets).

Joint Operating Agreements (JOA)

In JOA agreements, the Ecopetrol Business Group assesses whether it controls the use of the asset. If the Ecopetrol Business Group, as the operator, controls the use of the asset, it recognizes the entire right-of-use and lease liability in the consolidated financial statements. If it is the JOA who controls, it is analyzed whether the contract meets the characteristics of a sublease, and in that case each party must recognize the right of use in proportion to their participation.

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

4.13 Impairment of non-current assets

In order to evaluate if any non-current assets are impaired, Ecopetrol compares its carrying amount with its recoverable amount at least annually or earlier, if there is any indicator that an asset may be impaired.

For purposes of impairment testing, assets are grouped into cash generating units (CGU), provided that those assets individually considered do not generate cash inflows that, to a greater extent, are independent from those generated by other assets or CGUs. The grouping of assets in different CGUs requires the exercise of professional judgment and the consideration, among other parameters, of the business segments. In this sense, in the Exploration and Production segment, each CGU corresponds to each one of the different contractual areas commonly called "fields"; by exception, in those cases where the cash inflows generated by several fields are interdependent from each other, those fields are grouped into a single CGU. In the case of the Refining and Petrochemicals, each CGUs corresponds to each one of the refineries, petrochemical plants, and companies in this segment of the Ecopetrol Business Group, for the Transportation segment, each pipeline system is considered an independent CGU, and for the Electric power transmission and toll roads concessions segment, which also includes telecommunication business, the CGUs are as follows: 1) energy power transmission; 2) toll roads; and 3) telecommunications.

The recoverable amount of an asset is the higher amount of the fair value less costs of disposal or its value in use. If the recoverable amount of an asset (or of a CGU) is lower than its net carrying amount, such amount (or that of the CGU) is reduced to its recoverable amount, recognizing an impairment loss in profit or loss.

Fair value less costs of disposal is usually higher than the value in use for the asset in the production segment due to some significant restrictions in the estimation of future cash flows, such as: a) future capital expenses that improve the CGU performance, which could result in expected increase of net cash flows, and b) items before taxes that reflect specific business risks, resulting in a higher discount rate.

Fair value less costs of disposal is determined as the sum of the future discounted cash flows adjusted to the estimated risk. The estimations of expected future cash flows used in the assessment of impairment of the assets include estimates of futures commodity prices, supply and demand estimations, and the margins of the products.

Fair value less costs of disposal, as described above, is compared to valuation multiples and quoted prices of shares in companies comparable to Ecopetrol to determine if it is reasonable.

When an impairment loss is recorded, future amortization expenses are calculated based on the adjusted recoverable amount. Impairment losses may be recovered only if the reversal is related to a change in estimations used after impairment loss was recognized in previous periods. These recoveries do not exceed the carrying amount of the assets net of depreciation or amortization that would have been determined if such impairment had not been recognized.

The carrying amount of non-current assets reclassified as assets held-for-sale is compared to its fair value less costs of disposal. No other provision for depreciation, depletion or amortization is recorded if the fair value less costs of sale is lower than the carrying amount.

4.14 Provisions and contingent liabilities

Provisions are recognized when the Ecopetrol Business Group has a current obligation (legal or constructive) because of a past event, it is probable that Ecopetrol will be required to settle the obligation, and a reliable estimation can be made of the amount of the obligation. Where applicable, they are recorded at present value, using a rate reflecting the risk specific to the liability.

Future environmental decommissioning costs related to current or future operations, are accounted for as expenses or assets. Expenditures related to past operations that do not contribute to the obtaining of current or future benefits, are expensed as incurred.

The recognition of these provisions coincides with the identification of an obligation related to environmental remediation and Ecopetrol uses available information to determine a reasonable estimation of the related cost.

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

Provisions for which a negative outcome is assessed as possible are not recognized but are disclosed in the explanatory notes; including those for which the amount cannot be estimated.

If there is an expectation that the provision will be reimbursed, either in whole or in part, for example by virtue of an insurance contract, the amounts expected to be reimbursed are recognized as a separate asset only when such reimbursement is almost certain.

If the effect of the time value of money is significant, the provisions are discounted using the current market rate before taxes reflecting, as applicable, the liability specific risks. When recognizing the discount, the increase of the provision resulting from time elapsed is recognized as financial cost in the profit or loss statement.

Asset retirement obligation

Liabilities associated with the retirement of assets are recognized when there are current obligations, either legal or constructive, related to the abandonment and dismantling of wells, facilities, pipelines, buildings, and equipment.

The obligation is usually recorded when the assets are installed or when the surface or the environment are altered at the operating sites. These liabilities are calculated using the discounted cash flow method, using a pre-tax rate reflecting current market conditions similar liabilities and considering the economic limits of the field or the useful life of the respective asset. When it is not possible to determine a reliable estimation in the period in which the obligation originates, a provision is recognized when there is enough information available to make the best estimation.

The carrying amount of the provision is reviewed and adjusted annually considering changes in the assumptions used for its estimation, using a risk-free rate adjusted by a premium that reflects the risk and the company credit rating under the current market conditions. Any change in the present value of the estimated expenditure is reflected as an adjustment to the provision and the corresponding property, plant and equipment and natural and environmental resources. When a decrease in the asset retirement obligation related to a producing asset exceeds the carrying amount of the asset, the excess is recognized in the consolidated statement of profit or loss. The increase in the provision due to the passage of time is recognized in results for the period as a financial expense.

4.15 Income tax and other taxes

Income tax expense is comprised of income tax payable for the period and the effect of deferred taxes in each period.

Current income taxes are recognized in income except when they relate to items recognized in other comprehensive income, in which case the corresponding tax effect is also recognized in other comprehensive income. Income tax assets and liabilities are presented separately in the consolidated statement of financial position, except where there is a right of setoff within fiscal jurisdictions and an intention to settle such balances on a net basis.

Income tax is paid by each legal entity and not on a consolidated basis.

4.15.1 Current income tax

The Ecopetrol Business Group determines the provision for income tax based on the highest amount between taxable income and presumptive income (the minimum estimated amount of taxable profit on which the law expects to quantify and collect income taxes). Taxable income differs from profit before tax as reported in the consolidated statement of profit or loss, because of: items of income or expense that are taxable or deductible in other periods, special taxable deductions, tax losses and income and line items measured that, according to applicable tax laws in each jurisdiction, are considered nontaxable or nondeductible.

4.15.2 Deferred income tax

Deferred tax is provided using the liability method for temporary differences between the carrying amounts of existing assets and liabilities in the consolidated financial statements and their respective tax bases. A deferred tax liability is recognized for all taxable temporary differences. A deferred tax asset is recognized for all deductible temporary differences and for all accumulated tax losses, if there is a reasonable expectation that the Ecopetrol Business Group will generate future tax profits against which they will be used.

[Table of Contents](#)

Ecopetrol S.A.

Notes to the consolidated financial statements

(Figures expressed in millions of Colombian pesos, unless otherwise stated)

Deferred taxes on assets and liabilities are calculated based on the tax rates that are expected to apply during the years in which temporary differences between the carrying amounts and tax bases are expected to be reversed.

The carrying amount of a deferred tax asset is subject to review at the end of each reporting period, and it is reduced to the extent it is no longer probable that the corresponding legal entity will generate enough future taxable profit to realize such deferred tax asset.

In the statement of financial position, deferred tax assets are reflected net and as an offset against deferred tax liabilities, depending on the overall tax position in a particular jurisdiction and on the same taxable entity.

Deferred taxes are not recognized when they arise in the initial recognition of an asset or liability in a transaction (except in a business combination) and at the time of the transaction, do not affect the accounting or tax profit, or in respect of the taxes on the possible future distribution of accumulated profits of subsidiaries or investments accounted for by the equity method, if at the time of the distribution it may be controlled by Ecopetrol and it is probable that the retained earnings will be reinvested by the Ecopetrol Business Group companies and, therefore, will not be distributed to the Group.

4.15.3 Other taxes

The Ecopetrol Business Group recognizes in profit or loss the costs and expenses related to other taxes than the income tax, such as the wealth tax, which is determined based on the tax equity, the industry and commerce tax on income obtained in the municipalities for performance of commercial, industrial, and service activities, and the transport tax on volumes loaded in the transport systems. Taxes are calculated in accordance with current tax regulations. For more details, see Note 10.

4.16 Employee benefits

Salaries and benefits for Ecopetrol's employees are governed by the Colombian Collective Labor (Agreement 01 of 1977), and, by the Colombian Substantive Labor Code. In addition to the benefits determined by labour laws, employees are entitled to fringe benefits which are subject to the place of work, type of work, length of service, and basic salary. An annual interest of 12% is recognized on accumulated severance amounts for each employee, and the payment of compensation is provided for when special circumstances arise resulting in the non-voluntary termination of the contract, without justified cause, and in periods other than the probationary period.

Ecopetrol belonged to the special pension regime under which pension liabilities are Ecopetrol's responsibility and not pension fund's responsibility. However, Law 797 of January 29, 2003, and Legislative Act 001 of 2005 determined that Ecopetrol will no longer belong to the said regime and that from that point on employees would be part of the General Pension Regime. Consequently, pension obligations related to employees pensioned until July 31, 2010, are still Ecopetrol's responsibility. Employees are entitled to such pension bonus if they worked with Ecopetrol prior to January 29, 2003, but whose labor agreement expired without renewal before that date.

All labor benefits of employees who joined Ecopetrol before 1990 are Ecopetrol's responsibility, without the involvement of any social security entity or institution. Service cost for the employee and his/her relatives registered with Ecopetrol is determined by means of a mortality table, prepared based on facts occurring during the year.

For employees who joined Ecopetrol after the Act 50 of 1990 went in effect, Ecopetrol makes periodic contributions for severance payments, pensions, and labor risks to the respective funds.

In 2008, Ecopetrol partially settled the value corresponding to monthly pension payments from its pension liabilities, transferring such liabilities and their underlying amounts to autonomous pension funds (PAP, for its acronym in Spanish). The funds transferred, and returns on those funds, cannot be redirected, nor can they be returned to the Ecopetrol Business Group, until all of the pension obligations have been fulfilled. The settled obligation covers allowances and pension bonds payments, with health and education remaining Ecopetrol's responsibility.

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

Employee benefits are divided into four groups comprised as follows:

a) Short-term employee benefits and post-employment defined benefits:

Benefits to employees in the short term mainly correspond to those which payment will be made in the term of twelve months following the closing of the period in which the employees have rendered their services. These mainly include salaries, severance payments, vacation, bonuses, and other benefits.

Post-employment benefits of defined contributions plans correspond to the periodic payments for severance, pensions, and labor risk payments that the Ecopetrol Business Group makes to the respective funds that assume these obligations in their entirety.

The above benefits are recognized as an expense with an associated liability after deducting any already paid amounts.

b) Post-employment defined benefit plans:

In the defined benefits plan, the Ecopetrol Business Group provides the benefits agreed to current and former employees and assumes the actuarial and investment risks.

The following benefits are classified as long-term defined benefit plans recognized in the financial statements according to the calculations of an independent actuary:

- Pensions
- Pension bonds
- Health
- Educational plan
- Retroactive severances

Liabilities recognized in the statement of financial position with respect to these benefit plans are determined based on the present value of the defined benefit obligation at the date of the statement of financial position less the fair value of plan assets.

The defined benefit obligation is calculated annually by independent actuaries using the projected credit unit method, which considers employees' years of service and, for pensions, average or final pensionable remuneration. This obligation is discounted at its present value using interest rates of high-quality government bonds denominated in the currency in which the benefits will be paid and of a duration consistent with the plan obligations.

These actuarial calculations involve several assumptions that could differ from the events that will effectively take place in the future. Said assumptions include the determination of a discount rate, future salary increases, mortality rates and future pension increases. Because of the complexity of the calculation, the underlying assumptions and long-term nature of these plans, the obligations for defined benefits are extremely sensitive to changes in assumptions. All key assumptions are revised at the end of the reported period.

In determining the appropriate discount rate, in absence of a broad high quality bond market, Management considers interest rates corresponding to the class B TES bonds issued by the Colombian Government as its best reference, at an appropriate discount rate with maturities extrapolated in line with the term expected for each benefit plan. The mortality rate is based on the country's rate, the latest version of which is the RV08 mortality table published in resolution 1555 of October 2010. The future salary and pension increases are linked to the country's future inflation rates. Note 22 – *Provisions for employee benefits* provides further details on key assumptions used.

[Table of Contents](#)

Ecopetrol S.A.

Notes to the consolidated financial statements

(Figures expressed in millions of Colombian pesos, unless otherwise stated)

The amounts recognized in the consolidated statement of profit or loss related to employees defined benefit plans are comprised mainly by service cost and the net financial expense. Service cost includes mainly the increase in present value of the benefit obligation during the period (current service cost) and the amount resulting from a new benefit plan. Plan amendments corresponds to changes in benefits and are usually recognized when all legal and regulatory approvals have been obtained and the effects have been conveyed to the employees involved. The net financial expense is calculated using the net liability for defined benefits as compared with the yield curve of the discount rate at the beginning of each year for each plan. The net defined benefit obligation or asset resulting from actuarial profits and losses, the asset ceiling effect, and the asset profitability, excluding the value of recognized in the consolidated statement of profit or loss, are recognized in other comprehensive income.

When the plan assets exceed the gross obligation, the recognized asset is limited to the lower of the surplus in the defined benefits plan and the ceiling of assets determined using a discount rate based on Colombian Government bonds.

(a) Others long-term benefits

Others long-term benefits include the five-year term bonus which also considered in the actuarial calculation. This benefit is a cash bond that accumulates annually and is paid every five years to employees. The Ecopetrol Business Group recognizes in the consolidated statement of profit or loss the service cost, the net financial cost and the adjustment to the obligation of the defined benefit plan.

(b) Termination benefits

Termination benefits are recognized only when a detailed plan exists and there is no possibility to withdraw the offer. The Ecopetrol Business Group recognizes a liability and an expense for termination benefits at the earliest date between the date when the offer of such benefits cannot be withdrawn and the date when the restructuring costs are recognized.

4.17 Revenue from contracts with customers

The Ecopetrol Business Group's business is based on four principal sources of revenue from customer contracts: 1) sales of crude oil and natural gas, 2) services associated with the transport of hydrocarbons, and 3) sales of refined and petrochemical products, and biofuels, and 4) transmission of energy power and toll roads concessions. Revenue from customer contracts is recognized when control of the goods or services are transferred to the customer at an amount that reflects the consideration that the Ecopetrol Business Group expects to receive in exchange for those goods or services.

Sales of crude oil and natural gas

Revenue from sales of crude oil and natural gas is recognized upon transfer of control to the buyer. This generally occurs when the product is physically transferred into a vessel, pipe or by another delivery method, thus fulfilling the Ecopetrol Group's performance obligations to its customers.

For some natural gas supply contracts with a replacement period, a distinction is made between quantities of gas consumed and not consumed to recognize the respective revenue or liability relating to quantities that will be requested in the future. Once the customer claims such natural gas, the revenue is recognized.

Services associated with hydrocarbons transport

Revenue from hydrocarbons transport services is recognized when the service is provided to the customer and there are no contractual conditions that prevent recognition of the revenue. Ecopetrol Business Group companies are principal in providing these services.

Ship/ Take-or-Pay contracts for the sale of refined products, storage and transport specify minimum quantities of products or services for which a customer will pay, even if the latter does not receive them or use them ("deficient quantities"). Although the Ecopetrol Business Group expects customers to recover all deficient quantities to which they are contractually entitled, any load revenue received related to temporary shortfalls that will be offset in a future period will be deferred and that amount recognized as revenue in the event any of the following scenarios occurs:

- a) The customer exercises its right to deficient volumes or services, or

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

- b) The possibility is remote that the customer will exercise its right to deficient volumes or services.

Refined and petrochemical products and biofuels

In the case of refined products and petrochemicals, such as fuel oil, asphalt, polyethylene, LPG and propane and gasoline, etc., revenue is recognized when the products are shipped and delivered by the refinery; subsequently, they are adjusted for price changes, in the case of products with regulated prices. In the case of the companies that distribute natural gas and LPG, the revenue from the services is recognized when the service is provided to the customer.

In other cases, Ecopetrol Business Group recognizes revenue when the performance obligation is satisfied, giving rise to the certain, probable, and quantifiable right to demand payment.

Under current local regulation, Ecopetrol sells regular gasoline and ACPM in Colombia at a regulated price.

In accordance with Decree 1068 of 2015, the Ministry of Mines and Energy semiannually calculates and settles Ecopetrol's net position to be stabilized for each fuel by the Fuel Price Stabilization Fund (FEPC, for its acronym in Spanish). The net position corresponds to the sum of the spreads throughout the period, the result of which is the amount in pesos owed to the Company and charged to the resources of the FEPC. The differential corresponds to the product between the volume reported by the Company at the time of sale and the difference between the parity price and the reference price, the parity price being that which corresponds to the daily prices of motor and diesel gasoline observed during the month, expressed in pesos, referenced to the Gulf of the United States market, calculated by applying Resolution 18 0522 of 2010, and the reference price is the Producer Income defined by the Ministry of Mines and Energy for these purposes. Therefore, this differential constitutes a greater or lesser value of sales revenue and a receivable or payable account for Ecopetrol.

Electric power transmission and toll roads concessions

This group refers to 1) supplying of electricity transmission services in Latin America through the operation and maintenance of high-voltage transport networks and interconnections 2) design, construction, operation, and maintenance of road infrastructures, 3) supplying of information technology, and (4) telecommunications services.

The recognition of revenue from electric power transmission services occurs according to the performance obligations based on the conditions of the contracts that include requirements established by the electricity market regulators in the countries in which Ecopetrol Business Group operates. This is generally achieved when the performance obligations agreed with the regulatory entities are executed, considering the period and the quality of the service established in the contracts. Technology and telecommunications services revenue is also recognized according to the performance obligations defined in contracts with customers.

For service concession agreements, Ecopetrol Business Group measures the revenue in accordance with IFRIC 12 at the fair value of the consideration received or receivable, considering the payment defined in the contracts.

- Recognize revenues and costs for project construction services in results for the period, according to the percentage completion method of the projects at the reporting date, which includes an estimated profit margin determined based on the macroeconomic characteristics and the conditions of the project, and the weighting of the estimated receivable cash flows related to the estimated cash flows of the construction.
- Recognize revenues and costs for operation and maintenance services of third-party facilities in the profit or loss statement for the period, as the service is provided, based on the performance obligations established in the contracts.
- Recognize the financial returns of concession agreements classified as financial assets or contractual assets in the statement of profit or loss for the period using the effective interest rate method.

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

Significant financing component

Payments received from customers are generally short term. Using the practical expedient in IFRS 15, Ecopetrol Business Group does not adjust the promised amount of consideration for the effects of a significant financing component if it expects, at contract inception, that the period between the transfer of the promised good or service to the customer and the customer's payment for that good or service to be one year or less.

Considering that revenues related to concessions generates long term non-current accounts receivables to be received from grantors, a financial component is applied considering the measurement of the asset as amortized cost, defining the future cash flows and applying and discount rate, according to IFRS 9 – Financial Instruments.

Variable considerations

Upon fulfillment of the obligations set forth in agreements with customers, via delivery of the product or provision of the service, variable components of the transaction price may exist, such as the exchange rate for crude exports or international price fluctuations. In these cases, the Ecopetrol Business Group makes its best estimate of the transaction price that reflects the goods and services transferred to customers.

Agreements signed with customers do not include material variable considerations such as rebates, refunds, or discounts.

Customer advances

These correspond to contractual obligations in which the Ecopetrol Business Group receives advances from customers. These advances by customers form part of the policies and risk assessment defined by the Business Group.

4.18 Costs and expenses

Costs and expenses are presented according to their nature; they are detailed in the related disclosures in cost of sales, and administrative, operating, projects and other associated expenses.

4.19 Finance income (expenses)

Finance income and expenses include mainly: a) borrowings costs on loans and financing, except for those that are capitalized on qualifying asset, b) gains and losses on changes in fair value of financial instruments measured at fair value through profit or loss, c) currency exchange differences of financial assets and liabilities, except for debt instruments designated as hedging instruments, d) interest expenses as a result of discounting long-term liabilities (abandonment costs and pension liabilities), e) dividends derived from equity instruments measured at fair value with changes in other comprehensive income.

4.20 Information by business segment

Ecopetrol presents the information related to its business segments in its consolidated financial statements in accordance with paragraph 4 of IFRS 8 – Operation segments.

The operations of the Ecopetrol Business Group are performed through four business segments: 1) Exploration and Production, 2) Transport and Logistics, 3) Refining, Petrochemical and Biofuels, and 4) Electric Power Transmission and Toll Roads Concessions. Segments are determined based on management objectives and corporate strategic plans, considering that these businesses: (a) are engaged in different commercial activities, which generate sales revenue and incur costs and expenses; (b) the operational results are revised regularly by the Ecopetrol Business Group's Governance that makes operational decisions to allocate resources to the various segments and assess their performance; and (c) there is differentiated financial information available. Internal transfers represent sales to inter-company segments and are recognized and presented at market prices.

- a) **Exploration and production:** This segment includes activities related to the exploration and production of oil and gas. Revenues are derived from sales of oil and natural gas at market prices to other segments and to third parties (domestic and foreign distributors). Costs include costs incurred in production. Expenses include all exploration costs that are not capitalized.

[Table of Contents](#)

Ecopetrol S.A.

Notes to the consolidated financial statements

(Figures expressed in millions of Colombian pesos, unless otherwise stated)

- b) **Transport and logistics:** This segment includes sales revenue and costs associated with the transport and distribution of hydrocarbons and derivative products in operation.
- c) **Refining, petrochemicals, and biofuels:** This segment mainly includes activities performed at the Barrancabermeja and Cartagena refineries, where crude oil from production fields is refined or processed. Additionally, this segment includes distribution of natural gas and LPG activities performed by Invercolsa Group. Revenues are derived from the sale of products to other segments and to domestic and foreign customers and include refined and petrochemical products at market prices and some fuels at regulated price. This segment also includes industrial service sales to customers.
- d) **Electric power transmission and toll roads concessions:** This segment includes activities of supplying electric power transmission services, design, development, construction, operation, and maintenance of road and energy infrastructure projects. Revenues come from the supplying of these services to domestic and foreign clients (mainly Latin America). This segment also includes the supplying of information technology and telecommunications services.

See information by segments in Note 33.

4.21 Business combinations

The Ecopetrol Business Group accounts for business combinations using the acquisition method. Identifiable assets acquired and liabilities assumed are initially measured at fair value on the acquisition date.

The cost of an acquisition is measured as the aggregate of the consideration transferred, which is measured at acquisition date fair value, and the amount of any non-controlling interests in the acquiree. For each business combination, the Ecopetrol Business Group elects whether to measure the non-controlling interests in the acquiree at fair value or at the proportionate share of the acquiree's identifiable net assets. Acquisition-related costs are expensed as incurred and included in administrative expenses.

The Ecopetrol Business Group determines that it has acquired a business when the acquired set of activities and assets include an input and a substantive process that together significantly contribute to the ability to create outputs. The acquired process is considered substantive if it is critical to the ability to continue producing outputs, and the inputs acquired include an organized workforce with the necessary skills, knowledge, or experience to perform that process or it significantly contributes to the ability to continue producing outputs and is considered unique or scarce or cannot be replaced without significant cost, effort, or delay in the ability to continue producing outputs.

When Ecopetrol Business Group acquires a business, it assesses the financial assets and liabilities assumed for appropriate classification and designation in accordance with the contractual terms, economic circumstances and pertinent conditions as at the acquisition date.

Goodwill is initially measured at cost (being the excess of the aggregate of the consideration transferred and the amount recognized for non-controlling interests and any previous interest held over the net identifiable assets acquired and liabilities assumed). If the fair value of the net assets acquired is in excess of the aggregate consideration transferred, the Ecopetrol Business Group re-assesses whether it has correctly identified all of the assets acquired and all of the liabilities assumed and reviews the procedures used to measure the amounts to be recognized at the acquisition date. If the reassessment still results in an excess of the fair value of net assets acquired over the aggregate consideration transferred, then the gain is recognized in profit or loss.

After initial recognition, goodwill is measured at cost less any accumulated impairment losses. For the purpose of impairment testing, goodwill acquired in a business combination is, from the acquisition date, allocated to each of Ecopetrol Business Group's cash-generating units that are expected to benefit from the combination, irrespective of whether other assets or liabilities of the acquiree are assigned to those units.

Where goodwill has been allocated to a cash-generating unit (CGU) and part of the operation within that unit is disposed of, the goodwill associated with the disposed operation is included in the carrying amount of the operation when determining the gain or loss on disposal. Goodwill disposed in these circumstances is measured based on the relative values of the disposed operation and the portion of the cash-generating unit retained.

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

5. New standards and regulatory changes

5.1 New standards adopted by Ecopetrol Business Group, effective as of January 1, 2021

- Reform to the benchmark interest rate phase 2: In August 2020, IASB published this draft, which complements the one issued in 2019 and focuses on the effects on the financial statements when a company replaces the benchmark interest rate above for an alternative reference rate. The modifications in this phase refer to changes in contractual cash flows, hedge accounting and risk management disclosures.

Benchmark interest rates such as interbank offer rates (IBOR) have an important role in global financial markets, being "LIBOR" one of the most used by various companies for corporate debt and derivative instruments trading, among others. The G20 asked the Financial Stability Board (FSB) to carry out a review of the main benchmark interest rates. As a result of the review, LIBOR and other rates are expected to be replaced with new ones that give greater confidence to the markets in general. According to the Financial Conduct Authority, the 3- and 6-month LIBOR dollar reference rates will remain in effect until June 30, 2023.

Within the accounting analysis, Ecopetrol Business Group established that the contractual cash flows of financial assets or liabilities measured at amortized cost would change as a result of the IBOR reform; however, it is expected that this change will not have an application impact on the financial statements, given the exceptions provided by the amendment where it is established that, if the modification occurs as a direct consequence of the interest rate reform and the new rate is economically equivalent to the previous basis, the entity will not have to re-estimate future interest payments. Monthly financial expenses will be measured at the new interest rate without implying a remeasurement in the rate that could affect the current cost of the financial asset and/or financial liability.

Although the norm has already entered into force, the company has not made the changes in the current debt contracts and continues to apply the LIBOR rate for the calculation of interest, which is supported by what the Financial Conduct Authority mentioned that the LIBOR will remain in effect until June 30, 2023.

5.2 New standards issued by the IASB that are effective in future periods

The IASB issued amendments to the following IFRS, with application as of January 1, 2022, or subsequent periods:

- IAS 16 - Property, plant, and equipment: amendment that determines the prohibition to deduct from the cost of property, plant, and equipment the sales revenue of goods produced, while the company prepares the asset for its intended use. This amendment impacts the treatment of the sales to third parties of extensive production tests, which are sales of oil obtained by testing a development well before going into full production. Ecopetrol Business Group will apply this amendment as of January 1, 2022, disclosing separately the amounts of income and costs related to the items produced in the statement of profit or loss and taking the transitory definitions established in the amendment.
- IFRS 3 – Business Combinations: in which they update a reference from the standard to the Conceptual Framework. The amendments are intended to replace the reference to the Framework for the Preparation and Presentation of Financial Statements, issued in 1989, by the reference to the Conceptual Framework for Financial Information, issued in March 2018, without significantly changing its requirements.
- IAS 37 – Provisions, liabilities, and contingent assets: in which it details what costs an entity must include when determining whether a contract is onerous. The amendments define that a "directly related cost approach" must be applied. Costs directly related to a contract to provide goods or services include both incremental costs and an allocation of costs to contract activities. General and administrative costs are not directly related to the contract and should be excluded unless they are explicitly attributable to the counterparty under the contract.
- Annual improvement cycle 2018-2020 that involves adjustments to IFRS 1 - subsidiary as a first-time adopter, IAS 41 – taxation in fair value measurements, IFRS 16 – lease incentives and IFRS 9 – fees in the 10% test for derecognition of financial

[Table of Contents](#)

Ecopetrol S.A.
 Notes to the consolidated financial statements
 (Figures expressed in millions of Colombian pesos, unless otherwise stated)

liabilities, which clarifies the fees that an entity includes when assessing whether the terms of a new or modified financial liability are substantially different from the terms of the original financial liability.

- Amendment to IAS 1 - Classifications of liabilities as currents or non-current effective as of January 1st, 2023, as well as the following limited scope amendments.
- Amendments to IAS 1 - Presentation of financial statements. Companies should disclose material information about their accounting policies and apply the concept of materiality to disclosures of accounting policies. The amendments clarify the following points:
 - The word “significant” is changed to “material or with relative importance”.
 - The accounting policies that must be disclosed in the notes to the financial statements are clarified. An entity will disclose information about its material or relatively important accounting policies.
 - It is clarified when an accounting policy is considered material or relatively important.
 - Adds the following paragraph: “Information about accounting policies that focuses on how an entity has applied the requirements of IFRS to its own circumstances provides specific information about the entity that is more useful to users of financial statements than standardized information or information that only duplicates or summarizes the requirements of IFRS Standards”.
- Amendments to IAS 8 - Accounting policies, changes in accounting estimates and errors. Clarifies how companies should distinguish changes in accounting policies from changes in accounting estimates. The amendment was published by the IASB in February 2021 and defines an accounting estimate to distinguish it from an accounting policy: “Accounting estimates are monetary amounts, in financial statements, that are subject to measurement uncertainty.”
- Amendments to IAS 12 Deferred taxes related to assets and liabilities that are recognized in a single transaction. The purpose of the amendments is to reduce the diversity in reporting of deferred tax on leases and abandonment obligations. The modifications are effective for the annual periods as of January 1, 2023.
- IFRS 17 was issued by the IASB in 2017 with application beginning on January 1, 2021, to replace IFRS 4 Insurance Contracts. However, the entry into force was postponed until January 1, 2023. This standard has not been introduced into the Colombian accounting framework, and it was not included in the public discussion process that began on Technical Council of Public Accounting.

Ecopetrol Business Group is constantly monitoring changes in accounting regulations to assess the possible impacts that the new standards issued by the international organization may generate in their adoption in Colombia.

6. Cash and cash equivalents

	2021	2020
Banks	11,080,569	4,215,518
Short-term investments	3,467,859	866,606
Cash	1,478	184
	14,549,906	5,082,308

As of December 31, 2021, cash and cash equivalents balance includes \$71,979 (\$11,682 as of December 31, 2020), of restricted cash to be used exclusively for the payment of loans principal and interest obtained by Oleoducto Bicentenario and Oleoducto de los Llanos, and \$1,039,024, based on the financing contracts and maintained, mainly, to guarantee the debt service by Interconexión Eléctrica S.A. E.S.P. It is important to consider that the accomplishment of conditions in the loans agreements permits the cash and equivalents availability.

The fair value of cash and cash equivalents approximates their book value due to their short-term nature (less than three months) and its high liquidity. Cash equivalents are convertible to a known amount of cash and are subject to an insignificant risk of changes in value.

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

The return on cash and cash equivalents for the years ended December 31, 2021, and 2020 were 2.6% and 2.2%, respectively.

The following table reflects the credit quality of banks in which Ecopetrol Business Group has deposits and check accounts, and issuers of investments included in cash and cash equivalents:

Rating	2021	2020
AAA	3,892,694	2,578,090
F1+	2,383,713	1,286,310
BRC1+	2,172,603	99,923
A-1	1,294,164	851,394
BBB	1,277,357	121
A	1,224,990	4,319
F1	1,177,581	207,773
AA	526,127	546
P-2	370,582	—
BB	106,070	—
Aaa	27,621	1,431
AAAf	19,481	28,552
B	14,674	—
F3	12,853	12,184
Aa3	11,239	—
C	6,615	—
CCC	4,872	—
A3	3,049	—
BRC1	1,671	2,336
A1	1,032	—
AAAmmf	—	2,162
AA-	—	22
Other	20,918	7,145
	14,549,906	5,082,308

See credit risk policy in Note 30.7.

7. Trade and other receivables

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

	2021	2020
Current		
Customers and concessions		
Foreign (1)	6,155,070	2,021,070
Domestic (2)	3,355,716	1,913,106
Fuel price stabilization fund (3)	7,824,788	319,927
Accounts receivable from employees	106,547	97,723
Industrial services	32,096	39,651
Related parties (Note 31)	9,355	105,048
Other (4)	965,310	322,567
	18,448,882	4,819,092
Non-current		
Customers and concessions		
Foreign (5)	19,622,925	—
Domestic (6)	1,852,111	51,955
Accounts receivable from employees	534,051	474,693
Related parties (Note 31)	335	—
Other (4)	2,150,294	149,959
	24,159,716	676,607

- (1) The amount as of December 31, 2021, includes \$1,067,581 related to energy power transmission and telecommunication services provided to customers and, \$2,238,208 related to foreign concessions to be received from foreign grantors. These services are provided by Interconexión Eléctrica S.A.
- (2) The amount as of December 31, 2021, includes \$309,282 related to energy power transmission and telecommunication services provided to customers in Colombia, and \$438,411 related to national concessions to be received from the grantor in Colombia. These services are provided by Interconexión Eléctrica S.A.
- (3) Corresponds to the application of Colombian Resolution 180522 of March 29, 2010, and other regulations that modify and add to it (Decree 1880 of 2014 and Decree 1068 of 2015), which establish the procedure to recognize the subsidy for refiners and importers of current motor gasoline and diesel, and the methodology for calculating the net position (the value arising from the differences between the parity price and the regulated price, which can be positive or negative). For 2021, the increase in accounts receivable is due to the increase in international indicators. Ecopetrol Business Group received payments during 2021 from the Stabilization Fund as follows: Ecopetrol \$3,071,000 and Reficar \$782,468 corresponding to the settlement of the second half of 2020 and the first half of 2021.
- (4) Corresponds mainly to accounts receivable from ISA CTEEP to the Government of Brazil for labor benefits defined by Law 4819 of 1958 and crude loan agreements for transportation systems. This retirement supplement plan governed by State Law 4819/58 provides for the creation of a State Social Assistance Fund for employees admitted until May 1974. The company reiterates the understanding of its legal department and its external legal advisors that the expenses derived from State Law 4819/58 and its respective regulations are the total responsibility of SEFAZ-SP (Secretariat of Treasury of the State of São Paulo); therefore, it considers that these values are likely to be received. Management monitors the advances and developments related to the legal aspect of the matter and continuously evaluates the possible impacts on its financial statements. The gross value of these accounts receivable is \$1,772,101, and the provision for expected losses established, included in the provision line for expected credit losses, is \$368,299, for a net book value of \$1,403,802.
- (5) Corresponds to the accounts receivables related to financial assets from energy transmission companies in Brazil for \$13,661,459, and Peru for \$88,939, and financial assets from toll road concessions in Chile for \$5,872,527. Those amounts were measured in accordance with IFRS 9 and IFRIC 12.
- (6) Accounts receivable for road concessions in Colombia of Interconexión Eléctrica S.A., which mainly corresponds to construction, operation, and maintenance services for \$1,796,456.

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

The book value of trade and other receivables approximates their fair value.

The changes in the allowance for doubtful accounts for the year ended December 31, 2021, 2020 and 2019 are as follows:

	2021	2020	2019
Opening balance	291,144	282,791	268,654
(Recoveries) additions, net	(7,459)	16,253	14,158
Effect of business combination (Note 12)	474,654	—	—
Effect of change of control in subsidiaries (Note 2.2)	—	(5,517)	—
Accounts receivable write-off and uses	(8,148)	(2,383)	(21)
Closing balance	750,191	291,144	282,791

8. Inventories

	2021	2020
Crude oil	3,305,965	1,719,426
Fuels and petrochemicals	2,845,486	1,407,297
Materials for the production of goods	2,246,761	1,927,237
	8,398,212	5,053,960

The following are the changes of the allowances for losses for the years ended December 31, 2021, 2020 and 2019:

	2021	2020	2019
Opening balance	(109,549)	(131,526)	(86,938)
(Additions) reversals, net	(58,437)	(9,748)	(44,191)
Increase due to business combination	(2,837)	—	—
Foreign currency translation	(1,449)	(122)	371
Effect of change of control in subsidiaries	—	20,075	—
Other (1)	44,610	11,772	(768)
Closing balance	(127,662)	(109,549)	(131,526)

(1) It mainly includes the update of the provision in joint operations.

Crude oil, fuel and petrochemicals inventories are adjusted to the lowest between the cost and the net realizable value, because of fluctuations in international crude oil prices. The amount recorded for this in 2021 was \$23,785 (2020 - \$ 9,017 ; 2019 - \$ 9,759).

9. Other financial assets

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

	2021	2020
Assets measured at fair value		
Investment Portfolio – Local currency	759,892	474,535
Investment Portfolio – Foreign currency	1,172,718	2,494,124
Assets measured at fair value through other comprehensive income	2,789	732
Hedging instruments(1)	17,449	98,877
Investments in equity securities and trust funds (2)	606,624	—
	2,559,472	3,068,268
Assets measured at amortized cost	375,262	3,391
	2,934,734	3,071,659
Current	1,627,150	2,194,651
Non-current	1,307,584	877,008
	2,934,734	3,071,659

(1) As of December 31, 2021, corresponds to swap contracts to hedge commodity price risk and forwards contracts to hedge exchange rate risk.

(2) They include deposits in trusts companies and restricted funds in Brazil, Peru, Chile, and Colombia.

The average return of the investment portfolio in Colombian pesos (local currency) and U.S. dollars (foreign currency) were 2.23% (2020 – 5.6%) and 0.1% (2020 – 2.3%), respectively.

Changes in fair value are recognized in financial results (Note 29).

9.1 Restrictions

As of December 31, 2021, and 2020, there were no investments with restricted use, except some resources of Interconexión Eléctrica S.A. ESP, corresponding to long-term restricted funds in Brazil, Peru, Chile and Colombia, which have an specific destination to investment projects for \$138,688.

9.2 Maturity

	2021	2020
Up to 1 year	1,627,150	2,194,651
1 – 2 years	434,372	101,216
2 – 5 years	786,760	573,420
> 5 years	86,452	202,372
	2,934,734	3,071,659

9.3 Fair value

The following is the balance of other financial assets by fair value hierarchy level as of December 31, 2021, and 2020:

	2021	2020
Level 1	834,057	5,273
Level 2	1,139,457	3,062,995
	1,973,514	3,068,268

There were no transfers between hierarchy levels for the years ended December 31, 2021, and 2020.

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

The securities comprising Ecopetrol Business Group's portfolio are valued daily according to the instructions issued by the Financial Superintendence of Colombia. To this end, the information provided by authorized entities is used, which includes data from active markets. For cases in which market data is not available, other directly or indirectly observable data is used.

For U.S. dollar-denominated investments, fair value is based on information released by Bloomberg, while for investments denominated in Colombian pesos, fair value is provided by Precia, an entity authorized by the Financial Superintendence of Colombia to provide this service.

Within the investment valuation hierarchy process, other relevant aspects are considered, such as the issuer's rating, investment rating and the risk analysis of the issuer performed by the Ecopetrol Business Group.

9.4 Credit rating

The following table reflects the credit quality of the issuers of other financial assets:

	2021	2020
AAA	1,158,794	353,939
BB+	954,212	—
F1+	319,253	551,626
B	158,814	—
A-1	119,461	1,107,777
BRC1+	75,068	—
A+	42,821	60,692
A	12,204	21,179
F3	8,990	—
BB	7,412	—
BBB	7,112	—
AA+	6,075	5,332
BBB-	—	758,472
A-3	—	127,861
F1	—	43,839
AA-	—	21,263
AA	—	7,759
Other	64,518	11,920
	2,934,734	3,071,659

See credit risk policy in Note 30.7.

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

10. Taxes

10.1 Current and non-current tax assets and liabilities

	2021	2020
Current tax assets		
Income tax (1)	1,739,542	1,823,027
Credit tax balance (2)	3,108,175	1,311,693
Other taxes (3)	1,426,085	841,575
	6,273,802	3,976,295
Non-current tax assets		
Deferred tax assets (4)	9,024,858	7,673,912
Income tax credits (5)	5,274	397,821
	9,030,132	8,071,733
Current tax liabilities		
Income tax payable (6)	1,298,524	811,197
Industry and commerce tax	247,966	161,813
National tax and surcharge on gasoline	192,665	137,710
Carbon tax	66,006	64,091
Value added tax (7)	157,452	5,607
Other taxes (8)	189,491	63,465
	2,152,104	1,243,883
Non-current tax liabilities		
Deferred tax liabilities (9)	10,850,463	1,639,206
Income tax payable - work for taxes (10)	65,130	226,848
Other taxes (11)	1,208,927	—
	12,124,520	1,866,054

- (1) Given the payment for self-withholdings during the year, tax discounts like; taxes paid abroad, 50% of the industry and commerce paid, and VAT for the acquisition of real productive fixed assets, a favorable balance is generated for the term.
- (2) Corresponds mainly to the Ecopetrol's tax credit value added tax (VAT).
- (3) Includes the VAT credit derived from the acquisition of real productive fixed assets, following Article 258-1 of the Colombian Tax Code and municipal advance payments and self-withholdings.
- (4) Corresponds mainly to the loans payable in dollar of Ecopetrol, that increased from 2020 due to the currency devaluation in 2021; also includes the new tax losses of the Refinería de Cartagena S.A.S. ("Reficar") and Ecopetrol USA, among others.
- (5) Corresponds to the effective VAT credit paid on the acquisition of real productive fixed assets, which, given the limitations established by law, Ecopetrol could not use in income tax return of the fiscal year 2020 but in 2021.
- (6) The increase between the prior year, corresponds to the income increase obtained in 2021, due to higher prices and reactivation of the economy.
- (7) Corresponds mainly to the ISA's value added tax (VAT). ISA has been part of the Ecopetrol Business Group since August 2021.
- (8) The variation corresponds mainly to the increase in royalties' payments, transport tax, among others, due to the improved results in the fiscal year 2021.

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

(9) The variation corresponds mainly to purchase price allocation adjustments related to the acquisition of ISA (\$2,795,136) in addition to the consolidation of ISA's own deferred taxes (\$5,082,161).

(10) Corresponds to projects that will be ending in 2022 and are reclassified to the short term.

(11) Corresponds mainly to the contributions payable by the ISA group of PIS, CONFIS of CTEEP and subsidiaries located in Brazil

10.2 Income tax

In accordance with Law 2010/2019 (Tax Reform) the tax provisions applicable to individual companies in Colombia for the taxable year 2021 and 2020 are the following:

- The income tax rate applicable to national companies and foreign entities will be 32% for the year 2020 and 31% for the fiscal year 2021. Law 2155 of 2021 increased the income tax rate from 30% to 35% from the year 2022.
- For the year 2020, the presumptive income rate was 0.5% of the taxpayer's net equity from the immediately previous year. From 2021 the applicable tax rate was 0%.
- The income tax for tax free trade zone users will be 20%. If the company located in the free zone has a Legal Stability Agreement (hereinafter LSA), the income tax rate will continue to be 15% during the term of said contract. This is the case of Refinería de Cartagena S.A.S. ("Reficar") and Esenttia Masterbatch Ltda. ("Esenttia MB").
- For fiscal years 2020 and 2021, Ecopetrol Business Group had subsidiaries that were subject to a 32% and 31%, respectively, income tax rate, subsidiaries located in free trade zones that were subject to a 15% income tax rate depending upon whether they complied with the LSA rules and other subsidiaries in Brazil, Chile, Perú, USA, that were subject to 34%, 27%, 29.5%, 21%, respectively, and other companies that were subject to statutory income tax rates applicable in countries where they are incorporated.
- The tax depreciation percentages are adjusted based on the table established in Article 137 of the Colombian Tax Code. On the other hand, oil investments amortization will be calculated based on the technical production units as it is recorded for accounting purposes.
- The cost of acquisition of exploration rights, geology and geophysics (G&G), exploratory drilling, among others, is capitalized for tax purposes until the technical and commercial feasibilities of extracting the resource are achieved.
- Tax losses generated as of January 1, 2017, may be offset against ordinary net income obtained in the following 12 taxable years.

Statute of limitations of tax returns

For the Colombian Companies, the income tax returns of the taxable years 2011, 2012, 2014, 2015, 2016, 2017, 2018, 2019 and 2020 and income tax for equality - CREE - of the taxable years 2014, 2015, and 2016 can still be reviewed by the tax authorities. The management of Ecopetrol Business Group companies considers that the amounts recorded as liabilities for taxes payable are sufficient and are supported by the law to meet any claim that may be established with respect to such years

In Colombia, as of January 1, 2017, the statute of limitations for the income tax return corresponds to three-year (3) counted from the due date to file the return or the filing date, when these have been lately filed. Returns filed by taxpayers that have made transactions, subject to the transfer pricing regulations, have a five-year (5) statute of limitations, for the tax returns that are filed as of January 1, 2020. For the other countries where there are subsidiaries of the Ecopetrol Business Group, the statute of limitations time will depend on the local regulations in each country.

[Table of Contents](#)

Ecopetrol S.A.

Notes to the consolidated financial statements

(Figures expressed in millions of Colombian pesos, unless otherwise stated)

In Colombia, for tax returns with favorable balances, the statute of limitations will be 3 years as of the filing date of the request for refunds or offsetting. For tax returns in which tax losses are carried forward, the statute of limitations will be 6 years (5 years from 2020) counted as of their filing date. For the other countries where there are subsidiaries of the Ecopetrol Business Group, the statute of limitations time will depend on the local regulations in each country

Income tax expense

	2021	2020	2019
Current income tax (1)	6,975,549	2,861,606	7,117,040
Deferred income tax (2)	1,939,567	(791,824)	(2,365,108)
Deferred income tax – rate change (3)	(28,993)	—	—
Adjustments to prior years' current and deferred tax(4)	(90,860)	(31,121)	(33,519)
Income tax expenses	8,795,263	2,038,661	4,718,413

- (1) The variation mainly corresponds to the increase profits due to higher prices and the reactivation of the economy in fiscal year 2021. In 2020 Ecopetrol, calculated income tax under the presumptive income tax method
- (2) The variation mainly corresponds to the deferred tax asset on fiscal year 2020 tax losses and presumptive income tax of Ecopetrol (\$1,266,293), the effect of the exchange rate on loans denominated in foreign currencies, the recognition of the deferred tax asset on excess presumptive income tax of Refinería de Cartagena S.A.S. (\$180,562) and the effect of ISA acquisition (\$352,906).
- (3) Corresponds to the effect of the Law 2155 of 2021, which increased the income tax rate from 30% to 35% for 2022 and following years.
- (4) Corresponds to the difference between the provision and the tax return for fiscal year 2020 filed in 2021, and the effect of the deferred tax not calculated over the tax refund certificates (CERT acronymous in Spanish) in Ecopetrol, among others.

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

Reconciliation of the income tax expenses

The reconciliation between the income tax expense and the current tax applicable to the Ecopetrol Business Group in Colombia is as follows:

	2021	2020	2019
Net income before income tax	26,425,817	4,776,514	19,723,568
Statutory rate	31.0 %	32.0 %	33.0 %
Income tax at statutory rate	8,192,003	1,528,484	6,508,777
Effective tax rate reconciliation items:			
Non-deductible expenses	1,581,472	277,007	295,550
Reversal of deferred tax recognized in prior years	—	245,508	—
Rate differential adjustment	(304,176)	14,974	132,888
Impairment of non-current assets	—	—	57,646
Variation in equity accounting method in Invercolsa	—	—	(2,943)
Non-taxable income	(517,483)	(35,471)	(524,658)
Prior years' taxes	(90,860)	(31,121)	(33,519)
Foreign currency translation and exchange difference	(149,035)	59,852	(54,319)
Tax discounts and tax credit	(173,154)	(20,572)	(110,857)
Ecopetrol U.S.A. adjustment income tax	—	—	(1,550,152)
Others	285,489	—	—
Effect of tax reform	(28,993)	—	—
Income tax calculated	8,795,263	2,038,661	4,718,413
Effective tax rate	33.3 %	42.7 %	23.9 %
Current	6,940,660	2,583,832	7,127,492
Deferred	1,854,603	(545,171)	(2,409,079)
	8,795,263	2,038,661	4,718,413

The effective tax rate as of December 31, 2021, is 33.3% (2020 - 42.7%). The decrease from the previous year is mainly due to: a) the profit increase by the higher prices and reactivation of the economy in the fiscal year 2021, b) increase of the non-deductible expenses by the adjustment for exchange differences in the Colombian companies of Ecopetrol Business Group that are US dollar functional currency (\$1,192,108), c) the acquisition of ISA, d) the effect of the companies of the Group with profit that have a nominal rate different from the parent company (Ecopetrol Capital AG - \$52,026, Esentia MB - \$51,279, and Ecopetrol Permian - \$112,030) e) the effect of the deferred tax not calculated over the Tax refund certificates (CERT acronymous in Spanish) in Ecopetrol, and f) the increase of the income tax rate from 30% to 35%.

Deferred income tax

	2021	2020
Deferred tax assets	9,024,858	7,673,912
Deferred tax liabilities	(10,850,463)	(1,639,206)
Net deferred income tax	(1,825,605)	6,034,706

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

The detail of deferred tax assets and liabilities is as follows:

	2021	2020
Deferred tax assets (liabilities)		
Loss carry forwards (1)	4,399,754	4,478,606
Provisions (2)	4,029,550	3,187,850
Employee benefits (3)	1,378,161	1,874,242
Accounts payable	13,774	(10,626)
Loans and borrowings (4)	2,735,340	846,019
Accounts receivable – customers and concessions (5)	(4,029,534)	183,843
Presumptive income tax excesses (6)	180,563	61,722
Other (7)	(1,327,524)	47,269
Goodwill (8)	(780,193)	(366,346)
Property plant and equipment and Natural and environmental resources (9)	(8,425,496)	(4,267,873)
	(1,825,605)	6,034,706

(1) In 2021, a deferred tax asset for tax losses carryforwards was recognized in the following companies:

- Ecopetrol USA Inc.: losses that expires imasn 20 years (COP\$1,591,781) and losses that do not expire (COP\$765,914)
- Refinería de Cartagena: losses that do not expire (COP\$2,027,433) and
- Invercolsa: losses that expires in 12 years (COP\$14,626).

(2) Corresponds to non-deductible accounting provisions, mainly the asset retirement obligation (ARO) provision and asset restoration obligation in Ecopetrol USA.

(3) Corresponds to update of the actuarial calculations for health, pensions and bonds, education, and other long-term benefits to employees.

(4) Corresponds mainly to the effect in the foreign change (16%) in the fiscal year 2021.

(5) It includes mainly the deferred tax related to foreign concessions to be received from foreign grantors of ISA (COP\$4,118,455).

(6) Corresponds mainly to the effect by recognized deferred tax assets in Refinería de Cartagena (COP\$180,563)

(7) Mainly related to the effect of business combination Ecopetrol – ISA in intangibles (COP\$-997,516) and exploration costs, others, and partnership interest in Ecopetrol USA (COP\$28,029, COP\$109,156 and COP\$-469,499).

(8) According to Colombian tax law until the fiscal year 2016, goodwill was subject to amortization for fiscal proposes, while under IFRS it is only allowed to be subject to impairment tests, a difference that results in a deferred tax liability.

(9) Relates to deferred taxes on differences between book and tax depreciation and amortization rates, natural and environmental resources, intangibles, and property, plant and equipment have a useful life and a methodology for calculating depreciation and amortization different from those determined under the international accounting standards. This item includes the amount of the capital gains of 10% tax rate applicable to the lands and 35% tax rate for the other fixed assets. It mainly includes the deferred tax related to the business combination ISA (COP\$-1,756,893), natural and environmental resources in Ecopetrol (COP\$-2,991,429) and Property plant and equipment in Ocesa (COP\$-1,141,923), ISA (COP\$-500,314), and Refinería de Cartagena (COP\$-935,983).

Ecopetrol Business Group offsets tax assets and liabilities only if it has a legally enforceable right to offset current tax assets and liabilities and to the extent that they relate to income taxes required by the same tax jurisdictions and tax authorities.

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

Deferred tax details are as follows:

	Loss carry forwards	Provisions	Employee benefits	Accounts payable	Loans and borrowings	Excess presumptive income
As of December 31, 2018	1,002,062	1,994,762	1,161,860	365,646	827,452	(37,638)
Profit or loss	1,548,754	409,270	(57,343)	345,857	92,751	335,911
OCI	—	—	771,355	—	—	—
As of December 31, 2019	2,550,816	2,404,032	1,875,872	711,503	920,203	298,273
Profit or loss	1,927,790	783,818	39,608	(722,129)	(74,184)	(236,551)
OCI	—	—	(41,238)	—	—	—
As of December 31, 2020	4,478,606	3,187,850	1,874,242	(10,626)	846,019	61,722
Profit or loss	(78,852)	841,700	183,429	24,400	2,539,369	118,841
Increase due to business combinations (ISA acquisition – Note 12)	—	—	—	—	(650,048)	—
OCI	—	—	(679,510)	—	—	—
As of December 31, 2021	4,399,754	4,029,550	1,378,161	13,774	2,735,340	180,563

	PPE and Natural resources	Goodwill	Accounts receivable	Others	Total
As of December 31, 2018	(2,304,140)	(404,394)	79,591	(143,717)	2,541,484
Profit or loss	(736,296)	40,426	59,819	369,930	2,409,079
OCI	—	—	—	(114,520)	656,835
Increase in shareholding in Invercolsa	—	—	—	(98,005)	(98,005)
Foreign currency translation	—	—	—	(28,877)	(28,877)
As of December 31, 2019	(3,040,436)	(363,968)	139,410	(15,189)	5,480,516
Profit or loss	(844,091)	(2,378)	44,433	12,201	928,517
OCI	—	—	—	130,764	89,526
Increase due to business combinations (Guajira association)	(383,346)	—	—	—	(383,346)
Foreign currency translation	—	—	—	(80,507)	(80,507)
As of December 31, 2020	(4,267,873)	(366,346)	183,843	47,269	6,034,706
Profit or loss	(366,273)	(39,627)	(94,922)	(4,982,668)	(1,854,603)
Increase due to business combinations (ISA acquisition- Note 12)	(3,791,350)	(374,220)	(4,118,455)	1,056,776	(7,877,297)
Deferred tax recognized on ISA dividends (Note 12)	—	—	—	(35,033)	(35,033)
OCI	—	—	—	2,214,661	1,535,151
Foreign currency translation	—	—	—	371,471	371,471
As of December 31, 2021	(8,425,496)	(780,193)	(4,029,534)	(1,327,524)	(1,825,605)

Deferred tax assets recognized

Deferred tax assets recognized in the consolidated financial statements as of December 31, 2021, and 2020 amounted to (COP\$1,825,605) and COP\$6,034,706, respectively, and are comprised of the items included in detail of deferred tax assets and liabilities.

The Ecopetrol Business Group recognizes deferred tax assets to the extent that it is probable that they will be realized against available sources of income, including forecast of future taxable income. In accordance with the tax rules regulation applicable until December 31, 2016, excess of presumptive income and excess minimum base excesses before 2017 incurred in the income tax and income tax for equity equality - (CREE, as its acronym in Spanish) respectively, may be offset with the ordinary taxable income in the following five (5) years, using for this purpose, the formula established in numeral 6th, of Article 290 of Law 1819/2016.

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

The tax loss carryforwards of Ecopetrol USA generated between 2008 and 2017, expire in 20 years from the year in which they were incurred. The tax loss carryforwards generated starting January 1, 2018, have no expiration date and its use is limited to 80% of taxable income.

The movements of deferred income tax for the years as of December 31, 2021, 2020 and 2019 are as follows:

	2021	2020	2019
Opening balance	6,034,706	5,480,516	2,541,484
Deferred tax recognized in profit or loss	(1,854,603)	928,517	2,409,079
Increase due to business combination	(7,877,297)	(383,346)	(98,005)
Deferred tax recognized in other comprehensive income (a)	1,535,151	89,526	656,835
ISA Differed tax Dividends	(35,033)	—	—
Foreign currency translation	371,471	(80,507)	(28,877)
Closing balance	(1,825,605)	6,034,706	5,480,516

(a) The following is the detail of the income tax recorded in other comprehensive income:

December 31. 2021	Pre-tax	Deferred tax	After tax
Actuarial valuation gains (losses) (Note 22.1)	(2,456,667)	679,510	(1,777,157)
Cash flow hedging for future crude oil exports (Note 30.3)	1,259,269	(450,492)	808,777
Hedge of a net investment in a foreign operation (Note 30.4)	4,579,758	(1,708,348)	2,871,410
Hedge with derivative instruments	191,487	(55,821)	135,666
	3,573,847	(1,535,151)	2,038,696
December 31. 2020	Pre-tax	Deferred tax	After tax
Actuarial valuation gains (losses) (Note 22.1)	(137,459)	41,238	(96,221)
Cash flow hedging for future crude oil exports (Note 30.3)	(1,186)	1,908	722
Hedge of a net investment in a foreign operation (Note 30.4)	520,490	(156,147)	364,343
Hedge with derivative instruments	(78,547)	23,475	(55,072)
	303,298	(89,526)	213,772
December 31. 2019	Pre-tax	Deferred tax	After tax
Actuarial valuation gains (losses) (Note 22.1)	2,571,184	(771,355)	1,799,829
Cash flow hedging for future crude oil exports (Note 30.3)	(356,339)	118,008	(238,331)
Hedge of a net investment in a foreign operation (Note 30.4)	87,524	(26,257)	61,267
Hedge with derivatives instruments	(69,220)	22,769	(46,451)
	2,233,149	(656,835)	1,576,314

[Table of Contents](#)

Ecopetrol S.A.

Notes to the consolidated financial statements

(Figures expressed in millions of Colombian pesos, unless otherwise stated)

Deferred tax assets not recognized

Deferred tax assets related to the tax loss carryforwards incurred by the subsidiaries Andean Chemicals Ltd (COP\$1,852) and subsidiaries of ISA Group: Ruta del Bosque – Chile - (COP\$35,511), Ruta del Maule - Chile - (COP\$27,404), Ruta Costera – Colombia - (COP\$932), ISA Intervial Colombia (COP\$541), ISA Capital Do Brasil (COP\$15,983), Internexa Brasil Operadora de Telecomunicações (COP\$69,358), Internexa Participações – Brasil - (COP\$2,122) e ISA Bolivia (COP\$1,831), excess of presumptive income of Hocol Petroleum Company, and Andean Chemicals Ltd in the amount of COP\$12,077 and COP\$4,332, respectively, were not recognized, as the Management determined that it is not probable that these deferred tax assets will be recoverable in the foreseeable future.

If the Ecopetrol Business Group had recognized this deferred tax asset, the profit for the year ending December 31, 2021 would have increased by COP\$171,943.

Deferred tax liabilities not recognized

As of December 31, 2021, in connection with paragraph 39 of IAS 12, deferred tax liability was not recognized on the difference between the accounting and tax basis associated with investments in Ecopetrol subsidiaries, associates and joint ventures (Base: COP\$ -3,902,439 - Tax: COP\$ -390,244) and ISA subsidiaries (Base: COP\$ -5,039,019 - Tax: COP\$ - 503,902).

Uncertain tax positions - IFRIC 23

Ecopetrol Business Group's strategy is to avoid making aggressive tax decisions that may cause questioning of its tax returns, by tax authorities.

Regarding uncertain tax positions where it has been determined that there may be a possible controversy with the tax authority that could result in an income tax increase, a success threshold has been established by IFRIC 23, which has been calculated based on current regulations and tax opinion provided by our tax advisors.

In accordance with the aforementioned interpretation, the Ecopetrol Business Group considers that uncertain tax positions include in its determination of income tax will not affect the results if it is probable that the position will be accepted by the tax authorities. Notwithstanding, the Ecopetrol Business Group will continue to monitor new tax regulations and ruling issued by the tax authority and other entities.

10.2.1. Dividend taxes

Dividends related to profits generated from the year ended December 31, 2017 will be subject to withholding at a rate of 7.5% for 2020 and 2021, for resident companies and 10% for non-resident shareholders (companies and individuals). Further, if the earnings against which the dividends are distributed were not subject to corporate tax, these dividends are taxable by the income tax applicable during the distribution period (for 2021 the rate is 31%). In this scenario, the 7.5% or 10% tax on dividends will be applicable to the distributed amount, once it is reduced by the 31% in 2021 (32% in 2020) income tax rate.

The non-taxed dividends that the Company will receive will not be subject to withholding tax due to the express provision of the regulation that establishes the dividends that are distributed within Ecopetrol Business Groups duly registered with the Chamber of Commerce and decentralized entities; they will not be subject to withholding tax for this concept.

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

10.2.2. Transfer prices

According to the Colombian tax law, income taxpayers who enter transactions with related parties or related parties located in foreign jurisdictions and in free trade zones or with residents located in jurisdictions considered tax havens, are obliged to determine their ordinary and extraordinary income for purposes of the income tax, its costs and deductions, considering for these operations the arm's length principle.

Ecopetrol filed in 2021 its transfer pricing informative return for the 2020 taxable year, and its corresponding supporting documentation, as well as the country-by-country report and the master file for the same year, following the current tax law.

For fiscal year 2021, related-party transactions in foreign jurisdictions, as well as the business conditions under which said operations were carried out and the general structure did not vary significantly with respect to the previous year. For this reason, these transactions were carried out in accordance with the arm's length principle. It is estimated that there will be no need for adjustments derived from the analysis of transfer prices for 2021, which imply changes in the income provision of the taxable year 2021.

10.2.3. Value Added Tax (VAT)

Law 2010/2019 established that VAT paid on the import, creation, construction or acquisition of real productive fixed assets, may be treated as a tax credit for income tax purposes. This VAT cannot be assumed simultaneously as a cost or expense in the income tax and is not allowed to be discounted from the VAT return.

10.2.4. Law 2010 of 2019

The Government issued the Law 2010/2019, which makes numerous changes to the Colombian tax rules. The Tax Reform reduces the corporate income tax (CIT) rate from 33% in 2019 to 32% for 2020 and 31% for 2021.

The presumptive income tax rate (i.e., an alternative tax based on a percentage of the net equity of the last year) is reduced from 1.5% to 0.5% in 2020 and 0% for 2021 and onwards.

The thin capitalization rule ratio is modified from 3:1 (which includes all debt that generates interest with local and foreign entities, related or unrelated) to a 2:1 ratio that only considers debt transactions involving related local and foreign parties (including back-to-back transactions involving foreign third parties).

Tax on dividends

As of January 1, 2020, the Tax Reform establishes a 7.5% dividend tax on distributions between Colombian companies. The tax will be charged only on the first distribution of dividends between Colombian entities and may be credited against the dividend tax due once the ultimate Colombian company makes a distribution to its shareholders (nonresident shareholders (entities or individuals) or to Colombian individual residents). The dividend tax on local distributions does not apply if the Colombian companies are part of a registered economic Ecopetrol Business Group, or the distribution is to a Colombian entity qualifying for the new Colombian holding company (CHC) regime.

Normalization tax

The Tax Reform establishes a tax amnesty to "normalize" (i) unreported assets; or (ii) nonexistent liabilities that were included on a tax return. The amnesty will apply only for 2020 (September 25, 2020 is the due date for filing the normalization tax). The applicable tax rate is 15% of the value of the unreported assets or nonexistent liabilities.

Value Added Tax

Law 2010 of 2019 established that VAT paid on the import, construction or acquisition of real productive fixed assets may be deducted from taxable income. This VAT cannot be reported simultaneously as a cost and expense in the income tax return, nor will it be discounted from the sales tax.

[Table of Contents](#)

Ecopetrol S.A.

Notes to the consolidated financial statements

(Figures expressed in millions of Colombian pesos, unless otherwise stated)

Concerning VAT, changes have been made to the list of goods and services excluded from VAT as set forth in Articles 424, 426 and 476 of the Tax Code, adding Article 437 to the Tax Code, with regard to guidelines on compliance with formal duties concerning VAT by service providers abroad, and it has been noted that VAT withholding may be up to 50% of the tax amount, subject to regulation by the National Government. The VAT rate remains at 19%.

Tax procedures

With regards to procedure, the following changes have been made: (i) withholding tax returns which, being considered ineffective, will be enforceable, (ii) electronic notification of administrative acts; (iii) payment of the entire amount covered by a statement for objections to avoid late interest at the current rate plus two points; and (iv) elimination of the extension of the status of limitations to three (3) additional years due to tax losses offset and (v) a five-year status of limitations for those taxpayers who must comply with the transfer pricing regime.

Additionally, an audit benefit was included for fiscal years 2020 to 2021. Under this benefit, the income tax returns that reflect an increase in the net income tax of at least 30%, or 20% over the net income tax of the immediately preceding year, shall be considered firm for six (6) or twelve (12) months, respectively after the date of presentation if not notified of a deadline for correction or special requirement, or a special deadline or provisional settlement, provided that the return is filed timely and the payment is made within the established deadlines.

The above benefit does not apply to: (i) taxpayers who have access to tax benefits due to their location in a specified geographic region; (ii) if it is demonstrated that the withholding taxes reported are non-existent; (iii) if the net income tax is less than 71 UVT (COP\$2,6 for fiscal year 2021). The reduced status of limitation stated is not applicable for withholding tax returns and VAT returns, which shall follow the general tax rules.

10.2.5. Tax reform – Tax Law 2155/2021

The Tax Reform increase the corporate income tax (CIT) to 35% for 2022 and onwards and maintained credit for 50% of the industry and commerce paid. And introduced other changes in value-added tax and tax procedure obligations. Prior to the issuance of the tax law mentioned, the income tax rate for the year 2022 was 30% and the Industry and Commerce Tax discount was 100%.

Audit benefit: For the fiscal years 2022 and 2023, this Law reduce the time in which the tax authorities can audit an income tax return, from 5 years to between 6 to 12 months, depending on whether the net income tax increased to 35 % or 25% with respect to that income tax return in the last fiscal year.

Works for Taxes: The assumptions under which the “works for taxes” can be accessed are expanded, including those territories that, not being ZOMAC, are in some of these situations: (i) They have high rates of poverty, (ii) totally or partially lack infrastructure for the provision of residential public services, (iii) are in non-interconnected areas and (iv) are in Orange Development Areas (ADN acronyms in Spanish).

10.2.6. Others

According to the opinions of economic analysts, it is expected that in the second half of fiscal year 2022, the National Government will present a tax reform that may have effects on the calculation of income tax of the companies. For income tax, this tax reform would have effects from January 1, 2023.

11. Other assets

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

	2021	2020
Current		
Partners in joint operations (1)	639,199	534,145
Advanced payments to contractors and suppliers	591,990	503,698
Prepaid expenses	549,456	369,979
Trust funds (2)	527,520	218,158
Related parties (Note 31)	1,386	7,093
Other assets	23,540	30,963
	2,333,091	1,664,036
Non-current		
Abandonment and pension funds (3)	461,729	405,376
Employee benefits	229,969	221,658
Trust funds (2)	176,781	338,067
Advanced payments and deposits	92,815	54,392
Judicial deposits and attachments	48,845	42,672
Other assets (4)	188,224	27,949
	1,198,363	1,090,114

- (1) Corresponds to the net amount of cash calls and cutbacks generated in relation to the operations carried out with partners through Exploration and Production (E&P) contracts, Technical Evaluations (TEA) contracts and agreements entered in to with the National Hydrocarbons Agency (ANH), as well as through association contracts and other types of contracts.
- (2) Mainly includes the resources invested in trust fund destined to “works for taxes”, mechanism of payment of the income tax of 2019 and 2020, constituted in compliance with article 238 of Law 1819 of 2016 - Tax reform.
- (3) Mainly corresponds to Ecopetrol’s share in trusts funds established to support costs of abandonment of wells and dismantling of facilities, as well as the payment of future retirement pensions in some association contracts.
- (4) Increase due to the consolidation of ISA Group. This concept includes advances to suppliers and other non-current assets.

12. Business combinations

On August 20, 2021, Ecopetrol S.A completed the acquisition of Interconexión Eléctrica S.A. ESP ("ISA"). On such date, the closing conditions of the Inter-Administrative Agreement signed on August 11 between Ecopetrol S.A. and the Colombian Ministry of Finance and Public Credit ("MHCP") for the acquisition of \$569,472,561 shares of ISA equivalent to 51.4% of the outstanding shares were fulfilled. On August 20, 2021, Ecopetrol S.A. acquired control of ISA. As ISA was controlled by the Ecopetrol Business Group’s controlling shareholders the transaction was between entities under common control.

The accounting for transactions of entities under common control are not provided for in IFRS, as such, based on the guidance of International Accounting Standards (“IAS”) 8, Accounting Policies, Changes in Accounting Estimates and Errors, paragraphs 10 through 12, the Ecopetrol Business Group developed and applied and accounting policy that it applied to this transaction, considering the most recent pronouncements of other standard-setting bodies that use a similar conceptual framework to develop accounting standards, other accounting literature and industry practices. Given that the Ecopetrol Business Group concluded that the transaction had commercial substance, since the consideration transferred was settled in cash and determined based on the market value of the shares acquired (25,000 pesos per share) and involved significant minority interest (48.6%) the Ecopetrol Business Group accounted for the transaction as a business combination pursuant to IFRS 3.

The acquisition of ISA represents a transformational step for the Ecopetrol Business Group in the development of the strategy of energy transition, decarbonization and diversification of the business. With this acquisition, the Ecopetrol Business Group is positioned, through a single operation, as a key player in the electricity business, with prospects for future growth.

[Table of Contents](#)

Ecopetrol S.A.
 Notes to the consolidated financial statements
 (Figures expressed in millions of Colombian pesos, unless otherwise stated)

As of December 31, 2021, ISA is a multi-Latin business group with operations in the Electric Power Transmission, Toll Roads Concessions and Telecommunications businesses, through 50 subsidiaries, 11 joint ventures and 1 associate, in 6 countries in South and Central America.

Acquired assets and assumed liabilities at the date of acquisition:

	Fair Value
Assets	
Cash and cash equivalents	4,983,234
Accounts receivable	27,487,774
Inventories	120,300
Other financial assets	1,093,941
Current tax assets	477,504
Other assets	682,445
Investments in subsidiaries and joint ventures (Note 13) (1)	5,014,749
Properties, plant, and equipment (Note 14) (2)	17,640,458
Right of use assets (Note 16) (3)	230,207
Intangibles (Note 17) (4)	14,326,479
Deferred tax assets (Note 10.2)	2,075,849
Total assets	74,132,940
Liabilities	
Loans (Note 20)	27,203,432
Leases (Note 16) (3)	255,503
Accounts payable	1,358,692
Employee Benefits	973,210
Tax liabilities	1,897,786
Provisions and contingencies (Note 23) (5)	947,883
Other liabilities	1,708,349
Deferred tax liabilities (Note 10.2)	9,953,146
Total liabilities	44,298,001
Total identifiable net assets	29,834,939
Non-controlling interest (6)	(18,973,080)
Goodwill derived from the acquisition (7)	3,038,977
Consideration transferred (8)	13,900,836

1. The details of the fair values on the date of acquisition in associates and joint ventures are as follows:

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

Company	Fair Value
Joint Ventures	
Transmissora Aliança de Energia Elétrica S.A.	1,496,926
Interligação Elétrica do Madeira S.A.	1,446,019
Interligação Elétrica Paraguaçu S.A.	396,753
Interligação Elétrica Garanhuns S.A.	365,533
Interligação Elétrica Aimorés S.A.	269,484
Interligação Elétrica Ivaí S.A.	249,539
Interconexión Eléctrica Colombia Panamá S.A.	6,412
Derivex S.A.	489
Parques de Rio	96
Interconexión Eléctrica Colombia Panamá S.A.S E.S.P.	4
	4,231,255
Associated	
ATP Tower Holdings	783,494
	783,494
Total investments in joint ventures and associated companies	5,014,749

The fair value of the associates and joint ventures adjustment was \$1,281,598 and was determined by the methodologies of discounted cash flows, market value and market multiples. The companies Interligação Elétrica Garanhuns S.A., Interligação Elétrica do Madeira S.A., Interligação Elétrica Ivaí S.A., Interligação Elétrica Aimorés S.A. and Interligação Elétrica Paraguaçu S.A. were valued by discounted cash flows, Transmissora Aliança de Energia Elétrica (TAESA) was valued at market value and the other joint and associated businesses were valued by market multiples. The fair value adjustment of associates and joint ventures totaled \$1,281,598, of which \$558,659 relates to Transmissora Aliança de Energia Elétrica S.A. (TAESA) and \$367,659 relates to ATP. The key assumptions for TAESA's valuation were the number of shares held by ISA, the share market price and the exchange rate; whereas for ATP's valuation were: the Price to Book value multiple for telecommunication comparable companies and ATP's equity book value. The remaining other companies were valued by discounted cash flows.

2. The fair value adjustment of the property, plant and equipment amounts to \$5,233,557. The methodologies used to estimate the fair value of the property, plant and equipment and the transmission line easements were the replacement cost and market value estimate through quotations of similar assets. The key assumptions used to estimate the fair value of those assets were: replacement value of fixed assets, market quotations, and the assets useful lives.
3. Ecopetrol measured the acquired lease liabilities by discounting the future lease payments for the remaining lease terms using the Ecopetrol Business Group incremental borrowing rate at the date of acquisition. Right-of-use assets were measured at an amount equal to lease liabilities.
4. The fair value adjustment of intangible assets with contractual rights was \$4,596,134 and were valued by the Multi – period Excess Earnings Method (MEEM) methodology, including the contractual rights' fair value's estimates were calculated based on the contractual revenues and the adjusted operational margin of each intangible. The projected operational profit was deducted by the corresponding income tax rate applicable in the jurisdiction, and the estimated contributory asset charges. The projected excess earning was discounted to present value using the entities' discount rate (WACC, which included an intangible asset premium).
5. The fair value adjustment of contingent liabilities which are defined as present obligations that arise from past events and their fair value can be measured reliably was \$225,983 and it was determined based on the advice of its legal advisors based on the expected likely outcome of the disputes.
6. The non-controlling interest fair value adjustment was measured based on the proportionate share in the recognized amounts of the acquiree's identifiable net assets. It has two main components: (i) the non-controlling interest fair value adjustment in ISA's subsidiaries, mainly ISA CTEEP, ISA REP, and Consorcio Transmantaro (\$ 890,575); and (ii) the non-controlling interest from Ecopetrol in ISA (\$ 10,265,482).

[Table of Contents](#)

Ecopetrol S.A.
 Notes to the consolidated financial statements
 (Figures expressed in millions of Colombian pesos, unless otherwise stated)

The former corresponds mainly to the fair adjustment of the non-controlling shares in the following subsidiaries of ISA: ISA CTEEP, ISA REP and Consorcio Transmataro. The later corresponds to the fair value of 48.59% of the equity attributable to ISA's non-controlling shareholders, which was not acquired by Ecopetrol.

7. Goodwill from the acquisition was allocated to the Electric Power Transmission and Toll Roads Concessions Segment.

Goodwill represents the future profitability of the businesses and potential upsides such as the possibility to expand some of the existing businesses, management's know-how to identify new business opportunities and to finance them. Recognized Goodwill is not deducted for tax purposes in Colombia.

8. The consideration transferred corresponds to the payment made to the former controlling shareholder of ISA, reduced by the dividends received at the time of closing the transaction.

Deferred tax liability comprises primarily the temporary differences generated between the tax bases of plant and equipment property assets and intangibles assets measured at fair value and the ISA dividend payment, using the statutory rate enacted in corresponding jurisdiction.

From the date of the acquisition until December 31, 2021, ISA contributed \$4,113,198 to the consolidated revenue and \$1,108,202 (including non-controlling interest for \$846,454) to the consolidated net profit. If the acquisition had occurred on January 1, 2021, management estimates that consolidated revenue and consolidated net income for the year would have been higher by \$7,039,487 and \$2,096,511 (including non-controlling interest for \$1,501,984), respectively.

Analysis of the cash flow of the acquisition:

Consideration paid in cash	(14,236,814)
Dividends received by Ecopetrol from ISA (1)	371,011
Consideration transferred (included in investment activities) (2)	(13,865,803)
Cash acquired with the business combination (included in investing activities)	4,983,234
Acquisition-related costs (3)	(69,018)
Costs related to the issuance of debt (included in financing activities) (Note 20)	(42,699)
Acquisition cash flow, net	(8,994,286)

- (1) In December 2021, ISA paid dividends to Ecopetrol of \$371,011, constituting a deferred tax of \$35,033, which was offset from the consideration transferred to be transferred as per the provisions of the acquisition agreement.
- (2) For the consolidated cash flow purposes, the consideration transferred does not include deferred taxes on dividends (\$35,033) given that it is a non-cash item.
- (3) Acquisition-related costs correspond to fees for legal and financial advice and commissions.

13. Investments in associates and joint ventures

The details on the participations, economic activity, address, area of operations and financial information of the investments in joint ventures and associates can be found in Exhibit 1.

13.1 Composition and movements

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

	2021	2020
Joint ventures		
Equion Energía Limited	1,860,634	1,642,735
Transmissora Aliança de Energia Elétrica S.A.	1,496,060	—
Interligação Elétrica do Madeira S.A.	1,374,483	—
Interligação Elétrica Paraguaçu S.A.	412,526	—
Interligação Elétrica Garanhuns S.A.	363,498	—
Interligação Elétrica Ivaí S.A.	288,224	—
Interligação Elétrica Aimorés S.A.	278,408	—
Ecodiesel Colombia S.A.	64,019	51,672
Interconexión Eléctrica Colombia Panamá S.A.	8,737	—
Derivex S.A.	448	—
Parques de Rio	93	—
Interconexión Eléctrica Colombia Panamá S.A.S E.S.P.	4	—
Offshore International Group (1)	—	613,258
	6,147,134	2,307,665
Less impairment:		
Equion Energía Limited	(398,104)	(314,460)
Offshore International Group (1)	—	(609,826)
	5,749,030	1,383,379
Associates		
Gases del Caribe S.A. E.S.P.	1,515,838	1,512,629
ATP Tower Holdings	813,697	—
Gas Natural del Oriente S.A. E.S.P.	142,508	143,893
Gases de la Guajira S.A. E.S.P.	69,461	69,518
E2 Energía Eficiente S.A. E.S.P.	35,062	35,614
Extracol S.A.	28,578	26,996
Serviport S.A.	9,399	8,541
Sociedad Portuaria Olefinas	3,012	2,599
	2,617,555	1,799,790
Less impairment: Serviport S.A.	(9,399)	(8,541)
	2,608,156	1,791,249
	8,357,186	3,174,628

- (1) On January 19, 2021, through the signing of the Share Purchase Agreement with one of the subsidiaries of De Jong Capital LLC., in its capacity as buyer, Ecopetrol formalized the sale of all the shares in the company Offshore International Group (OIG), in which it had a participation equivalent to 50%. This operation generated the following impacts on the results of the period: profit from the sale of assets for \$4,923 and the realization of other comprehensive income for \$361,728.

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

The following is the movement of investments in associates and joint ventures:

For the year ended December 31, 2021:

	Associates	Joint ventures	Total
Opening balance	1,791,249	1,383,379	3,174,628
Capitalization	—	44,735	44,735
Business combination (Note 12)	783,494	4,231,255	5,014,749
Effects of equity method through:			
Profit or loss	193,367	232,797	426,164
Other comprehensive income	12,142	121,856	133,998
Dividends declared (1)	(171,238)	(177,870)	(349,108)
Impairment (Note 18)	(858)	(83,644)	(84,502)
Foreign currency translation	—	(3,478)	(3,478)
Closing balance	2,608,156	5,749,030	8,357,186

(1) During 2021, the Group received dividends of \$206,048 from Ecodiesel, Transmissora Aliança de Energia Elétrica S.A., Interligação Elétrica do Madeira S.A., Gas Natural del Oriente S.A. E.S.P., Gases del Caribe S.A. E.S.P., Extrucol S.A., Gases de la Guajira S.A. E.S.P. and Efficient Energy S.A. E.S.P.

For the year ended December 31, 2020:

	Associates	Joint ventures	Total
Opening balance	1,826,757	1,418,315	3,245,072
Effects of equity method through:			
Profit or loss	114,779	(38,443)	76,336
Other comprehensive income	(2,923)	—	(2,923)
Dividends declared (1)	(148,665)	(9,017)	(157,682)
Impairment reversal (loss) (Note 18)	2,529	(69,041)	(66,512)
Foreign currency translation	(1,228)	81,565	80,337
Closing balance	1,791,249	1,383,379	3,174,628

(1) During 2020, the Group received dividends of COP\$157,241 (2019 - COP\$189,169) from its investments.

For the year ended December 31, 2019:

	Associates	Joint ventures	Total
Opening balance	244,662	1,599,674	1,844,336
Effects of equity method through:			
Profit or loss	109,538	257,366	366,904
Other comprehensive income	(174,991)	4,531	(170,460)
Dividends declared	(75,674)	(4,192)	(79,866)
Impairment reversal (loss) (Note 18)	142	(318,962)	(318,820)
Foreign currency translation and other movements (1)	1,723,080	(120,102)	1,602,978
Closing balance	1,826,757	1,418,315	3,245,072

(1) Invercolsa S.A. became a subsidiary as of November 29, 2019, thus the direct investments of Invercolsa in Gases del Caribe S.A. E.S.P., Gas Natural del Oriente S.A. E.S.P., Gases de la Guajira S.A. E.S.P., Extrucol S.A., E2 Energía Eficiente S.A. E.S.P., became direct investments of the Group as of the consolidation.

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

13.2 Additional information about associates and joint ventures

The following is the detail of assets, liabilities, and results of the main investments in associates and joint ventures, as of December 31, 2021, and 2020:

	2021			2020	
	Interligação Elétrica do Madeira	Transmissora Aliança de Energia Elétrica	Equion Energia Limited	Equion Energia Limited	Offshore International Group
Statement of financial position					
Current assets	593,389	1,233,296	3,054,020	2,616,813	266,240
Non-current assets	4,432,664	8,985,539	3,850	13,538	1,302,555
Total assets	5,026,053	10,218,835	3,057,870	2,630,351	1,568,795
Current liabilities	325,049	711,592	62,157	81,259	154,086
Non-current liabilities	2,196,231	4,633,422	35,316	49,773	871,089
Total liabilities	2,521,280	5,345,014	97,473	131,032	1,025,175
Equity	2,504,773	4,873,821	2,960,397	2,499,319	543,620
Other complementary information					
Cash and cash equivalents	207,703	128,256	106,858	36,601	110,622

	2021			2020		2019
	Interligação Elétrica do Madeira	Transmissora Aliança de Energia Elétrica	Equion Energia Limited	Equion Energia Limited	Offshore International Group	Equion Energia Limited
Statement of profit or loss						
Sales revenue	639,356	2,953,672	63,169	257,066	325,812	1,285,891
Costs	(18,021)	(450,666)	(45,201)	(127,672)	(364,750)	(671,179)
Other operating income (expenses), net	—	(117,526)	(8,553)	60,852	(234,597)	(624)
Financial (expenses) income	(129,094)	(562,549)	65,611	(1,090)	(24,034)	(3,660)
Income tax (expense)	(112,574)	(285,702)	(22,091)	(45,137)	59,818	(214,048)
Financial year results	379,667	1,537,229	52,935	144,019	(237,751)	396,380
Other comprehensive results	—	15,599	1,632,400	1,223,990	—	1,102,757
Other complementary information						
Depreciation and amortization	3,708	15,076	399	41,536	205,243	404,482

This is a reconciliation of equity of the significant investments and the carrying amount of investments as of December 31:

	2021			2020	
	Interligação Elétrica do Madeira	Transmissora Aliança de Energia Elétrica	Equion Energia Limited	Equion Energia Limited	Offshore International Group
Equity of the joint venture	2,504,773	4,873,821	2,960,397	2,499,319	543,620
% of Ecopetrol's ownership	51 %	14.88 %	51 %	51 %	50 %
Ecopetrol's ownership	1,277,434	725,185	1,509,802	1,274,654	271,811
Additional value of the investment	—	197,070	375,694	375,693	341,447
Impairment	—	—	(398,104)	(314,460)	(609,826)
Unrealized gain	—	—	(24,862)	(7,612)	—
Carrying amount of the investment	1,277,434	922,255	1,462,530	1,328,275	3,432

According to the equity method recognized in profit and loss by Ecopetrol Business Group in aggregated amount for separately not significant joint ventures and associates correspond to \$85,509 and \$193,367, respectively.

[Table of Contents](#)

Ecopetrol S.A.
 Notes to the consolidated financial statements
 (Figures expressed in millions of Colombian pesos, unless otherwise stated)

14. Property, plant, and equipment

	Plant and equipment	Pipelines, networks and lines	Work in progress	Buildings	Lands	Other	Total
Cost							
Balance as of December 31, 2020	51,088,781	37,141,694	7,514,228	8,412,469	4,112,826	2,692,461	110,962,459
Additions/capitalizations	1,958,132	1,657,967	1,854,907	434,438	4,965	207,179	6,117,588
Increase by business combination (Note 12)	184,303	14,860,422	1,521,181	557,224	395,828	121,500	17,640,458
(Decrease) increase in abandonment costs (Note 23)	(182,172)	(104,101)	(1,673)	(3,494)	—	127	(291,313)
Capitalized financial interests (1)	53,740	29,435	29,209	12,491	160	6,129	131,164
Exchange differences capitalized	1,371	751	745	319	4	156	3,346
Disposals	(312,646)	(81,967)	(9,344)	(25,530)	(4,164)	(37,560)	(471,211)
Foreign currency translation	4,946,012	1,646,079	164,778	204,496	257,988	120,110	7,339,463
Transfers/reclassifications	(284,678)	252,353	(507,917)	67,814	32,690	(91,442)	(531,180)
Balance as of December 31, 2021	57,452,843	55,402,633	10,566,114	9,660,227	4,800,297	3,018,660	140,900,774
Accumulated depreciation and impairment losses							
Balance as of December 31, 2020	(21,256,869)	(17,558,024)	(1,023,456)	(3,628,724)	(78,548)	(908,500)	(44,454,121)
Depreciation expense	(2,420,045)	(1,723,300)	—	(381,978)	—	(116,923)	(4,642,246)
Reversal (loss) of an impairment (Note 18)	24,888	(22,346)	(312,009)	12,790	16,403	(858)	(281,132)
Disposals	276,225	66,555	421	18,152	34	31,355	392,742
Foreign currency translation	(1,726,218)	(434,365)	(1,550)	(73,136)	(5,500)	(61,416)	(2,302,185)
Transfers/reclassifications	403,182	6,428	56,994	(6,357)	—	2,447	462,694
Balance as of December 31, 2021	(24,698,837)	(19,665,052)	(1,279,600)	(4,059,253)	(67,611)	(1,053,895)	(50,824,248)
Net balance as of December 31, 2020	29,831,912	19,583,670	6,490,772	4,783,745	4,034,278	1,783,961	66,508,338
Net balance as of December 31, 2021	32,754,006	35,737,581	9,286,514	5,600,974	4,732,686	1,964,765	90,076,526

(1) Financial interest is capitalized based on the weighted average rate of loan costs. See Note 20 – Loans and financing.

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

	Plant and equipment	Pipelines, networks and lines	Work in progress	Buildings	Lands	Other	Total
Cost							
Balance as of December 31, 2019	47,995,471	36,370,647	6,259,654	8,157,945	4,054,538	2,660,232	105,498,487
Additions/capitalizations (1)	1,625,316	1,179,602	1,573,469	390,731	18,705	244,494	5,032,317
Increase in abandonment costs (Note 23)	181,318	15,035	—	3,885	—	3,126	203,364
Capitalized financial interests (2)	42,052	31,511	38,756	14,965	753	8,324	136,361
Exchange differences capitalized	1,338	1,002	1,233	476	24	265	4,338
Disposals	(491,677)	(84,184)	(79,077)	(16,390)	(10,155)	(85,785)	(767,268)
Effect of control loss in subsidiaries (3)	(298,570)	(592,885)	(775)	(266,526)	(60,341)	(144,189)	(1,363,286)
Adjustment on fair value for business combination (4)	547,965	44,538	—	54,413	—	73,754	720,670
Foreign currency translation	1,336,351	478,103	19,804	59,107	73,181	29,876	1,996,422
Transfers /reclassifications	149,217	(301,675)	(298,836)	13,863	36,121	(97,636)	(498,946)
Balance as of December 31, 2020	51,088,781	37,141,694	7,514,228	8,412,469	4,112,826	2,692,461	110,962,459
Accumulated depreciation and impairment losses							
Balance as of December 31, 2019	(19,035,642)	(16,635,110)	(1,114,366)	(3,456,254)	(80,682)	(961,611)	(41,283,665)
Depreciation expense	(2,296,176)	(1,634,545)	—	(341,052)	—	(113,207)	(4,384,980)
(Loss) reversal of an impairment (Note 18)	(368,754)	329,743	(327,751)	(18,074)	8,799	(8,601)	(384,638)
Disposals	443,259	75,150	3,492	14,279	11	82,310	618,501
Effect of control loss in subsidiaries (3)	266,825	403,095	262	221,708	30,669	108,081	1,030,640
Foreign currency translation	(306,506)	(155,927)	959	(13,707)	3,403	(9,738)	(481,516)
Transfers/reclassifications	40,125	59,570	413,948	(35,624)	(40,748)	(5,734)	431,537
Balance as of December 31, 2020	(21,256,869)	(17,558,024)	(1,023,456)	(3,628,724)	(78,548)	(908,500)	(44,454,121)
Net balance as of December 31, 2019	28,959,829	19,735,537	5,145,288	4,701,691	3,973,856	1,698,621	64,214,822
Net balance as of December 31, 2020	29,831,912	19,583,670	6,490,772	4,783,745	4,034,278	1,783,961	66,508,338

- (1) Includes capitalizations for the acquisition of Guajira association by Hocol for a value of COP\$361,426.
(2) Financial interests are capitalized based on the weighted average rate of borrowing costs. See Note 20 - Loans and borrowings.
(3) See effects of control loss in subsidiaries in Note 28.
(4) On November 22, 2019, Hocol S.A. – a 100% subsidiary of Ecopetrol Business Group – signed a Purchase Agreement and Sale of Assets with “Chevron” to acquire the entire stake owned by the latter in the Guajira Association (43% of the association contract) and its position as operator.

15. Natural and environmental resources

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

	Oil investments	Asset retirement cost	Exploration and evaluation	Total
Cost				
Balance as of December 31, 2020	65,367,278	7,231,851	8,867,894	81,467,023
Additions/capitalizations (1)	4,032,780	60,618	2,639,630	6,733,028
Increase in abandonment costs (Note 23)	—	778,925	13,256	792,181
Disposals	(3,497)	(484)	(69,908)	(73,889)
Withdrawal of exploratory assets and dry wells (2)	—	—	(486,408)	(486,408)
Capitalized financial interests (3)	99,786	—	24,757	124,543
Exchange differences capitalized	2,546	—	632	3,178
Foreign currency translation	1,979,171	101,866	767,117	2,848,154
Transfers/reclassifications	4,751,417	(78)	(4,544,665)	206,674
Balance as of December 31, 2021	76,229,481	8,172,698	7,212,305	91,614,484
Accumulated depletion and impairment losses				
Balance as of December 31, 2020	(46,106,147)	(2,981,449)	(445,268)	(49,532,864)
Depletion expense	(3,803,027)	(1,193,454)	—	(4,996,481)
Reversal of impairment (Note 18)	305,016	—	59,111	364,127
Disposals	500	—	31,214	31,714
Foreign currency translation	(1,401,121)	(41,610)	—	(1,442,731)
Transfers/reclassifications	(311,565)	(14,161)	197,321	(128,405)
Balance as of December 31, 2021	(51,316,344)	(4,230,674)	(157,622)	(55,704,640)
Net balance as of December 31, 2020	19,261,131	4,250,402	8,422,626	31,934,159
Net balance as of December 31, 2021	24,913,137	3,942,024	7,054,683	35,909,844

- (1) Includes: a) Ecopetrol Permian for investments made in the drilling of wells and construction of facilities executed in RODEO, b) Ecopetrol for the Llanito, Purple Angel, Casabe and Offshore Tayrona fields. and c) Hocol mainly in Mamey 3, Pintado, Pozo Toldado, SN-8, Rc7 Pozo Basari, Ocelote, SSJN1, VIM8 and Saman. d) Ecopetrol America for Rydber and K2 e) Ecopetrol Brazil for the Gato do Mato project.
- (2) Mainly includes the Moyote well by Ecopetrol México, Ecopetrol S.A. mainly the Aguas Blancas, Alqamari-1, Nafta-1, Lorito Este 1, Boranda Centro 1 and Chimuelo 1 wells, Hocol Chacha 2 well, Ecopetrol América the well Silverback #1 and Silverback #2 and by Ecopetrol Brasil Ceará. Additionally, Hocol includes exploration expenses.
- (3) Financial interests are capitalized based on the weighted average rate of loan costs. See Note 20 – Loans and borrowings.

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

	Oil investments	Asset retirement cost	Exploration and evaluation	Total
Cost				
Balance as of December 31, 2019	59,822,566	5,036,884	8,362,719	73,222,169
Additions/capitalizations (1)	3,659,270	123,446	2,211,746	5,994,462
Increase in abandonment costs (Note 23)	—	2,075,992	28,097	2,104,089
Disposals	(1,806)	260	(223,805)	(225,351)
Withdrawal of exploratory assets and dry wells (2)	—	—	(448,132)	(448,132)
Capitalized financial interests (3)	111,140	—	—	111,140
Exchange differences capitalized	3,535	—	—	3,535
Adjustment at fair value for business combinations (4)	563,546	—	—	563,546
Foreign currency translation	440,978	23,353	(138,809)	325,522
Transfers/reclassifications	768,049	(28,084)	(923,922)	(183,957)
Balance as of December 31, 2020	65,367,278	7,231,851	8,867,894	81,467,023
Accumulated depletion and impairment losses				
Balance as of December 31, 2019	(41,993,097)	(2,156,274)	—	(44,149,371)
Depletion expense	(3,810,349)	(831,909)	—	(4,642,258)
Reversal (loss) of impairment (Note 18)	116,403	—	(334,112)	(217,709)
Disposals	213	(40)	93,975	94,148
Foreign currency translation	(310,894)	(14,546)	—	(325,440)
Transfers/reclassifications	(108,423)	21,320	(205,131)	(292,234)
Balance as of December 31, 2020	(46,106,147)	(2,981,449)	(445,268)	(49,532,864)
Net balance as of December 31, 2019	17,829,469	2,880,610	8,362,719	29,072,798
Net balance as of December 31, 2020	19,261,131	4,250,402	8,422,626	31,934,159

- (1) Includes capitalizations for the acquisition of Guajira association by Hocol for a value of COP\$214,852 (See Note 2.2).
- (2) Includes dry wells: 1) Ecopetrol: Nafta 1, Caronte, Alqamari, Boranda Sur and Coyote; 2) Hocol: Obiwan and 3) Ecopetrol Brasil: a well of Saturno. Additionally, exploration costs of Ecopetrol America are included.
- (3) Financial interests are capitalized based on the weighted average rate of loan costs. See Note 20 – Loans and borrowings.
- (4) On November 22, 2019, Hocol S.A. – a 100% subsidiary of Ecopetrol Business Group – signed a Purchase Agreement and Sale of Assets with “Chevron” to acquire the entire stake owned by the latter in the Guajira Association (43% of the association contract) and its position as operator.

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

Accounting for suspended exploratory wells

The following table shows the classification by age, from the completion date, of the exploratory wells that are suspended as of December 31, 2021, 2020 and 2019:

	2021	2020	2019
Between 1 and 3 years (a)	—	—	361,700
Between 3 and 5 years (b)	—	319,368	132,021
More than 5 years (c)	651,040	589,604	441,389
Total suspended exploratory wells	651,040	908,972	935,110
Number of projects exceeding 1 year	6	16	30
Wells under 1 year of suspension (d)	20,863	—	—

- (a) As of December 2019, suspended exploratory wells correspond to Ecopetrol: Caronte, Purple Angel and Gorgon.
- (b) For 2020, the balance corresponds mainly to wells of Ecopetrol: Purple Angel and Gorgon. For 2019, the balance corresponds mainly to wells of Ecopetrol S.A.: Luna-1 and Gala 1K and discovery wells of Ecopetrol America Inc: Warrior 1.
- (c) Corresponds mainly to i) Ecopetrol S.A.: Orca 1, Purple Angel and Gordon, which are under evaluation. As of December 2021, the suspended exploratory wells of Offshore International Group are not included, considering that Ecopetrol formalized the sale of all the shares in the company Offshore International Group (Note 13). For 2020, the exploratory wells correspond mainly to i) Ecopetrol S.A.: Orca 1, Luna-1 and Gala 1K. For 2019, the balance corresponds mainly to Orca 1.
- (d) Corresponds to Hocol: Merecumbe 1 -SSJN1 as of December 2021.

16. Right-of-use assets

The following is the movement of right-of-use assets for the years ended December 31, 2021 and 2020:

	Pipelines	Lands and buildings	Plant and equipment	Vehicles	Right-of-use assets	Lease liabilities
Balance as of December 31, 2020	—	93,472	133,939	150,475	377,886	1,055,198
Additions	22,871	22,190	10,037	20,319	75,417	75,417
Effect of business combinations (Note 12)	75,836	121,042	13,779	19,550	230,207	255,503
Amortization of the period	(6,897)	(39,109)	(61,186)	(86,830)	(194,022)	—
Remeasurements(1)	—	26,057	48,803	5,045	79,905	80,068
Impairment loss	—	(5,802)	(20,608)	(5,373)	(31,783)	—
Disposals	—	(14,540)	—	(98)	(14,638)	(64,726)
Finance cost	—	—	—	—	—	49,694
Repayment of borrowings and interests	—	—	—	—	—	(336,030)
Transfers	(214)	(11,676)	(363)	(1,134)	(13,387)	2,615
Exchange difference	(14,577)	7,436	(3,017)	(2,749)	(12,907)	47,360
Balance as of December 31, 2021	77,019	199,070	121,384	99,205	496,678	1,165,099

- (1) Corresponds mainly to updating rates and conditions in lease contracts.

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

	Lands and buildings	Plant and equipment	Vehicles	Right-of-use assets	Subleases	Lease liabilities
Balance as of December 31, 2019	218,513	97,264	140,448	456,225	29,436	1,290,954
Additions	41,303	14,618	32,582	88,503	—	88,503
Amortization of the period	(52,200)	(29,038)	(98,726)	(179,964)	—	—
Remeasurements (1)	(41,907)	33,686	69,255	61,034	—	76,799
Reversal of impairment	312	29,718	5,844	35,874	—	—
Disposals	(13,343)	(4,321)	—	(17,664)	—	(28,916)
Effect of control loss in subsidiaries	(61,044)	(7,432)	—	(68,476)	(29,436)	(102,671)
Finance cost	—	—	—	—	—	64,988
Repayment of borrowings and interests	—	—	—	—	—	(350,539)
Exchange difference	1,838	(556)	1,072	2,354	—	16,080
Balance as of December 31, 2020	93,472	133,939	150,475	377,886	—	1,055,198

(1) Corresponds mainly to updating rates and conditions in lease contracts.

17. Intangible assets

The following is the movement of intangibles and their amortization and impairment for the years ended December 31, 2021, and 2020:

	Licensees and software	Other intangibles	Concessions and rights	Easements (2)	Total
Cost					
Balance as of December 31, 2020	835,030	201,463	351,108	79,176	1,466,777
Acquisitions	140,263	11,456	275,736	16,891	444,346
Effect of business combination (Note 12) (1)	130,634	666,455	11,910,589	1,618,801	14,326,479
Disposals	(21,581)	(226)	(402)	(79)	(22,288)
Foreign currency translation	82,397	83,856	893,249	18,553	1,078,055
Transfers/reclassifications	(47,932)	(22,924)	73,161	37	2,342
Balance as of December 31, 2021	1,118,811	940,080	13,503,441	1,733,379	17,295,711
Accumulated amortization and impairment losses					
Balance as of December 31, 2020	(607,871)	(67,299)	(173,799)	(62,765)	(911,734)
Amortization of the period	123,796	(19,780)	(427,989)	(3,200)	(327,173)
Losses for impairment	(57)	—	—	—	(57)
Disposals	21,313	56	—	41	21,410
Foreign currency translation	(55,695)	(66,333)	(447,697)	—	(569,725)
Transfers/reclassifications	(171,303)	64	171,360	(37)	84
Balance as of December 31, 2021	(689,817)	(153,292)	(878,125)	(65,961)	(1,787,195)
Net balance as of December 31, 2020	227,159	134,164	177,309	16,411	555,043
Net balance as of December 31, 2021	428,994	786,788	12,625,316	1,667,418	15,508,516

(1) Corresponds to the balances recognized in the business combination, which mainly includes i) service concessions classified as intangible assets, according to IFRIC 12, in Peru, Bolivia, and Colombia, ii) rights to use infrastructure and intangible assets recognized through business combinations in Brazil and Peru, and iii) intangibles associated with economic benefits from contractual income.

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

- (2) Easements are acquired rights for the passage of its operating assets, mainly electric power transmission lines. These assets are acquired in perpetuity, so there is no set term or contractual limit, and the right is maintained over time.

	Licenses and software	Other intangibles	Total
Cost			
Balance as of December 31, 2019	994,599	285,247	1,279,846
Acquisitions	43,817	46,265	90,082
Foreign currency translation	12,569	5,072	17,641
Effect of control loss in subsidiaries (Note 28)	(10,584)	—	(10,584)
Disposals	(5,430)	—	(5,430)
Adjustment on fair value for business combination (Note 12)	156	—	156
Transfers	30,892	64,174	95,066
Balance as of December 31, 2020	1,066,019	400,758	1,466,777
Accumulated amortization and impairment losses			
Balance as of December 31, 2019	(692,217)	(104,531)	(796,748)
Amortization of the period	(93,907)	(23,429)	(117,336)
Recovery -losses for impairment (Note 18)	(176)	5	(171)
Disposals	5,558	11	5,569
Effect of control loss in subsidiaries (Note 28)	9,877	—	9,877
Foreign currency translation	(8,689)	(65)	(8,754)
Transfers	(2,116)	(2,055)	(4,171)
Balance as of December 31, 2020	(781,670)	(130,064)	(911,734)
Net balance as of December 31, 2019	302,382	180,716	483,098
Net balance as of December 31, 2020	284,349	270,694	555,043

18. Impairment of non-current assets

As mentioned in Note 4.13, each year the Ecopetrol Business Group assesses whether there is an indication that an asset or cash-generating unit may be impaired or if impairment losses recognized in previous periods should be reversed (except for goodwill impairment losses).

The Impairment of non-current assets includes (tangible and intangible) property, plant and equipment and natural resources, investments in companies, goodwill and other non-current assets. The Ecopetrol Business Group is exposed to future risks derived mainly from variations in: (i) the estimate of future oil prices, (ii) refining margins and profitability, (iii) cost profile, (iv) investments and maintenance expenses, (v) amounts of recoverable reserves, (vi) market and country risk assessments reflected in the discount rate, and (vii) changes in domestic and international regulations, among others.

Any changes in the above estimates used to calculate the recoverable amount of a non-current assets can have a material impact on the recognition impairment losses or reversals (other than goodwill impairment losses) in the profit or loss. Highly sensitive significant estimates affecting each business segments, among others include: (i) in the exploration and production segment, variations of recoverable hydrocarbon estimates, changes in projected realization prices and the discount rate; (ii) in the refining segment, changes in finished products and crude oil prices, the discount rate, refining margins, changes in environmental regulations, cost structure and the level of capital expenditures; (iii) in the transport and logistics segment, changes in regulated tariffs and transported volumes, and (iv) in electric power transmission and toll roads concessions, internal and external factors that affect the recoverable value of the assets versus the book value of the assets.

As described in Note 2.8, the behavior of the prices of crude oil and products during the year 2021 showed a recovery versus the price levels generated in 2020 and 2019, a situation that has an impact in the parameters established for the calculation of the impairment.

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

Based on the impairment tests conducted by the Ecopetrol Business Group, the following are the impairment or reversals for the years ended on December 31, 2021, 2020 and 2019:

Impairment (loss) reversal by segment	2021	2020	2019
Exploration and Production	438,020	(192,693)	(1,982,044)
Refining and Petrochemicals	(305,466)	(781,528)	452,163
Transport and Logistics	(165,901)	341,065	(232,556)
Electric power transmission and toll roads concessions	(4)	-	-
	(33,351)	(633,156)	(1,762,437)
Recognized in:			
Property, plant, and equipment (Note 14)	(281,132)	(384,638)	(373,123)
Natural resources (Note 15)	364,127	(217,709)	(1,017,061)
Investment in joint ventures and associates (Note 13)	(84,502)	(66,512)	(318,820)
Right of use assets (Note 16)	(31,783)	35,874	(53,488)
Other non-current assets	(61)	(171)	55
	(33,351)	(633,156)	(1,762,437)

18.1 Exploration and production

The impairment reversal of assets of the Exploration and Production segment for the years ended December 31 of 2021, 2020 and 2019 is the following:

	2021	2020	2019
Oilfields	521,664	(123,652)	(1,663,082)
Investment in joint ventures	(83,644)	(69,041)	(318,962)
	438,020	(192,693)	(1,982,044)

18.1.1 Oilfields

In 2021, because of the new market variables, the incorporation of new reserves, price differentials versus the reference to Brent, available technical and operational information, there was a recovery of impairment recognized in previous years of the fields that operate in Colombia: Tibú, West B, South, Dina Cretaceous, Hobo and Underriver, La Hocha, Totare; and in fields operated abroad: K2. There also was an expense for impairment, mainly in the Oripaya, Arrayán and Boranda fields.

An impairment expense was recognized in the year 2020 because of the current economic context of the hydrocarbons sector, the behavior of market variables, price differentials versus the reference to Brent, technical and operational information available. This impairment was mainly recognized in fields that operate in Colombia: Occidente B, Sur, Teca, Tibú, La Hocha and Espinal, and in the field K2 abroad. In addition, a recovery was recognized in: Casabe, because of a significant increase in its reserves, as well as Provincia, Lisama and Orito.

In 2019, because of the current hydrocarbons sector's economic context, the behavior of the market variables, Ecopetrol's crude oil basket price discounts as compared to the ICE Brent crude price, available technical and operational information, there was an impairment loss in the oilfields that operate in Colombia mainly Tibú, Casabe, Provincia, Underriver, La Hocha y Andalucía and the oilfield operated abroad K2.

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

The following is the breakdown of oilfields impairment losses or reversals for the years ended December 31, 2021, 2020 and 2019:

2021

Cash generating units	Carrying amount	Recoverable amount	Impairment reversal (loss)
Oil fields in Colombia			
Reversal	11,216,641	17,575,851	499,599
Loss	239,046	136,698	(104,041)
Fields operated abroad			
Reversal	1,142,593	1,306,219	126,106
			521,664

2020

Cash generating units	Carrying amount	Recoverable amount	Impairment reversal (loss)
Oil fields in Colombia			
Reversal	24,845,238	61,224,928	1,019,395
Loss	2,439,799	1,423,561	(1,016,238)
Fields operated abroad			
Loss	1,277,609	1,150,800	(126,809)
			(123,652)

2019

Cash generating units	Carrying amount	Recoverable amount	Impairment reversal (loss)
Oil fields in Colombia			
Reversal	3,842,819	6,047,345	74,577
Loss	4,992,462	3,322,284	(1,673,258)
Fields operated abroad			
Reversal	200,910	539,785	4,391
Loss	68,792	—	(68,792)
			(1,663,082)

The grouping of assets to determine the CGUs is consistent as compared to the prior periods.

The assumptions used to determine the recoverable amount include the following:

- The fair value less costs of disposal of the Exploration and Production segment assets was determined based on cash flows after tax derived from the business plans approved by Ecopetrol Business Group's management, which are developed based on long-term macroeconomic policies and fundamental assumptions of supply and demand. The fair value hierarchy is 3.
- Balance of oil and gas reserves, in addition to proven reserves; probable and possible reserves were also considered (See Note 34), adjusted by different risk factors.
- The real discount rate (after tax) determined as the average weighted cost of capital (WACC) and it corresponds to 4.94 % (2020 – 3.67% and 2019–6.31%).

[Table of Contents](#)

Ecopetrol S.A.

Notes to the consolidated financial statements

(Figures expressed in millions of Colombian pesos, unless otherwise stated)

- Oil price – Brent: the forecasts include USD\$75.72/barrel for the first year, USD\$62.60/barrel for the medium term and USD\$61.89/barrel for the long term. In 2020, the assumptions taken USD\$46.36/barrel for the first year, USD\$57.00/barrel for the medium term and USD\$67.77/barrel as of the year 2030. International oil price projections were carried out by an independent agency specializing in oil and gas, considering the current scenarios of oil quota agreements of the OPEC (Organization of Petroleum Exporting Countries) and the impact of the changes in specifications issued by the international agreement to prevent pollution by ships (Marpol) as of the year 2020 on crude and fuels with high sulfur content.

18.1.2 Investments in joint ventures

Investments in joint ventures in the Exploration and Production segment are recorded using the equity method of accounting. Ecopetrol evaluates if there is any objective evidence that indicate that the fair value of such investments has deteriorated in the period, especially those for which goodwill has been recorded.

As a result, Ecopetrol recognized an (impairment loss) or reversal of impairment on the carrying value as of December 31, as follows:

	2021	2020	2019
Equion Energía Limited	(83,644)	7,928	(134,753)
Offshore International Group	—	(76,969)	(184,209)
	(83,644)	(69,041)	(318,962)

In 2021, an impairment expense was recognized on the investment in Equion, mainly from the consideration of the fair value of the sale transaction of the El Morro Aragua Pipeline.

There was a recovery in 2020 on the investment in Equion mainly originated by the update of the transport rates through pipelines where Ecopetrol has a shareholding, and an impairment loss was recorded on the investment in Offshore International Group considering the fair value of the sale transaction. The significant assumptions used to determine the recoverable amount of these investments are consistent with those described in the previous section, except for the use of a discount rate in real terms in 2020 for Offshore International Group of 5.79% (2019 – 8.50%).

In 2019, an impairment loss for both. Offshore International Group and Equion Energía Limited was recorded, due to current market variables, decreasing international crude oil prices, conservative position over projects and increasing costs.

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

18.2 Refining and Petrochemical

	2021	2020	2019
Refinería de Cartagena	34,650	(440,525)	911,597
Bioenergy	—	—	(234,340)
Invercolsa S.A.	(97)	(3)	—
Refinería de Barrancabermeja (projects)	(340,019)	(341,000)	(225,094)
	<u>(305,466)</u>	<u>(781,528)</u>	<u>452,163</u>

The following is the Cash Generating Units impairment or reversals in the refining and petrochemical segment for the years ended December 31, 2021, 2020 and 2019:

2021

Cash-generating units	Carrying amount	Recoverable amount	Impairment reversal (loss)
Refinería de Cartagena	26,808,008	26,842,658	34,650
Invercolsa S.A.	292	195	(97)
Refinería de Barrancabermeja (projects)	340,019	—	(340,019)
			<u>(305,466)</u>

2020

Cash-generating units	Carrying amount	Recoverable amount	Impairment loss
Refinería de Cartagena	24,041,174	23,600,649	(440,525)
Invercolsa S.A.	276	273	(3)
Refinería de Barrancabermeja (projects)	676,334	335,334	(341,000)
			<u>(781,528)</u>

2019

Cash-generating units	Carrying amount	Recoverable amount	Impairment reversal (loss)
Refinería de Cartagena	22,292,788	23,204,385	911,597
Bioenergy	575,331	340,991	(234,340)
Refinería de Barrancabermeja (projects)	901,517	676,423	(225,094)
			<u>452,163</u>

The grouping of assets to determine the CGUs is consistent with prior periods.

18.2.1 Refinería de Cartagena

The recoverable amount of the Refinería de Cartagena was calculated based on its fair value less costs of disposal, which is higher than its value in continued use. The fair value less costs of disposal of the Refinería de Cartagena was determined based on cash flows after taxes that are derived from business plans approved by the Ecopetrol Business Group's management, which are developed based on market prices provided by a third-party expert, which considers long-term macroeconomic variables and fundamental supply and demand assumptions for crude oil and refined products. The fair value hierarchy is 3.

The significant assumptions to determine the recoverable amount included: (i) a gross refining margin determined by crude oil feedstock and products price outlook provided by an independent third-party expert; (ii) a real discount rate (after tax) of 5.3% (2020-5.1% and

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

2019–6.2%), determined under WACC methodology; (iii) current conditions or benefits, or similar, as an industrial user of goods and services of the free trade zone and during the validity of the license; (iv) level of costs and long-term operating expenses in line with international refinery standards of similar configuration and conversion capacity; (v) refinery throughput and production; and (vi) level of continued investment.

It is important to mention that the refining business is highly sensitive to the volatility of the margins and the macroeconomic variables implicit in the determination of the discount rate, therefore, any change in these assumptions could potentially result in significant variations in the determination of impairment losses or reversal amounts.

The impairment expense for 2020 was mainly derived from lower refining margins associated with external factors associated with the COVID-19 pandemic. On the other hand, management endured operational improvements that compensate to a certain extent for the effects of macroeconomic variables.

The reversal of impairment recorded for 2019, is mainly related to macroeconomic assumptions changes which decreased the discount rate used to value the assets; this is explained by the decreasing risk and the Company's cost of the debt. Together, operational management and financial results allowed the support of operational improvements included in the forecast that compensate in some measure the effects related to the impact that the MARPOL regulation will have on the margins' forecast of refined products and the crude oil basket price discounts. The results of 2019 were impacted by a higher knowledge of the Refinery capabilities and efficient operational management.

18.2.2 Bioenergy

Starting June 24, 2020, Bioenergy entered the mandatory liquidation process. Therefore, as of this date Ecopetrol Business Group does not have control over Bioenergy and it is no longer a part of the consolidated figures.

An impairment expense was recorded in 2019 in the amount of \$234,340. This value was mainly generated by changes in operating variables, changes in the projection of operating flows and the need for greater resources, mainly due to the results of the renewal of older cane plantations.

The recoverable amount of Bioenergy for 2019 was calculated based on the fair value less the costs of disposal level, which is greater than the value in use and corresponds to the future cash flows discounted after taxes on profit. The fair value hierarchy is 3.

The significant assumptions used to determine the recoverable amount included: (a) forecast of ethanol prices based on projections made by Ecopetrol Business Group specialists and (b) a 6.03% discount rate in real terms determined under the WACC methodology.

18.2.3 Refinería de Barrancabermeja

As of December 31, 2021, because an update analysis for the Barrancabermeja Refinery Modernization Project, an impairment expense of \$340,019 was recognized, produced mainly by engineering work executed according to the evaluations and the context of the industry during the year.

An impairment expense of COP\$341,000 was recognized as of December 31, 2020, as a result of the update of the analysis for the Barrancabermeja Refinery Modernization Project, in relation to engineering work based on the evaluations carried out and the current context of the industry.

During 2019, a loss of COP\$225,094 was recorded, primarily related to engineered works for the integral development of the Refinería de Barrancabermeja Modernization Project, mainly due to the advance in the technical analysis of options to the eventual improvement of the conversion of the Refinery.

18.3 Transport and Logistics

The recoverable amount of these assets was determined based on its fair value with costs of disposal, which corresponds to discounted cash flows based on the hydrocarbon production curves and refined products transport curves. The fair value hierarchy is 3.

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

The assumptions used in the model to determine the recoverable value included: i) the tariffs regulated by the Ministry of Mines and Energy and the Energy and Gas Regulation Commission - CREG, ii) the actual discount rate used in the valuation was 2.95% (2020 – 3.17% and 2019 - 4.88%) and iii) transport volume projections based on the financial plan and the long-term volumetric transport program.

In 2021, an impairment expense was recognized for the Southern Cash Generating Unit, the estimate of the impaired value was \$160,653, corresponding to the total value of the asset. In addition, an impairment of \$2,845 was established for the Yaguará-Tenay system, which corresponds to 39% of the value of the asset. Finally, the segment recognized an additional impairment of \$2,545 as a result of the sale of a turbo-generator during the year and a recovery in other non-current assets of \$142. The recognition of impairment is due to volumetric variation and rates.

In 2020, Cenit recognized an impairment recovery of COP\$341,065, related to the South CGU, which includes Tumaco Port and the TransAndino Pipeline (OTA, by its acronym in Spanish) and the North CGU, which includes the section Banadia - Ayacucho, and it is part of the Caño Limón Pipeline, due to volumetric recovery and changes in tariffs. The fair value of these CGUs is COP\$7,049,007 and their book value is COP\$2,153,631.

In 2019, we recorded an impairment loss of COP\$232,556, mainly related to the cash-generating unit of the South COP\$106,983, by Puerto de Tumaco and the TransAndino Pipeline (OTA), which means an impairment loss of 100% of the book value; and the cash-generating unit of the North COP\$125,140; both include the right-of-use assets. This impairment loss was generated mainly by decreased volume transport to determine the income forecast and the lower efficiency costs.

19. Goodwill

	2021	2020
Interconexión Eléctrica S.A. E.S.P.	3,092,045	—
Oleoducto Central S.A.S.	683,496	683,496
Hocol Petroleum Ltd.	537,598	537,598
Invercolsa S.A.	434,357	434,357
Andean Chemical Ltd	127,812	127,812
Esenttia S.A.	108,137	108,137
	4,983,445	1,891,400
Less impairment Hocol Petroleum Ltd.	(297,121)	(297,121)
	4,686,324	1,594,279

As of December 31, 2021, and 2020, the Ecopetrol Business Group assessed the recoverability of the carrying value of goodwill generated in the acquisition of subsidiaries. The recoverable amount was determined based on the realization value less costs of disposal using the present value of future cash flows for each of the companies acquired with goodwill. The source of information used the financial projections of each company derived from the business plans approved by management, which were developed based on long-term macroeconomic factors such as price curves and margins and fundamental assumptions of supply and demand. As a result of the analysis, the Ecopetrol Business Group did not recognize any goodwill impairment for these periods.

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

20. Loans and borrowings

20.1 Composition of loans and borrowings

	Weighted average effective interest rate as of December 31		2021	2020
	2021	2020		
Local currency				
Bonds	9.1 %	6.4 %	4,941,024	1,084,461
Syndicated loan	5.4 %	5.6 %	600,452	811,079
Lease liabilities (1)	6.3 %	6.6 %	823,922	836,489
Commercial loan	7.8 %	6.3 %	1,516,377	312,408
			7,881,775	3,044,437
Foreign currency				
Bonds (2)	5.7 %	6.0 %	66,603,695	33,944,548
Commercial loan (3)	3.5 %	3.6 %	18,750,580	8,247,014
Loans from related parties (Note 31)	0.3 %	0.8 %	1,483,701	1,277,046
Lease liabilities (1)	6.0 %	6.1 %	341,177	218,709
			87,179,153	43,687,317
			95,060,928	46,731,754
Current			9,206,283	4,923,346
Non-current			85,854,645	41,808,408
			95,060,928	46,731,754

- (1) Corresponds to present value of the payments to be made during the term of the operative lease contracts of pipelines, tanks, property, and vehicles, recognized by the implementation of IFRS 16 – Leases (See Note 16).
- (2) On October 27, public debt bonds were issued for USD \$2,000 million, with maturity of 10 and 30 years, at coupon rates of 4.625% and 5.875%, respectively, to partially refinance the loan obtained for the acquisition of 51.4% of Interconexión Eléctrica S.A. (ISA). The movement of foreign currency bonds also corresponds to the increase in the exchange rate.
- (3) Corresponds mainly to the credit with international banks for the acquisition of ISA for USD\$3,672 million (the equivalent value in pesos received corresponds to \$14,190,267) subscribed between Ecopetrol and Banco Santander S.A., Citibank N.A., JPMorgan Chase Bank, N.A., and The Bank of Nova Scotia, each with a 25% participation. The main conditions of the financing are: (i) payment of 100% principal at maturity within a period of 2 years from the date of subscription of the contract; (ii) an interest rate of Libor USD (3M) + 80 basis points and (iii) an initial aggregate commission of 30 basis points. The Costs related to the issuance of debt correspond to \$42,699 (Note 12).

20.2 Fair value of loans

The fair value of loans and borrowings is \$99,258,034 and \$52,721,790 as of December 31, 2021, and 2020, respectively.

For fair value measurement, local currency bonds were valued using Precia reference prices, while bonds in U.S. dollars were valued using Bloomberg. Regarding the other financial obligations for which there is no market benchmark, a discount to present value technique was used. These rates incorporate market risk through some benchmarks (Libor, FTD) and the Ecopetrol Business Group's credit risk (spread).

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

20.3 Maturity of loans and borrowings

The following are the maturities of loans and borrowing as of December 31, 2021:

	Up to 1 year (1)	1 – 5 years	5-10 years	> 10 years	Total
Local currency					
Bonds	290,858	1,152,829	1,423,909	2,073,428	4,941,024
Syndicated loan	239,597	360,855	—	—	600,452
Lease liabilities	188,477	340,283	283,070	12,092	823,922
Commercial loans	170,758	539,693	595,307	210,619	1,516,377
	889,690	2,393,660	2,302,286	2,296,139	7,881,775
Foreign currency					
Bonds	3,275,138	27,550,698	17,515,876	18,261,983	66,603,695
Commercial loans	3,457,708	14,792,560	303,012	197,300	18,750,580
Lease liabilities	100,046	205,617	35,514	—	341,177
Loans from related parties	1,483,701	—	—	—	1,483,701
	8,316,593	42,548,875	17,854,402	18,459,283	87,179,153
	9,206,283	44,942,535	20,156,688	20,755,422	95,060,928

(1) Includes short-term credit and the current portion of long-term debt, as applicable.

The following are the maturities of loans and borrowing as of December 31, 2020:

	Up to 1 year (1)	1 – 5 years	5-10 years	> 10 years	Total
Local currency					
Bonds	65,829	354,081	370,900	293,651	1,084,461
Syndicated loan	242,660	568,419	—	—	811,079
Lease liabilities	167,059	418,938	211,233	39,259	836,489
Commercial loans	106,410	205,998	—	—	312,408
	581,958	1,547,436	582,133	332,910	3,044,437
Foreign currency					
Bonds	1,905,325	14,692,852	12,109,859	5,236,512	33,944,548
Commercial loans	1,098,593	6,563,863	584,558	—	8,247,014
Loans from related parties	1,277,046	—	—	—	1,277,046
Lease liabilities	60,424	149,381	8,904	—	218,709
	4,341,388	21,406,096	12,703,321	5,236,512	43,687,317
	4,923,346	22,953,532	13,285,454	5,569,422	46,731,754

(1) Includes short-term credit and the current portion of long-term debt, as applicable.

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

20.4 Breakdown by type of interest rate and currency

The following is the breakdown of loans and borrowing by type of interest rate as of December 31, 2021 and 2020:

	2021	2020
Local currency		
Fixed rate	1,239,723	523,870
Floating rate	6,642,052	2,520,567
	<u>7,881,775</u>	<u>3,044,437</u>
Foreign currency		
Fixed rate	69,427,014	38,706,328
Floating rate	17,752,139	4,980,989
	<u>87,179,153</u>	<u>43,687,317</u>
	<u>95,060,928</u>	<u>46,731,754</u>

The interest on the bonds in national currency is indexed to the CPI (Consumer Price Index) and bank loans and variable rate leasing in Colombian pesos are indexed to the DTF (Fixed Term Deposits) and IBR (Banking Reference Indicator), plus a differential. Interest on loans in foreign currency is calculated based on the LIBOR rate plus a spread and the interests of the other types of debt are at a fixed rate.

20.5 Loans designated as hedging instrument

As of December 31, 2021, Ecopetrol designated USD\$13,287 million (2020- USD\$8,549 million) of foreign currency debt as a hedging instrument, of which USD\$8,315 million is used to hedge the net investment in foreign operations with the US dollar as their functional currency, and USD\$4,972 million is used to hedge the cash flows of future crude oil exports. See Note 30 – *Risk management*.

20.6 Guarantees and covenants

Financing obtained directly by Ecopetrol in capital markets has no guarantees granted or financial covenant restrictions.

The following is a summary of certain restrictions contained in loan instruments of Ecopetrol Business Group. As of Dec 31, 2021, the covenants, loans and payments have been fulfilled.

- The syndicated loan entered by Oleoducto Bicentenario requires that this subsidiary maintain an established relationship of leverage and solvency and cash flow / service to the debt.
- ISA and its companies obtained guarantees to support the growth of its different business units and ensure strategic commercial and operational viability; guarantees under paragraph 14 of IFRS 7 corresponding to assets pledged as collateral for contingent assets/liabilities granted. As of December 31, 2021, the total value of the current guarantees is \$18,236,351.
- ISA and its companies have covenants related to the delivery of periodic financial information and the fulfillment of the obligations originated in the credit agreements with the financial entities, the Ministry of Public Works of Chile, the bondholders, the rating agencies of risks, auditors, and municipalities, among others. The main companies with covenants acquired in the management of financing are Ruta Costera, ISA Peru, ISA CETEEP and subsidiaries, ISA Intervial and concessionaires, ISA Interchile.

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

20.7 Movement of net financial debt

The following is the movement of net financial debt as of December 31, 2021, 2020 and 2019:

	Cash and equivalents	Other financial assets	Loans and borrowings	Net financial debt
Balance as of December 31, 2019	7,075,758	4,979,292	(38,239,139)	(26,184,089)
Cash flow	(1,971,156)	(2,107,856)	(6,105,296)	(10,184,308)
Exchange difference:				
Recognized in profit or loss	(22,294)	38,701	747,744	764,151
Recognized in other comprehensive income	—	—	(722,458)	(722,458)
Financial cost registered to projects	—	—	(255,372)	(255,372)
Financial income (expense) recognized in profit or loss	—	43,948	(2,386,537)	(2,342,589)
Foreign currency translation	—	42,529	(175,885)	(133,356)
Effect of loss of control in subsidiaries	—	—	528,981	528,981
Other movements that do not generate cash flow	—	75,045	(123,792)	(48,747)
Balance as of December 31, 2020	5,082,308	3,071,659	(46,731,754)	(38,577,787)
Cash flow (1)	3,992,936	(1,317,936)	(9,729,667)	(7,054,667)
Exchange difference:				
Recognized in profit or loss	491,428	76,085	(810,358)	(242,845)
Recognized in other comprehensive income	—	—	(6,113,502)	(6,113,502)
Financial cost registered to projects	—	—	(255,708)	(255,708)
Financial income (expense) recognized in profit or loss	—	7,431	(3,095,224)	(3,087,793)
Foreign currency translation	—	55,306	(821,889)	(766,583)
Valuation recognized in results and OCI	—	(1,632)	—	(1,632)
Uploading index	—	—	(85,652)	(85,652)
Effect of business combination (Note 12) (2)	4,983,234	1,093,941	(27,458,935)	(21,381,760)
Other movements that do not generate cash flow	—	(50,120)	41,761	(8,359)
Balance as of December 31, 2021	14,549,906	2,934,734	(95,060,928)	(77,576,288)

(1) The cash flow related to loans and borrowings includes the cash proceeded from borrowing, repayments, lease, and interest payments. The cash flow also includes \$42,699 related to the issuance of debt for ISA acquisition (Note 12).

(2) Includes for loans and financing, loans for \$27,203,432 and lease liabilities for \$255,503.

21. Trade and other payables

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

	2021	2020
Current		
Suppliers	10,470,260	6,491,909
Partners' advances	1,060,349	497,898
Withholding tax	717,720	462,429
Insurance and reinsurance	294,114	240,803
Deposits received from third parties (1)	136,310	84,436
Related parties (Note 31)	66,598	72,316
Dividends payable (2)	58,668	223,571
Agreements in transport contracts (3)	33,883	37,941
Hedging operations (4)	2,032	6,405
Various creditors (1)	728,297	331,333
	13,568,231	8,449,041
Non - current		
Suppliers	8,260	—
Deposits received from third parties (1)	33	1,109
Various creditors (1)	62,314	19,955
	70,607	21,064

- (1) For presentation purposes, this note includes the current and non-current trade and other payables, for comparative years 2021-2020.
- (2) Corresponds to dividends declared to third parties by Intercoconexión Eléctrica S.A., Ecopetrol and Investments of Gases of Colombia S.A.
- (3) Corresponds to the value of the payables for agreements agreed in the transportation contracts for pipelines, calculated in volumetric quality compensation and other inventory management arrangements.
- (4) Corresponds to the balance payable for the liquidation of swap contracts acquired to hedge the price risk of export crude oil.

The carrying amount of trade accounts and other accounts payable approximates their fair value due to their short-term nature.

22. Provisions for employees' benefits

	2021	2020
Post-employment benefits		
Healthcare	6,636,809	7,193,527
Pension	2,159,530	2,819,985
Education	443,761	485,792
Bonds	320,833	342,669
Other plans	91,476	102,632
Termination benefits – Voluntary retirement plan (1)	746,585	713,407
	10,398,994	11,658,012
Social benefits and salaries	856,198	674,080
Other employee benefits	123,853	91,575
	11,379,045	12,423,667
Current	2,296,253	2,022,137
Non-current	9,082,792	10,401,530
	11,379,045	12,423,667

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

- (1) It includes the obligation for the new voluntary retirement plan, on which Ecopetrol made offers to a part of its workers during 2020, of which 94 workers in 2021 and 421 in 2020 have accepted. This plan was approved at the end of 2019 by the Company's Board of Directors and includes the retirement of employees from January 2020 until December 2023, through 4 modalities: Compliance with the work cycle (pension), Retirement Plan A (Rent), Retirement Plan B (Bonus), and Enhanced Compensation.

22.1 Post-employment benefits liability (asset)

The following table shows the movement in liabilities and assets, net of post-employment benefits and termination benefits, as of December 31, 2021 and 2020:

	Pension and bonds (1)		Other		Total	
	2021	2020	2021	2020	2021	2020
Liabilities for employee benefits						
Opening balance	16,320,383	15,916,472	8,510,594	7,593,171	24,830,977	23,509,643
Effect of business combination	545,319	—	301,780	—	847,099	—
Current service cost	10,948	—	121,404	118,035	132,352	118,035
Past service cost (2)	3,545	—	125,783	631,761	129,328	631,761
Interest expense	867,644	882,785	485,494	439,682	1,353,138	1,322,467
Transferred benefits	—	—	(577)	—	(577)	—
Actuarial (gains) losses	(2,285,738)	418,187	(1,091,228)	87,311	(3,376,966)	505,498
Benefits paid	(931,051)	(897,061)	(506,323)	(359,366)	(1,437,374)	(1,256,427)
Foreign currency translation	(10,458)	—	—	—	(10,458)	—
Closing balance	14,520,592	16,320,383	7,946,927	8,510,594	22,467,519	24,830,977
Plan assets						
Opening balance	13,157,729	12,709,838	15,236	3,015	13,172,965	12,712,853
Effect of business combination	—	—	11,004	—	11,004	—
Return on assets	691,584	700,168	367	136	691,951	700,304
Contributions to funds	—	—	504,511	370,090	504,511	370,090
Benefits paid	(924,924)	(897,061)	(502,340)	(358,199)	(1,427,264)	(1,255,260)
Actuarial (losses) gains	(884,160)	644,784	(482)	194	(884,642)	644,978
Closing balance	12,040,229	13,157,729	28,296	15,236	12,068,525	13,172,965
Net post-employment benefits liability	2,480,363	3,162,654	7,918,631	8,495,358	10,398,994	11,658,012

- (1) There is no cost for the pension and pension plans service since the beneficiaries were retired as of July 31, 2010.
- (2) It includes the new voluntary retirement plan.

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

The following table shows the movement in profit and loss and in other comprehensive income as of December 31, 2021, 2020 and 2019:

	2021	2020	2019
Recognized in profit or loss			
Interest expense, Net	658,476	622,163	537,893
Current service cost	104,246	118,035	76,478
Remeasurements	(211)	—	10,213
	762,511	740,198	624,584
Recognized in other comprehensive income			
Pension and pension bonds (1)	1,401,578	226,597	(1,303,693)
Healthcare (1)	991,050	(33,324)	(1,268,379)
Education and severance	63,222	(55,693)	922
Termination benefits – Voluntary retirement plan	—	(121)	(34)
Other movements	817	—	—
	2,456,667	137,459	(2,571,184)
Deferred tax	(679,510)	(41,238)	771,355
	1,777,157	96,221	(1,799,829)

- (1) For the year 2021, higher discount rates were applied in the actuarial calculation process, which generates a variation of other comprehensive income compared to the year 2020. The increase also includes the adding of Interconexión Eléctrica S.A. E.S.P. in consolidation process.

22.2 Plan assets

Plan assets are resources held by pension trusts for payment of pension obligations. Payments for health and education post-employment benefits are Ecopetrol's responsibility. The destination of trust resources and its yields cannot be changed or returned to the Ecopetrol Business Group until all pension obligations have been fulfilled.

The following is the composition of the plan assets of pension and pension bonds by type of investment as of December 31, 2021 and 2020:

	2021	2020
Bonds issued by the national government	2,758,728	4,958,612
Other local currency	5,422,709	1,502,349
Bonds of private entities	2,393,322	3,177,531
Variable yield	1,026,862	679,448
Other public bonds	302,254	777,562
Other foreign currency	113,012	1,992,800
Bonds of foreign entities	51,638	84,663
	12,068,525	13,172,965

36.99% (2020 – 23.3%) of plan assets are classified as level 1 in the fair value hierarchy where prices for the assets are directly observable on actively traded markets, and 63.01% (2020 – 76.7%) are classified as level 2.

The fair value of level 2 plan assets is calculated using prices quoted in the assets' market. The Ecopetrol Business Group obtains these prices through reliable financial data providers recognized in Colombia or abroad depending on the investment.

For the securities issued in local currency, the fair value of plan assets is calculated using information published by Precia, a price supplier authorized by the Financial Superintendence of Colombia. According to its methodology, prices are calculated based on market

[Table of Contents](#)

Ecopetrol S.A.
 Notes to the consolidated financial statements
 (Figures expressed in millions of Colombian pesos, unless otherwise stated)

information on the valuation date or estimated from historical inputs according to the criteria established for the calculation of each of the prices.

The average price is calculated based on the most representative market of the transactions carried out through electronic platforms approved and supervised by the regulator.

On the other hand, the estimated price is calculated for investments that do not reflect enough information to estimate an average market price, replicating the quoted prices for similar assets or prices obtained through quotes from brokers. This estimated price is also given by Precia because of the application of robust methodologies approved by the financial regulator and widely used by the financial sector.

The following table reflects the credit ratings of the issuers and counterparties in assets held by the autonomous pension funds:

	2021	2020
AAA	7,183,658	4,369,805
Nación	2,871,610	5,102,222
AA+	455,875	570,716
F1+	112,284	61,192
BAA3	78,216	—
AA	74,350	134,454
BBB+	40,928	10,328
BBB-	39,865	458,273
BRC1+	37,884	52,296
BAA1	18,855	—
AA-	9,558	4,014
A	5,834	5,307
BBB	—	201,163
A3	—	11,633
Others	47,348	297,048
Not available ratings	1,092,260	1,894,514
	12,068,525	13,172,965

See credit risk policy in Note 30.8.

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

22.3 Actuarial assumptions

The following are the actuarial assumptions used in determining the present value of defined employee benefit obligations used for the actuarial calculations as of December 31, 2021, and 2020:

2021	Pension	Bonds	Health	Education	Others (1)
Discount rate (1)	5.18%-8.7 %	5.00%-6.25 %	7.00%-8.8 %	6.30%-8.9 %	5.56%-7.10 %
Salary growth rate (1)	4.50 %	N/A	N/A	4.50 %	4.5%-4.7 %
Expected inflation rate (1)	3.0%-4.0 %	3.00 %	3.00 %	3.00 %	3.00%-4.00 %
Pension growth rate	3.0%-3.5 %	N/A	N/A	N/A	3.50 %
Cost trend					
Short-term rate	N/A	N/A	6.67 %	4.00 %	N/A
Long-term rate	N/A	N/A	4.00 %	4.00 %	4.70 %

2020	Pension	Bonds	Health	Education	Others (1)
Discount rate	5.50 %	4.75 %	6.00 %	5.00 %	4.09 %
Salary growth rate	N/A	N/A	N/A	N/A	4.70 %
Expected inflation rate	3.00 %	3.00 %	3.00 %	3.00 %	3.00 %
Pension growth rate	3.00 %	N/A	N/A	N/A	N/A
Cost trend					
Short-term rate	N/A	N/A	6.67 %	4.00 %	N/A
Long-term rate	N/A	N/A	4.00 %	4.00 %	N/A

N/A: Not applicable for this benefit.

(1) Weighted average discount rate.

The cost trend is the projected increase for the initial year, which includes the expected inflation rate.

The mortality table used for the calculations was that of 'Valid Annuitant' for men and women based on the experience gained for the period 2005–2008 of the Colombian Social Security Institute.

22.4 Maturity of benefit obligation

The cash flows required for payment of post-employment obligations of Ecopetrol and Cenit are the following:

Period	Pension and bonds	Other benefits	Total
2022	999,575	510,539	1,510,114
2023	1,027,226	525,620	1,552,846
2024	1,069,119	529,898	1,599,017
2025	1,076,416	531,384	1,607,800
2026	1,108,696	529,663	1,638,359
2027 and thereafter	5,714,448	2,666,746	8,381,194

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

22.5 Sensitivity analysis

The following sensitivity analysis shows the effect of such possible changes on the obligation for defined benefits, while keeping the other assumptions constant, as of December 31, 2021:

	Pension	Bonds	Health	Education	Other
Discount rate					
–50 basis points	13,639,890	1,079,858	6,893,605	434,192	867,453
+50 basis points	12,320,218	1,014,678	6,019,242	398,399	836,192
Inflation rate					
–50 basis points	12,265,258	1,013,016	N/A	N/A	747,303
+50 basis points	13,692,090	1,080,136	N/A	N/A	769,637
Salary growth rate					
–50 basis points	N/A	N/A	N/A	2	89,570
+50 basis points	N/A	N/A	N/A	2	96,968
Cost trend					
–50 basis points	N/A	N/A	6,021,414	398,143	N/A
+50 basis points	N/A	N/A	6,887,785	434,328	N/A

N/A: Not applicable for this benefit.

22.6 Voluntary retirement plan

In May 2020, Ecopetrol offered a new voluntary retirement plan, which 421 workers have accepted. This plan includes the dismissal of employees from January 2020 to December 2023, through 4 modalities: compliance with the work cycle (pension), retirement plan A (Income), retirement plan B (Bonus) and enhanced compensation.

In August 2016, the Ecopetrol offered a voluntary retirement plan, which as of December 31, 2021, was used by 125 workers who met certain requirements. This plan includes benefits such as monthly income, education, and health benefits until the date on which the employee is granted their retirement pension.

As of December 31, 2021, the amount of the net obligation associated with voluntary retirement plans is \$746,585 (2020 - \$713,407).

23. Accrued liabilities and provisions

	Asset retirement obligation	Litigation	Environmental contingencies and others	Total
Balance as of December 31, 2020	11,239,325	118,139	1,070,266	12,427,730
Increase in abandonment costs	500,868	—	—	500,868
Effect of business combination (Note 12)	—	329,123	618,760	947,883
Additions	242,435	261,785	210,619	714,839
Uses	(548,133)	(13,453)	(334,922)	(896,508)
Financial costs	292,329	3,925	7,272	303,526
Foreign currency translation	152,212	4,466	34,774	191,452
Transfers	11,283	(19)	31,153	42,417
Balance as of December 31, 2021	11,890,319	703,966	1,637,922	14,232,207
Current	1,041,674	59,843	488,601	1,590,118
Non-current	10,848,645	644,123	1,149,321	12,642,089
	11,890,319	703,966	1,637,922	14,232,207

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

	Asset retirement obligation	Litigation	Environmental contingencies and others	Total
Balance as of December 31, 2019	8,835,420	137,429	945,439	9,918,288
Increase in abandonment costs	2,307,453	—	—	2,307,453
Additions	143,320	32,108	237,181	412,609
Uses	(291,793)	(31,709)	(106,448)	(429,950)
Financial costs	258,464	—	—	258,464
Effect of control loss in subsidiaries (Note 28)	(23,874)	(20,117)	—	(43,991)
Adjustment on fair value for business combination	31,137	—	—	31,137
Foreign currency translation	37,239	428	5,476	43,143
Transfers	(58,041)	—	(11,382)	(69,423)
Balance as of December 31, 2020	11,239,325	118,139	1,070,266	12,427,730
Current	949,638	46,844	224,627	1,221,109
Non-current	10,289,687	71,295	845,639	11,206,621
	11,239,325	118,139	1,070,266	12,427,730

	Asset retirement obligation	Litigation	Environmental contingencies and others	Total
Balance as of December 31, 2018	6,719,275	127,945	906,792	7,754,012
Increase in abandonment costs	2,188,928	—	—	2,188,928
Additions	112,486	58,913	90,854	262,253
Uses	(410,191)	(45,342)	(59,755)	(515,288)
Financial costs	226,803	—	3	226,806
Foreign currency translation	(5,240)	79	1,211	(3,950)
Transfers	3,359	(4,166)	6,334	5,527
Balance as of December 31, 2019	8,835,420	137,429	945,439	9,918,288
Current	589,411	28,662	171,224	789,297
Non-current	8,246,009	108,767	774,215	9,128,991
	8,835,420	137,429	945,439	9,918,288

23.1 Asset retirement obligation

The estimated liability for asset retirement obligation costs corresponds to the future obligation that the Ecopetrol Business Group to restore environmental conditions to a level similar to that existing before the start of projects or activities, as described in Note 3.5 – Abandonment and dismantling costs of fields and other facilities. As these relate to long-term obligations, this liability is estimated by projecting the expected future payments and discounting at present value with a rate indexed to the Ecopetrol Business Group's financial obligations, considering the temporariness and risks of this obligation. The discount rates used in the estimate of the obligation as of December 31, 2021, were Exploration and Production 2.89% (2020 – 2.65%), Transportation and Logistics 3.14% (2020 - 2.71%), and Refining and Petrochemicals 4.21% (2020 - 3.67%).

[Table of Contents](#)

Ecopetrol S.A.
 Notes to the consolidated financial statements
 (Figures expressed in millions of Colombian pesos, unless otherwise stated)

23.2 Litigations

The following table details the main litigations recognized in the statement of financial position as of December 31, whose loss expectations are probable and could imply an outflow of resources:

	2021	2020
Damages to third parties due to hydrocarbon easement in a building near the Cartagena Refinery.	11,019	11,019
CTEEP Regulatory Contingency: Billing Eletrobras – RBNI Corresponds to the collection action filed by Eletrobras against ISA CTEEP requesting the return of the value charged in excess by the company as part of the payment of the compensation resulting from the extension of Concession Contract No. 059/2001 under Law No. 12,783/201, relating to NI facilities (new investments) that had been transferred to the company by Eletrobras.	27,993	—
Second instance rulings unfavorable to the interests of Ecopetrol, related to public works contributions, for which they have a unified sentence and that could be subject to collection by the tax authority	203,160	—

23.2 Environmental contingencies and others

These correspond to contingencies for environmental incidents and obligations related to environmental compensation and mandatory investment of 1% for the use of, exploitation of or effect on natural resources imposed by national, regional, and local environmental authorities. Mandatory investment of 1% is based on the use of water taken directly from natural sources in accordance with the provisions of Law 99 of 1993, Article 43, Decree 1900 of 2006, Decree 2099 of 2017 and 075 and 1120 of 2019 and article 321 of Law 1955 of 2019 in relation to the projects that Ecopetrol develops in Colombia.

The Colombian Government through the Ministry of Environment and Sustainable Development, issued in December 2016 and in January 2017 the Decrees 2099 and 075, which modify the Single Regulatory Decree of the environment and sustainable development sector, Decree 1076 of 2015, related to the mandatory investment for the use of water taken directly from natural sources. The decrees included modifications and guidelines regarding the geographical scope for the execution of the activities for the fulfillment of the obligation, investment lines and the calculation of the base of liquidation of the obligations. Likewise, June 30, 2017, was defined as the maximum date to modify the Investment Plans that are in execution.

In 2019, Law 1955/2020 was issued, which in its article 321 unifies the basis for the settlement of this obligation and requires updating the investment obligations of 1% to present value. Ecopetrol carried out the recertification of the settlement base and the acceptance of the percentage of updating of the investment values of 1% in more than 90 environmental licenses, generating a lower provision for this obligation. Currently, ANLA's pronouncements are being received in relation to article 321 of Law 1955, some through official letters and others through resolutions. Ecopetrol has filed an appeal for reconsideration with ANLA in most cases, which are under review by this authority.

[Table of Contents](#)

Ecopetrol S.A.

Notes to the consolidated financial statements

(Figures expressed in millions of Colombian pesos, unless otherwise stated)

23.3 Contingencies

Oleoducto Bicentenario de Colombia S.A.S.

Settlement agreement with Frontera and the Pacifics OBC:

During July 2018, the carriers Frontera Energy Colombia Corp. (Frontera), Canacol Energy Colombia S.A.S. (Canacol) and Vetra Exploración y Producción Colombia S.A.S. (Vetra and, together with Frontera and Canacol, the Carriers) sent letters to Oleoducto Bicentenario de Colombia S.A.S. (Bicentenario) alleging there were early termination rights under the Ship-or-Pay Transport Agreements entered by each of them and Bicentenario in 2012 (the Transport Agreements). Consequently, Frontera ceased to comply with its obligations under the agreement. Bicentenario has rejected the terms of the letters, noting that there is no option for early termination and reiterating to the Carriers that the Transport Agreements are current and therefore the Carriers must fulfill their obligations under the Transport Agreements in a timely fashion. Under Bicentenario's understanding that the Transport Agreements remain current and that the Carriers are in violation of their obligations under such agreements, Bicentenario declared the Carriers delinquent because of their failure to pay for transport service under the aforementioned agreements. Consequently, Bicentenario executed the standby letters of credit posted as guarantee for the Transport Agreements.

After trying a direct settlement with Frontera, the Company filed arbitration claims against Frontera under the arbitration agreement contained in the Transportation Contract in the Arbitration and Conciliation Center of Chamber of Commerce of Bogota.

On November 17, 2020, Bicentenario, Frontera, the Pacific OBCs and Cenit Transporte y Logística de Hidrocarburos S.A.S. filed a conciliation request with the Attorney General's Office (Procuraduría General de la Nación) to finish their controversies. In the case of Bicentenario and Frontera together with the Pacific OBCs, the conciliation request is intended to resolve the disputes under the Transportation Contracts and under the Investment Framework Agreement and, in the case of Cenit and Frontera together with the Pacific OBC, the controversies under the respective transportation contracts entered and the tariffs dispute between Cenit and Frontera.

On March 24, 2021, the Attorney General's Office issued a favorable opinion regarding the conciliation request signed between Bicentenario, Frontera, the Pacific OBCs and Cenit Transporte y Logística de Hidrocarburos SAS, recommending that the Administrative Court of Cundinamarca should approve the conciliation agreement to resolve all disputes between the parties.

The Administrative Court of Cundinamarca approved the Conciliation, being executed on November 10, 2021. With the obligations of the parties in the Conciliation Agreement, in compliance, on November 11, 2021, the conciliation was closed.

Settlement agreement with Vetra Exploración y Producción Colombia S.A.S.:

On January 13, 2021, Bicentenario and Vetra signed a conciliation agreement with which it was intended to finish the controversies related to the transportation and storage contracts and also finalize the arbitration tribunals that were in progress. Said agreement had to be approved by the Court, prior concept of the Public Ministry. In this arrangement, a formula was established, which consisted, in general, in finalizing the contractual bonds celebrated between the parties and settling all the pending payment obligations between the two companies. In February 2021, the conciliation agreement that finished the controversies between the parties was presented to the court, which was approved on April 28, 2021. With the approval of the conciliation agreement, the controversies between the parties were terminated.

Settlement agreement with Canacol Energy Colombia S.A.S.

On March 8, 2021, Bicentenario and Canacol signed a conciliation agreement with which it was intended to finish the controversies related to the transportation and storage contracts and also finalize the arbitration tribunals that were in progress. Said agreement required approval by the Court, prior concept of the Public Ministry and it established a settlement formula that consisted, in general, in ending the contractual connections between the parties and settling all pending payment obligations between the two companies. In March 2021, the conciliatory formula that finished the controversies between the parties was presented to the Court, which was approved on April 23, 2021. With the approval of the conciliation agreement, the controversies between the parties were terminated.

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

Cenit Transporte y Logística de Hidrocarburos S.A.S. ("Cenit") – Controversy with Grupo Frontera

On November 29, 2018, through file No. 15911, the Company filed an arbitration claim against Grupo Frontera for three matters in dispute, between the parties:

- Unilateral decision of Grupo Frontera to early termination the Ship or Pay transportation contracts for the Caño Limón – Coveñas Pipeline. Within the agreement entered with the Frontera Energy regarding the Caño Limón Coveñas Pipeline, and in particular clause 13.3 establishes that, in the event of service suspension for reasons not attributable to either party, for a longer period 180 continuous calendar days, either party may terminate the contract early. Frontera considered that the facts that gave rise to the early termination of the contract were fulfilled, for its part Cenit considered that no more than 180 days of service suspension had elapsed.
- Rate disagreement between Cenit and Grupo Frontera regarding the application or not of the rates set by the Ministry of Mines and Energy for the period 2015-2019. Since December 2016, the Frontera Group filed objections to the full payment of invoices issued by Cenit, expressing its opposition to the application of the rates set by the Ministry of Mines and Energy (MME) in resolutions 31480 and 31661 of 2016. In the other hand, Cenit considered that the objections presented by the client were inadmissible.
- Abandonment Fund: Cenit, considering the resolutions 31480 and 31661 of September 30, 2016, and October 26, 2016, respectively, issued in 2018 and 2019 invoices for the abandonment fund established by the Ministry of Mines and Energy, through which established the transportation rates for some of the Cenit systems for the 2015-2019 rate period.

For its part, Frontera began an international arbitration process against Cenit and the Bicentenario, where the discrepancies and disputes associated with the Investment Framework Agreement and the transportation contracts for the Caño Limón – Coveñas and Bicentenario Pipelines were in process.

Settlement agreement Bicentenario, Cenit and Frontera

On November 17, 2020, Cenit and Oleoducto Bicentenario de Colombia, subsidiaries of Ecopetrol, reached an agreement with Frontera Energy and filed a conciliation request with the Attorney General's Office to resolve all their disputes. The Attorney General's Office issued a favorable concept for the agreement on March 24, 2021, and the Administrative Court of Cundinamarca approved the conciliation on November 5, 2021, once the approving order was executed, all the arbitration processes that existed due to the disputes already described were terminated.

Within the signed agreement, it was established that Frontera would recognize the existence of the contracts in dispute as of December 31, 2019, transferring to Cenit its 43.03% of shares in the Oleoducto Bicentenario, the resources of the trust company assignment corresponding to the tariff disagreement, and deliver to Cenit the full line of the Oleoducto Bicentenario, in addition to allowing the company to offset a portion of its Bicentenario syndicated debt with the pending dividends to be declared and existing accounts receivable in favor of Frontera as of December 31, 2019.

Frontera also signed new transportation contracts with Cenit and its subsidiaries Oleoducto Bicentenario and Oleoducto de los Llanos Orientales (ODL) once the conciliation took effect after the legally required approvals.

Settlement agreement Bicentenario, Cenit and Canacol

On October 30, 2020, Cenit and Canacol reached a settlement agreement to resolve all their disputes. The agreement included a full and final mutual release of all present and future amounts claimed by all parties related to the transportation contracts terminated by the Caño Limón - Coveñas pipeline. On November 18, 2020, the Arbitration Court approved the conciliation agreement between Cenit and Canacol, which considered that Canacol was forced to transfer all its outstanding shares in Oleoducto Bicentenario to Cenit. Additionally, as part of the agreement, Canacol entered in new transportation contracts with Cenit. The contracts allow Cenit to obtain payment of certain amounts included in the settlement, during the term of the contracts.

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

Settlement agreement Bicentenario, Cenit and Vetra

On November 23, 2020, Cenit and Vetra reached a settlement agreement to resolve all their disputes. The agreement included a full and final mutual release of all present and future amounts claimed by all parties related to the transportation contracts with early termination for the Caño Limón - Coveñas Pipeline. On February 18, 2021, the Arbitration Court approved the conciliation agreement between Cenit and Vetra, which considered that Vetra must transfer all its outstanding shares in Oleoducto Bicentenario to Cenit, and to make a cash payment for the remaining amounts included in the agreement.

Refinería de Cartagena S.A.S.

Arbitration tribunal:

On March 8, 2016, Reficar filed a request for arbitration with the International Chamber of Commerce (the "ICC") against Chicago Bridge & Iron Company NV, CB&I (UK) Limited and CBI Colombiana SA (jointly, "CB&I"), concerning a dispute related to the Engineering, Procurement, and Construction Agreements entered into by and between Reficar and CB&I for the expansion of the Cartagena Refinery in Cartagena, Colombia. Reficar is the Claimant in the ICC arbitration and seeks no less than USD\$2 billion in damages plus lost profits.

On May 25, 2016, CB&I filed its Answer to the Request for Arbitration and the preliminary version of its counterclaim against Reficar, for approximately USD \$ 213 million. On June 27, 2016, Reficar filed its reply to CB&I's counterclaim denying and disputing the declarations and relief requested by CB&I.

On April 28, 2017, Reficar filed its non-detailed claim, and, on the same date, CB&I submitted its Statement of Counterclaim increasing its claims to approximately USD \$116 million and COP\$387,558 million, including USD \$70 million for a letter of credit compliance. On March 16, 2018, CB&I submitted its Exhaustive Statement of Counterclaim further increasing its claims to approximately USD\$129 million and COP\$432,303 million (including in each case interest), and also filed its Exhaustive Statement of Defense to Reficar's claims. On this same date, Reficar filed its Exhaustive Statement of Claim seeking, among others, USD\$139 million for provisionally paid invoices under the Memorandum of Agreement ("MOA") and Project Invoicing Procedure ("PIP") Agreements and the EPC Contract.

On June 28, 2019, Chicago Bridge & Iron Company filed a response to Reficar's non-detailed defense of the counterclaim, updating the value of its claim to approximately USD \$137 million and COP \$503,241 million, including interest. Likewise, CB&I presented its detailed defense to Reficar's claim.

On this same date, Reficar filed its Reply to CB&I's Non-Exhaustive Statement of Defense and its Exhaustive Statement of Defense to CB&I's counterclaim, updating its claim for provisionally paid invoices under the MOA and PIP Agreements and the EPC Contract to approximately USD\$137 million.

In relation to this matter, as of December 31, 2021, there is a balance of approximately USD \$ 122 million, in invoices paid by Reficar to CB&I, under the PIP and MOA Agreements of the EPC contract, whose supports provided to date by CB&I do not show acceptance by AMEC Foster Wheeler - PCIB.

In January 2020, McDermott International Inc. – CB&I parent company – commenced a bankruptcy case under title 11 of the United States Code in the United States Bankruptcy Court for the Southern District of Texas. Faced with this situation, Refinería de Cartagena has taken actions to protect its interests and has a group of experts with whom it will continue to evaluate other measures it may adopt in this new circumstance.

As a consequence of the initiation of the reorganization process, the arbitration was suspended until July 1, 2020, as described below.

On January 21, 2020, Comet II BV, the successor in interest to Chicago Bridge & Iron Company NV, commenced bankruptcy case under title 11 of the United States Code in the United States Bankruptcy Court for the Southern District of Texas. Before the beginning of the insolvency process of Comet II BV, an automatic suspension of the initiation or continuation of any action, process or execution of judgment or award against Comet II BV became effective, which suspended the arbitration. On January 23, 2020, Comet II B.V. obtained an order from the Bankruptcy Court permitting it to, in its discretion, modify the automatic stay to permit it to proceed with

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

litigation or other contested matters. On March 14, 2020, the Bankruptcy Court entered an order confirming a plan of reorganization, and the order provides for the stay against the arbitration to end upon the earlier of the effective date of the plan or August 30, 2020.- whichever would occur first.

On June 30, 2020, McDermott International Inc. notified the occurrence of the effective date of the reorganization plan, for which the suspension of arbitration was lifted on July 1, 2020.

On May 6, 2020, the Superintendence of Companies ordered the judicial liquidation of CBI Colombiana SA, one of the defendants in the CB&I arbitration. On October 22, 2020, Reficar requested its recognition as a creditor of CBI Colombiana SA, up to the maximum amount of its claims in the arbitration. On January 15, 2021, the liquidator of CBI Colombiana SA accepted Reficar's request.

On September 22, 2020, the tribunal scheduled the start of the hearings for May 2021.

Between May 17 and June 16, 2021, the first two blocks of the hearing were held, in which the evidence in the Arbitration against CB&I was presented. On June 16, 2021, the Court ordered the submission of post-hearing briefs for October 15 and November 5, 2021. Likewise, the Court summoned the parties to a hearing on closing arguments for November 18, and 19, 2021.

On August 16, 2021, the parties requested the Court to modify the procedural calendar, consisting of slightly altering the dates of presentation of the post-hearing briefs. On August 26, 2021, the Court granted the request of the parties, so the post-hearing briefs were presented on October 22 and November 10, 2021. The closing arguments hearing was held in a single session on November 18, 2021, and the session scheduled for November 19, 2021, was dispensed with.

Subsequently, on December 20, 2021, Refinería de Cartagena presented its memorial for costs in the Arbitration against CB&I. Until the Court issues its final decision, the result of this arbitration is unknown.

23.4 Investigations of control entities – Reficar

Reficar is a wholly owned subsidiary of Ecopetrol. According to Colombian regulations, Ecopetrol's and Reficar's employees are considered public servants, and as such can be held liable for negligent use or management of public resources. In this context, given that Ecopetrol is majority owned by the Colombian Government and Reficar is a wholly owned subsidiary of Ecopetrol, Ecopetrol and Reficar administer public resources.

As a result, Ecopetrol and Reficar employees are generally subject to the control and supervision of the following control entities, among others:

Prosecutor's Office:

To date, 3 legal proceedings are being carried out arising from the events related to the expansion and modernization project of the Refinería de Cartagena (the "project").

Proceeding 1 – 110016000101201600023 - MOA - PIP and EPC

This process is being carried out against some prior members of the Refinería de Cartagena Board of Directors, Refinería de Cartagena ex workers, Chicago Bridge and Iron Company (CB&I) workers and the Reficar Statutory Auditor between 2013 and 2015; for the crimes of undue interest in the conclusion of contracts, misappropriation in favor of third parties, illicit enrichment of individuals in favor of third parties and ideological falsehood in public document.

On May 31, 2018, the Accusation Formulation Hearing was installed; however, on this date the jurisdiction of the judge in the case was challenged. For this reason, it was only possible to start it on November 29, 2018. On August 22, 2019, the accusation hearing ended and Refinería de Cartagena and Ecopetrol were officially recognized as victims.

On November 25, 2019, the preparatory hearing for the trial was installed.

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

On November 4, 2020, a hearing was arranged in which the judge of the case manifested his impediment that was resolved by the Superior Court of Bogotá, by means of an order of December 16, February 2021, declaring it unsupported and maintaining jurisdiction in the same court.

The preparatory trial hearing continued from November 2 to 30, 2021. It was suspended to elaborate evidentiary stipulations between the FGN and the defense. It was restarted on January 12, 2022, and will continue with the processing of the stipulations, and later, with the evidentiary requests by the procedural subjects.

Proceeding 2 - 110016000101201800132 Business line

This process is carried out for the crimes of aggravated unfair administration and obtaining a false public document, against previous members of the Board of Directors of Refinería de Cartagena and an ex-president of this company.

On August 5, 2019, the accusation formulation hearing was installed and finished and Refinería de Cartagena and Ecopetrol were officially recognized as victims.

On November 18, 2019, the preparatory trial hearing was installed, and it is currently being developed.

Proceeding 3 – 110016000101201800134 – Subscription of contract PMC - Foster Wheeler

This process is carried out for the crime of entering into a contract without legal requirements, against two ex-workers of the Refinería de Cartagena, who acted as ex-president in property and ex-president in charge, for the period for which the accusation is made.

On January 27, 2020, the accusation hearing was installed and finished, and Refinería de Cartagena and Ecopetrol were officially recognized as victims.

On March 11, 2020, the preparatory hearing for the trial was installed.

On October 4 and 13, 2021, the preparatory hearing for the trial continued, all the evidence, both from the FGN and the defenders, was requested and decreed. On February 7, the oral trial began, and the evidence requested by the Prosecutor's Office and the defense were taken. On April 5, the practice of evidence concluded, and May 9, 2022, was cited as the date to present the closing arguments.

Office of the Comptroller General (Contraloría General de la República – CGR):

Financial Audit for the 2020 period

The CGR executed a financial audit of Refinería de Cartagena between February 1st and May 27th, 2021.

In the Final Audit Report, three issues of an administrative nature are established, and it is indicated that (i) the budget execution is reasonable, since the budget was prepared and executed in accordance with the applicable regulations, (ii) the internal financial control was efficient, since it is adequate and effective controls according to the risks that are inherent to the different processes, procedures and activities during the 2020 period, (iii) that the accounting opinion is negative, since the CGR considered that the Financial Statements “do not present reasonably in all important aspects the financial situation as of December 31, 2020”.

Considering the above, the CGR did not terminate the fiscal account for the 2020 term.

Fiscal responsibility processes

- 2017-00309_UCC-PRF-005-2017

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

Through Order No. 773 of June 5, 2018, the Office of the Comptroller General issued an order to file and impute fiscal responsibility within the process # PRF-2017-00309_UCC-PRF-005-2017 and impute responsibility to:

- i. Nine (9) ex-members of the Board of Directors of Refinería de Cartagena
- ii. Five (5) ex-workers of Refinería de Cartagena
- iii. One (1) ex-worker of Ecopetrol
- iv. Five (5) contractor companies that provided their services during the execution of the project,
- v. Four (5) insurance companies and two (2) reinsurers, as a civilly responsible third party.

Additionally, in the order it was required to form an independent process in relation to the event that generates the late entry into operation of the refinery, which gives rise to a loss of profit; that is, the net profit not received by Refinería de Cartagena.

On April 26, 2021, the CGR issued a first instance ruling with fiscal responsibility for changes 2 and 3 that were made to the expansion and modernization project of the Refinería de Cartagena for a value of COP\$2,9 thousands of millions in solidarity and as a gross fault against:

- i. Seven (7) ex-members of the Board of Directors of Refinería de Cartagena
- ii. Five (5) ex-workers of Refinería de Cartagena
- iii. Four (4) contractor companies that provided their services during the execution of the project,
- iv. Four (4) insurance companies.

On June 3, 2021, the CGR decided on the appeals for reconsideration and resolved, among other matters: (a) not to reconsider and confirm the first instance ruling for one of the parties, (b) partially reinstate the first instance decision to the insurance companies, (c) partially correct the ruling, and (d) grant the appeals filed.

On July 6, 2021, the CGR's Fiscal and Sanction Chamber decided the degree of consultation and the appeals filed by the parties and resolved, among other matters: (a) to deny the appeals, and (b) to confirm the order that resolved appeal for reconsideration.

The Plenary Chamber of the Council of State, through an Order dated August 26, 2021, decided not to acknowledge the automatic control of the legality of the fiscal responsibility ruling.

The parties affected by the ruling may sue the administrative act directly before the jurisdiction, once it is final.

- PRF-2018-00684-PRF-017-2018

Due to the late entry into operation that generated lost profits, the CGR is executing an independent process in which various requirements have been met. To date, the CGR has not issued an indictment.

- PRF-80011-2018-33300

Through Order No. 1328 of August 24th, 2021, the CGR closed the preliminary investigation UCC-IP-005-2019 and opened a new fiscal responsibility process. In this, eight former officials of Refinería de Cartagena (three former presidents and five former financial vice-presidents) are investigated.

According to the press release, the CGR attributes the alleged damage to unidentified expenses associated with the Project, amounting to US\$9,240,927 from the period June to December 2015 and US\$12,447,618 from the periods 2016 to 2018; and 268.71 MUSD that, being approved and entered the refinery budget, do not show what was executed within the Project.

Through official letter 2021EE0138643 of August 26, 2021, the Intersectoral Comptroller's Office number 15 informed to Refinería de Cartagena of the closure of the Preliminary Inquiry UCC-IP-005-2019 and the opening of the Ordinary Process of Fiscal Responsibility PRF-80011-2018-33300, in which Refinería de Cartagena and Ecopetrol are affected entities.

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

The CGR has been recognizing legal status to act on the different trusted representatives of those under investigation and has resolved their different requests through orders.

As of the date of this report, the financial statements continue to adequately disclose the Ecopetrol Business Group's financial and operational situation in all material aspects and its internal controls remain in force and therefore the ruling does not generate any impact on the companies.

23.5 Detail of contingent liabilities

The following is a summary of the main contingent liabilities that have not been recognized in the statement of financial position as, according to the evaluations made by internal and external advisors of the Ecopetrol Business Group, the expectation of loss is not probable as of December 31, 2021, and 2020:

Type of process	2021		2020	
	Number of processes	Proceedings	Number of processes	Proceedings
Constitutional	86	1,336,966	254	15,810,766
Ordinary administrative	146	1,867,591	158	726,557
Labor	788	87,175	674	57,136
Civil	58	13,148	55	6,363
Penal	1	—	2	595
	1,079	3,304,880	1,143	16,601,417

23.6 Details of contingent assets

The following is a breakdown of the Ecopetrol Business Group's principal contingent assets, where the inflow of economic benefits is probable, but not virtually certain.

Type of process	2021		2020	
	Number of processes	Proceedings	Number of processes	Proceedings
Ordinary administrative	62	217,550	109	404,830
Arbitration	1	78,600	2	138,386
Civil	188	23,258	171	87,871
Penal	72	55,385	149	61,466
Labor	185	4,714	132	3,555
Constitutional	4	—	5	—
	512	379,507	568	696,108

24. Equity

The main components of equity are detailed below:

24.1 Subscribed and paid-in capital

Ecopetrol's authorized capital amounts to \$36,540,000, and is comprised of 60,000,000,000 ordinary shares, of which 41,116,694,690 are outstanding, and 11.51% (4,731,906,273 shares) are held privately and 88.49% (36,384,788,417 shares) are held by the Colombian Government. The value of the reserve shares amounts to \$11,499,933 comprised of 18,883,305,310 shares. As of December 31, 2021, and 2020, subscribed and paid-in capital amounts to COP\$25,040,067. There are no potentially dilutive shares.

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

24.2 Additional paid-in capital

Additional paid-in capital mainly corresponds to: (i) share premium from the Ecopetrol Business Group's capitalization in 2007, for \$4,457,997, (ii) share premium from the sale of shares awarded in the second capitalization, which took place in September 2011, of \$2,118,468, (iii) a \$31,377 share premium from the placement of shares on the secondary market, arising from the calling of guarantees from debtors in arrears, according to the provisions of Article 397 of the Code of Commerce, and (iv) additional paid-in capital receivables for (\$143).

24.3 Equity reserves

The following is the composition of the Ecopetrol Business Group's reserves as of December 31, 2021, and 2020:

	2021	2020
Legal reserve	4,737,788	4,568,980
Fiscal and statutory reserves	509,082	509,082
Occasional reserves	5,377,359	4,557,074
	10,624,229	9,635,136

The movement of equity reserves is the following for the years ended December 31, 2021, and 2020:

	2021	2020
Opening balance	9,635,136	3,784,658
Release of reserves	(5,066,156)	(540,826)
Allocation to reserves	6,055,249	6,391,304
Closing balance	10,624,229	9,635,136

24.4 Retained earnings and dividends

Ecopetrol Business Group distributes dividends based on Ecopetrol's separate financial statements prepared under International Financial Reporting Standards accepted in Colombia (NCIF, as its acronym in Spanish).

The General Assembly of Shareholders of Ecopetrol on March 26, 2021, decreed dividends on the profit for 2020, for a value of \$698,984 (2020 - \$7,401,005 and 2019 - \$9,251,256). During 2021, dividends were paid for \$696,387 for 100% of the shareholders, and the subsidiaries paid \$2,074,900. As of December 2021, the total of dividends paid is \$2,771,287 (2020: \$8,734,351; 2019: \$13,867,029).

24.5 Other comprehensive income attributable to owners of parent

The following is the composition of the other comprehensive income attributable to the shareholders of the parent, Ecopetrol, net of tax:

	2021	2020	2019
Foreign currency translation (1)	17,244,686	11,794,201	10,265,398
Cash flow hedge with derivative instruments	(60,916)	44,132	3,689
Cash flow hedges for future exports	(945,247)	(136,470)	(135,748)
Actuarial gain on defined benefit plans	(517,278)	(2,260,989)	(2,357,210)
Hedge of a net investment in a foreign operation	(4,364,465)	(1,494,926)	(1,130,583)
Others	1,114	1,114	1,114
	11,357,894	7,947,062	6,646,660

(1) Includes the realization of other comprehensive income for \$361,728 from the sale of the shares in the company Offshore International Group (OIG).

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

24.6 Earnings per share

	2021	2020	2019
Profit attributable to Ecopetrol's shareholders	15,649,143	1,586,677	13,744,011
Weighted average number of outstanding shares	41,116,694,690	41,116,694,690	41,116,694,690
Net basic and diluted earnings per share (Colombian pesos)	COP\$ 380.60	COP\$ 38.59	COP\$ 334.27

25. Revenue from contracts with customers

	2021	2020	2019
National sales			
Mid-distillates (1)	17,140,327	8,860,588	15,041,883
Gasoline and turbo fuels (1)	15,475,370	6,768,046	9,658,180
Natural gas	3,200,069	2,845,155	2,256,123
Services	3,065,988	2,859,559	4,115,626
Plastic and rubber	1,642,035	865,204	834,133
LPG and propane	926,231	375,775	372,916
Fuel gas service	734,666	671,570	72,249
Electric power transmission services (2)	728,467	—	—
Asphalts	611,051	526,100	544,200
Polyethylene	320,466	138,035	192,436
Aromatics	247,387	155,740	228,552
Crude oil	193,476	230,520	356,857
Roads and Construction Services (2)	107,179	—	—
Fuel oil	23,799	37,001	97,907
Other income gas contracts	2,879	32,190	102,845
Other products	402,828	322,232	431,201
Cash flow hedges (3)	(8)	—	—
	44,822,210	24,687,715	34,305,108
Foreign sales			
Crude oil	34,868,421	20,086,173	28,521,993
Diesel	3,867,937	3,164,068	4,391,798
Fuel oil	2,288,977	1,044,811	1,870,929
Plastic and rubber	2,092,379	1,302,131	1,249,189
Electric power transmission services (2)	1,827,622	—	—
Roads and Construction Services (2)	1,241,144	—	—
LPG and propane	116,960	18,943	13,591
Natural gas	71,529	17,231	27,255
Gasoline and turbo fuels	—	179,257	1,085,392
Other products	1,033,909	580,411	408,427
Cash flow hedges (3)	(349,884)	(857,347)	(385,170)
	47,058,994	25,535,678	37,183,404
	91,881,204	50,223,393	71,488,512

(1) Corresponds to the application of Decree 180522 of March 29, 2010, and other standards that modify and add (Decree 1880 of 2014 and Decree 1068 of 2015), which establishes the procedure to recognize the subsidy for refiners and importers of ordinary motor gasoline and ACPM, and the methodology for calculating the net position (value generated between the parity price and the regulated price, which can be positive or negative). As of December 31, 2021, the value recognized by price differential corresponds to \$11,335,453 (2020 \$142,723; 2019 \$1,785,277). See Note 4.17 – Revenue from contracts with customers.

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

- (2) Corresponds to the revenue related to the electric power transmission contracts and toll roads concessions of Interconexión Eléctrica S.A. E.S.P. See Note 4.17 – Revenue from contracts with customers.
- (3) Includes accumulated as of December 31 the result of i) hedges for future exports (Note 30.3) for (\$249,978) (2020: (\$193,374); 2019: (\$386,773)) and ii) operations with derivative financial instruments for (\$99,914) (2020: (\$663,973); 2019: \$1,603), which are related to crude oil for (\$99,913) (2020: (\$587,591); 2019: \$1,603), fuel oil for \$7 (2020: (\$76,382); 2019 : 0) and mid-distillates for (\$8) (2020: 0; 2019: 0). To present comparative values, the cash flow hedges and hedges for future exports were grouped for the years 2020 and 2019.

Sales by geographic areas

	2021	%	2020	%	2019	%
Colombia	44,822,210	48.8 %	24,687,715	49.2 %	34,305,108	48.0 %
Asia	20,355,063	22.2 %	9,497,498	18.9 %	13,529,151	18.9 %
United States	16,025,083	17.4 %	11,365,218	22.6 %	17,371,173	24.3 %
South America and others	5,727,355	6.2 %	1,296,370	2.6 %	1,502,815	2.1 %
Central America and the Caribbean	3,503,618	3.8 %	2,581,644	5.1 %	3,472,665	4.9 %
Europe	1,447,875	1.6 %	794,948	1.6 %	1,307,600	1.8 %
	91,881,204	100 %	50,223,393	100 %	71,488,512	100 %

Concentration of customers

During 2021, Organización Terpel S.A. represented 11.0% of sales revenue for the period (2020 – 15.0% and 2019 – 16.0%); no other customer represented more than 10% of total sales. There is no risk of the Ecopetrol Business Group's financial situation being affected by a potential loss of the client. The commercial relationship with this customer is for the sale of refined products and transportation services.

Revenues from concession contracts

ISA, through its companies, promotes development in several countries through concessions acquired for the supplying of public energy transport services, services associated with the Management of Real Time Systems in Colombia and public road transport, through concessionaires in Chile and Colombia.

The main concessions are the following:

Concessions in Colombia

Intelligent Network Systems, through a business collaboration agreement entered into with UNE EPM Telecomunicaciones S.A. and Consorcio ITS, executes the addendum number 5 of the Inter-administrative Agreement 5400000003 of 2006 with the Municipality of Medellín to "provide under the concession modality, the necessary technological infrastructure, the services for its modernization and optimization of the management of the administrative services of the Secretaría de Transporte y Tránsito of Medellín, through a complete solution of technology, information, communications and operation of the information and communications technology (ICT's)", in which the payment consists in the right to participate in the resources received from the penalty fees collected through the photodetection system within the municipality.

This contract is within the scope of IFRIC 12 under the intangible model, because the Municipality of Medellín, as the grantor, controls what services the operator must provide with the infrastructure, who must be charged, and at what price. In addition, the Municipality of Medellín controls, through ownership of the right of use, any significant residual interest in the infrastructure at the end of its useful life.

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

Coastal Route

Under the public-private partnership scheme, considering the terms of Law 1508 of 2012, and from the act of awarding the Public Tender VJ-VE-IP-LP-0011-2013, issued by the National Infrastructure Agency (ANI), through Resolution No. 862 of July 2, 2014, on September 10, 2014, the ANI and the concessionaire signed the Concession Contract No. 004 of 204. The purpose is to "execute the final studies and designs, environmental management, property, social management, construction, rehabilitation, improvement, operation, and maintenance of the corridor Cartagena-Barranquilla Project and Circunvalar de la Prosperidad".

This contract is within the scope of IFRIC 12 under the financial asset model for investment in construction (construction services). The concession receives income from the following sources of compensation: ANI contributions, tolls collections and revenues from commercial exploitation. If the concessionaire does not achieve the expected revenue from toll collection, the grantor (ANI) will recognize and pay the concessionaire the collection differential in years 8, 13 and 18, contractually denominated as present value of the reference month of toll collection. The revenue guarantees represent an unconditional contractual right to receive cash or other financial assets for construction services provided. The contractually guaranteed payment is a specific and determinable amount.

As of December 31, 2021, a progress of 97.24% was obtained for Functional Unit 3 and 99.94% for Functional Unit 6, achieving a consolidated progress of the project of 99.91% and commissioning of the entire road corridor.

Concessions in Brazil

For concession contracts in Brazil to supply public electric power transmission services, the operator has the right in the contractual asset while the concessionaire complies with the obligation to build and implement the transmission infrastructure, recognizing revenues throughout the time of the project. At the end of the concession, the assets linked to it will be reverted, determining and calculating the compensation to be recognized by the operator.

The concession contracts of ISA CTEEP and TAESA were analyzed and classified in accordance with IFRS 15 - Revenue from contracts with customers within the contractual asset model as of the 1st of January 2018.

The value of the contractual asset of the electric power transmission concessionaires is formed by the present value of their future cash flows, which are determined at the beginning of the concession or in its extension and is revalued in the Periodic Tariff Review.

The cash flows are defined based on the remuneration that the concessionaires receive for supplying the public transmission service to the users, Receita Anual Permitida (RAP). These resources amortize the investments made in the transmission infrastructure. Any investments that are not amortized (reversed assets) generate the right to compensation from the grantor, equivalent to the additional remuneration of the entire transmission infrastructure at the end of the concession contract. This flow of future collections is updated for inflation (IPCA/IGPM) and remunerated by a discount rate that represents the financial component of the business defined at the beginning of each project.

During the stage of the execution of the construction of the work, the concessionaire has the right to the consideration in accordance with the fulfillment of the completion of the work and the performance obligations, and not only with the time used for the construction. The revenue is recognized for the value of the expenses incurred in the formation of the asset plus a construction margin.

Construction and remuneration revenues from concession assets are subject to deferral of the cumulative Social Integration Program and the Contribution for the Financing of Social Security (Cofins), recognized as deferred taxes (non-current liabilities).

Concessions in Chile

Road concession contracts for the supplying the public service of road infrastructure in Chile, may consider traffic risk or guaranteed total income according to a revenue distribution mechanism or a present value of revenue, which in the latter cases, allow the total revenue of the concession to be collected in a guaranteed way in present value. Additionally, in some concession contracts other concepts

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

are included, such as the minimum guaranteed revenue and subsidies (both in construction and in operation stages); both correspond to payments from the State, subject to specific compliance of conditions by the concessionaire.

The model applied to concessions in Chile will depend on whether there is a traffic risk, that is, whether its revenue is guaranteed or not and whether it is enough to pay for the investment. If the concession contract considers traffic risk, it is recognized according to IFRIC 12 as an intangible asset. This asset is amortized over the life of the concession operation. In the other hand, if the contract establishes income and compensation guarantee mechanisms, it is recognized as a financial asset. This asset is extinguished through payments received from road users, through the collection of tolls, or directly through payments from the Ministry of Public Works. Currently, ISA has road concessions in Chile applying the financial asset model.

26. Cost of sales

	2021	2020	2019
Variable costs			
Imported products (1)	16,944,375	7,592,489	12,639,710
Purchases of crude in association and concession	10,015,898	4,281,661	5,466,496
Depreciation amortization and depletion	6,328,144	6,069,903	5,523,306
Purchases of hydrocarbons – ANH (2)	5,611,153	2,798,432	5,437,177
Taxes and economic rights	1,125,761	841,443	788,924
Electric energy	1,087,269	1,098,621	829,543
Hydrocarbon transport services	917,552	874,632	821,654
Process materials	906,500	827,464	1,016,617
Purchases of other products and gas	811,024	598,015	584,507
Services contracted in associations	267,934	269,637	267,778
Others (3)	(3,009,700)	657,634	(676,269)
	41,005,910	25,909,931	32,699,443
Fixed costs			
Depreciation and amortization	3,270,735	2,930,120	2,781,446
Services contracted	2,756,000	1,623,375	1,841,009
Maintenance	2,637,857	2,257,370	2,497,002
Labor costs	2,596,947	2,299,761	2,316,567
Services contracted in associations	1,286,291	1,121,010	1,211,510
Taxes and contributions	1,060,123	593,041	516,933
Materials and operating supplies	561,182	508,037	574,678
Hydrocarbon transport services	57,855	253,752	268,572
General costs (4)	348,876	71,075	265,200
	14,575,866	11,657,541	12,272,917
	55,581,776	37,567,472	44,972,360

- (1) Imported products correspond mainly to gasolines, naphtha, and diluent to facilitate the transport of heavy crude oil.
- (2) Corresponds to purchases of crude oil by Ecopetrol from the National Hydrocarbons Agency (ANH, by its acronym in Spanish) derived from national production.
- (3) Corresponds to: i) result of the process of use and valuation of core inventories, ii) measurement at net realizable value and iii) other capitalizable charges to projects. The variation corresponds to the recovery of international indicators that affects the valuation, and higher volumes.
- (4) Includes the transfers to operating expenses of the costs related to Refinería de Barranca units without production due to the decrease in loading capacity due to the health emergency caused by COVID-19.

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

27. Administrative, operations and project expenses

	2021	2020	2019
Administrative expenses			
General expenses	(1,638,129)	(1,424,348)	(1,140,975)
Labor expenses (1)	(1,264,319)	(1,658,613)	(759,324)
Depreciation and amortization	(386,732)	(229,792)	(202,547)
Taxes	(52,889)	(60,397)	(48,753)
	(3,342,069)	(3,373,150)	(2,151,599)
Operations and project expenses			
Exploration costs	(959,562)	(689,087)	(763,452)
Commissions fees freights and services	(686,156)	(656,432)	(558,370)
Taxes	(515,848)	(428,608)	(483,330)
Labor expenses	(312,791)	(309,972)	(402,531)
Depreciation and amortization (2)	(174,311)	(94,723)	(75,484)
Maintenance	(156,412)	(78,181)	(56,333)
Fee for regulatory entities	(139,158)	(142,695)	(94,785)
Others	(209,319)	(186,318)	(197,469)
	(3,153,557)	(2,586,016)	(2,631,754)

(1) Since 2020, it includes the recognition of the new voluntary retirement plan for 94 workers for 2021 (2020: 421).

(2) It includes the right-of-use assets amortizations for \$28,441 (2020: \$10,814; 2019: \$14,532).

28. Other operating (expenses) income

	2021	2020	2019
Expense for legal provisions	(650,926)	(139,978)	(98,020)
Loss on sale of assets	(123,342)	(263,647)	(148,021)
Impairment loss of short-term assets	(83,773)	(34,416)	(90,441)
Gain on revaluation of assets in Guajira association (1)	—	1,284,372	—
Gain on acquisition of participations and interests (1)	—	86,026	1,048,924
Gain on loss of control in subsidiaries (2)	—	65,695	—
Other income (3)	785,297	120,114	344,354
	(72,744)	1,118,166	1,056,796

(1) Results in the acquisition of Guajira in 2020: Ecopetrol \$1,284,372 and Hocol \$86,026. For Ecopetrol it corresponds to the revaluation of the assets that it already had in the Guajira association and for Hocol it corresponds to the Bargain obtained from the acquisition of the 43% stake. For 2019, this corresponds mainly to gains related to the business combination of Invercolsa S.A.

(2) Recognition in 2020 of the disposal of net assets due to the loss of control due to the opening of the judicial liquidation process of Bioenergy S.A.S. and Bioenergy Zona Franca S.A.S. \$65,570 (Note 2.2). Liquidation process of ECP Oil and Gas Germany GmbH COP\$125.

(3) It mainly corresponds to the compensation received by Cenit Transporte y Logística de Hidrocarburos and Oleoducto Bicentenario de Colombia, because of the approval of the conciliation agreement with the Frontera Group (Note 23.3).

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

29. Financial result

	2021	2020	2019
Finance income			
Yields and interests	266,116	299,246	481,674
Results from financial assets and others	108,640	665,310	975,245
Gain on derivatives valuation	10,289	108,838	—
Dividends (1)	27	44	117,260
Other financial income	18,520	27,992	49,157
	403,592	1,101,430	1,623,336
Finance expenses			
Interest (2)	(3,095,224)	(2,384,342)	(1,894,490)
Financial cost of other liabilities (3)	(1,043,728)	(872,987)	(757,509)
Results from financial assets	(101,973)	(473,598)	(638,767)
Other financial expenses	(190,723)	(198,864)	(43,703)
	(4,431,648)	(3,929,791)	(3,334,469)
Foreign exchange gain			
(Loss) gain from exchange difference	(31,726)	346,774	40,639
Gain from realization of other comprehensive income on sale of joint ventures (Note 13)	361,728	—	—
	330,002	346,774	40,639
Financial result	(3,698,054)	(2,481,587)	(1,670,494)

- (1) In 2007, Arrendadora Financiera Internacional Bolivariana (AFIB) and Ecopetrol signed an agreement to constitute a trust fund, in which Invercolsa deposited dividends corresponding to 8.53% of the participation in dispute, regarding the shares acquired by Fernando Londoño. In 2019, as a result of the sentence of the Supreme Court of Justice, Ecopetrol received the amount of dividends that were in that trust.
- (2) As of December 31, 2021, borrowing costs for the financing of developing natural resources and property, plant, and equipment of COP\$255,707 (2020 – COP\$247,501 and 2019 – \$248,139) were capitalized.
- (3) Includes the financial expense of the asset retirement obligations and the liabilities for post-employment benefits.

30. Risk management

30.1 Exchange rate risk

The Ecopetrol Business Group operates mainly in Colombia and makes sales in the local and international markets, for that reason, it is exposed to exchange rate risk.

As of December 31, 2021, the Colombian peso depreciated 15.98%, going from a closing rate as of December 31, 2020 of COP\$3,432.50 to COP\$3,981.16 pesos per dollar.

When the Colombian peso depreciates, export earnings, when converted to pesos, increase, and imports and external debt service become more expensive.

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

The balance of financial assets and liabilities denominated in foreign currency for the years ended December 31, is presented in the following table:

(in US\$Million)	2021	2020
Cash and cash equivalents	388	197
Other financial assets	408	1,164
Trade receivables and payables, net	423	203
Loans and borrowings	(15,514)	(11,814)
Other assets and liabilities, net	702	277
Net liability position	(13,593)	(9,973)

Of the total net position, USD\$(13,306) million correspond to net liabilities of companies with the Colombian peso as its functional currency, of which USD\$(13,180) correspond to loans used as hedging instruments whose valuation is recognized in other comprehensive income, the exchange rate difference valuation of the remaining net liabilities for USD\$(126) million affect the profit or loss. Likewise, USD\$(287) million of the net position correspond to monetary assets and liabilities of Ecopetrol Business Group companies with a functional currency different from the Colombian peso, whose valuation is recognized in profit or loss.

30.2 Sensitivity analysis for exchange rate risk

The following is the effect of a change of 1% and 5% in the exchange rate of the Colombian peso as compared with the U.S. dollar, on the balance of financial assets and liabilities denominated in foreign currency as of December 31, 2021:

Scenario / Variation in the exchange rates	Effect on income before taxes +/-	Effect in other comprehensive income +/-
1 %	16,432	524,727
5 %	82,161	2,623,635

30.3 Cash flow hedge for future exports

In order to present on financial statements, the effect of the natural hedge between exports and debt, and considering that the exchange rate risk materializes when the exports are made, on October 1, 2015, the Board of Directors designated the amount of USD\$5,440 million of Ecopetrol's foreign currency debt as a hedge instrument of future revenue from crude oil exports, for the period 2015–2023. In 2021, USD\$3,672 million were additionally designated as a hedging instrument for its future income from crude oil exports, for the period 2022–2026; in accordance with IFRS 9 – Financial Instruments.

The following is the movement of foreign currency debt designated as a non-derivative hedging instrument for the years ended December 31, 2021, and 2020:

(US\$Million)	2021	2020
Hedging instrument at the beginning of the period	1,300	1,300
Reassignment of hedging instruments	675	1,230
Realization of exports	(675)	(1,230)
Designation of new coverage	3,672	—
Hedging instrument at the end of the period	4,972	1,300

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

The following is the movement in other comprehensive income for the years ended December 31, 2021, 2020 and 2019:

	2021	2020	2019
Opening balance	(136,470)	(135,748)	(374,079)
Exchange difference	(1,533,743)	(201,967)	(35,607)
Reclassification to profit or loss	249,978	193,374	386,773
Ineffectiveness	24,496	9,779	5,173
Deferred income tax	450,492	(1,908)	(118,008)
Closing balance	(945,247)	(136,470)	(135,748)

The expected reclassification of the cumulative exchange difference from other comprehensive income to the profit or loss is as follows:

Year	Before taxes	Taxes	After taxes
2022	(1,426,676)	(499,337)	(927,339)
2023	121,948	42,682	79,266
2024	(118,164)	(41,357)	(76,807)
2025	(73,332)	(25,666)	(47,666)
2026	41,998	14,699	27,299
	(1,454,226)	(508,979)	(945,247)

30.4 Hedge of a net investment in a foreign operation

The Board of Directors approved the application of net investment hedge accounting from June 8, 2016. The measure is intended to reduce the volatility of non-operating income due to exchange rate variations. The net investment hedge will be applied on a portion of the Ecopetrol Business Group's investments in foreign operations, in this case on investments in subsidiaries which have the U.S. dollar as their functional currency, using a portion of the Ecopetrol Business Group's U.S. dollar denominated debt as the hedging instrument.

Ecopetrol designated as the hedged item the net investments in Oleoducto Central S.A. (Ocensa), Ecopetrol América LLC., Hocol Petroleum Ltd, (HPL) and Refinería de Cartagena S.A.S. (Reficar) and as a hedging instrument a portion of its debt denominated in US dollars, in a total amount equivalent to USD\$5,200 million.

During 2021 Ecopetrol expanded this hedge for USD\$1,229 million to add a greater amount of designation for Refinería de Cartagena. In 2021, also capital payments of USD\$270 million were made (June USD\$163 and December USD\$107 million). The total hedged balance as of December 31, 2021, is USD\$8,208 million (2020: USD\$7,475).

Additionally, ISA Colombia made a net investment hedge on the investments in the companies REP, ISA Perú, CTM and PDI for a value of USD\$330 million. The hedging instrument corresponds to a green international bond issued on November 26, 2021.

The following is the movement in other comprehensive income attributable to owners of parent for the years ended December 31:

	2021	2020	2019
Opening balance	1,494,926	1,130,583	1,069,316
Exchange difference	4,577,887	520,490	87,524
Deferred income tax	(1,708,348)	(156,147)	(26,257)
Closing balance	4,364,465	1,494,926	1,130,583

30.5 Hedging with financial derivatives

In 2020, Ecopetrol carries out non-delivery forward operations for the sale of dollars in order to mitigate the volatility of the exchange rate in the cash flow required for the Company's operations for around USD\$420 million, during the year 2021 Ecopetrol did not sign contracts for this type of operation.

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

The ISA Group has hedges with derivative financial instruments – CCS (Cross Currency Swaps) and IRS (Interest Rate Swap) to hedge exchange rates. These hedges are recognized as cash flow hedges.

Company	Derivative instrument	2021	2020
Red de Energía del Perú (1)	Cross currency swap	106,333	—
Intervial Chile (2)	Cross currency swap	30,769	—
Ruta del Maipo (3)	Cross currency swap	11,042	—
		148,144	—

- (1) The company designated these derivative instruments as cash flow hedges, to mitigate exposure to exchange rate volatility of interest payments in Peruvian sol of the First Issue Series A and First Issue Series B of the Third Corporate Bond Program, considering that its functional currency is the US dollar.
- (2) In 2021, a UF currency hedging operation was subscribed as a debt strategy in Chilean pesos.
- (3) The subsidiary has a cross currency swap as a hedging instrument, the purpose of which is to reduce exposure to changes in future cash flows due to changes in the exchange rate that affect the bond held by the entity in US dollars and the UF variation due to future flows from toll collections.

Additionally, the ISA Group has forward derivatives USD/BRL to mitigate the exchange risk for commitments in dollars with suppliers of the IE Jaguar 07 project, as of December 31, 2021, the balance corresponds to \$13,019 (asset position).

30.6 Commodity price risk

The price risk of raw materials is associated with Ecopetrol Business Group's operations, both exports and imports of crude oil, natural gas and refined products. In order to mitigate this risk, the Group has implemented hedges to partially protect the results from price fluctuations, considering that part of the financial exposure under contracts for the purchase of crude oil and refined products depends on the international oil prices.

The risk of such exposure is partially hedged in a natural way, as an integrated Group (with operations in the exploration and production, transportation and logistics and refining segments) and carries out both crude exports at international market prices and sales of refined products at prices correlated with international prices.

Ecopetrol Business Group has a policy for the execution of (strategic and tactical) hedges and implemented processes, procedures, and controls for their management. The main purpose of the strategic hedging program is to protect the Group's consolidated financial statements from the volatility of market variables in each period of time, to protect income and thus cash flow. On the other hand, tactical hedges allow to capture value in trading operations and Asset Backed Trading (ABT), thereby mitigating the market risk of specific operations.

The following is the detail of the operations during 2021:

The commitments in physical spots and term contracts in the commercialization activity represent an exposure to the price risk of commodities, in particular the risk associated with the volatility of the price of crude oil and refined products. Although said exposure is part of the natural risk of the production, refining and commercialization activity carried out by Ecopetrol, in order to maximize value capture, Ecopetrol can concentrate the risk exposure in terms of time and/or indicator that differs from the Company's natural price risk profile.

Swaps operations for 27.5 MMBLS to mitigate risks associated with storage marketing strategies, anticipated purchases of raw materials, supply to refineries and international sales delivered at the destination port expired last year.

As of the date of this report, Ecopetrol Business Group has in its liability a net swap position of \$34,395 (2020: net asset position \$7,572). These derivative operations are recognized under cash flow hedge accounting.

[Table of Contents](#)

Ecopetrol S.A.
 Notes to the consolidated financial statements
 (Figures expressed in millions of Colombian pesos, unless otherwise stated)

30.7 Credit risk

Credit risk is the risk that the Ecopetrol Business Group may suffer financial losses because of default of: (a) payments by its clients for the sale of crude oil, gas, products or services; (b) financial institutions in which it keeps investments, or (c) by counterparties with which it has contracted financial instruments.

Credit risk related to customers

In the selling process of crude oil, gas, refined products and petrochemicals, and transport services, the Ecopetrol Business Group may be exposed to credit risk in the event that customers fail to fulfill their payment obligations. The Ecopetrol Business Group's risk management strategy has designed mechanisms and procedures that aim to minimize such events, thus safeguarding the Ecopetrol Business Group's cash flow.

The Ecopetrol Business Group performs a continuous analysis of the financial strength of its counterparties, by classifying them according to their risk level and financial guarantees in the event of a default of payments. Similarly, the Ecopetrol Business Group continuously monitors national and international market conditions for early alerts of major changes that may have an impact on the timely payment of obligations from customers.

For the receivables that are considered exposed to credit risk, Ecopetrol Business Group make individual analysis of each customer's situation to determine the value of impairment to recognize in financial statements. The Ecopetrol Business Group performs administrative and legal actions required to recover amounts past due and charges interest from customers that fail to comply with payment policies.

An aging analysis of the accounts receivable portfolio in arrears, but not impaired, as of December 31, 2021, and 2020 is as follows:

	2021	2020
Less than 3 months overdue	332,249	56,144
Between 3 and 6 months overdue	7,103	1,270
More than 6 months overdue	4,418	301,858
	<u>343,770</u>	<u>359,272</u>

Credit risk in financial assets

Following the promulgation of Decree 1525 of 2008, which provides general rules on investments for public entities, Ecopetrol's management established guidelines for its investment portfolios. These guidelines determine that investments in Ecopetrol's U.S. dollar portfolios are generally limited to investments of cash excess in fixed-income securities issued by entities rated A or higher in the long term and A1/P1/F1 or higher in the short term (international scale) by Standard & Poor's Ratings Services, Moody's Investors Service or Fitch Ratings.

In addition, Ecopetrol may also invest in securities issued or guaranteed by the United States of America or Colombia governments, without regard to the ratings assigned to such securities. In Ecopetrol's Colombian Peso portfolio, it must invest the cash excess in fixed-income securities of issuers rated AAA in the long term, and F1+/BRC1+ in the short term (local scale) by Fitch Ratings Colombia or BRC Standard & Poor's. Likewise, the Company may also invest in securities issued or guaranteed by the national government without qualification restrictions.

In order to diversify the risk in the Colombian Peso portfolio, Ecopetrol does not invest more than 10% of the cash excess in one specific issuer. In the case of the U.S. dollar portfolio, Ecopetrol does not invest more than 5% of the cash excess in one specific issuer in the short term (up to one year), or 1% in the long term.

The credit rating of issuers and counterparties in transactions involving financial instruments is disclosed in Note 6 – Cash and cash equivalents, Note 9 – Other financial assets and Note 22 – Provisions for employees' benefits.

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

30.8 Interest rate risk

Interest rate risk arises from Ecopetrol's exposure to changes in interest rates because the Ecopetrol Business Group has investments in fixed and floating-rate instruments and has issued floating rate debt linked to LIBOR, DTF and CPI interest rates. Thus, interest rate volatility may affect the fair value and cash flows of the Ecopetrol Business Group's investments and the financial expense of floating rate loans and financing.

As of December 31, 2021, 25.7% (2020, 16% and 2019, 17%) of the Ecopetrol Business Group's indebtedness is linked to floating interest rates. As a result, if market interest rates rise, financing expenses will increase, which could have an adverse effect on the results of operations.

Ecopetrol controls the exposure to interest rate risk by establishing limits to the portfolio duration, Value at Risk – VAR and *tracking error*.

Autonomous equities linked to Ecopetrol's pension obligations are also exposed to changes in interest rate, as they include fixed and floating rate instruments that are recognized according to the mark to market. Colombian regulation for pension funds, as stipulated in the Decree 941 of 2002 and Decree 1861 of 2012, indicates that they must follow the same regime as the regular obligatory pension funds in their moderate portfolio.

The following table provides information about the sensitivity of the Ecopetrol Business Group's results and other comprehensive income for the next 12 months to variations in interest rate of 100 basis points:

	Effect on profit or loss (+/-)		Effect on Other
	Financial Assets	Financial Liabilities	Comprehensive Income (+/-)
			Plan Assets
+100 basis points	(22,082)	603,559	(499,144)
-100 basis points	22,082	(569,008)	508,441

A sensitivity analysis of discount rates on pension plan assets and liabilities is disclosed in Note 22 – Provisions for employees' benefits.

30.9 Liquidity risk

The ability to access credit and capital markets to obtain resources for the investment plan execution for Ecopetrol Business Group may be limited due to adverse changes in market conditions. A global financial crisis could worsen risk perception in emerging markets.

Events that could affect the political and regional environment of Colombia may make it difficult for our subsidiaries to access the capital markets. These conditions, together with potential significant losses in the financial services sector and changes in credit risk assessments, may make it difficult to obtain resources on favorable terms. As a result, the Ecopetrol Business Group may be forced to review the conditions of the investment plan (as necessary), or access financial markets under unfavorable terms, thereby negatively affecting the Ecopetrol Business Group's results of operations and financial results.

Liquidity risk is managed in accordance with the Ecopetrol Business Group's policies aimed at ensuring that enough cash flows to comply with the Ecopetrol Business Group's financial commitments within the established dates and with no additional costs. The main method for the measurement and monitoring of liquidity is cash flow forecasting.

[Table of Contents](#)

Ecopetrol S.A.
 Notes to the consolidated financial statements
 (Figures expressed in millions of Colombian pesos, unless otherwise stated)

The following is a summary of the maturity of financial liabilities as of December 31, 2021. The amounts disclosed in the table are the contractual undiscounted cash flows. The payments in foreign currency were restated taking a constant exchange rate of COP\$3,981.16 per U.S. dollar:

	Up to 1 year	1-5 years	5-10 years	> 10 years	Total
Loans (payment of principal and interest)	5,808,268	46,594,900	24,851,089	31,568,975	108,823,232
Trade and other payables	13,568,231	78,091	—	—	13,646,322
	<u>19,376,499</u>	<u>46,672,991</u>	<u>24,851,089</u>	<u>31,568,975</u>	<u>122,469,554</u>

30.10 Capital management

The main objective of the capital management of the Ecopetrol Business Group is to ensure a financial structure that optimizes the cost of capital, maximizes the rate of return to its shareholders and allows access to financial markets at a competitive cost to cover financial needs that support an investment grade credit rating profile.

The following is the leverage ratio as of December 31, 2021, and 2020:

	2021	2020
Loans and borrowings (Note 20)	95,060,928	46,731,754
Cash and cash equivalents (Note 6)	(14,549,906)	(5,082,308)
Other financial assets (Note 9)	(2,934,734)	(3,071,659)
Net financial debt	<u>77,576,288</u>	<u>38,577,787</u>
Equity	<u>90,583,772</u>	<u>53,499,363</u>
Leverage	<u>46.13 %</u>	<u>41.90 %</u>

The movement of the net financial debt is detailed in Note 20.7.

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

31. Related parties

Balances with associates and joint ventures as of December 31, 2021, and 2020 are as follows:

	Accounts receivable	Accounts receivable – Loans	Other assets	Accounts payable	Loans	Other liabilities
Joint Ventures						
Equion Energy Limited (1)	925	—	1,386	12,997	1,483,701	233
Ecodiesel Colombia S.A.	1,521	—	—	46,452	—	—
Interligação Elétrica Garanhuns S.A.	—	28	—	—	—	—
Interligação Elétrica Paraguai S.A.	—	28	—	—	—	—
Interligação Elétrica Aimorés S.A.	—	28	—	—	—	—
Interligação Elétrica Ivaí S.A.	—	28	—	—	—	—
Derivex S.A.	—	335	—	—	—	—
Associates						
Gas Natural del Oriente S.A. E.S.P.	—	—	—	5,211	—	—
Extracol S.A.	—	—	—	283	—	—
E2 Energía Eficiente S.A. E.S.P.	6,797	—	—	1,655	—	—
Balance as of December 31, 2021	9,243	447	1,386	66,598	1,483,701	233
Current	9,243	112	1,386	66,598	1,483,701	233
Non-current	—	335	—	—	—	—
	9,243	447	1,386	66,598	1,483,701	233
	(Note 7)	(Note 7)	(Note 11)	(Note 21)	(Note 20)	
	Accounts receivable	Accounts receivable – Loans	Other assets	Accounts payable	Loans	Other liabilities
Joint Ventures						
Equion Energía Limited (1)	1,950	—	7,093	32,335	1,277,046	1,663
Ecodiesel Colombia S.A.	1,345	—	—	35,632	—	1
Offshore International Group Inc (2)	—	97,300	—	—	—	—
Associates						
Gas Natural del Oriente S.A. E.S.P.	—	—	—	1,858	—	—
Extracol S.A.	—	—	—	279	—	—
E2 Energía Eficiente S.A. E.S.P.	4,453	—	—	1,264	—	—
Serviport S.A.	—	—	—	948	—	—
Balance as of December 31, 2020	7,748	97,300	7,093	72,316	1,277,046	1,664
Current	7,748	97,300	7,093	72,316	1,277,046	1,664
Non-current	—	—	—	—	—	—
	7,748	97,300	7,093	72,316	1,277,046	1,664
	(Nota 7)	(Nota 7)	(Nota 11)	(Nota 21)	(Nota 20)	

Loans:

(1) Resources deposited by Equion in Ecopetrol Capital AG.

Accounts receivable – Loans:

(2) Offshore International Group Inc. loan granted by Ecopetrol This company is no longer part of the business group. See note 13.

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

The main transactions with related parties as of December 31 are detailed as follows:

	2021		2020		2019	
	Sales and services	Purchases and others	Sales and services	Purchases and others	Sales and services	Purchases and others
Joint Ventures						
Equion Energy Limited	13,996	149,046	27,595	356,872	317,382	569,105
Ecodiesel Colombia S.A.	35,825	442,373	8,268	346,201	8,614	280,649
Offshore International Group	—	—	4,461	—	3,245	—
	49,821	591,419	40,324	703,073	329,241	849,754
Associates						
E2 Energía Eficiente S.A. E.S.P.	60,159	6,976	49,860	2,849	—	—
Gas Natural del Oriente S.A. E.S.P.	—	27,175	—	26,141	—	—
Extrucol S.A.	—	2,354	—	1,162	—	—
	60,159	36,505	49,860	30,152	—	—
	109,980	627,924	90,184	733,225	329,241	849,754

31.1 Directors and key management personnel

In accordance with the approval given by the shareholders' meeting in 2012, which was recorded in Minute No. 026, the directors' fees for attending the meetings of the Board of Directors and / or the committees increase from four to six legal monthly minimum legal monthly salaries in force. On the other hand, in the General Shareholders' Meeting of 2018, the amendment of the Corporate Bylaws that appears in Minute No. 036 was approved, by virtue of which, the fourth paragraph of article 23 was eliminated that made the differentiation between the fees for face-to-face and non-face-to-face meetings. The members of the Board of Directors do not have any kind of variable remuneration. The amount paid in 2021 for fees to members of the Board of Directors amounted to \$3,757 (2020 - \$3,102).

The total compensation paid to Executive Officers and Senior Managers as of December 31, 2021, amounted to \$27,735 (2020 - \$24,068 and 2019 - \$22,632). Executive Officers and Senior Managers are not eligible to receive pension and retirement benefits.

Directors as of December 2021 are not eligible to receive benefits pension and retirement. As of December 31, 2020, the amount set aside to provide the benefits of pension and retirement for executives amounted to \$13,413 (2019 - COP\$18,740).

As of December 31, 2021, key management officers owned less than 1% of the outstanding shares of Ecopetrol as follows:

Key management personnel	% Shares
Felipe Bayón	<1% outstanding shares
Jaime Caballero	<1% outstanding shares

31.2 Post-employment benefit plans

The administration and management of resources for payment of Ecopetrol's pension obligations are managed by autonomous pension funds (PAPs, by its acronym in Spanish) which serve as guarantee and payment sources. In 2008, Ecopetrol received the authorization to partially commute the value corresponding to monthly payments, bonds, and quotas, transferring said obligations and the money that support them to autonomous patrimonies of a pension nature, in accordance with the requirements of Decree 1833 of 2016.

Since November 2016, the entities that manage the resources are: Fiduciaria Bancolombia, Fiduciaria de Occidente and Consorcio Ecopetrol PACC (formed by Fiduciaria La Previsora, Fiduciaria Bancoldex, Fiduagraria and Fiduciaria Central).

These trust companies will manage the pension resources for a period of five years (2016-2021) and as compensation they receive remuneration with fixed and variable components, the latter are settled on the gross yields of the portfolios and charged to the resources managed.

[Table of Contents](#)

Ecopetrol S.A.

Notes to the consolidated financial statements

(Figures expressed in millions of Colombian pesos, unless otherwise stated)

As of 2022, and after a rigorous selection and asset allocation process, the new trust companies that manage the funds related to the pension obligations are Fiduciaria BBVA, Fiduciaria Bogotá, and the Ecopetrol PACC 2021 Consortium, defined by Fiduprevisora, Fiducoldex, FiduAgraria and Fiducentral.

31.3 Government related parties

The Colombian Government controls Ecopetrol with a stock ownership of 88.49%. The most significant transactions with governmental entities are comprised as follows:

(a) Purchase of oil from the National Hydrocarbons Agency – ANH

The ANH, an entity which operates under the rules of the Ministry of Mines and Energy, has as objective to manage the oil and gas reserves and resources owned by the Colombian Nation.

By nature of the business, Ecopetrol purchases the crude oil that the ANH receives from producers in Colombia at the prices set in accordance with an established formula, which reflects the sale prices (crude oils and products), adjusted for API gravity quality, sulfur content, transportation rates to the export ports, refining process cost and a commercialization rate (when apply). The contract between Ecopetrol and the ANH ended on October 30, 2021, and a new one began with effect from November 1, 2021, to October 31, 2022.

Until December 2013 the Ecopetrol Business Group commercialized, on behalf of the ANH, the natural gas received by the latter in kind from producers. Since January 2014, ANH has received royalties in cash for the production of natural gas.

The purchase value of oil and gas from ANH is detailed in Note 26 - Cost of sales.

Additionally, Ecopetrol, like other oil and gas companies, takes part in “rounds” for the allocation of exploration blocks in Colombia without implying special treatment for Ecopetrol on count of it being an entity whose majority shareholder is the Colombian Government.

(b) Refined Price Stabilization Fund

The sale prices of regular gasoline and diesel are regulated by the National Government. In that way, there are differentials between the volume reported by the companies at the time of sale and the difference between the parity price and the reference price, the parity price being the one that corresponds to the daily prices of motor gasoline and diesel observed during the month. This differential can be for or against the producers, and it is a result of the application of Colombian Resolution 180522 of March 29, 2010, and other regulations that modify and add to it (Decree 1880 of 2014 and Decree 1068 of 2015), that establish the procedure to recognize the subsidy for refiners and importers of current motor gasoline and diesel, and the methodology for calculating the net position (the value arising from the differences between the parity price and the regulated price). The value of this differential is detailed in Note 25 - Revenue from contracts with customers and in Note 7 - Trade and other receivables, net.

(c) National Tax and Customs Direction

Ecopetrol, just like any other company in Colombia, has tax obligations that it must comply with and does not have any other kind of association or commercial relationship with the National Tax and Customs Direction of Colombia. For more information, see Note 10 - Taxes.

(d) Comptroller General of the Republic

Ecopetrol, just like any other state entity in Colombia, is obliged to comply with the requirements set out by the Comptroller General of the Republic and make an annual payment to this entity on account of a maintenance fee. Ecopetrol does not have any other kind of association or commercial relationship with this entity.

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

32. Joint operations

The Ecopetrol Business Group carries out exploration and production operations through Exploration and Production (E&P) Contracts, Technical Evaluation (TEA) Contracts and Agreements signed with the National Hydrocarbons Agency or ANH, as well as through Partnership Contracts and other types of contracts. The main joint operations in 2021 are as follows:

32.1 Contracts in which Ecopetrol is not the operator

Partners	Contract	Type	% Participation	Geographic area of operations
SierraCol Energy Arauca, LLC	Chipirón		30.41 %	
	Cosecha	Production	30 %	Colombia
	Cravo Norte		55 %	
Frontera Energy Colombia Corp	Rondón		50 %	
	Quifa	Production	40 %	Colombia
	Casanare		74.40 %	
Perenco Colombia Limited	Corocora		83.91 %	
	Estero	Production	95.98 %	
	Garcero		91.22 %	Colombia
ONGC Videsh Limited Sucursal Colombia	Orocúe		86.47 %	
	Ronda Caribe RC-10	Exploration	50 %	Offshore Caribe Norte
	Tayrona	Exploration	44 %	Offshore Caribe Norte
Shell EP Offshore ventures Limited	Fuerte Sur		50 %	
	Purple Angel	Exploration	50 %	Offshore Caribe Norte
	Col-5		50 %	
Canacol	Rancho Hermoso	Production	70 %	Colombia
	Nuevas Formaciones			
	Llanos 86		50 %	
Geopark	Llanos 87		50 %	
	Llanos 104	Exploration	50 %	Colombia
	Llanos 123		50 %	
Interoil Colombia	Llanos 124		50 %	
	Mana		30 %	
	Ambrosia	Production	30 %	Colombia
Lewis	Rio Opia		30 %	
	SSJN1	Exploration	50 %	Colombia
	Saturno		10 %	
Shell	Sul de Gato do Mato	Exploration	30 %	Brazil
	Gato do Mato		30 %	
	Pau Brasil	Exploration	20 %	Brazil
BP Energy	Rodeo Midland Basin	Production	49 %	Midland, Texas, USA
	(Oxy)			
	Quarter North Energy	Production	32 %	Golfo de México
Murphy Exploration and Production Company - USA	Gunflint	Production	30 %	Golfo de México
	K2	Production	21 %	Golfo de México
	Rydberg	Exploration	29 %	Golfo de México
OXY (Anadarko)- K2	ESOX	Production	21 %	Golfo de México
	Shell Offshore LLC			
	Bloque 8	Exploration	50 %	Golfo de México
Hess Corporation	Bloque 6	Exploration	50 %	Gulf of Mexico
Pemex Exploración y Producción				
PC Carigali Mexico Operation SA				

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

32.2 Contracts in which Ecopetrol is the operator

Partners	Contract	Type	% Participation	Geographic area of operations
	VMM29	Exploration	50 %	
	CR2		50 %	
ExxonMobil Exploration Colombia	C62		50 %	Colombia
	VMM37		100 %	
	KALE		0 %	
Repsol Colombia SA	CPO9	Exploration	55 %	Colombia
ONGC Videsh Limited Sucursal Colombia	RC9	Exploration	50 %	Colombia
CPVEN E&P Corp. Sucursal Colombia	VMM32	Exploration	51 %	Colombia
Shell Exploration and Production	CR4	Exploration	50 %	Colombia
SK Innovation Co Ltd.	San Jacinto	Exploration	70 %	Colombia
Repsol Exploración Colombia S.A.	Catleya	Exploration	50 %	Colombia
Emerald Energy PLC Suc. Colombia	Cardon	Exploration	50 %	Colombia
Parex Resources Colombia Ltd.	ORC401 CRC-2004-01	Exploration	50 %	Colombia
Repsol Colombia Oil & Gas Limited	CPO9 – Akacias	Production	55 %	Colombia
SierraCol Energy Arauca, LLC	La Cira Infantas	Production	58 %	
	Teca		86 %	Colombia
Perenco Oil And Gas	San Jacinto Rio Paez	Production	68 %	Colombia
Cepsa Colombia				
Total Colombie	Mundo Nuevo	Exploration	15 %	Colombia
Repsol Exploración Colombia SA				
Equion Energía Limited				
Emerald Energy Colombia	Oleoducto Alto Magdalena	OAM	45 %	Colombia
Frontera Energy				
Lewis Energy Colombia Inc	Clarinero	Exploration	50 %	Colombia
Total Colombie	Niscota	Production	20 %	Colombia

The Company acquires investment commitments at the moment of receiving the exploration and/or exploitation rights of a determined area by the competent authority.

32.3 Commitments for joint ventures

According to the process for exploration wells, Ecopetrol Business Group has certain commitments to meet minimum expenditure requirements on the exploration assets.

The Ecopetrol exploration commitments as of December 2021, correspond to \$USD 562.9 million. This value includes the contracts Llanos and Tayrona, which represent \$USD 61.6 million and \$USD 73 million of commitments, respectively.

33. Information by segments

A description of the Ecopetrol Business Group's business segments is in Note 4.20 - Information by business segment.

The following segment information is reported based on the information used by the Board of Directors as the top body to make strategic and operational decisions of these business segments. The performance of the segments is based primarily on an analysis of income, costs, expenses, and results for the period generated by each segment which are regularly monitored.

The information disclosed in each segment is presented net of transactions between the Ecopetrol Business Group companies.

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

33.1 Statement of profit or loss

Below are the consolidated statements of profit or loss by segment for the years ended December 31, 2021, 2020 and 2019:

For the year ended on December 31, 2021						
	Exploration and Production	Refining and Petrochemicals	Transport and Logistics	Electric Power transmission and toll roads concessions	Eliminations	Total
Third-party sales	38,552,572	46,658,196	2,557,238	4,113,198	—	91,881,204
Inter-segment sales	24,696,380	4,318,189	9,601,228	—	(38,615,797)	—
Total sales revenue	63,248,952	50,976,385	12,158,466	4,113,198	(38,615,797)	91,881,204
Variable cost	(30,473,145)	(44,860,928)	(531,361)	—	34,859,524	(41,005,910)
Fixed cost	(9,861,987)	(3,674,460)	(2,728,948)	(1,817,491)	3,507,020	(14,575,866)
Cost of sales	(40,335,132)	(48,535,388)	(3,260,309)	(1,817,491)	38,366,544	(55,581,776)
Gross profit	22,913,820	2,440,997	8,898,157	2,295,707	(249,253)	36,299,428
Administrative expenses	(1,987,817)	(784,214)	(457,217)	(322,939)	210,118	(3,342,069)
Operation and project expenses	(1,882,686)	(944,616)	(404,264)	(460)	78,469	(3,153,557)
Impairment of non-current assets	438,020	(305,466)	(165,901)	(4)	—	(33,351)
Other operating income and expenses net	(617,893)	10,749	591,829	(51,267)	(6,162)	(72,744)
Operating income (expenses)	18,863,444	417,450	8,462,604	1,921,037	33,172	29,697,707
Financial result net						
Financial income	517,629	24,313	76,453	89,267	(304,070)	403,592
Financial expenses	(2,410,906)	(1,151,255)	(250,816)	(886,420)	267,749	(4,431,648)
Foreign exchange gain (loss) net	(219,747)	(132,734)	381,964	300,519	—	330,002
	(2,113,024)	(1,259,676)	207,601	(496,634)	(36,321)	(3,698,054)
Share of profits of associates and joint ventures	9,610	200,998	858	214,698	—	426,164
Income before tax	16,760,030	(641,228)	8,671,063	1,639,101	(3,149)	26,425,817
Income tax	(5,019,540)	(383,562)	(2,925,390)	(466,771)	—	(8,795,263)
Net profit (loss) for the period	11,740,490	(1,024,790)	5,745,673	1,172,330	(3,149)	17,630,554
Profit (loss) attributable to:						
Group owners of parent	11,829,119	(1,198,619)	4,635,354	386,438	(3,149)	15,649,143
Non-controlling interest	(88,629)	173,829	1,110,319	785,892	—	1,981,411
	11,740,490	(1,024,790)	5,745,673	1,172,330	(3,149)	17,630,554
Supplementary information						
Depreciation depletion and amortization	6,844,910	1,640,940	1,211,642	462,430	—	10,159,922

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

	For the year ended on December 31, 2020				
	Exploration and Production	Refining and Petrochemicals	Transport and Logistics	Eliminations	Total
Third-party sales	22,854,925	24,804,887	2,563,581	—	50,223,393
Inter-segment sales	13,985,072	1,299,464	9,630,859	(24,915,395)	—
Total sales revenue	36,839,997	26,104,351	12,194,440	(24,915,395)	50,223,393
Fixed costs	(9,479,317)	(3,427,211)	(2,813,856)	4,062,843	(11,657,541)
Variable costs	(23,429,102)	(22,398,344)	(567,501)	20,485,016	(25,909,931)
Cost of sales	(32,908,419)	(25,825,555)	(3,381,357)	24,547,859	(37,567,472)
Gross profit	3,931,578	278,796	8,813,083	(367,536)	12,655,921
Administrative expenses	(2,163,198)	(936,175)	(533,594)	259,817	(3,373,150)
Operation and project expenses	(1,511,510)	(781,309)	(403,657)	110,460	(2,586,016)
Impairment of non-current assets	(192,693)	(781,528)	341,065	—	(633,156)
Other operating income and expenses net	1,085,114	34,705	1,827	(3,480)	1,118,166
Operating income (expenses)	1,149,291	(2,185,511)	8,218,724	(739)	7,181,765
Financial result net					
Financial income	1,177,712	67,832	125,677	(269,791)	1,101,430
Financial expenses	(2,896,060)	(914,534)	(389,394)	270,197	(3,929,791)
Foreign exchange gain (loss) net	360,409	(447,880)	434,245	—	346,774
	(1,357,939)	(1,294,582)	170,528	406	(2,481,587)
Share of profits of associates and joint ventures	(53,037)	131,462	(2,089)	—	76,336
Income before tax	(261,685)	(3,348,631)	8,387,163	(333)	4,776,514
Income tax	43,569	614,269	(2,696,499)	—	(2,038,661)
Net profit (loss) for the period	(218,116)	(2,734,362)	5,690,664	(333)	2,737,853
Profit (loss) attributable to:					
Group owners of parent	(139,279)	(2,848,511)	4,574,800	(333)	1,586,677
Non-controlling interest	(78,837)	114,149	1,115,864	—	1,151,176
	(218,116)	(2,734,362)	5,690,664	(333)	2,737,853
Supplementary information					
Depreciation depletion and amortization	6,445,812	1,599,780	1,278,946	—	9,324,538

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

	For the year ended on December 31, 2019				
	Exploration and Production	Refining and Petrochemicals	Transport and Logistics	Eliminations	Total
Third-party sales	31,295,118	36,393,470	3,799,924	—	71,488,512
Inter-segment sales	21,372,872	2,377,336	9,270,812	(33,021,020)	—
Total sales revenue	52,667,990	38,770,806	13,070,736	(33,021,020)	71,488,512
Fixed costs	(9,587,961)	(3,523,948)	(3,039,452)	3,878,444	(12,272,917)
Variable costs	(26,785,904)	(34,332,271)	(698,742)	29,117,474	(32,699,443)
Cost of sales	(36,373,865)	(37,856,219)	(3,738,194)	32,995,918	(44,972,360)
Gross profit	16,294,125	914,587	9,332,542	(25,102)	26,516,152
Administrative expenses	(1,284,560)	(496,155)	(372,942)	2,058	(2,151,599)
Operation and project expenses	(1,475,710)	(743,378)	(434,904)	22,238	(2,631,754)
Impairment of non-current assets	(1,982,044)	452,163	(232,556)	—	(1,762,437)
Other operating income and expenses net	49,673	1,014,988	74,607	(82,472)	1,056,796
Operating income (expenses)	11,601,484	1,142,205	8,366,747	(83,278)	21,027,158
Financial result net					
Financial income	1,440,440	229,297	273,613	(320,014)	1,623,336
Financial expenses	(2,311,133)	(996,790)	(306,878)	280,332	(3,334,469)
Foreign exchange gain (loss) net	287,286	(179,936)	(66,711)	—	40,639
	(583,407)	(947,429)	(99,976)	(39,682)	(1,670,494)
Share of profits of associates and joint ventures	227,401	17,091	138	122,274	366,904
Income before tax	11,245,478	211,867	8,266,909	(686)	19,723,568
Income tax	(1,925,798)	(83,504)	(2,709,111)	—	(4,718,413)
Net profit (loss) for the period	9,319,680	128,363	5,557,798	(686)	15,005,155
Profit (loss) attributable to:					
Group owners of parent	9,382,129	117,708	4,244,860	(686)	13,744,011
Non-controlling interest	(62,449)	10,655	1,312,938	—	1,261,144
	9,319,680	128,363	5,557,798	(686)	15,005,155
Supplementary information					
Depreciation depletion and amortization	5,892,822	1,398,948	1,291,013	—	8,582,783

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

33.2 Sales by product

The sales by product for each segment are detailed below for the years ended December 31, 2021, 2020 and 2019:

	For the year ended on December 31, 2021					Total
	Exploration and Production	Refining and Petrochemicals	Transport and Logistics	Electric power transmission and toll roads concessions	Eliminations	
Local sales						
Mid-distillates	—	17,166,812	—	—	(26,485)	17,140,327
Gasolines	—	17,931,469	—	—	(2,456,099)	15,475,370
Natural gas	4,077,691	—	—	—	(877,622)	3,200,069
Services	132,060	659,088	12,158,466	120,795	(10,004,421)	3,065,988
Plastic and rubber	—	1,642,035	—	—	—	1,642,035
LPG and propane	618,218	332,542	—	—	(24,529)	926,231
Fuel gas service	—	742,212	—	—	(7,546)	734,666
Electric power transmission services	—	—	—	728,467	—	728,467
Asphalts	25,178	585,873	—	—	—	611,051
Polyethylene	—	320,466	—	—	—	320,466
Aromatics	—	247,387	—	—	—	247,387
Crude oil	23,619,491	—	—	—	(23,426,015)	193,476
Roads and Construction Services	—	—	—	107,179	—	107,179
Fuel oil	10,838	12,961	—	—	—	23,799
Other income gas contracts	2,879	—	—	—	—	2,879
Other products	35,213	2,160,653	—	—	(1,793,038)	402,828
Cash flow hedges	—	(8)	—	—	—	(8)
	28,521,568	41,801,490	12,158,466	956,441	(38,615,755)	44,822,210
Foreign sales						
Crude oil	34,868,421	—	—	—	—	34,868,421
Diesel	—	3,867,937	—	—	—	3,867,937
Fuel oil	—	2,288,977	—	—	—	2,288,977
Plastic and rubber	—	2,092,379	—	—	—	2,092,379
Electric power transmission services	—	—	—	1,827,622	—	1,827,622
Roads and Construction Services	—	—	—	1,241,144	—	1,241,144
LPG and propane	116,960	—	—	—	—	116,960
Natural gas	71,529	—	—	—	—	71,529
Other products	20,365	925,595	—	87,991	(42)	1,033,909
Cash flow hedges	(349,891)	7	—	—	—	(349,884)
	34,727,384	9,174,895	—	3,156,757	(42)	47,058,994
	63,248,952	50,976,385	12,158,466	4,113,198	(38,615,797)	91,881,204

[Table of Contents](#)

Ecopetrol S.A.
 Notes to the consolidated financial statements
 (Figures expressed in millions of Colombian pesos, unless otherwise stated)

	For the year ended on December 31, 2020				
	Exploration and Production	Refining and Petrochemicals	Transport and Logistics	Eliminations	Total
Local sales					
Mid-distillates	—	8,871,938	—	(11,350)	8,860,588
Gasoline and turbo fuels	6,739	7,880,124	—	(1,118,817)	6,768,046
Services	116,485	268,081	12,194,384	(9,719,391)	2,859,559
Natural gas	3,683,018	—	—	(837,863)	2,845,155
Plastic and rubber	—	865,204	—	—	865,204
Fuel gas service	—	678,396	—	(6,826)	671,570
Asphalts	27,043	499,057	—	—	526,100
LPG and propane	249,533	133,525	—	(7,283)	375,775
Crude oil	13,250,275	—	—	(13,019,755)	230,520
Aromatics	—	155,740	—	—	155,740
Polyethylene	—	138,035	—	—	138,035
Fuel oil	7,758	29,243	—	—	37,001
Other income gas contracts	32,190	—	—	—	32,190
Other products	19,556	417,889	—	(115,213)	322,232
	17,392,597	19,937,232	12,194,384	(24,836,498)	24,687,715
Foreign sales					
Crude oil	20,165,489	29	—	(79,345)	20,086,173
Diesel	—	3,164,068	—	—	3,164,068
Fuel oil	—	1,044,811	—	—	1,044,811
Plastic and rubber	—	1,302,131	—	—	1,302,131
LPG and propane	18,943	—	—	—	18,943
Natural gas	17,231	—	—	—	17,231
Gasolines and turbo fuels	—	179,257	—	—	179,257
Other products	26,702	553,206	56	447	580,411
Cash flow hedges	(780,965)	(76,382)	—	—	(857,347)
	19,447,400	6,167,120	56	(78,898)	25,535,678
	36,839,997	26,104,352	12,194,440	(24,915,396)	50,223,393

[Table of Contents](#)

Ecopetrol S.A.
 Notes to the consolidated financial statements
 (Figures expressed in millions of Colombian pesos, unless otherwise stated)

	For the year ended on December 31 2019				
	Exploration and Production	Refining and Petrochemicals	Transport and Logistics	Eliminations	Total
Local sales					
Mid-distillates	—	15,073,134	—	(31,251)	15,041,883
Gasoline and turbo fuel	—	11,554,947	—	(1,896,767)	9,658,180
Services	196,527	261,390	13,070,676	(9,412,967)	4,115,626
Natural gas	2,909,770	—	—	(653,647)	2,256,123
Plastic and rubber	—	834,133	—	—	834,133
Asphalts	24,690	519,510	—	—	544,200
LPG and propane	179,541	193,375	—	—	372,916
Crude oil	21,085,955	—	—	(20,729,098)	356,857
Fuel gas service	—	72,249	—	—	72,249
Aromatics	—	228,552	—	—	228,552
Polyethylene	—	192,436	—	—	192,436
Other income gas contracts	102,845	—	—	—	102,845
Fuel oil	1,464	96,443	—	—	97,907
Other products	25,215	703,270	—	(297,284)	431,201
	24,526,007	29,729,439	13,070,676	(33,021,014)	34,305,108
Foreign sales					
Crude oil	28,459,998	61,995	—	—	28,521,993
Diesel	—	4,391,798	—	—	4,391,798
Fuel oil	—	1,870,929	—	—	1,870,929
Plastic and rubber	—	1,249,189	—	—	1,249,189
LPG and propane	13,591	—	—	—	13,591
Natural gas	27,255	—	—	—	27,255
Gasolines and turbo fuels	—	1,085,392	—	—	1,085,392
Other products	26,309	382,063	55	—	408,427
Cash flow hedges	(385,170)	—	—	—	(385,170)
	28,141,983	9,041,366	55	—	37,183,404
	52,667,990	38,770,805	13,070,731	(33,021,014)	71,488,512

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

33.3 Capital expenditures by segments

The following are the investments amounts made by each segment for the years ended December 31, 2021, 2020 and 2019:

	2021	Exploration and Production	Refining and Petrochemicals	Transport and Logistics	Electric power transmission and toll roads concessions	Total
Property, plant, and equipment (Note 14)		2,633,119	1,845,618	1,344,654	294,197	6,117,588
Natural and environmental resources (Note 15)		6,733,028	—	—	—	6,733,028
Intangibles (Note 17)		106,490	22,685	47,236	267,935	444,346
		9,472,637	1,868,303	1,391,890	562,132	13,294,962
	2020	Exploration and Production	Refining and Petrochemicals	Transport and Logistics		Total
Property, plant, and equipment (Note 14)		2,866,600	1,329,181	836,536		5,032,317
Natural and environmental resources (Note 15)		5,994,462	—	—		5,994,462
Intangibles (Note 17)		41,002	8,771	40,309		90,082
		8,902,064	1,337,952	876,845		11,116,861
	2019	Exploration and Production	Refining and Petrochemicals	Transport and Logistics		Total
Property, plant, and equipment		2,151,194	497,512	1,363,953		4,012,659
Natural and environmental resources		9,798,193	—	—		9,798,193
Intangibles		25,775	20,569	121,945		168,289
		11,975,162	518,081	1,485,898		13,979,141

34. Supplemental information on oil and gas producing activities (unaudited)

The information in this note is referred to as “unaudited” as a means of clarifying that it is not covered by the audit opinion of the independent registered public accounting firm that has audited and reported on the “Consolidated Financial Statements.”

In accordance with the requirements of the United States Securities and Exchange Commission (SEC), Rule 4–10(a) of Regulation S–X, Release 33–8879, Accounting Standards Codification 932 and the ASU– 2010–03 “Oil and Gas reserve Estimation and Disclosures” rule, this section provides supplemental information on oil and gas exploration and producing activities of the Ecopetrol Business Group. The information included in sections (1) to (3) provides historical cost information pertaining to costs incurred in exploration, property acquisitions and development, capitalized costs, and results of operations. The information included in sections (4) and (5) presents information on Ecopetrol’s estimated net proved reserve quantities, standardized measure of estimated discounted future net cash flows related to proved reserves and changes in estimated discounted future net cash flows.

The following information corresponds to Ecopetrol’s oil and gas producing activities as of December 31, 2021, 2020 and 2019, and includes information related to the Ecopetrol Business Group’s consolidated subsidiaries.

Under the SEC final rule optional disclosure of possible and probable reserves is allowed but, the Ecopetrol Business Group opted not to do so. Ecopetrol estimated its reserves without considering non–traditional resources.

[Table of Contents](#)

Ecopetrol S.A.
 Notes to the consolidated financial statements
 (Figures expressed in millions of Colombian pesos, unless otherwise stated)

34.1 Capitalized costs relating to oil and gas exploration and production activities

	2021	2020	2019
Natural and environmental properties	79,385,151	67,767,005	60,261,025
Wells, equipment, and facilities – property, plant and equipment	31,730,001	31,166,804	30,150,268
Exploration and production projects	11,474,682	12,494,665	8,801,630
Accumulated depreciation, depletion, and amortization	(70,739,885)	(64,233,572)	(60,346,094)
Net capitalized cost	51,849,949	47,194,902	38,866,829

It includes information of the Exploration and Production segment subsidiaries and joint ventures.

In accordance with IAS 37, costs capitalized to natural and environmental properties include provisions for asset retirement obligations of \$3,930,370, \$3,936,494, and \$2,336,236 during 2021, 2020 and 2019, respectively.

34.2 Costs incurred in oil and gas exploration and developed activities

Costs incurred are summarized below and include both amounts expensed and capitalized in the corresponding period.

	2021	2020	2019
Acquisition of proved properties (1)	—	507,907	2,668,960
Acquisition of unproved properties (2)	—	1,274,660	261,231
Exploration costs	1,793,549	1,340,898	640,556
Development costs	11,264,075	7,367,020	8,084,283
	13,057,624	10,490,485	11,655,030

- (1) For 2020, it corresponds mainly to the acquisition of the entire participation in the Guajira Association (43% of the association contract) by Hocol and its position as operator. In July 2019, Ecopetrol and Occidental Petroleum Corp. (OXY) entered into a Joint Operation contract in order to execute a joint plan for the development of unconventional drilling in the Permian Basin in the state of Texas (USA).
- (2) During 2020, Ecopetrol through its subsidiary Ecopetrol Óleo e Gás do Brasil Ltda acquired 30% of the interests, rights and obligations in two areas that correspond to the BM-S-54 Concession Agreement and the Sul de Gato do Mato Shared Production Contract, located offshore in Santos basin of Brazil, in the discovery of hydrocarbons called "Gato do Mato". Additionally, Ecopetrol Óleo e Gás do Brasil Ltda has recognized the billing related to activities of drilling during the year. On July 17, 2020, the Ministry of Mines and Energy of Brazil authorized the transfer of 10% of the Saturn block for USD\$85 million, located in the Santos basin, to Ecopetrol Óleo e Gás do Brasil, this percentage of which Shell Brasil Petróleo Ltda and Chevron Brasil Óleo e Gas Ltda. were equal holders. In the new shareholding structure, Ecopetrol retains 10% of the interests of the block, while Shell (operator) and Chevron each retain 45% of the total.

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

34.3 Results of operations for oil and gas exploration and production activities

The Ecopetrol Business Group's results of operations from oil and gas exploration and production activities for the years ended December 31, 2021, 2020 and 2019 are as follows:

	2021	2020	2019
Net revenues			
Sales	50,631,272	30,141,662	42,070,018
Transfers	12,617,680	7,025,839	11,564,358
	63,248,952	37,167,501	53,634,376
Production costs(1)	12,554,338	12,753,880	9,336,387
Depreciation, depletion, and amortization(2)	6,623,891	6,393,506	6,049,543
Other production costs(3)	21,156,904	14,005,669	21,550,907
Exploration expenses(4)	960,247	689,204	763,562
Other expenses(5)	3,090,128	2,227,481	4,163,241
	44,385,508	36,069,740	41,863,640
Income before income tax expense	18,863,444	1,097,761	11,770,736
Income tax expense	(5,652,743)	(233,255)	(2,107,363)
Results of operations for exploration and production activities	13,210,701	864,506	9,663,373

- (1) Production costs are lifting costs incurred to operate and maintain productive wells and related equipment and facilities including costs such as operating labor, materials, supplies, and fuel consumed in operations and the costs of operating natural gas liquids plants. In addition, they include expenses related to the asset retirement obligations that were recognized during 2021, 2020 and 2019 of \$292,329, \$213,925, and \$198,394, respectively.
- (2) In accordance with IAS 37, the expense related to asset retirement obligations that were recognized during 2021, 2020 and 2019 in depreciation, depletion, and amortization, were \$887,725, \$639,123, and \$272,147, respectively.
- (3) Includes transportation costs and naphtha that are not part of the Ecopetrol Business Group's lifting cost.
- (4) Exploration expenses include the costs of geological and geophysical activities, as well as the non-productive exploratory wells.
- (5) Corresponds to administration, marketing expenses and impairment.

During 2021, 2020, and 2019, the Ecopetrol Business Group transferred approximately 19.9%, 18.9%, and 21.6%, respectively, of its crude oil and gas production; (percentages based on the value sales in Colombian pesos) to intercompany business units. Those transfers were 52.1%, 45.9% and 51.5%, respectively, of crude oil and gas production volume (including Reficar).

The intercompany transfers were realized at market prices.

34.4 Reserve information

The Ecopetrol Business Group follows international standards for estimating, classifying, and reporting reserves framed under SEC definitions. Corporate Reserve Management of Ecopetrol, Upstream Management and the Vice-Presidency of Development and Production, present the reserves balance to the Board of Directors, which approved it in February 2022.

The reserves were estimated at a level of 99.4% by specialized firms: DeGolyer and MacNaughton, Ryder Scott Company, Gaffney Cline, and Sproule International Limited. According to these certifications the reserves report complies with the content and guidelines set forth in Rule 4-10 of Regulation S-X issued by the United States SEC.

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

The following information relates to the net proven reserves owned by the Ecopetrol Business Group in 2021, 2020 and 2019, and corresponds to the official reserves statements prepared by the Ecopetrol Business Group:

	2021			2020			2019		
	Oil (Mbls)	Gas (Gpc)	Total (Mbe)	Oil (Mbls)	Gas (Gpc)	Total (Mbe)	Oil (Mbls)	Gas (Gpc)	Total (Mbe)
Proved reserves:									
Opening balance	1,257	2,921	1,770	1,384	2,906	1,894	1,200	3,002	1,727
Revisions of previous estimates(1)	240	431	315	(81)	51	(72)	75	51	84
Improved recovery	120	107	139	100	74	113	94	3	94
Purchases	—	—	—	—	171	30	142	126	164
Extensions and discoveries	12	—	12	41	8	42	66	2	67
Sales	(3)	(4)	(3)	(1)	(0)	(1)	—	—	—
Production	(177)	(304)	(231)	(186)	(289)	(236)	(193)	(278)	(242)
Closing balance	1,449	3,151	2,002	1,257	2,921	1,770	1,384	2,906	1,894
<i>Proved developed reserves:</i>									
Opening balance	834	2,636	1,297	898	2,662	1,365	883	2,882	1,389
Closing balance	921	2,561	1,370	834	2,636	1,297	898	2,662	1,365
<i>Proved undeveloped reserves:</i>									
Opening balance	423	285	473	486	244	529	317	119	338
Closing balance	528	590	632	423	285	473	486	244	529

Some values were rounded for presentation purposes.

- (1) Represents changes in previous proved reserves, upward or downward, resulting from new information (except for an increase in a proved area), usually obtained from development drilling and production history or result from changes in economic factors.

For additional information about the changes in Proved Reserves and the process for estimating reserves, see section 3.5.3 – Oil and Gas Reserves.

34.5 Standardized measure of discounted future net cash flows relating to proved oil and gas quantities and changes therein

The standardized measure of discounted future net cash flows related to the above proved crude oil and natural gas reserves is calculated in accordance with the requirements of ASU 2010-03. Estimated future cash inflows from production under SEC requirements are computed by applying unweighted arithmetic average of the first day-of-the-month for oil and gas price to year-end quantities of estimated net proved reserves, with cost factors based on those at the end of each year, currently enacted tax rates and a 10% annual discount factor. In our view, the information so calculated does not provide a reliable measure of future cash flows from proved reserves, nor does it permit a realistic comparison to be made of one entity with another because the assumptions used cannot reflect the varying circumstances within each entity. In addition, a substantial but unknown proportion of future real cash flows from oil and gas production activities is expected to derive from reserves which have already been discovered, but which cannot yet be regarded as proved.

	2021	2020	2019
Future cash inflows	401,980,640	187,210,379	279,722,107
Future costs			
Production (1)	(129,109,036)	(85,989,384)	(93,589,960)
Development	(38,451,863)	(28,752,131)	(32,734,702)
Income taxes	(69,053,224)	(13,470,352)	(37,077,231)
Future net cash flow	165,366,517	58,998,512	116,320,214
10% discount factor	(57,009,654)	(18,568,308)	(36,934,889)
Standardized measure of discounted net cash flows	108,356,863	40,430,204	79,385,325

[Table of Contents](#)

Ecopetrol S.A.
 Notes to the consolidated financial statements
 (Figures expressed in millions of Colombian pesos, unless otherwise stated)

(1) Production future costs include the estimated costs related to assets retirement obligations in the amount of \$17,364,520; \$12,545,574 and \$10,665,315 as of December 31, 2021, 2020, and 2019, respectively.

The following are the principal sources of change in the standardized measure of discounted net cash flows in 2021, 2020 and 2019:

	2021	2020	2019
Net change in sales and transfer prices and in production cost (lifting) related to future production	110,224,660	(44,482,725)	2,411,040
Changes in estimated future development costs	(22,011,659)	(5,401,560)	(12,627,361)
Sales and transfer of oil and gas produced net of production costs	(50,694,613)	(24,413,621)	(44,297,989)
Net change due to extensions, discoveries, and improved recovery	6,741,068	3,134,469	7,061,712
Net change due to purchase and sales of minerals in place	(13,419)	570,460	213,539
Net change due to revisions in quantity estimates	32,923,680	(3,414,649)	6,756,418
Previously estimated development costs incurred during the period	32,941,335	7,943,239	23,200,357
Accretion of discount	10,468,951	10,468,951	11,542,289
Timing and other	(16,636,925)	567,027	(4,993,389)
Net change in income taxes	(36,016,420)	16,073,288	3,814,269
Aggregate change in the standardized measure of discounted future net cash flows for the year	67,926,658	(38,955,121)	(6,919,115)

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

35. Subsequent and relevant events

- Distribution Project 2021 Fiscal Year Profits

Ecopetrol reports on the 2021 profit distribution project, which its Board of Directors approved to be submitted for consideration by the General Assembly of Shareholders at the ordinary session on March 30, 2022.

The profit distribution project proposed, in accordance with the current dividend policy, to distribute an ordinary dividend of \$243 COP per share, equivalent to a payout of 59.8% of the net profit of Ecopetrol.

Additionally, the Company's Board of Directors, considering the solid financial performance of all its segments, the price expectations for the year 2022 and its solidity, proposes an extraordinary dividend, of an exceptional nature, of 9.1% equivalent to \$37 COP per share for a total dividend of \$280 COP per share. The payment of the total dividend is aligned with the goals of the 2022-2024 Business Plan announced on February 8, 2022.

Likewise, the Board proposed the constitution of an occasional reserve for \$8,889,900 destined to provide support to the financial sustainability of the Company and flexibility in the development of its strategy. The General Assembly approved the distribution project.

- Project Rydberg – Ecopetrol America

On March 29, 2022, Ecopetrol America made the decision to withdraw from the Rydberg project, an asset that is in the development phase with production expected at the end of 2023 (it is not an exploratory asset). The approximate net book value is US\$74.2 million.

The main impacts of this decision consist of a reduction in the company's reserves, lower production in the development portfolio and a decrease in non-current assets.

- Issuance of Notes – Consorcio Transmantaro S.A.

On April 4, 2022, Consorcio Transmantaro S.A. (CTM), one of ISA's electric power transmission subsidiaries in Peru, issued 5.20% Amortizing Notes due 2038 (14.5 years weighted average life) in an aggregate amount of US\$ 500 million in a Rule 144A/Regulation S notes offering. The notes were listed on the Official List of the Luxembourg Stock Exchange. This follows CTM's announcement on March 22, 2022, of an Any-and All Tender Offer with allocation codes and consent solicitation to holders of CTM's 4,375% senior notes due 2023. The issuer declares that has received valid tenders of notes and the consent from holders.

[Table of Contents](#)

Ecopetrol S.A.

Notes to the consolidated financial statements

(Figures expressed in millions of Colombian pesos, unless otherwise stated)

- **New participation of Ecopetrol Brasil in six offshore fields**

Ecopetrol, through its subsidiary Ecopetrol Óleo e Gás do Brasil, jointly participated with the company Shell Brasil Petróleo Ltda. to present the best offer in six exploratory blocks located in the Santos Basin in the Third Permanent Offer Cycle of the Agência Nacional do Petróleo, Gás Natural e Biocombustíveis (ANP). Ecopetrol will have a participation of 30% in the aforementioned blocks, and Shell, as the operator, will have a 70% participation. With this new acquisition, Ecopetrol was able to increase its presence to 12 blocks in Brazil; including exploratory acreage within the Santos and Ceará basins, and the Gato do Mato development project.

- **Borrowing from BNDES – National Bank for Economic and Social Development**

In February 2022, CTEEP - Companhia de Transmissão de Energia Elétrica Paulista S.A., contracted with BNDES a credit of BRL \$567,400 thousand, intended for the implementation of the Investment Plan for the modernization of the energy transmission system and improvements related to the Public Service Concession Agreement for Transmission of Electricity No. 059/2001-ANEEL.

The credit will be released in portions by BNDES to CTEEP, with amortization in 234 monthly and successive payments, with the first payment due on July 15, 2022. It should be noted that the first disbursement took place on March 21, 2022.

Additionally, the loan agreement has the usual early maturity clauses ("covenants"), in line with the other agreements that CTEEP already has with BNDES.

- **Issuance of debentures**

On April 5, 2022, CTEEP's Board of Directors approved the 12th issue of unsecured, non-convertible simple debentures, in up to 2 (two) series.

700,000 debentures were issued, totaling an amount of BRL \$700,000 thousand, with (i) the maturity term of the debentures of the 1st series of the issue being 7 years from the date of issue, corresponding to April 15, 2029, and (ii) the maturity term of the debentures of the 2nd series of the Issue of 10 years from the issue date, corresponding to April 15, 2032.

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

Exhibit 1 – Consolidated subsidiaries, associates, and joint ventures

Company	Functional currency	Ownership interest Ecopetrol	Activity	Country/ Domicile	Geographic area of operations	Equity	Profit (loss) of the year	Total assets	Total liabilities
Subsidiaries									
Refinería de Cartagena S.A.S.	US Dollar		Refining of hydrocarbons, commercialization and distribution of products	Colombia	Colombia	17,933,857	(1,238,939)	33,094,487	15,160,630
Cenit transporte y logística de hidrocarburos S.A.S.	Colombian Peso	100 %	Storage and transport by pipelines of hydrocarbons	Colombia	Colombia	16,408,773	4,784,348	18,586,004	2,177,231
Ecopetrol Global Energy S.L.U.	US Dollar	100 %	Investment Vehicle	Spain	Spain	12,083,224	240,792	12,083,538	314
Oleoducto Central S.A.S - Ocensa	US Dollar		Transportation by crude oil pipelines	Colombia	Colombia	3,177,600	2,353,602	7,071,850	3,894,250
Hocol Petroleum Limited.	US Dollar	100 %	Investment Vehicle	Bermuda	Bermuda	3,761,673	453,876	3,791,829	30,156
Ecopetrol América LLC.	US Dollar	100 %	Exploration and exploitation of hydrocarbons	United States	United States	2,962,647	258,622	3,461,610	498,963
Hocol S.A.	US Dollar	100 %	Exploration and exploitation of hydrocarbons	Cayman Islands	Colombia	3,258,783	483,792	4,931,264	1,672,481
Esentia S.A.	US Dollar	100 %	Production and commercialization of polypropylene resin	Colombia	Colombia	2,322,456	287,425	3,296,001	973,545
Ecopetrol Capital AG	US Dollar		Collection of surpluses from, and providing funds to, companies of Ecopetrol Business Group	Switzerland	Switzerland	2,404,032	218,723	9,007,535	6,603,503
Oleoducto Bicentenario de Colombia S.A.S.	Colombian Peso	100 %	Transportation by crude oil pipelines	Colombia	Colombia	1,426,391	731,832	2,759,984	1,333,593
Oleoducto de Colombia S. A. – ODC	Colombian Peso	73 %	Transportation by crude oil pipelines	Colombia	Colombia	432,870	375,475	669,876	237,006
Black Gold Re Ltd.	US Dollar	100 %	Reinsurer for companies of Ecopetrol Business Group	Bermuda	Bermuda	987,442	15,284	1,267,465	280,023
Andean Chemicals Ltd.	US Dollar	100 %	Investment Vehicle	Bermuda	Bermuda	1,605,929	152,357	1,606,253	324
Oleoducto de los Llanos Orientales S. A. - ODL	Colombian Peso	65 %	Transportation by crude oil pipelines	Panama	Colombia	991,866	406,590	1,434,010	442,144
Interconexión Eléctrica S.A. E.S.P (1)	Colombian Peso		Public transmission service of electric power, the development of infrastructure projects and their commercial exploitation and the development of information technology systems, activities and services and telecommunications.	Colombia	Latin-America	22,132,996	509,125	61,698,188	39,565,192

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

Company	Functional currency	Ownership interest Ecopetrol	Activity	Country/ Domicile	Geographic area of operations	Equity	Profit (loss) of the year	Total assets	Total liabilities
Inversiones de Gases de Colombia S.A. Invercolsa S.A.	Colombian Peso		Holding with investments in natural gas and LPG transportation and distribution companies in Colombia	Colombia	Colombia	656,135	276,422	659,053	2,918
Alcanos de Colombia S.A. E.S.P. (2)	Colombian Peso	51.88 %	Residential public fuel gas service, construction and operation of gas pipelines, distribution networks, regulation, measurement, and compression stations.	Colombia	Colombia	370,507	107,960	773,501	402,994
Metrogas de Colombia S.A. E.S.P. (2)	Colombian Peso	29.61 %	Public service of commercialization and distribution of fuel gas; the exploration, exploitation, storage, use, transportation, refining, purchase, sale and distribution of hydrocarbons and their derivatives.	Colombia	Colombia	65,787	17,620	121,984	56,197
Gases del Oriente S.A. E.S.P. (2)	Colombian Peso	33.49 %	Home public service of distribution of fuel gas and the development of all complementary activities to the supplying of said service.	Colombia	Colombia	122,172	57,780	194,729	72,557
Promotora de Gases del Sur S.A. E.S.P. (2)	Colombian Peso	48.50 %	Promote the linking of national or foreign capital, public or private, to achieve the gas massification project.	Colombia	Colombia	58,638	22,846	82,268	23,630
Combustibles Líquidos de Colombia S.A. E.S.P. (2)	Colombian Peso	31.44 %	Wholesale marketing of fuel gas, the supplying of the residential public service of LPG distribution and the development of complementary activities to supply the service.	Colombia	Colombia	58,964	3,876	75,171	16,207
Gasoducto de Oriente S.A. (2)	Colombian Peso	41.61 %	Design and construction of hydrocarbon production and treatment plants, construction of hydrocarbon transmission lines.	Colombia	Colombia	556	(29)	584	28
		31.61 %							

[Table of Contents](#)

Ecopetrol S.A.
 Notes to the consolidated financial statements
 (Figures expressed in millions of Colombian pesos, unless otherwise stated)

Company	Functional currency	Ownership interest Ecopetrol	Activity	Country/ Domicile	Geographic area of operations	Equity	Profit (loss) of the year	Total assets	Total liabilities
Ecopetrol USA Inc.	US Dollar	100%	Exploration and exploitation of hydrocarbons	United States	United States	10,195,017	581,820	10,202,943	7,926
Ecopetrol Permian LLC.	US Dollar	100%	Exploration and exploitation of hydrocarbons	United States	United States	5,355,562	373,104	5,932,250	576,688
Ecopetrol Oleo e Gas do Brazil Ltda.	Real	100%	Exploration and exploitation of hydrocarbons	Brazil	Brazil	1,774,650	(212,853)	1,861,482	86,832
Esentia Masterbatch Ltda.	Colombian Peso	100%	Manufacture of polypropylene compounds and masterbatches	Colombia	Colombia	430,162	274,562	564,140	133,978
Ecopetrol del Perú S. A.	US Dollar	100%	Exploration and exploitation of hydrocarbons	Peru	Peru	61,103	(341)	63,492	2,389
ECP Hidrocarburos de México S.A. de C.V.	US Dollar	100%	Offshore exploration	Mexico	Mexico	52,454	(126,458)	57,096	4,642
Ecopetrol Costa Afuera S.A.S.	Colombian Peso	100%	Offshore exploration	Colombia	Colombia	13,447	90	16,952	3,505
Esentia Resinas del Peru SAC	US Dollar	100%	Commercialization polypropylene resins and masterbatches	Peru	Peru	12,240	4,555	67,144	54,904
Topili Servicios Administrativos S de RL De CV.	Mexican Peso	100%	Specialized management services	Mexico	Mexico	46	(31)	48	2
Kalixpan Servicios Técnicos S de RL De CV.	Mexican Peso	100%	Specialized services related to oil and gas industry	Mexico	Mexico	53	(28)	55	2
Ecopetrol Singapore PTE. LTD	Singapore dollar	100%	Holding company with investment in an international trading company for crude oil and refined products	Singapore	Asia	258	(48)	261	3
Ecopetrol Trading Asia PTE. LTD	Singapore dollar	100%	International trading of crude oil and refined products	Singapore	Asia	251	(46)	31,051	30,800

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

Company Associates	Functional currency	Ownership interest Ecopetrol	Activity	Country/ Domicile	Geographic area of operations	Equity	Profit (loss) of the year	Total assets	Total liabilities
Serviport S.A. (3)	Colombian Peso		Services for the support of loading and unloading of oil ships, supply of equipment, technical inspections, and load measurements	Colombia	Colombia	19,181	2,079	43,731	24,550
Sociedad Portuaria Olefinas y Derivados S.A. (4)	Colombian Peso	49 %	Construction, use, maintenance and administration of port facilities, ports, private docks.	Colombia	Colombia	4,372	(734)	6,996	2,624
Joint Ventures									
Equion Energía Limited	US Dollar	51 %	Exploration and exploitation of hydrocarbons	United Kingdom	Colombia	2,960,397	52,934	3,057,870	97,473
Ecodiesel Colombia S.A. (4)	Colombian Peso	50 %	Production, trading and distribution of biofuels and oleochemicals	Colombia	Colombia	128,037	51,656	232,253	104,216

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

Company	Functional currency	Ownership interest Ecopetrol	Activity	Country/ Domicile	Geographic area of operations	Assets	Liabilities	Equity	Profit (loss) of the year
Subsidiaries, associates, and joint ventures Interconexión Eléctrica S.A. ESP									
Consorcio Transmantaro	US Dollar	60 %	Electric power	Peru	Peru	7,250,457	5,578,049	1,672,408	234,866
Interligação Elétrica Evrecy	Brazilian real	35.82 %	Electric power	Brazil	Brazil	79,166	9,677	69,489	(8,716)
Fundo de Investimento Assis	Brazilian real	35.73 %	Autonomous Fund – Special Purpose Entity	Brazil	Brazil	27,170	2	27,168	3,669
Fundo de Investimento Barra Bonita									
Renda Fixa Referenciado	Brazilian real	35.77 %	Autonomous Fund – Special Purpose Entity	Brazil	Brazil	78,920	4	78,916	1,637
Fundo de Investimento Referenciado di Bandeirantes	Brazilian real	13.10 %	Autonomous Fund – Special Purpose Entity	Brazil	Brazil	158,035	13	158,022	8,553
Fundo de Investimento Xavantes									
Referenciado di	Brazilian real	15.69 %	Autonomous Fund – Special Purpose Entity	Brazil	Brazil	321,759	23	321,736	16,238
Interconexiones Viales	Chilean peso	65 %	Roads concessions	Chile	Chile	6,752	1,078	5,674	(3,396)
Interligação Elétrica Aguapei	Brazilian real	35.82 %	Electric power	Brazil	Brazil	482,218	80,582	401,636	77,267
Interligação Elétrica Biguaçu	Brazilian real	35.82 %	Electric power	Brazil	Brazil	250,337	19,312	231,025	(2,723)
Interligação Elétrica De Minas Gerais	Brazilian real	35.82 %	Electric power	Brazil	Brazil	113,493	7,885	105,608	6,597
Interligação Elétrica Itapura	Brazilian real	35.82 %	Electric power	Brazil	Brazil	147,721	16,394	131,327	7,094
Interligação Elétrica Itaquere	Brazilian real	35.82 %	Electric power	Brazil	Brazil	449,766	94,399	355,367	68,803
Interligação Elétrica Itaúnes	Brazilian real	35.82 %	Electric power	Brazil	Brazil	301,579	23,100	278,479	32,447
Interligação Elétrica Norte E Nordeste	Brazilian real	35.82 %	Electric power	Brazil	Brazil	389,507	128,724	260,783	40,840
Interligação Elétrica Pinheiros	Brazilian real	35.82 %	Electric power	Brazil	Brazil	526,781	73,331	453,450	89,593
Interligação Elétrica Riacho Grande	Brazilian real	35.82 %	Electric power	Brazil	Brazil	41,740	(8,811)	50,551	(3,907)
Interligação Elétrica Serra Do Japi	Brazilian real	35.82 %	Electric power	Brazil	Brazil	450,593	65,384	385,209	62,424
Interligação Elétrica Sul	Brazilian real	35.82 %	Electric power	Brazil	Brazil	175,464	27,833	147,631	22,352
Interligação Elétrica Tibagi	Brazilian real	35.82 %	Electric power	Brazil	Brazil	175,038	26,632	148,406	10,973
Internexa	Colombian peso	99.42 %	Telecommunications and ICT	Colombia	Colombia	531,292	423,449	107,843	21,881
Transamerican Telecommunication S.A.	US Dollar	99.42 %	Telecommunications and ICT	Argentina	Argentina	40,568	19,989	20,579	(58)
Internexa Brazil Operadora de Telecomunicações	Brazilian real	99.42 %	Telecommunications and ICT	Brazil	Brazil	249,586	229,088	20,498	(10,614)
Internexa Chile	Chilean peso	98.43 %	Telecommunications and ICT	Chile	Chile	78,415	56,492	21,923	4,033

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

Company	Functional currency	Ownership interest Ecopetrol	Activity	Country/ Domicile	Geographic area of operations	Assets	Liabilities	Equity	Profit (loss) of the year
Subsidiaries, associates, and joint ventures									
Interconexión Eléctrica S.A. ESP									
Internexa Participações	Brazilian real	99.42 %	Investment Vehicle	Brazil	Brazil	19,942	603	19,339	(10,487)
Internexa Peru	US Dollar	99.42 %	Telecommunications and ICT	Peru	Peru	320,245	249,061	71,184	17,440
ISA Bolivia	US Dollar	100 %	Electric power	Bolivia	Bolivia	124,619	8,634	115,985	11,019
ISA Capital Do Brazil	Brazilian real	100 %	Investment Vehicle	Brazil	Brazil	3,923,685	222,115	3,701,570	734,604
ISA CTEEP	Brazilian real	35.82 %	Electric power	Brazil	Brazil	19,986,151	9,713,678	10,272,473	2,096,201
ISA Interchile	US Dollar	100 %	Electric power	Chile	Chile	6,769,025	5,514,461	1,254,564	(297,034)
ISA Intercolombia	Colombian peso	100 %	Electric power	Colombia	Colombia	279,988	186,954	93,034	38,093
ISA Intervial Chile	Chilean peso	100 %	Roads concessions	Chile	Chile	3,971,874	822,694	3,149,180	252,450
ISA Intervial Colombia	Colombian peso	100 %	Roads concessions	Colombia	Colombia	566	—	566	(7)
ISA Inversiones Chile	Chilean peso	100 %	Investment Vehicle	Chile	Chile	3,748,138	6,872	3,741,266	202,436
ISA Inversiones Costera Chile	Chilean peso	100 %	Investment Vehicle	Chile	Chile	599,723	595,633	4,090	(31,127)
ISA Inversiones Tolten	Chilean peso	100 %	Investment Vehicle	Chile	Chile	43	—	43	10
ISA Investimentos E Participações	Brazilian real	100 %	Investment Vehicle	Brazil	Brazil	933,742	7,980	925,762	216,596
ISA Peru	US Dollar	99.98 %	Electric power	Peru	Peru	962,823	772,002	190,821	48,791
ISA REP	US Dollar	60 %	Electric power	Peru	Peru	1,949,243	1,438,949	510,294	202,971
ISA Transelca	Colombian peso	100 %	Electric power	Colombia	Colombia	1,507,616	580,035	927,581	184,024
Linear Systems RE	US dollar	100 %	Other business	Bermudas	Bermudas	130,264	104,551	25,713	3,710
Proyectos de Infraestructura del Perú	US Dollar	100 %	Electric power	Peru	Peru	153,956	146,612	7,344	704
Ruta Costera	Colombian peso	100 %	Roads concessions	Colombia	Colombia	2,680,312	2,491,025	189,287	(17,385)
Ruta de La Araucanía	Chilean peso	100 %	Roads concessions	Chile	Chile	762,038	450,237	311,801	33,805
Ruta de Los Ríos	Chilean peso	75 %	Roads concessions	Chile	Chile	226,203	149,717	76,486	20,336
Ruta del Bosque	Chilean peso	100 %	Roads concessions	Chile	Chile	376,464	264,533	111,931	43,786
Ruta del Loa	Chilean peso	100 %	Roads concessions	Chile	Chile	470,016	246,754	223,262	25,607
Ruta del Maipo	Chilean peso	100 %	Roads concessions	Chile	Chile	6,695,805	4,647,650	2,048,155	214,324
Ruta del Maule	Chilean peso	100 %	Roads concessions	Chile	Chile	26,822	17,337	9,485	(21,212)
Sistemas Inteligentes en Red	Colombia peso	99.77 %	Other business	Colombia	Colombia	17,265	7,932	9,333	3,457
XM	Colombian peso	99.73 %	Electric power	Colombia	Colombia	245,199	212,583	32,616	11,290

- (1) Corresponds to consolidated financial statements, profit is from four months of operation (September to December), assets and liabilities are presented accumulated. See note 12.
- (2) Indirect participation through Inversiones de Gases de Colombia S.A. Invercolsa S.A.
- (3) Information available as of September 30, 2021, the investment of is fully impaired.
- (4) Information available as of November 30, 2021.

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

Exhibit 2 – Conditions of the most significant debt

Type of debt	Company	Issue date	Maturity date	Currency	Disbursement	Outstanding balance Dec 31, 2021	Outstanding balance Dec 31, 2020	Interest rate	Amortization plan	Payment of interest
		Dec-10	Dec-40	COP	284,300	284,300	284,300	Floating	Bullet	Half-yearly
		Aug-13	Aug-23	COP	168,600	168,600	168,600	Floating	Bullet	Half-yearly
	Ecopetrol S.A.	Aug-13	Aug-28	COP	347,500	347,500	347,500	Floating	Bullet	Half-yearly
		Aug-13	Aug-43	COP	262,950	262,950	262,950	Floating	Bullet	Half-yearly
		Dec-11	Dec-23	COP	180,000	180,000	—	Floating	Bullet	Half-yearly
		Dec-11	Dec-41	COP	120,000	120,000	—	Floating	Bullet	Half-yearly
		May-13	May-22	COP	120,000	120,000	—	Floating	Bullet	Quarterly
		May-13	May-28	COP	100,000	100,000	—	Floating	Bullet	Quarterly
		May-15	May-25	COP	100,000	100,000	—	Floating	Bullet	Quarterly
		May-15	May-30	COP	120,000	120,000	—	Floating	Bullet	Quarterly
Bonds, domestic currency		May-15	May-35	COP	280,000	280,000	—	Floating	Bullet	Quarterly
		Feb-16	Feb-24	COP	115,000	115,000	—	Floating	Bullet	Quarterly
		Feb-16	Feb-28	COP	152,000	152,000	—	Floating	Bullet	Quarterly
	Interconexión	Feb-16	Feb-41	COP	133,000	133,000	—	Floating	Bullet	Quarterly
	Eléctrica S.A.	Apr-17	Apr-24	COP	260,780	260,780	—	Fixed	Bullet	Quarterly
	E.S.P and subsidiaries	Apr-17	Apr-32	COP	196,300	196,300	—	Floating	Bullet	Quarterly
		Apr-17	Apr-42	COP	242,920	242,920	—	Floating	Bullet	Quarterly
		Nov-17	Nov-25	COP	150,080	150,080	—	Fixed	Bullet	Quarterly
		Nov-17	Nov-31	COP	120,100	120,100	—	Floating	Bullet	Quarterly
		Nov-17	Nov-47	COP	229,820	229,820	—	Floating	Bullet	Quarterly
		Jul-18	Jul-27	COP	156,500	156,500	—	Floating	Bullet	Quarterly
		Jul-18	Jul-33	COP	142,063	142,063	—	Floating	Bullet	Quarterly
		Jul-18	Jul-43	COP	201,437	201,437	—	Floating	Bullet	Quarterly
		Aug-20	Aug-29	COP	160,000	160,000	—	Fixed	Bullet	Quarterly
		Aug-20	Aug-40	UVR (1)	147,132	147,132	—	Fixed	Bullet	Annual
		Jul-16	Jan-34	UVR (1)	341,416	341,416	—	Fixed	Half-yearly	Half-yearly
		Oct-11	Oct-26	COP	100,000	100,000	—	Floating	Bullet	Quarterly

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

Type of debt	Company	Issue date	Maturity date	Currency	Disbursement	Outstanding balance	Outstanding balance	Interest rate	Amortization plan	Payment of interest
						Dec 31, 2021	Dec 31, 2020			
		Sep-13	Sep-23	USD	1,300	1,300	1,300	Fixed	Bullet	Half-yearly
		Sep-13	Sep-43		850	850	850			
		May-14	May-45		2,000	2,000	2,000			
		Sep-14	Jan-25		1,200	1,200	1,200			
	Ecopetrol S.A.	Jun-15	Jun-26		1,500	1,500	1,500			
		Nov-21	Nov-31		1,250	1,250	—			
		Nov-21	Nov-51		750	750	—			
		Jun-16	Sep-23		500	500	500			
		Apr-20	Apr-30		2,000	2,000	2,000			
	Oleoducto Central S.A.S.	May-14	May-21	USD	500	500	500	Fixed	Bullet	Half-yearly
		Nov-21	Nov-33		330	330	—	Fixed	Half-yearly	Half-yearly
		Jul-16	Jan-34		151	151	—	Fixed	Half-yearly	Half-yearly
		Jan-11	Jan-26		38	38	—	Fixed	Bullet	Quarterly
Bonds, foreign currency		Oct-12	Apr-31		40	40	—	Fixed	Bullet	Half-yearly
		Nov-12	Nov-22		26	26	—	Fixed	Bullet	Half-yearly
		Feb13	Feb23		19	19	—	Fixed	Bullet	Half-yearly
		May-13	May-23		450	450	—	Fixed	Bullet	Half-yearly
		Apr-19	Apr-34		600	600	—	Fixed	Half-yearly	Half-yearly
		Mar-17	Feb24		54	54	—	Floating	Bullet	Annual
	Interconexión	May-18	Apr-25		111	111	—	Floating	Bullet	Half-yearly
	Eléctrica S.A.	Dec-19	Dec-29		73	73	—	Floating	Half-yearly	Half-yearly
	E.S.P and subsidiaries	Dec-20	Nov-28	USD	143	143	—	Floating	Half-yearly	Half-yearly
		Dec-20	May-44		143	143	—	Floating	Half-yearly	Half-yearly
		Feb21	Jul-44		121	121	—	Floating	Half-yearly	Half-yearly
		May-21	May-24		215	215	—	Floating	Bullet	Bullet
		Oct-21	Oct-31		120	120	—	Floating	Bullet	Half-yearly
		Oct-21	Oct-39		50	50	—	Floating	Half-yearly	Half-yearly
		Aug-01	Jun-22		421	421	—	Fixed	Half-yearly	Half-yearly
		Aug-18	Jun-25		213	213	—	Fixed	Half-yearly	Half-yearly
		Aug-18	Dec-30		220	220	—	Fixed	Half-yearly	Half-yearly
		Aug-18	Dec-24		37	37	—	Fixed	Half-yearly	Half-yearly
		Jun-19	Dec-30		183	183	—	Fixed	Half-yearly	Half-yearly
		Nov-06	Jun-22		55	55	—	Fixed	Half-yearly	Half-yearly
		Feb21	Jun-50		32	32	—	Fixed	Half-yearly	Half-yearly
		Jul-21	Jun-56		1,200	1,200	—	Fixed	Bullet	Half-yearly

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

Type of debt	Company	Issue	Maturity	Currency	Disbursement	Outstanding balance	Outstanding balance	Interest	Amortization	Payment of
		date	date			Dec 31, 2021	Dec 31, 2020	rate	plan	interest
		Sep-19	Sep-25		70	70	—	Fixed	Half-yearly	Half-yearly
		Jun-21	Jun-22		40	40	—	Fixed	Bullet	Bullet
		Jun-21	Jun-22		10	10	—	Fixed	Bullet	Bullet
		Jun-21	Jun-22		40	40	—	Fixed	Bullet	Bullet
		Jun-21	Jun-22		10	10	—	Fixed	Bullet	Bullet
		Aug-20	Aug-22		83	82	—	Floating	Bullet	Bullet
		Nov-21	Feb22		62	62	—	Fixed	Bullet	Bullet
		Feb16	Jul-24		5	3	—	Floating	Quarterly	Quarterly
		Jan-14	Mar-29		51	25	—	Floating	Monthly	Monthly
		Jan-14	Jan-24		19	4	—	Fixed	Monthly	Monthly
		Aug-17	Mar-32		49	36	—	Floating	Monthly	Monthly
		Apr-20	Apr-22		116	116	—	Floating	Bullet	Quarterly
		Jan-11	May-26		8	3	—	Floating	Monthly	Monthly
		Nov-11	May-26		9	3	—	Floating	Monthly	Monthly
		Nov-11	May-26		8	3	—	Floating	Monthly	Monthly
		May-10	May-30		39	24	—	Fixed	Monthly	Monthly
International	Interconexión	Nov-17	Dec-22		5	2	—	Floating	Monthly	Monthly
commercial	Eléctrica S.A.	Mar-20	Aug-24	USD	6	6	—	Floating	Quarterly	Quarterly
loans	E.S.P and subsidiaries	Apr-20	Dec-22		5	5	—	Floating	Bullet	Monthly
		Mar-17	Mar-24		106	17	—	Fixed	Half-yearly	Half-yearly
		Sep-12	Sep-23		57	9	—	Fixed	Half-yearly	Half-yearly
		Oct-18	Mar-25		8	8	—	Floating	Monthly	Monthly
		Mar-17	Mar-24		57	7	—	Fixed	Half-yearly	Half-yearly
		Sep-12	Sep-23		32	4	—	Fixed	Half-yearly	Half-yearly
		Mar-17	Mar-24		44	10	—	Fixed	Half-yearly	Half-yearly
		Sep-12	Sep-23		23	5	—	Fixed	Half-yearly	Half-yearly
		May-21	Mar-24		11	11	—	Fixed	Half-yearly	Half-yearly
		May-21	Mar-24		6	6	—	Fixed	Half-yearly	Half-yearly
		Sep-16	Aug-22		66	10	—	Fixed	Half-yearly	Half-yearly
		Sep-16	Aug-22		12	4	—	Fixed	Half-yearly	Half-yearly
		Jan-19	Dec-22		6	4	—	Fixed	Half-yearly	Half-yearly
		Sep-18	Jun-50		12	16	—	Fixed	Monthly	Monthly
		May-21	May-25		105	105	—	Fixed	Half-yearly	Half-yearly
		May-21	May-26		70	70	—	Fixed	Half-yearly	Half-yearly

[Table of Contents](#)

Ecopetrol S.A.
Notes to the consolidated financial statements
(Figures expressed in millions of Colombian pesos, unless otherwise stated)

Type of debt	Company	Issue date	Maturity date	Currency	Disbursement	Outstanding balance 31-Dec-21	Outstanding balance 31-Dec-20	Interest rate	Amortization plan	Payment of interest
International commercial loans - Refinería de Cartagena	Ecopetrol S.A.	Dec-17	Dec-27	USD	2,001	1,100	1,305	Fixed	Half-yearly	Half-yearly
		Dec-17	Dec-27		76	41	49	Floating		
		Dec-17	Dec-27		73	40	48	Fixed		
		Dec-17	Dec-27		159	87	103	Floating		
		Dec-17	Dec-25		359	224	257	Floating		
International commercial loan – ISA acquisition	Ecopetrol S.A.	Aug-21	Aug-23	USD	3,672	1,672	—	Floating	Half-yearly	Half-yearly
		Dec-16	Jan-28	COP	250,000	250,000	—	Floating	Half-yearly	Half-yearly
		Dec-16	Jan-34	COP	150,000	150,000	—	Floating	Half-yearly	Half-yearly
		Dec-16	Jan-34	COP	150,000	150,000	—	Floating	Half-yearly	Half-yearly
		Dec-16	Jan-34	UVR (1)	392,168	161,904	—	Fixed	Half-yearly	Half-yearly
Domestic commercial loans	Interconexión	Jul-18	Jul-35	COP	217,500	4,651	—	Floating	Half-yearly	Half-yearly
	Eléctrica S.A	Oct-21	Oct-31	COP	158,050	158,050	—	Floating	Quarterly	Quarterly
	E.S.P and subsidiaries	Oct-21	Oct-28	COP	70,500	70,500	—	Floating	Quarterly	Quarterly
		Jun-17	Jun-24	COP	28,000	8,717	—	Floating	Quarterly	Quarterly
		Aug-17	Aug-24	COP	32,000	23,863	—	Floating	Quarterly	Quarterly
		Dec-17	Dec-24	COP	10,000	7,472	—	Floating	Quarterly	Quarterly
		May-18	Nov-28	COP	59,467	59,467	—	Floating	Half-yearly	Half-yearly
		Nov-18	Nov-28	COP	23,000	23,000	—	Floating	Half-yearly	Half-yearly
Committed credit line	Ecopetrol S.A.	Apr-20	Sep-23	USD	665	665	665	Floating	Bullet	Half-yearly
Domestic syndicated commercial loan	Oleoducto Bicentenario	Jul-12	Jul-24	COP	2,100,000	592,550	800,450	Floating	Quarterly	Quarterly

(1) UVR is “Unidad de Valor Real”, a national currency which reflects the inflation adjusted Colombian peso

[Table of Contents](#)

9. Signature Page

SIGNATURES

The registrant hereby certifies that it meets all of the requirements for filing on Form 20-F and that it has duly caused and authorized the undersigned to sign this annual report on its behalf.

Ecopetrol S.A.

By: /s/ Felipe Bayón Pardo

Name: Felipe Bayón Pardo

Title: Chief Executive Officer

By: /s/ Jaime Caballero Uribe

Name: Jaime Caballero Uribe

Title: Chief Financial Officer

Dated: April 25, 2022

[Table of Contents](#)

10. Exhibits

Exhibit No.	Description
1.1	Amended and Restated Bylaws of Ecopetrol S.A., dated March 26, 2021 (English Translation).
2.1	Form of Deposit agreement between Ecopetrol, JPMorgan Chase Bank as depository, and the holders from time to time of ADSs (incorporated by reference to Exhibit 99.A to our registration statement on Form F-6 filed with the U.S. Securities and Exchange Commission on December 29, 2017 (File No. 333-222378)).
2.2	Form of Amendment No. 1 to the Deposit Agreement between Ecopetrol, JPMorgan Chase Bank as depository, and the holders from time to time of ADSs (incorporated by reference to Exhibit (a)(2) to our registration statement on Form F-6 filed with the U.S. Securities and Exchange Commission on December 17, 2021 (File No. Form F-6 filed with the U.S. Securities and Exchange Commission on December 29, 2017 (File No. 333-222378)).
4.1	Transportation Agreement between Ecopetrol S.A. and Oleoducto Central S.A., dated March 31, 1995 (incorporated by reference to Exhibit 4.1 on Form 20-F filed with the U.S. Securities and Exchange Commission on September 12, 2008 (File No. 001-34175)). (English Translation).
4.2	Supplementary Agreement to Transportation Agreement between Ecopetrol S.A. and Oleoducto Central S.A., dated January 17, 2013 (incorporated by reference to Exhibit 4.2 on Form 20-F filed with the U.S. Securities and Exchange Commission on April 29, 2013 (File No. 001-34175)). (English Translation).
4.3	Crude Oil Transportation Services Agreement between Ecopetrol S.A. and Cenit Transporte y Logística de Hidrocarburos S.A.S., dated April 1, 2013 (incorporated by reference to Exhibit 4.6 on Form 20-F filed with the U.S. Securities and Exchange Commission on April 29, 2013 (File No. 001-34175)). (English Translation).
4.4	Refined Products Transportation Services Agreement between Ecopetrol S.A. and Cenit Transporte y Logística de Hidrocarburos S.A.S., dated April 1, 2013 (incorporated by reference to Exhibit 4.7 on Form 20-F filed with the U.S. Securities and Exchange Commission on April 29, 2013 (File No. 001-34175)). (English Translation).
4.5	Bicentenario Transport Contract between Oleoducto Bicentenario de Colombia S.A.S. and Ecopetrol S.A., dated June 20, 2012 incorporated by reference to Exhibit 4.9 on Form 20-F filed with the U.S. Securities and Exchange Commission on April 25, 2014 (File No. 001-34175)). (English Translation).
4.6	Supplementary Agreement No. 2, dated March 28, 2014, to the Bicentenario Transport Contract between Oleoducto Bicentenario de Colombia S.A.S. and Ecopetrol S.A., dated June 20, 2012 (incorporated by reference to Exhibit 4.11 on Form 20-F filed with the U.S. Securities and Exchange Commission on April 28, 2016 (File No. 001-34175)). (English Translation).
4.7	Supplementary Agreement No. 4, dated April 6, 2015, to the Bicentenario Transport Contract between Oleoducto Bicentenario de Colombia S.A.S. and Ecopetrol S.A., dated June 20, 2012 (incorporated by reference to Exhibit 4.12 on Form 20-F filed with the U.S. Securities and Exchange Commission on April 28, 2016 (File No. 001-34175)). (English Translation).
4.8	Amendment No. 6, dated April 25, 2016, to the Crude Oil Transportation Services Agreement between Ecopetrol S.A. and Cenit Transporte y Logística de Hidrocarburos S.A.S., dated April 1, 2013 (incorporated by reference to Exhibit 4.13 on Form 20-F filed with the U.S. Securities and Exchange Commission on April 5, 2019 (File No. 001-34175)). (English Translation).
4.9	Amendment No. 7, dated December 28, 2016, to the Crude Oil Transportation Services Agreement between Ecopetrol S.A. and Cenit Transporte y Logística de Hidrocarburos S.A.S., dated April 1, 2013 (incorporated by reference to Exhibit 4.14 on Form 20-F filed with the U.S. Securities and Exchange Commission on April 5, 2019 (File No. 001-34175)). (English Translation).
4.10	Indenture, dated as of July 23, 2009, between the Company and The Bank of New York Mellon, as trustee (incorporated by reference to Exhibit 4.2 to the Company's Form F-4 filed with the U.S. Securities and Exchange Commission on July 31, 2009 (File No. 333-160965)).

[Table of Contents](#)

Exhibit No.	Description
4.11	Amendment No. 1 to the Indenture, dated as of June 26, 2015, between the Company and The Bank of New York Mellon, as trustee (incorporated by reference to Exhibit 4.10 on Form 6-K of the Company furnished to the U.S. Securities and Exchange Commission on June 25, 2015 (File No. 001-34175)).
4.12	Prospectus Supplement relating to Ecopetrol S.A.'s 5.875% Notes due 2023 (incorporated by reference to the Company's Prospectus Supplement filed with the U.S. Securities and Exchange Commission on September 11, 2013 (File No. 333-190198)).
4.13	Prospectus Supplement relating to Ecopetrol S.A.'s 4.125% Notes due 2025 (incorporated by reference to the Company's Prospectus Supplement filed with the U.S. Securities and Exchange Commission on September 9, 2014 (File No. 333-190198)).
4.14	Prospectus Supplement relating to Ecopetrol S.A.'s 5.375% Notes due 2026 (incorporated by reference to the Company's Prospectus Supplement filed with the U.S. Securities and Exchange Commission on June 23, 2015 (File No. 333-190198)).
4.15	Prospectus Supplement relating to Ecopetrol S.A.'s 7.375% Notes due 2043 (incorporated by reference to the Company's Prospectus Supplement filed with the U.S. Securities and Exchange Commission on September 11, 2013 (File No. 333-190198)).
4.16	Prospectus Supplement relating to Ecopetrol S.A.'s 5.875% Notes due 2045 (incorporated by reference to the Company's Prospectus Supplement filed with the U.S. Securities and Exchange Commission on May 20, 2014 (File No. 333-190198)).
4.17	Prospectus Supplement relating to Ecopetrol S.A.'s 6.875% Notes due 2030 (incorporated by reference to the Company's Prospectus Supplement filed with the U.S. Securities and Exchange Commission on April 27, 2020 (File No. 333-225381)).
4.18	Prospectus Supplement relating to Ecopetrol S.A.'s 4.625% Notes due 2031 (incorporated by reference to the Company's Prospectus Supplement filed with the U.S. Securities and Exchange Commission on October 28, 2021 (File No. 333-256623)).
4.19	Prospectus Supplement relating to Ecopetrol S.A.'s 5.875% Bonds due 2051 (incorporated by reference to the Company's Prospectus Supplement filed with the U.S. Securities and Exchange Commission on October 28, 2021 (File No. 333-256623)).
4.20	Inter-Administrative Share Purchase Agreement dated August 11, 2021 between Ecopetrol S.A. and the <i>Ministerio de Hacienda y Crédito Público</i> (English translation).
4.21	Loan Agreement among Ecopetrol S.A., as borrower, the lenders party thereto, Mizuho Bank, Ltd., as administrative agent, and BBVA Securities Inc., Banco Santander, S.A., JPMorgan Chase Bank, N.A., Mizuho Bank, Ltd., Sumitomo Mitsui Banking Corporation and The Bank of Nova Scotia, as joint lead arrangers and joint bookrunners, dated as of August 17, 2021.
8.1	List of subsidiaries of Ecopetrol S.A.
12.1	Section 302 Certification of the Chief Executive Officer.
12.2	Section 302 Certification of the Chief Financial Officer.
13.1	Section 906 Officer Certification.
23.1	Consent of Ernst & Young Audit S.A.S.
23.2	Consent of Ryder Scott LP.
23.3	Consent of Sproule International Limited.
23.4	Consent of DeGolyer and MacNaughton.
23.5	Consent of Gaffney, Cline & Associates.
99.1	Third-Party Reserve Report of Ryder Scott Company, L.P.
99.2	Third-Party Reserve Report of Sproule International Limited.
99.3	Third-Party Reserve Report of DeGolyer and MacNaughton.
99.4	Third-Party Reserve Report of Gaffney, Cline & Associates.
101.INS	XBRL Instance Document
101.SCH	XBRL Taxonomy Extension Schema Document
101.CAL	XBRL Taxonomy Extension Calculation Linkbase Document
101.DEF	XBRL Taxonomy Extension Definition Linkbase Document
101.LAB	XBRL Taxonomy Extension Labels Linkbase Document
101.PRE	XBRL Taxonomy Extension Presentation Linkbase Document

[Table of Contents](#)

11. Cross-reference to Form 20-F

		Sections
Item 1.	Identity of Directors, Senior Management and Advisers	N/A
Item 2.	Offer Statistics and Expected Timetable	N/A
Item 3.	Key Information	
	A. [Reserved]	N/A
	B. Capitalization and Indebtedness	N/A
	C. Reasons for the Offer and Use of Proceeds	N/A
	D. Risk Factors	5.2
Item 4.	Information on the Company	Note 1 to the consolidated financial statements
	A. History and Development of the Company	2.1; 3.1; Note 1 to the consolidated financial statements
	B. Business Overview	2; 3.4 – 3.14; 4.6, Notes 14, 15 and Supplemental information on Oil and Gas producing activities (unaudited by EY) to the consolidated financial statements
	C. Organizational Structure	3.2
	D. Property, Plants and Equipment	3.4 – 3.8; 4.7.2; Notes 14, 15 and 16 to the consolidated financial statements
Item 4A.	Unresolved Staff Comments	None
Item 5.	Operating and Financial Review and Prospects	
	A. Operating Results	3.4 – 3.8; 4; 6.2
	B. Liquidity and Capital Resources	2.1; 4.6; 4.8; Consolidated statements of cash flow and Notes 9, 19, 28 and 29 to the consolidated financial statements
	C. Research and development, Patents and Licenses, etc.	3.9; Note 16 to the consolidated financial statements
	D. Trend Information	4.11
	E. Critical Accounting Estimates	4.5
Item 6.	Directors, Senior Management and Employees	
	A. Directors and Senior Management	7.3; 7.5
	B. Compensation	7.6; Notes 4, 21 and 30 to the consolidated financial statements
	C. Board Practices	7.3
	D. Employees	3.13
	E. Share Ownership	7.7
Item 7.	Major Shareholders and Related Party Transactions	
	A. Major Shareholders	6.9; 7.7
	B. Related Party Transactions	3.11; Note 31 to the consolidated financial statements
	C. Interests of Experts and Counsel	N/A
Item 8.	Financial Information	
	A. Consolidated Statements and Other Financial Information	4; 6.2; 6.3; 8
	B. Significant Changes	7.8; Note 33 to the consolidated financial statements
Item 9.	The Offer and Listing	
	A. Offer and Listing Details	6.4, 6.5
	B. Plan of Distribution	N/A
	C. Markets	6.3
	D. Selling Shareholders	N/A
	E. Dilution	N/A
	F. Expenses of the Issue	N/A

[Table of Contents](#)

Item 10.	Additional Information	
	A. Share Capital	N/A
	B. Memorandum and Articles of Association	7.1
	C. Material Contracts	3.5.4; 4.9; Exhibits 4.1 – 4.09, 4.20 and 4.21
	D. Exchange Controls	5.3.4; 6.7
	E. Taxation	4.3.1; 6.6; Note 10 to the consolidated financial statements
	F. Dividends and Paying Agents	N/A
	G. Statements by Experts	N/A
	H. Documents On Display	1.1
	I. Subsidiary Information	N/A
Item 11.	Quantitative and Qualitative Disclosures About Market Risk	4.10; 5.2.1; 5.2.4; 5.3.4; Note 29 to the consolidated financial statements
Item 12.	Description of Securities Other than Equity Securities	
	A. Debt Securities	6.4; Exhibits 4.11–4.19
	B. Warrants and Rights	N/A
	C. Other Securities	N/A
	D. American Depositary Shares	6.5, Exhibit 2.1
Item 13.	Defaults, Dividend Arrearages and Delinquencies	None
Item 14.	Material Modifications to the Rights of Security Holders and Use of Proceeds	None
Item 15.	Controls and Procedures	5.3; 7.8
Item 16A.	Audit Committee Financial Expert	7.3.2
Item 16B.	Code of Ethics	7.2; 7.4
Item 16C.	Principal Accountant Fees and Services	7.8
Item 16D.	Exemptions from the Listing Standards for Audit Committees	N/A
Item 16E.	Purchases of Equity Securities by the Issuer and Affiliated Purchases	N/A
Item 16F.	Changes in Registrant's Certifying Accountant	7.8
Item 16G.	Corporate Governance	7
Item 16H.	Mine Safety Disclosure	N/A
Item 16I.	Disclosure Regarding Foreign Jurisdictions that Prevent Inspections	N/A
Item 17.	Financial Statements	N/A
Item 18.	Financial Statements	8
Item 19.	Exhibits	10

Exhibit 1.1

BYLAWS OF ECOPETROL S.A.

CHAPTER I: LEGAL NATURE, CORPORATE NAME, INCORPORATION, DOMICILE AND DURATION

ARTICLE ONE. LEGAL NATURE – CORPORATE NAME.- ECOPETROL S.A. is a corporation, of commercial nature, comprised of public and private shareholders, that carries out its corporate purpose in a competitive manner with private entities. Hereinafter and for the purposes of this document, it will be referred to as “Ecopetrol” or the “Company”.

As established by law, Ecopetrol is a mixed-economy company, from the national order, and assigned to the Ministry of Mines and Energy. All legal acts, agreements and actions required to carry out its corporate purpose are governed exclusively by the rules of private law, regardless of the percentage of the state shareholding in the Company’s capital stock.

ARTICLE TWO. DOMICILE.- The main domicile of Ecopetrol is the city of Bogotá D.C. the Company may open subsidiaries, branch offices and agencies throughout the country and abroad.

ARTICLE THREE. DURATION.- The duration of the Company is one hundred (100) years as of its establishment.

CHAPTER II: CORPORATE PURPOSE

ARTICLE FOUR. CORPORATE PURPOSE.- The corporate purpose of Ecopetrol is to carry out, in Colombia or abroad, commercial and industrial activities related to the exploration, operation, refining, transportation, storage, distribution and marketing of hydrocarbons and their byproducts.

Additionally, the following activities are part of the corporate purpose of Ecopetrol:

- 1) Administration and management of all assets that were returned to the Government after the termination of the former De Mares Concession. Additionally, over such assets, Ecopetrol shall have, all the powers provided by Law.
- 2) Exploration and operation of hydrocarbons in oil areas or fields that, prior to January 1, 2004: a) were linked to executed agreements or, b) were being directly operated by Ecopetrol.
- 3) Exploration and operation of oil areas or fields assigned to Ecopetrol by the National Hydrocarbons Agency - ANH, or the entity acting as such.
- 4) Exploration and operation of hydrocarbons abroad, directly or through agreements entered into with third parties.
- 5) Export and import of hydrocarbons, its derivatives and their byproducts.
- 6) Production, processing, blending, transportation, storage, distribution and/or marketing (purchase and sale), and industrialization of hydrocarbons, their byproducts, and products owned by Ecopetrol or by third parties, domestic or imported.
- 7) Refining, processing, and any other type of industrial process or petrochemical of the hydrocarbons, its derivatives, similar products, in the grounds of the Company or of third parties.
- 8) Transportation and storage of hydrocarbons, their byproducts and similar, through transportation or storage systems.
- 9) Export and import of fuels and oxygenating components of vegetable origin.
- 10) Production, processing, mix, transportation, storage, distribution, and/or commercialization (purchase and sale) of fuels and vegetable-based oxygenating components, owned by the Company or from third parties, imported or domestic.

- 11) Develop all of the activities required within the electric energy process, in order to generate energy that satisfies the Company's own needs in all its business segments and, furthermore, sell its surplus and buy in case of shortages as a main source or as backup for its operations.
- 12) Design, construction, operation and maintenance of ports infrastructure for the export and import of hydrocarbons, and their byproducts or oxygenating components.
- 13) Construct, operate, administer, maintain, dispose and manage all infrastructure, facilities and property that is required to achieve the Company's corporate purpose.
- 14) Establish and be part of all types of companies, including sole proprietorships, as well as open branches and agencies that are necessary for the proper implementation of its corporate purpose. The participation permitted by this clause may include involvement in companies whose activity differs from the one of the Company, provided that, in the opinion of the Board of Directors, this is appropriate for the implementation of the corporate purpose.
- 15) Concluding all kinds of credit and financing operations with financial entities or insurers.
- 16) Guarantee third-party obligations within the scope of its business and within the framework of its corporate purpose, with the prior authorization of its Board of Directors.
- 17) Securitizing assets and investments.
- 18) Temporarily or permanently invest cash surpluses and reserves in the capital markets, and underwrite bonds, purchase securities, equities, interests or rights, make deposits or engage in any type of investment and cash transaction with authorized financial entities.
- 19) Obtain and exploit industrial property rights on trademarks, drawings, insignia, patents for new technologies and products, results from research, and creations by the Company's competent units, as well as any other intangible property.
- 20) Training personnel in all specialties required for the proper implementation of the corporate purpose.
- 21) Participate in research, scientific or technological activities related to its corporate purpose, or to activities that are supplementary, related or useful thereto, as well as taking advantage of them and applying them technically and economically.
- 22) Carry out the above activities and any other investments, legal acts or related activities which are supplementary or useful for the implementation of its corporate purpose and activities in relation to hydrocarbons, their byproducts, refined products, similar, or products that are able to substitute those mentioned.
- 23) Participate in developing social programs for the community, in particular the community around sites where the Company has influence.
- 24) All other duties assigned by Law.

PARAGRAPH: Ecopetrol must accomplish its corporate purpose in a competitive manner, meeting criteria of economic and financial profitability in consideration of the market circumstances and the risks inherent to the industry, while also attending to the needs of the corporate group in which Ecopetrol is the parent company.

CHAPTER III: CAPITAL, SHARES AND SHAREHOLDERS RIGHTS

ARTICLE FIVE. COMPANY CAPITAL.- The Company has an authorized share capital of thirty-six trillion five hundred forty thousand billion pesos legal tender (\$36,540,000,000,000.00), divided into sixty billion (60,000,000,000) ordinary shares with a par value of six hundred nine pesos (\$609) each, represented in accordance with the provisions of these Bylaws.

ARTICLE SIX. SHARE ISSUANCE.- Ecopetrol may issue shares within the authorized capital limit, in accordance with the limitations established by Law.

ARTICLE SEVEN. SHAREHOLDER REGISTER.- The Company will keep a Stock Ledger that has been registered beforehand with the Chamber of Commerce of the main corporate domicile and this register will contain the names of the shareholders, the number of shares corresponding to each of them, the security or securities with their respective numbers and registration dates, the sales and transfers, pledges, usufructs, and judicial attachments and claims, as well as any other act subject to registration pursuant to the law. In the event that the shares are dematerialized, they will be represented by a macro security, which will be held in safekeeping and managed in the central securities depository, which will make annotations regarding the subscribers thereof and will keep the Stock Ledger. Shareholders may request a certificate through their direct depositor, which legitimizes them to exercise the rights inherent to their status.

The Company recognizes the person that appears registered in the Stock Ledger as the owner of shares, and only for the number of securities and under the conditions that are registered therein.

ARTICLE EIGHT. SECURITIES OR CERTIFICATES.- The shares of the Company may circulate in physical or dematerialized form.

- a) Shares that circulate physically or in materialized form, will be represented by securities bearing the handwritten signature of the President and of the Secretary of the Company or whomever acts as such, and will be issued in a numeric and continuous series and must comply with all requirements pursuant to Article 401 of the Commerce Code, or the regulations that amend, replace or add to it.

Until the total amount per share has been paid in its entirety, only provisional securities will be issued to the subscribers. All provisional securities will be exchanged for permanent securities when the shares represented by them are fully paid. The securities may be issued for groups or lots of shares, or for each specific share.

The shareholders will be responsible for any taxes or fees imposed on the issuance of shares that circulate physically or in materialized form, as well as for those generated by transfers, transmission or changes regarding their ownership.

- b) Certificates relating to the shares that are placed, transferred or taxed and that circulate in a dematerialized manner will be safeguarded and managed by a specialized entity or a Centralized Securities Depository with experience in this type of activity. The holders may request a certificate that guarantees the exercise of the rights inherent to the status of shareholder. The entity responsible for management will make the corresponding annotations regarding the subscribers of the shares and will keep the Shareholder Register. The content and characteristics of the certificates will be subject to the relevant legal requirements. Until the value of the shares has been fully paid, the Company may only issue provisional certificates.

The circulation, charges and other matters and operations related to the dematerialized shares will be governed by what is established in the laws applicable to dematerialized securities.

ARTICLE NINE. SHAREHOLDER DEFAULT.- When a shareholder fails to pay an installment on a due date for the shares it has subscribed, it cannot exercise the rights inherent to such shares. The Company, at the discretion of the Board of Directors, will proceed with the judicial collection or sell (at the expense of the defaulter and through a broker) the shares they have subscribed, or to allocate the amount received to the release of the number of shares corresponding to the installments paid, after deduction of twenty percent (20%) of such sums as compensation for the damage that will be presumed caused.

ARTICLE TEN. SHAREHOLDER RIGHTS.- All ordinary shares confer to the shareholder an equal right to the corporate assets and to the profits that are distributed, and each of them has the right to one vote in the deliberations of the General Shareholders Assembly, within the legal limitations.

The shareholders of the Company, in addition to what is established by law, will enjoy the following rights and guarantees:

- 1) Participate in the deliberations of the General Shareholders Assembly and exercise their voting rights to make the decisions that correspond to the General Shareholders Assembly, including the appointment of bodies and individuals whom, in accordance with the law and these Bylaws, must be appointed by the shareholders and, if necessary, have effective mechanisms for representation in said Meetings.
- 2) Receive, as a dividend, a percentage of the profits of the Company in pro rata to the shares that the shareholder holds in the Company. Ecopetrol allocates the profits in accordance with the provisions set forth by law and these Bylaws.
- 3) Have access to the Company's public information in a timely and comprehensive manner, and freely inspect the books and other documents referred to in Articles 446 and 447 of the Commercial Code or the laws that modify, replace or add something to them, within fifteen (15) business days prior to the meeting of the General Shareholders Assembly in which the end-of-year financial statements are considered.
- 4) Request any information or clarifications they deem appropriate through the channels provided by the Company, such as the Shareholder and Investor Relations Office or whichever acts in its stead.
- 5) Receive by pro rata, part of the corporate assets at the time of liquidation, if applicable and, once the Company's external liabilities have been paid, in proportion to the shares they hold therein.
- 6) Be represented by a third party, as established by a written document in which they express the name of the party that will represent them and the scope of the mandate. The powers of representation for purposes of the General Shareholders Assembly must be subject to the provisions of Article 184 of the Commercial Code, or the regulations that amend, replace or add to it.
- 7) Transfer or dispose their shares, as established by law and these Bylaws.
- 8) Make recommendations on corporate governance to the Company, through written requests presented to the Shareholder and Investor Attention Office.
- 9) Request, with other shareholders, that a special Shareholders Assembly be held, in accordance with the provisions of Article 17 of these Bylaws.
- 10) Request authorization from the Shareholder and Investor Service Office to commission specialized audits, at their expense and under their responsibility, provided that such audit does not hinder the day-to-day operations of the Company, under the following terms:
 - a) Specialized audits may be carried out at any time and on the documents authorized by Article 447 of the Commercial Code, upon request of a plural number of shareholders representing at least five percent (5%) of the Company's subscribed shares.
 - b) Specialized audits may not cover documents that are confidential in nature, in accordance with the law, in particular Article 15 of the Constitution and Article 61 of the Commercial Code, as well as Letter g) of Article 4, Law 964 of 2005 and the regulations that govern, amend, replace or add to these.
 - c) Scientific, technical, economic, and statistic information shall not be subject to specialized audits either, in accordance with the applicable legislation. This shall also be the case for technical and scientific information regarding prospects for reservoirs, obtained directly by the Company or its partners, as well as the information derived from contracts that represent competitive advantages; this type of information will enjoy the commercial confidentiality set out by Colombian commercial law. In any case, specialized audits must deal with specific matters and cannot be conducted on industrial secrets or on matters whose confidentiality is protected by the legislation on intellectual property rights.
 - d) In no case, the specialized audits may imply impairment to managers' autonomy, in accordance with legal and bylaw powers.
 - e) The working documents of the special auditor will subject to reserve and must be conserved for a time no less than five (5) years, as of the date of elaboration.

- f) The request to carry out specialized audits will be submitted in writing to the Shareholder and Investor Attention Service Office, stating the reasons why they are to be carried out, the facts and operations to be audited, and the duration. The persons hired to perform the specialized audits must be qualified professionals, recognized as such in accordance with the law, and they shall comply with the requirements set out by the law and these Bylaws for being a Statutory Auditor of the Company. The external auditor will be chosen in accordance with procedures that ensure their objective selection and independence.
 - g) The Shareholder and Investor Attention Service Office must process the request in question in an expeditious and efficient manner, facilitating the activities of the auditor, in coordination with the Company's units that must cooperate in order for the audit to be possible.
 - h) The results of the specialized audit will first be reported to the President of the Company, who has thirty (30) business days to comment. These results and the comments from the President will be shared with the Board of Directors and with the appropriate control and oversight administrative entities. In the event there is a breach of law, matters will be transferred to the competent authorities.
 - i) Investors may request specialized audits in accordance with the nature of its investment, taking into account the previous rules and as long as they own, at least individually or jointly, ten percent (10%) or more of the corresponding issuance of securities or values.
- 11) Submit proposals related to the proper progress of the Company to the Board of Directors, with other shareholders, provided that they represent at least five percent (5%) of the subscribed shares. The proposals must indicate the address and name of the person to whom the response to the request will be sent, and with whom the Board will act, if deemed necessary. In any case, the topics of such proposals may not be related to industrial secrets or information that is strategic to the Company's development. These requests must be submitted in writing to the Shareholder and Investor Service Office or the department that acts as such. In turn, this Office must submit them to the Board or to the relevant institutional committee for its examination and potential approval by the Board of Directors. In order to give answer to these requests, the Board of Directors must abstain from supplying information that is confidential or place Ecopetrol's business at risk, or affects the rights of third parties or that, if disclosed, may be used to the detriment of the Company.
- 12) When they deem that a rule of the Corporate Governance Code has been ignored or breached, they may contact the Company's Board of Directors in writing, stating the reasons and facts on which they base their claim, indicating their name, citizenship card number, address, telephone number and city, in order to guarantee that it will be possible to answer their request. The Secretary General, or the person acting as such, will send the above request to the Board of Directors. The Board will evaluate the request, give the response they consider, and take the necessary measures so that the relevant provisions are not breached. The Board of Directors may exercise this duty by appointing a committee to review such request.
- 13) Shareholders may exercise their exit rights in accordance with the terms and conditions established by law, and if such is the case, avail themselves with the conditions that the Nation will establish in the Declaration of the Majority Shareholder.
- 14) All rights granted by the law and these Bylaws.

PARAGRAPH ONE: FAIR TREATMENT TO SHAREHOLDERS AND INVESTORS.- In order to guarantee the full exercise of Shareholders rights and obligations that the Company has towards its investors and shareholders, the Company will give them equal treatment regarding requests, claims, and information, regardless of the value of their investment or the number of shares that they represent.

All shareholders of the Company will be treated fairly, considering that each shareholder has the same rights according to the number and class of shares held.

PARAGRAPH TWO: DISPUTE SETTLEMENT MECHANISMS.- Any disputes between the Company and its shareholders will be resolved by means of a direct settlement, which will start with the reception of the notification

of disagreement. If no agreement is reached within sixty (60) business days, the parties can choose to resolve the disagreement either through the ordinary jurisdiction or through the Superintendence of Companies.

ARTICLE ELEVEN. INDIVISIBILITY OF THE SHARES.- Shares will belong individually to the shareholders, as a result, when by any legal disposition or by agreement, one or more shares belong to a plural number of individuals, the Company will registry of the shares in favor of all joint owners, who must designate a common representative that will exercise the rights that correspond to them as Shareholders of the Company.

The appointment of this representative will be made in accordance with the provisions of Article 378 of the Commercial Code or the standard that amends or replaces it.

ARTICLE TWELVE. REPRESENTATION AND VOTE UNITY.- Each shareholder, whether an individual or legal entity, may only appoint a single representative to act before the General Shareholders Assembly, regardless of the number of shares held by it.

The representative or agent of a shareholder may not split the vote of their principal, which means that they are not allowed to vote with one or several shares held by the represented party in a certain sense or for certain individuals, and use other share(s) to vote differently or for other individuals. However, this individuality of the vote does not prevent a representative of several shareholders from voting in each case following the separate instructions issued by each shareholder, or each represented group or principal.

CHAPTER IV: DIRECTION AND MANAGEMENT

ARTICLE THIRTEEN. CORPORATE BODIES.- The direction, management and representation of the Company will be the responsibility of the following main bodies:

- a) General Shareholders Assembly.
- b) Board of Directors, and
- c) President, who provides General Legal Representation. However, the Company will also have other legal representatives.

PARAGRAPH: The Company will have a Secretary of the General Shareholders Assembly and a Secretary of the Board of Directors.

The Secretary, or whoever replaces him in his absolute or temporary absences, will be responsible for keeping the minute books and attesting before third parties regarding what is contained therein. This will be in addition to the duties set out in these Bylaws, the Regulations of the Company, and those assigned by the General Shareholders Assembly, the Board of Directors and the President.

The Secretary, or whoever replaces him in his absolute or temporary absences, will take special care to maintain the confidentiality that corresponds to the Company's books and documents according to the Law and commercial practices.

CHAPTER V: GENERAL SHAREHOLDERS ASSEMBLY

ARTICLE FOURTEEN. COMPOSITION OF THE GENERAL SHAREHOLDERS ASSEMBLY.- The General Shareholders Assembly is comprised by the representatives of the shares with the necessary quorum, and under the terms prescribed in these Bylaws and in the law.

ARTICLE FIFTEEN. DUTIES OF THE GENERAL SHAREHOLDERS ASSEMBLY.- The General Shareholders Assembly will exercise the following duties, both in ordinary meetings and in special meetings:

- a) Appoint the person who will be the chair of the meeting.
- b) Examine, approve or reject the end-of-year financial statements and the accounts that the Managers must submit.
- c) Appoint and remove the members of the Board of Directors.
- d) Appoint and remove the Statutory Auditor, and set their fees.
- e) In accordance with the law, order the distribution of profits resulting from the financial statements, determining the amount of profits to be distributed, and the term and the methods for payment of the dividends. The General Shareholders Assembly may determine that the amounts available at any time for dividend distribution be fully or partially capitalized, and that their value be distributed in Company shares among the shareholders, pro rata with those held at the time of capitalization.
- f) Define how the way to cancel losses if there were any to offset losses, if any.
- g) Authorize the issuance and placement of shares in reserve, provided that this is done without being subject to the right of preference, likewise with the issuance of convertible bonds.
- h) Authorize any issuance of preferred or dividend right shares and order the reduction or elimination of preferences.
- i) Determine the reserves that must be established, in addition to statutory reserves.
- j) Order the repurchase of own shares and their subsequent sale.
- k) Adopt all measures required for compliance with these Bylaws or required in the interests of the Company.
- l) Study and approve the amendments to the Bylaws, in accordance with the rules that govern the matter.
- m) Approve the valuation of the contributions in goods received by the Company in payment for the subscription of shares, after the date of their issuance.
- n) Consider and approve, as appropriate, the reports from the managers regarding the state of company business, as well as the report from the statutory auditor, as applicable.
- o) Approve all mergers, spin-offs or transformations.
- p) Approve authorized capital increases.
- q) Issue its own regulations.
- r) All others assigned by law or these Bylaws.

PARAGRAPH: The Nation undertakes, in accordance with its shareholding, that the disposal of assets of which its amount is equal to or greater than 15% of the market capitalization of Ecopetrol, will be discussed and decided within the General Shareholders Assembly, and the Nation may only vote in a favorable way if the vote of the minority shareholders is equal to or greater than 2% of the shares subscribed by shareholders other than the Nation.

Notwithstanding the foregoing, if the established majority referred to in this paragraph is not achieved, the Nation may request that a new Shareholders Assembly be held under the terms established in these Bylaws, and at said meeting such decisions may be taken with the majority provided in the Law or in these Bylaws.

ARTICLE SIXTEEN. ORDINARY MEETINGS.- The ordinary meetings of the General Shareholders Assembly will be held at the registered office of the company's domicile within the first three months of each year, on the date and at the time indicated in the notice. The notice will be issued by the President thirty (30) calendar days prior to the scheduled date for the meeting, by publishing the notice on the Company's website www.ecopetrol.com.co, or whichever site takes its place, as well as in print or digital newspaper with widespread circulation nationwide.

In the ordinary meetings, the General Shareholders Assembly must deal with the following issues, in addition to those assigned by Law:

- a) Examine the position of the Company.
- b) Elect members of the Board of Directors and the Company's auditor.
- c) Determine the economic guidelines of the Company.
- d) Analyze the accounts and financial statements for the last fiscal year.
- e) Decide on the disposal and distribution of profits.
- f) Approve all measures aimed at ensuring compliance with the corporate purpose.

PARAGRAPH ONE: Additionally, Ecopetrol will implement the following corporate governance best practices: (i) on the Sunday prior to the date of the ordinary meeting of the Shareholders Assembly, it will issue a reminder, by means of a notice published in a print or digital newspaper with widespread circulation nationwide, and on the website www.ecopetrol.com.co, or whichever site takes its place, regarding the date, time and place of the meeting, (ii) and at least three (3) calendar days prior to the date of the ordinary meeting it will use the website www.ecopetrol.com.co, or whichever site takes its place, to publish the agenda for the meeting of the Shareholders Assembly and the proposals from management.

PARAGRAPH TWO: If it is not duly summoned, the General Shareholders Assembly will be legally entitled to hold such meeting on the first business day of the month of April, at 10:00 a.m. at the offices of the main domicile where the Company's management operates.

ARTICLE SEVENTEEN. EXTRAORDINARY MEETINGS.- The General Shareholders Assembly may be called to extraordinary meetings when required on account of unforeseen or urgent needs of the Company, following notice from the President, the Board of Directors or the Statutory Auditor, such notice must include the agenda, date, time and place where it will take place.

Likewise, an extraordinary meeting maybe called by order or directly summoned by the Superintendent, or whomever has its duties, when so requested by a plural number of shareholders representing at least five percent (5%) of the total subscribed shares.

Calls to extraordinary meetings will be made by the President with fifteen (15) calendar days in advance of the date set for holding the meeting by means of a publication on the Company's website of the announcement of the meeting, www.ecopetrol.com.co or whichever website functions in its places, as well as on a print or digital newspaper with widespread circulation nationwide.

The notice will indicate the matters on the Agenda to be considered by the General Shareholders Assembly in its extraordinary meeting.

PARAGRAPH: Additionally, Ecopetrol will implement the following corporate governance best practices: (i) on the Sunday prior to the date of the extraordinary meeting of the General Shareholders Assembly, it will issue a reminder, by means of a notice published in a newspaper of wide and national circulation, and on the website www.ecopetrol.com.co, or whichever site takes its place, regarding the agenda, date, time and place of the meeting, and (ii) at least three (3) calendar days prior to the date of the special meeting, it will use the website www.ecopetrol.com.co, or whichever site takes its place, to publish the agenda for the General Shareholders Assembly and the proposals from the management.

The Nation agrees to use its vote to support initiatives that are made in order to include additional issues to those mentioned in the agenda for the extraordinary meetings of the General Shareholders Assembly, provided that such initiatives are submitted by one or more shareholders representing at least two percent (2%) of the subscribed shares.

ARTICLE EIGHTEEN. UNIVERSAL MEETINGS.- Notwithstanding the provisions of these Bylaws regarding the convening to ordinary and extraordinary meetings, the General Shareholders Assembly may meet, without prior notice, at any place, if there is a will to do so, when the totality of the subscribed shares is represented. It may deal with any matter, unless the law establishes otherwise.

ARTICLE NINETEEN. QUORUM.- The General Shareholders Assembly shall deliberate with a plural number of shareholders that represent, at least half plus one of the subscribed shares. Decisions will always be taken by the majority of votes present, unless the law establishes special majorities.

PARAGRAPH: If the General Shareholders Assembly is summoned to a meeting and it is not held due to a lack of quorum, a new meeting will be summoned and it will meet and decide validly with one or several shareholders, regardless of the number of shares represented. The new meeting must be held no sooner than ten (10) business days and no later than thirty (30) business days counted from the date set for the initial meeting. When the Shareholders Assembly gathers in an ordinary session in its own right on the first business day of the month of April, it may also validly deliberate and make decisions under the terms of this article.

CHAPTER VI: BOARD OF DIRECTORS

ARTICLE TWENTY. BOARD OF DIRECTORS.- The Board of Directors of the Company will have nine (9) principal members with no alternates, who will be elected by the General Shareholders Assembly using the electoral quotient system, for institutional periods of four (4) years, being possible that such members be re-elected more than once for the same period without exceeding three (3) periods in total. The elected persons may not be replaced in partial elections without proceeding to a new election using the electoral quotient system, unless the vacancies are decided unanimously.

On the slate of candidates to be presented for consideration of the General Shareholders' Assembly, at least three (3) current members will be included, with the exception of candidates in lines eight and nine, which will be postulated in accordance with Paragraph Two of this article.

The nomination and appointment to the Board of Directors of the Company, may be carried out in personal capacity. In any case, the member of the Board of Directors must observe his/her fiduciary duties as a director in the performance of his/her duties, regardless of the origin of his nomination.

If there is no new elections of Board members it will be understood that the appointment has been extended until a new appointment is made.

The Board of Directors will be subject to the inabilities and incompatibilities that the law may establish.

TRANSITORY PARAGRAPH: The first four-year institutional period for the members of the Board of Directors will be counted as from the Board of Directors' election that was held in 2021 and finalize at the time of the ordinary meeting of the general shareholders' meeting to be held in 2025. This will be the first period for purposes of the re-election and maximum permanence of three (3) periods in total set forth in the first paragraph of this Article.

PARAGRAPH ONE: INDEPENDENT MEMBERS OF THE BOARD OF DIRECTORS.- The majority of the members of the Board of Directors shall be independent. The election of the independent members of the Board of Directors will be performed in accordance with the criteria provided in Paragraph Two of the Article 44 of Law 964 of 2005 and in accordance with the procedure established in Decree 3923 of 2006, or any provision that governs, amends, replaces or adds to these.

The members of the Board of Directors who are elected as independent, will commit in writing, upon accepting the position, to maintain their standing as independent members during the performance of their duties. If for any reason any Independent Board Member loses this condition, he/she must notify this situation in writing to the Secretary of the Board of Directors.

PARAGRAPH TWO: The Nation agrees that, in the meetings of the General Shareholders Assembly in which the members of the Board of Directors will be elected, the list of candidates that The Nation presents will include (for lines eight and nine) individuals proposed by the Hydrocarbon-Producing Departments in which Ecopetrol operates, and individuals proposed by the minority shareholders, as follows:

- a) In applying the provisions of paragraph one, Article 5, Law 1118 of 2006, regarding line eight, the Nation's list of candidates for members of the Board of Directors shall include a person nominated by the Governors of the Hydrocarbon-Producing Departments operated by Ecopetrol. The name of the respective candidate must be chosen by the Governors of said Departments by simple majority, through a prior vote. The result of this must be sent to the Ministry of Finance and Public Credit no later than ten (10) days prior to when the respective meeting will be held. In the event that, for any reason, the name of the candidate is not submitted within the established timeframe, the Nation's list of candidates for members of the Board of Directors shall include one of the persons that has been designated by the Governors, who, in any case, must meet the requirements established in this paragraph.

Hydrocarbon-Producing Departments operated by Ecopetrol shall be understood according to Law 1530 of 2012, article 4, paragraph 1 or any law that additions, modify or replace this law.

- b) In line nine, the Nation's list of candidates for members of the Board of Directors shall include a person designated by the ten (10) minority shareholders with the largest shareholding. The name of the respective candidate must be chosen by simple majority, through a prior vote. The result of this must be sent to the Ministry of Finance and Public Credit no later than ten (10) days prior to when the respective meeting will be held. If such minority shareholders fail to reach an agreement, the Nation's list will include the person designated by the five (5) minority shareholders with the largest shareholding. If such shareholders do not reach an agreement prior to the date of the meeting in which the respective election is to be carried out, the Nation will be able to propose a candidate who must, in any case, meet the requirements established in this paragraph.

For the purpose of sections a) and b) of this paragraph, it shall be understood that the Nation's commitment to vote for candidates proposed by the minority shareholders of Ecopetrol and the Hydrocarbon-Producing Departments operated by Ecopetrol, shall be subject to the condition that each proposed candidate meets the following conditions:

- (i) That the profiles conform to those defined for members of the Board of Directors of Ecopetrol, in accordance with the provisions set forth in these Bylaws.
- (ii) The members comply with the requirements of an independent member, at least, in accordance with the definition of independence established in the paragraph of Article 44, Law 964 of 2005 or any provision that governs or amends it.
- (iii) The Nation's agreement established in section b) of this article, shall no longer be valid at the moment in which the minority shareholders can, in accordance with their shareholding, appoint a member of the Board of Directors of Ecopetrol in their own right. The foregoing is without prejudice to the validity of the Declaration of the Nation, in its capacity as majority shareholder of Ecopetrol, signed on February 16, 2018.

PARAGRAPH THREE: The fees for members of the Board of Directors will be set by the General Shareholders Assembly and paid by the Company for attendance at the meetings of the Board of Directors and the Committees. This compensation shall be set in accordance with the nature of the Company, the responsibility inherent to the position and market guidelines. This information will be disclosed on the website www.ecopetrol.com.co, or whichever site takes its place.

PARAGRAPH FOUR: The members of the Board of Directors will be evaluated in accordance with the mechanism defined by the Board itself.

At each ordinary meeting, the Board of Directors shall provide the General Shareholders Assembly with a report on the operation of the Board of Directors, which shall take into account the attendance at the meetings of the Board and its Committees, performance and participation therein, and the results of the Board's assessment.

The results of the assessments for the Board of Directors will be published on the Company's website www.ecopetrol.com.co, or whichever site takes its place.

PARAGRAPH FIVE: The rules on the appointment and functions of the Chairman of the Board of Directors and the Secretary are contemplated in the Internal Regulations of the Board of Directors that is published on the website of The Company www.ecopetrol.com.co.

ARTICLE TWENTY-ONE. PROFILES OF THE MEMBERS OF THE BOARD OF DIRECTORS.- The members of the Board of Directors will be committed to the Company's corporate vision and must at least meet the following requirements: (i) have knowledge or international experience in the activities inherent to the Company's corporate purpose and/or have knowledge and experience in the field of industrial and/or commercial, financial, business risks, stock market, administrative, legal or related science activities, have more than 15 years of professional experience; (iii) enjoy a good reputation and be recognized for their professional competence and integrity, and (iv) not belonging simultaneously to more than five (5) boards of directors of corporations (*Sociedades Anónimas*), including Ecopetrol's Board.

Gender, diversity and inclusion criteria will be taken into consideration when comprising the Board of Directors, and at least one (1) of the nine (9) members shall be a woman. Gender, diversity and inclusion criteria shall, in any case, be concurrent with the provisions set forth in this article regarding the profiles of the members of the Board of Directors.

The Company will seek to increase the participation of women, in line with its diversity and inclusion goals.

The profiles of the members of the Board of Directors will be reviewed and updated by the Board of Directors or the institutional committee that the Board decides.

ARTICLE TWENTY-TWO. MEETINGS.- The Board of Directors will hold ordinary meetings at least eight (8) times a year at the offices of the Company or at the place indicated by it, on the date and time that it establishes and, in a special capacity, when summoned by itself, the President of Ecopetrol or its Board of Directors, the Statutory Auditor or two (2) of its members.

The summon to meetings, both ordinary and extraordinary, will be made by means of a communication sent to each of the members, at least five (5) calendar days in advance. Such communication may be sent through any suitable means, such as fax or email.

The deliberations of the Board of Directors may be suspended and then resumed as many times as decided by the majority of the members present at the meeting.

The Board of Directors shall elect its Chairperson and Vice Chair from its members, and their role will be to chair and direct the ordinary and extraordinary meetings of the Board of Directors and they shall be elected for institutional periods of four (4) years. At the sessions in which both the Chairperson and Vice Chair are absent, the attendees may appoint the person who will chair the respective meeting from among their members.

The Secretary General, or their delegate, will act as secretary of the Board of Directors. In meetings where they are absent, attendees may appoint (from among its members) the person who will assume the duties of the Board's Secretary.

The President of the Company will attend the meetings of the Board of Directors, in which he will have voice but not vote. In no case may the President of be appointed as President of the Board of Directors.

PARAGRAPH ONE: QUORUM.- The Board of Directors shall deliberate with a number equal to or greater than five of its members. Decisions shall be made through a majority of the votes from the members present.

PARAGRAPH TWO: UNIVERSAL MEETINGS OF THE BOARD OF DIRECTORS.-The Board of Directors may meet validly at any date, time and place, without prior notice, when:

- (i) All members of the Board of Directors are present.
- (ii) They decide to declare the session as convened.

During the universal meetings, the Board of Directors may deal with any type of matter that relates to its duties, unless the law establishes otherwise.

ARTICLE TWENTY-THREE. DUTIES.- The Board of Directors will have the following duties:

- 1) Issue its own regulations.
- 2) Appoint, evaluate and remove the President of Ecopetrol, approve his/her succession plan and set its compensation in accordance with the responsibility of the position and market practices.
- 3) Grant permits or licenses to the President of the Company and appoint a person in charge, in the event that the President's alternates are absent.
- 4) Serve as an advisory body for all matters that the President of the Company requires.
- 5) Examine and approve the reports that the President must submit on the work carried out by the Company.
- 6) Appoint and remove the legal representatives of the Company and their respective alternates.
- 7) Approve the succession policy for the members of the Board of Directors.
- 8) Organize and coordinate the succession process of its members, without prejudice to the power of the General Shareholders' Meeting regarding the appointment and removal of the members of the Board of Directors, so as to provide complete and relevant information on the candidates to be considered by the General Shareholders' Meeting, and ensure that the candidates meet the profile and comply with the requirements and conditions established for such purpose.
- 9) Adopt and include in the Company's management report specific measures regarding the governance of the Company, its conduct and its information, in order to ensure respect for the rights of those who invest in its shares or any other securities that it issues, in accordance with the parameters set by market regulation bodies, while also ensuring the proper management of its affairs and public knowledge of its work.
- 10) Fulfill the provisions of Article 447 of the Commercial Code or any provisions that regulate or amend it, on the right of inspection.
- 11) Together with the President of the Company, present to the General Shareholders' Meeting a special report expressing the closeness of existing economic relations between the parent company and its affiliates or subsidiaries, pursuant to Article 29 of Law 222 of 1995.
- 12) Implement the decisions adopted by the General Shareholders Assembly related to the repurchase of shares of the Company.
- 13) Propose to the General Shareholders' Meeting the approval of reserve funds beyond the legal reserves.
- 14) Establish the criteria for determining size of personnel plant, the compensation policy, and approve the top-level organizational structure. For purposes of these Bylaws, those forming part of the first level dependencies shall be construed as those who, as part of their duties, report directly to the President.
- 15) Appoint and remove the employees who lead the first level areas of the Company.
- 16) Approve the Company's budget and investment plan.
- 17) Approve the Company's consolidated, separate, interim and end of period financial statements.

- 18) The opening and closing of Ecopetrol branches and agencies, both in Colombia and abroad.
- 19) Approve the incorporation of non-profit organizations that have the same, a related or complementary purpose that Ecopetrol's corporate purpose or a purpose that is necessary or suitable for the best development of Ecopetrol's corporate purpose.
- 20) Encumber, dispose of or limit the right of ownership over assets owned by Ecopetrol, other than hydrocarbons, their byproducts, and refined or petrochemical products according to the guidelines established by the Board of Directors.
- 21) Regulate and implement the issuance and placement of shares and bonds convertible into shares. Likewise, authorize and implement the issuance and placement of non-convertible bonds in shares, as well as other debt securities that allow the financing of the Company. In any case, the Board of Directors may entrust the President of the Company with the approval of the subscription regulations, the prospectus of issuance and all other documents related to the issue and placement of securities.
- 22) Authorize the execution of loans and financing operations that have a term greater than one (1) year, from entities that are legally authorized for such purpose, as well as the granting of the guarantees that may be applicable.
- 23) Establish the mechanisms necessary to ensure that when an Ecopetrol employee discloses (either to the Audit and Risks Committee of the Board of Directors or to their immediate superiors) information of which they have knowledge regarding a potential conflict of interest within the Company or irregularities regarding accounting or financial information, they will not suffer discrimination or negative consequences, and in general, will be protected from any retaliation resulting from this.
- 24) Request the President of the Company to hire the external advisors chosen by the Board of Directors, when deemed necessary in order to perform their duties, or as additional support for the Committees of the Board of Directors, in accordance with the terms and conditions established in the Internal Regulations of the Board of Directors.
- 25) Comply with the duties that, in terms of prevention and control of money laundering, financing of terrorism and financing of weapons of mass destruction proliferation, are assigned to it by current and applicable national and international regulations.
- 26) Verify the effectiveness and transparency of the Company's accounting systems and prepare or instruct the preparation and submission of regular reports to shareholders and the market on the financial and governance position of the Company.
- 27) Intervene in any activities for which the purpose, in its judgment, is to better pursue the Company's activities through requests for reports from Company workers.
- 28) Approve the incorporation and capital contributions to subsidiaries, as well as authorize the adoption of measures tending to their liquidation.
- 29) Approve the acquisition of interests and rights in previously incorporated companies that have the same, similar, connected or complimentary corporate purpose, and such acquisition is required because it is useful and it is appropriate for the proper development of the corporate purpose of Ecopetrol.
- 30) Approve the disposal of shares, interests, contractual positions and rights in companies in which it has an interest.
- 31) Approve the annual reserve report and the 20F annual report.
- 32) Together with the President of the Company, present for approval of the General Shareholders' Meeting the Company's management report, financial statements for each year, planned distribution of earnings and other documents stipulated in Article 446 of the Commercial Code and Law 222 of 1995, or in provisions that replace, regulate, amend or supplement them as set forth therein.
- 33) Approve the Code of Good Governance, Code of Ethics and their amendments.
- 34) Ensure that Ecopetrol's economic relations with its shareholders (including the majority shareholder and its subsidiaries companies) fall within the limits and conditions established by law and regulations on the prevention, management and settlement of conflicts of interest established in these Bylaws and,

in any case, under market conditions and always focused on the long-term sustainability of the Company.

- 35) Approve the granting of credits to Ecopetrol group of companies and/or third-party guarantees securing obligations of the Ecopetrol group of companies, both of which are to be carried out solely and exclusively within the Company's ordinary course of business and within the framework of its corporate purpose, in accordance with the provisions of these Bylaws.
- 36) Ensure the effectiveness of the internal control and risk management systems.
- 37) The Board of Directors of the Company, in its capacity as the strategic guiding body, will have the following duties:
- a) Approve the strategy and business plan for Ecopetrol group ensuring corporate responsibility and including environmental, social, governance, technology and innovation standards.
 - b) Approve the budget and investment plan for Ecopetrol group and issue the rules for their elaboration and execution.
 - c) Approve the consolidated objectives and targets Ecopetrol group.
 - d) Issue compensation and culture guidelines for Ecopetrol and its subsidiaries companies.
 - e) Approve the guidelines for retaining, transferring and mitigating financial risks, including insurance for the Ecopetrol group.
 - f) Approve the new business of Ecopetrol group in accordance with the guidelines established by the Board of Directors and the internal regulations issued for this purpose.
 - g) Approve the corporate governance model applicable to Ecopetrol group.
- 38) All others assigned by Law and these Bylaws.

PARAGRAPH ONE: The Board of Directors may order the President to perform some of the functions assigned to it, except for those that by law expressly must be exercised by the Board of Directors.

PARAGRAPH TWO: The Board of Directors establish commissions for special work or studies within the Board itself.

ARTICLE TWENTY-FOUR. COMMITTEES OF THE BOARD OF DIRECTORS.- The Board of Directors may have institutional committees in accordance with the law, or those established by the Board itself, composed of members of the Board of Directors, appointed by the Board itself. At least one (1) member of each Committee shall be independent. The foregoing is without prejudice to the minimum number of independent members that the Audit and Risks Committee must comprise by law.

For its operation, in addition to the provisions of current regulations that are applicable, the Committees will have Internal Regulations that establish their objectives, duties and responsibilities.

CHAPTER VII: GENERAL REGULATIONS FOR THE SHAREHOLDERS MEETING AND THE BOARD OF DIRECTORS

ARTICLE TWENTY-FIVE. MINUTES FOR PERSONAL ATTENDANCE MEETINGS.- The minutes must comply with the provisions of Articles 189 and 431 of the Commercial Code, as applicable, and with the regulations or circulars that govern, amend or replace these. The minutes will be registered when said formality is necessary by legal mandate.

ARTICLE TWENTY-SIX. REMOTE SESSIONS OF THE GENERAL SHAREHOLDERS' MEETING AND BOARD OF DIRECTORS.- In addition to the in-person sessions regulated in other sections of these Bylaws, the General Shareholders' Meeting or Board of Directors may meet remotely in accordance with Law 22 of 1995, or the rules that modify, add to or replace it.

ARTICLE TWENTY-SEVEN. DECISION-MAKING MECHANISM.- The General Shareholders Assembly or the Board of Directors shall take decisions when the shareholders or the directors express their voting decision in writing in accordance with Law 22 of 1995, or the rules that modify, add to or replace it.

ARTICLE TWENTY-EIGHT. MINUTES.- With regard to meetings where there is no personal attendance, or when there are decisions made through the mechanism established in the previous section, the corresponding minutes shall be prepared and recorded in the respective book in accordance with Law 22 of 1995, or the rules that modify, add to or replace it.

ARTICLE TWENTY-NINE. CONFLICT OF AUTHORITY.- Any doubt or conflict regarding the duties or authority of the Board of Directors and the President will always be settled in favor of the Board of Directors. Conflicts between the duties of the Board of Directors and the General Shareholders Assembly will be settled in favor of the General Shareholders Assembly.

CHAPTER VIII: THE PRESIDENT

ARTICLE THIRTY. PRESIDENT.- The management of Ecopetrol will be the responsibility of the President, who will be appointed, evaluated and removed by the Board of Directors.

The election of the President will be carried out in accordance with criteria of suitability, knowledge, experience, and leadership, and framed within the succession policy approved by the Board of Directors.

Any change in the succession policy and in the way in which the President work is evaluated must be approved by the Board of Directors. Once the respective amendment comes into effect, the Board of Directors' Secretary will communicate this to all managers and the new system will be disclosed to all interested citizens through the Shareholder and Investor Service Office and through Ecopetrol's website www.ecopetrol.com.co, or whichever site takes its place.

ARTICLE THIRTY-ONE. DUTIES OF THE PRESIDENT.-The President's will have the following duties:

- 1) Execute the strategy and business plan approved by the Board of Directors.
- 2) Direct, coordinate, monitor, control and evaluate the execution and fulfillment of the corporate purpose of Ecopetrol.
- 3) Adopt the decisions and determine the appropriate acts in order to fulfill the Company's corporate purpose, within the limits set out by law and in the bylaws.
- 4) Implement the compensation policy and present the Board of Directors with initiatives aimed at amending, supplementing or adjusting said policies.
- 5) Perform the evaluations of workers responsible for the first level dependencies of the Company, in accordance with the objectives established by the Board of Directors.
- 6) Together with the Board of Directors, present for approval of the General Shareholders' Meeting the Company's management report, certified financial statements for each fiscal year, planned distribution of earnings and other documents listed in Article 446 of the Commercial Code and Law 222 of 1995, or any provisions that replace, regulate, amend or supplement them, as set forth therein.
- 7) Fulfill the legal provisions concerning the right of inspection set forth in Article 447 of the Commercial Code or any standards that replace, regulate or amend it.
- 8) Execute the Company's budget and investment plan, consistent with the standards for its execution, as set by the Board of Directors.
- 9) Comply with and enforce the decisions of the Board of Directors.

- 10) Exercise the legal representation of Ecopetrol, without prejudice to the powers and rights conferred to the Legal Representatives for Judicial and Extrajudicial Affairs and the Legal Representative for the Provision of Goods and Services.
- 11) Approve the Company's participation in national and international non-profit organizations given and as long as their purpose is the same, related or complimentary to Ecopetrol's, or necessary or appropriate for the best development of Ecopetrol's corporate purpose.
- 12) Direct Ecopetrol's employment relations and appoint, remove and hire the Company's personnel in accordance with legal, regulatory and statutory standards.
- 13) Make proposals to the Board of Directors on the appointment or removal of employees from the first level dependencies and, if necessary, remove any of these employees and appoint a temporary replacement (this situation must be reported to the Board of Directors).
- 14) Summon the Board of Directors and the General Shareholders Assembly to ordinary and extraordinary meetings.
- 15) Present the Board of Directors with and ensure ongoing fulfillment of the specific measures regarding the governance of the Company, its conduct and its information, in order to ensure respect for the rights of those who invest in its shares or in any other securities it issues, while also ensuring proper management of its affairs and public knowledge of its work.
- 16) Treat all shareholders fairly.
- 17) Avoid and reveal disclose potential conflicts of interest between them and the Company, or with shareholders, suppliers or contractors, reporting their existence to the members of the Board of Directors and, if applicable, to the General Shareholders Assembly, though refraining from deliberating or issuing their opinion on the contentious issue, according with the law and the procedure established within the Company.
- 18) Encumber, transfer or limit the right of ownership over assets owned by Ecopetrol other than hydrocarbons, their derivatives and refined or petrochemical products in accordance with the guidelines established by the Board of Directors.
- 19) Together with the Board of Directors, present to the General Shareholders' Meeting a special report expressing the closeness of economic relations existing between the parent company and its affiliates or subsidiaries, pursuant to Article 29 of Law 222 of 1995.
- 20) Submit the following documents to the Board of Directors:
 - a) The budget and investment plan for the Company and its subsidiaries, as well as its amendments, in accordance with the provisions set out by the rules applicable to its preparation.
 - b) A quarterly analysis of budget execution, consolidated and separate financial statements, as well as yearly closure profit forecasts.
 - c) Annually, the financial reports, the financial statements and a report on the progress of the Company.
 - d) All other information requested by the Board of Directors for the fulfillment of the duties assigned to it.
- 21) Represent the shares, participations or interests that Ecopetrol has in companies, partnerships, foundations, or any other type of association.
- 22) Provide the market with timely, complete and accurate information about the Company's financial statements and its business and administrative conduct, without prejudice to the provisions of Articles 23 and 48, Law 222 of 1995, or the rules that replace or amend these.
- 23) Present a Code of Good Governance and a Code of Ethics to the Board of Directors for approval.

- 24) Establish and maintain the Company's Internal Control System.
- 25) Lead the Company's zero tolerance policy with respect to fraud, bribery, corruption, violations of the Foreign Corrupt Practices Act ("FCPA"), money laundering, financing of terrorism and financing of weapons of mass destruction proliferation; the effective implementation and sustainability of the Compliance Program and fulfill the duties assigned to it by current and applicable regulations, with regard to prevention and control of money laundering, financing of terrorism and financing of weapons of mass destruction proliferation.
- 26) Appoint the employees of the Company in the Boards of directors of the Companies in which Ecopetrol has a participation as a shareholder has participation in Colombia or abroad.
- 27) Execute and develop the corporate governance guidelines for Ecopetrol group.
- 28) Approve all new businesses of the Ecopetrol Group that are not responsibility of the Board of Directors, in accordance with the guidelines established by it and the provisions set forth in the internal regulations.
- 29) Perform all other duties established by Law.

PARAGRAPH: The President will organize the government of the Company for which, without the authorization of another body, will be able to assign other workers and committees of the Company to carry out some of their functions, except those that by legal mandate, must be exercised directly by the President.

When for the development of the assigned faculties, the worker requires legal capacity in order to carry out agreements that are binding to the Company, the assignment of the President must be accompanied by the respective act of representation, which may be revoked at any time.

ARTICLE THIRTY-TWO. LEGAL REPRESENTATION OF THE COMPANY.- The President is the general legal representative of the Company, who will have the commercial and legal representation of Ecopetrol for all purposes and will have at least two (2) personal alternates who will replace him/her in the event of temporary or absolute absences, and will have identical powers. The alternates of the President will be appointed by the Board of Directors, for two-year periods and may be freely re-elected or removed at any time. When the Board of Directors does not appoint the alternates when needed, the previous ones will continue in their position until new appointments are made.

However, for more efficiency in the ordinary course of business, the Company will have, additionally, a Legal Representative for Judicial Affairs, and a Legal Representative for Purposes of the Supply of Goods and Services.

LEGAL REPRESENTATIVE FOR JUDICIAL AND OUT-OF-COURT AFFAIRS.- The Company will have one (1) legal representative for Judicial and Out-of-Court Affairs, who will have one (1) personal alternate who will replace it during its temporary or absolute absences, and such alternate will have identical powers.

The legal representative for Judicial and Out-of-Court Affairs will represent the Company in the following matters: a) Receive all kinds of notifications regarding actions and administrative investigations and lawsuits filed or initiated against the Company in any kind of judicial, out-of-court, administrative or police action or proceedings. b) Represent the Company in all kind of judicial, administrative, police, arbitration or out-of-court proceedings, in which the Company is a party. For this purpose, the Legal Representative for Judicial and Out-of-Court Affairs or its alternate will be fully authorized to receive, withdraw, settle and conciliate on behalf of the Company. c) Respond on behalf of the Company, all kinds of judicial and out-of-court questions that may be directed to the Company. d) Represent the Company in all kinds of administrative actions initiated by or against it, before any administrative, police or judicial authority. e) Initiating and carrying out, on behalf of the Company, all kinds of requests, petitions or procedures before any administrative, police or judicial authority, including the power to file any appeal on behalf of the Company. f) Granting, on behalf of the Company, powers of attorney to the lawyers who will exercise representation and legal status in all kinds of judicial, police or administrative proceedings in which the Company is a party. For this purpose, the Representative or their

alternate may confer powers of attorney to receive, withdraw, settle and conciliate on behalf of the Company. They may revoke the granted powers of attorney at any time.

The legal representative for Judicial and Out-of-Court Affairs and its alternate will be appointed by the Board of Directors for periods of two (2) years and may be re-elected indefinitely or freely removed at any time. The Legal Representative for Judicial and Out-of-Court Affairs and its alternate will continue in their positions until such time that the Board of Directors appoints another person in their place.

LEGAL REPRESENTATIVE FOR PURPOSES OF THE SUPPLY OF GOODS AND SERVICES.- The Company will have one Legal Representative for Purposes of the Supply of Goods and Services, who will have one (1) personal alternate who will replace it during their temporary, absolute or accidental absences, and such alternate shall have identical powers.

The Legal Representative for Purposes of the Supply of Goods and Services and its alternate will be appointed by the Board of Directors for periods of two (2) years and may be re-elected indefinitely or freely removed at any time. During their temporary, absolute or accidental absences, an alternate with identical power will replace them. The Legal Representative for Purposes of the Supply of Goods and Services and their alternate will continue in their positions until such time that the Board of Directors appoints another person in their place.

CHAPTER IX: STATUTORY AUDITOR

ARTICLE THIRTY-THREE. STATUTORY AUDITOR.- The Company will have a Statutory Auditor along with their respective alternate, who will replace them during their absolute or temporary absences, both of whom shall be elected by the General Shareholders Assembly.

In terms of electing the people who are going to occupy the position of Statutory Auditor or their alternate, the Company may only elect individuals or legal entities duly registered in the Register for the Central Board of Accountants and who meet the requirements established in Law 43 of 1990 or in the standards that govern, amend or replace it, or whichever standards are applicable.

The election of the Statutory Auditor will be carried out based on an objective and transparent pre-selection carried out by the Audit and Risks Committee of the Board of Directors.

The Audit and Risks Committee of the Board of Directors will do the election of the External Auditor through an objective and transparent pre selection of candidates.

The Audit and Risks Committee of the Board of Directors will evaluate the candidates and present a recommendation to the General Shareholders Assembly, during which an order of eligibility will be established, based on criteria of experience, service, costs and knowledge of the sector.

The shareholders may propose additional candidates for Statutory Auditor to the Audit and Risks Committee, provided that their profiles comply with the provisions of the law and these Bylaws. They may also express any dissatisfaction with the current Statutory Auditor to the Shareholder and Investor Service Office, being the Audit and Risks Committee the one who will evaluate the case, so that it can be brought to the General Shareholders Assembly, which will make the decision on the matter.

PARAGRAPH ONE: In the event that the Statutory Auditor is a legal entity, it must appoint a public accountant to carry out the duties of statutory auditor so that the role can be performed personally, under the terms of Article 215 of the Commercial Code or the rules that replace or amend it. In the event that the person appointed is absent, the alternates will act in their place

PARAGRAPH TWO: The Statutory Auditor will receive the payment indicated by the General Shareholders Assembly, in accordance with criteria such as suitability, professional experience in auditing similar companies, and market guidelines.

PARAGRAPH THREE: In accordance with the provisions of Article 206 of the Commerce Code, or the rules that replace or amend it, the Statutory Auditor's term will be equal to that of the Board of Directors, but in any case, they may be removed at any time by the General Shareholders Assembly through a vote representing half plus one of the shares present at the relevant meeting.

ARTICLE THIRTY-FOUR. DUTIES OF THE STATUTORY AUDITOR.- Without prejudice to the duties indicated by laws and regulations, the responsibilities of the Statutory Auditor are as follows:

- 1) Ensure that the transactions that are concluded or carried out on behalf of the Company comply with the requirements of these Bylaws, the decisions of the General Shareholders Assembly and the Board of Directors.
- 2) Examine all transactions, inventories, minutes, books, correspondence, account vouchers and business relating to the Company.
- 3) Verify the cash count on the occasions that the Statutory Auditor deems appropriate.
- 4) Verify of all the Company's securities, as well as the others that it has in safekeeping.
- 5) Inspect the assets of the Company and ensure that measures are taken for the conservation and security thereof.
- 6) Report (expressly and in writing) the irregularities noted in the Company's minutes of the Shareholders Assembly, the Audit and Risks Committee, the Board of Directors or the President, as appropriate.
- 7) Authorize the Company's financial statements by means of their signature.
- 8) Summon the General Shareholders Assembly to special meetings, in accordance with the provisions of Article 17 of these Bylaws.
- 9) Comply with the provisions of Article 447 of the Commerce Code or the legal provisions that govern or amend it.
- 10) Cooperate with the competent authority for the inspection and monitoring of the Company, and provide it with any reports that may be required or requested.
- 11) Act in the deliberations of the General Shareholders Assembly and those of the Board of Directors, when summoned to them, with the right to speak but not to vote.
- 12) Fulfill all other duties indicated by law and these Bylaws, as well as those that are entrusted to them by the Audit and Risks Committee and the General Shareholders Assembly (provided such duties are compatible with the law and Bylaws).
- 13) Ensure that management complies with the specific duties established by the monitoring bodies, especially those related to the duties of information and the Corporate Governance Code.
- 14) Report relevant findings to the Company's bodies, to the authorities and to the market, as appropriate.
- 15) Be aware of the complaints filed for breach of the rights of shareholders and investors, as well as the results of these investigations, which will be conveyed to the Board of Directors and made known to the General Shareholders Assembly.
- 16) Ensure that the Company's accounts and the minutes for sessions of the General Shareholders Assembly and the Board of Directors are kept regularly, and that the Company's correspondence and account vouchers are duly kept, issuing the necessary instructions for such purposes.
- 17) All others indicated in Article 207 of the Commerce Code or other legal provisions

PARAGRAPH ONE: The Statutory Auditor will not have the authority to intervene in Ecopetrol's administrative activities. They may only perform the administrative duties inherent to the role of Statutory Auditor.

PARAGRAPH TWO: In order to communicate the material findings, the Statutory Auditor must:

- 1) Report any irregularities that occur in Ecopetrol's operation and in the implementation of its business, in writing and in a timely manner, to the Board of Directors, the General Shareholders Assembly, the Audit and Risks Committee or the President, as appropriate in accordance with the competence of the body and the magnitude of the finding in the judgment of the Statutory Auditor.
- 2) Summon extraordinary meetings of the General Shareholders Assembly when necessary.
- 3) Inform the legal representative of securities holders, when deemed necessary, in the event there are debt securities.

PARAGRAPH THREE: On a permanent basis, management will use Ecopetrol's website www.ecopetrol.com.co or whichever site takes its place (available to the market and shareholders) to publish the latest report from the Statutory Auditor, together with its annexes and the details of the findings and qualifications presented.

ARTICLE THIRTY-FIVE. DISQUALIFICATIONS FOR THE POSITION OF STATUTORY AUDITOR.- In addition to the disqualifications and incompatibilities established in law, Ecopetrol's Statutory Auditor may not be anyone who has received income from the Company and/or its subsidiaries, where such income represents twenty-five percent (25%) or more of their latest annual income from the immediately preceding year, or persons who perform or exercise (in the Company and/or its subsidiaries companies, directly or through third parties) services other than those of Statutory Auditor, thereby compromising their independence for exercising the position. The Statutory Auditor will be appointed for periods of four (4) years and may be reelected consecutively for a total of ten (10) years, and it may once again be hired after one (1) period away from the position. The partner assigned to the Company must be replaced after a term of five (5) years holding this position.

CHAPTER X: FINANCIAL STATEMENTS, PROFIT DISTRIBUTION, AND RESERVE FUNDS

ARTICLE THIRTY-SIX: FINANCIAL STATEMENTS.- On the thirty-first (31st) of December of each year the accounts will be closed and the financial statements of the Company will be produced.

ARTICLE THIRTY-SEVEN: FUTURE EXPENSES.- In order to calculate the income statement, funds must be appropriated in advance to cover future-but-certain expenses, such as company benefits, depreciation, amortization, and taxes, among others.

ARTICLE THIRTY- EIGHT. PROFITS.- Of the net profits calculated in accordance with Article 39 of these Bylaws, ten percent (10%) will be taken for the statutory reserve, until it is equal to half of the subscribed capital. When this limit is reached, the Company will not be obliged to continue carrying this ten percent (10%) to this account, unless the General Shareholders Assembly so provides. However, if it decreases, the same ten percent (10%) of the profits will be appropriated until the reserve once again reaches the limit of fifty percent (50%) of the subscribed capital.

ARTICLE THIRTY-NINE. DIVIDENDS.- For purposes of the distribution of profits as provided in Articles 155 and 454 of the Commercial Code or the rules that replace or amend them, net profits shall be considered as those resulting from the application of the following procedure:

- 1) The profits made by the Company are based on the real and reliable Financial Statements for each year, and from this value only the items corresponding to the following are subtracted: (i) Financing the losses from previous years that affect the capital, i.e. when as a consequence thereof the net equity is reduced below the subscribed capital (if any); (ii) The statutory reserve and bylaw-related reserves (if any), and (iii) Appropriations for the payment of income and ancillary taxes.
- 2) Using the balance thus determined, the percentages to be distributed shall be applied in accordance with the provisions of the Law. This value shall be the minimum amount to be distributed as a dividend in each period.

- 3) The amounts resulting after having distributed the minimum dividends will be available so that the General Shareholders Assembly can establish incidental reserves or so that they can be distributed as dividends in addition to the minimum dividends established in number 2) above in accordance with the dividend distribution policy of the Company. In any case, the distribution of dividends must include (i) the capacity of the Company to finance its own investment plan through its operational cash flow and (ii) the Company's rating before credit rating agencies.

ARTICLE FORTY. LOSSES.- Losses, if any, will be cancelled using the reserves allocated for that purpose and, failing that, using the legal reserve. Reserves whose purpose is to absorb certain losses cannot be used to cover other losses, unless the General Shareholders Assembly so decides. If the statutory reserve is insufficient to cancel the losses, the company's profits for the following years will be applied to this end, until the loss is extinguished, and during such time it shall not be possible to allocate the profits differently. The meeting may adopt or order measures leading to the restoration of net equity when losses arise that have placed such equity below fifty percent (50%) of the subscribed capital of the Company, e.g. measures such as the sale of valued company assets, the reduction of subscribed capital (carried out in accordance with the law), or the issuance of new shares. Any of these measures must be taken within eighteen (18) months following the determination of the loss. Failing this, the Company must be dissolved.

CHAPTER XI: DISSOLUTION AND LIQUIDATION

ARTICLE FORTY-ONE. DISSOLUTION.- The Company will only be dissolved due to the causes provided in Article 457 of the Commercial Code or the rules that replace or amend them.

ARTICLE FORTY-TWO. LIQUIDATION.- If the Company is dissolved, its liquidation will commence immediately. To this end, it should be taken into account that:

- 1) Excluding the event of an express legal exception, any act that deviates from this purpose will result in the unlimited, joint and several liability of the Liquidator or Liquidators and the Statutory Auditor who failed to intervene.
- 2) The following words must be added to the company name: UNDER LIQUIDATION. If this requirement is ignored, the Liquidator or Liquidators and the Statutory Auditor who failed to intervene shall be liable in an unlimited, joint and several manner for the damage and losses that may occur.

PARAGRAPH: In the event of liquidation, in-kind contributions will be returned to the person who provided them, in the corresponding proportion, once Article 240 of the Commercial Code and the other applicable legal provisions in such case have been applied.

ARTICLE FORTY-THREE. LIQUIDATOR.- The liquidation of the Company shall be performed by the person appointed by the General Shareholders Assembly and in accordance with Article 228 of the Commercial Code, or the provisions that supplement, govern or amend it. The Liquidator will execute any action under its exclusive liability.

ARTICLE FORTY-FOUR. POWERS OF THE LIQUIDATOR.- The President, in their capacity as liquidator, or the liquidators appointed by the General Shareholders Assembly, have the obligations and powers conferred to them by Articles 232, 233 and 238 of the Commercial Code.

ARTICLE FORTY-FIVE. POWERS OF THE GENERAL SHAREHOLDERS ASSEMBLY.- During the liquidation, the powers of the General Shareholders Assembly will remain as they were during the existence of the Company, with the only limitations being those that the liquidation status imposes.

CHAPTER XII: FINAL REGULATIONS

ARTICLE FORTY-SIX. TRANSPARENCY.- Ecopetrol group, its managers, employees and beneficiaries

have expressly adopted a zero-tolerance policy against fraud, bribery, corruption, any violations to the FCPA, money laundering, terrorist financing and financing of weapons of mass destruction proliferation. Furthermore, they manifestly reject any actions such as facilitation payments, political contributions and donations, and donations that do not comply with the requirements of the Colombian Constitution, lobbying activities and payments, anti-competitive and monopolistic practices, sexual harassment, discrimination in any form, and any behavior that may constitute a violation of the Colombian Constitution, local or foreign law, as applicable. Likewise, they reject all conducts infringing or not acknowledging the content of the Code of Ethics and the internal regulation. Based on this, the Company undertakes to:

- 1) Refrain from participating in events considered compliance risks (fraud, bribery, violations to FCPA, money laundering, terrorist financing and financing of weapons of mass destruction proliferation).
- 2) Promote, maintain and strengthen the Compliance Program, the Internal Control System, the Integrated Risk System and an ethics and transparency culture in the Company to prevent and mitigate the materialization of compliance risks.
- 3) Have in place tools to identify the risks of the Company and that include means of control to mitigate such risks.
- 4) Reject and penalize behaviors involving the materialization of any of the risks set forth in this article.
- 5) Zero-tolerance of acts of favoritism or nepotism in selection processes or facilitation payments, political contributions and donations, and donations that do not comply with the requirements of the Colombian Constitution, lobbying activities and payments, anti-competitive and monopolistic practices..
- 6) Have in place adequate and confidential channels to receive and manage complaints, dilemmas and enquiries submitted by employees and people interested in the transparency of the Company.
- 7) Cooperate with national and foreign authorities in carrying out any inquiry and/or investigation involving Ecopetrol Group, its employees, contractors, suppliers, partners or allies.
- 8) Have within its organizational structure, an independent unit that ensures the adoption and management of the Compliance Program, the Internal Control System, and the Integrated Risk System and fosters its enforcement and articulation in Ecopetrol and the companies of Ecopetrol Group. This unit will have functional reporting to the Audit and Risks Committee of the Board of Directors.

ARTICLE FORTY-SEVEN. DUTIES AND RESPONSIBILITIES OF MANAGERS.- The duties and responsibilities of Ecopetrol will be those included in managers shall relate to those established in Article 23 of, Law 222 of 1995 and Article 200 of the Commerce Code, or in the legal provisions that govern, amend or replace these, or that are applicable.

ARTICLE FORTY-EIGHT. DUTY OF CONFIDENTIALITY.- The members of the Board of Directors and the employees of the Company have the duty to comply with the legal and internal guidelines regarding the protection and handling of confidential and reserved information, and may not make use of it for their own benefit or that of a third party, or for the purpose of causing any damage or harm to the Company or its shareholders. Therefore, they may not disclose to third parties the operations, plans or initiatives thereof, nor communicate of any technical procedure or the results of exploration or location of assets, or similar, and in general the activities of Ecopetrol, unless instructed or ordered by a competent government authority.

The use of privileged information for the negotiation of shares is rejected and prohibited. The Company's Administrators and employees must abide by the laws and internal regulations governing the matter.

ARTICLE FORTY-NINE. DISQUALIFICATIONS AND INCOMPATIBILITIES.- The members of the Board of Directors and the employees of Ecopetrol will be subject to the inabilities and incompatibilities set out in the Political Constitution, the law, and the provisions contained in these Bylaws on such issues and on conflicts of interest, as well as the rules that govern, amend or replace these.

PARAGRAPH ONE: The foregoing does not prevent the members of the Board of Directors or employees at any level from acquiring the goods or services that the Company supplies to the public under conditions common to all those who request them.

PARAGRAPH TWO: Ecopetrol workers may be members of the boards of directors of the companies in which Ecopetrol holds an equity stake, which shall not imply a conflict of interest between that duty and the exercise of duties within the Company.

ARTICLE FIFTY. CONFLICTS OF INTEREST.- Among others, a conflict of interest shall be deemed to exist when:

- a) There are opposing interests between a Manager or any employee of the Company and the interests of Ecopetrol, which may lead them to making decisions or acting for their own benefit or the benefit of third parties and to the detriment of the interests of the Company, or
- b) When there is any circumstance that may diminish independence, fairness or objectivity in the actions of a Manager or any employee of Ecopetrol, and this may be detrimental to the interests of the Company.

For these purposes, Managers shall be construed as the persons defined as such in Article 22, Law 222 of 1995 or any rule that adds to, amends or replaces it.

PARAGRAPH TWO: DISCLOSURE OF CONFLICTS IN THE COMPANY.- The President members of the Board of Directors and all of Ecopetrol employees must disclose any conflict between their personal interests and the interests of Ecopetrol when dealing with its main shareholder and its subsidiaries companies, customers, suppliers, contractors and any person who conducts or intends to conduct business with the Company or with companies in which it has a shareholding or interests (direct or indirect).

PARAGRAPH THREE: MANAGEMENT OF CONFLICTS OF INTEREST.- In order to resolve situations involving conflicts of interest, the following procedure will be followed:

- a) In the event that the conflict of interest involves an employee of the Company, other than Managers at the Company they must inform their line manager in writing so that the latter may decide on the matter, and if they deem that the conflict of interest exists, such line manager will appoint someone to replace the person involved in the conflict of interest.
- b) In the event that the conflict of interest involves a Manager at Ecopetrol, matters shall proceed as provided in Section 7, Article 23, Law 222 of 1995 or the rules that ~~may~~ add to, amend or replace it.

ARTICLE FIFTY-ONE. ECOPETROL S.A. APPLICABLE LAW.- The legal system applicable to the Company will be that indicated in law, which, for the legal acts, agreements and actions necessary to manage and implement the corporate purpose, is exclusively Private Law.

ARTICLE FIFTY-TWO. CORPORATE GOVERNANCE.- Ecopetrol, its managers and employees undertake the obligation to comply with the corporate governance practices, which have been voluntarily adopted by the Company

ARTICLE FIFTY-THREE. SUPPLEMENTARY RULES.- In matters not provided for in these Bylaws, the relevant legal provisions shall apply.

Exhibit 4.20

INTER-ADMINISTRATIVE AGREEMENT FOR THE SALE OF SHARES

N. 7.007-2021

entered into by:

The Nation - Ministry of Finance and Public Credit

(The "Seller")

and

Ecopetrol S.A.

(The "Buyer")

on

August 11, 2021

Execution Version

INTER-ADMINISTRATIVE AGREEMENT FOR THE SALE OF SHARES

This interadministrative agreement for the sale of shares (the "Agreement") is entered into on August 11, 2021 (the "Execution Date") between (1) the Nation - Ministry of Finance and Public Credit, with tax identification number 899,999-090-2, represented by José Manuel Restrepo Abondano, of legal age, identified with citizenship card No. 79,521,502, acting in his capacity as Minister of Finance and Public Credit, (the "Seller" or the "Ministry"); and (2) Ecopetrol S.A., a *sociedad por acciones, de economía mixta de carácter comercial, del orden nacional*, linked to the Ministry of Mines and Energy, with tax identification number 899,999,068 - 1, represented by Felipe Bayon Pardo, of legal age, identified with citizenship card No. 80,407,311 Acting as Chairman and principal legal representative (the "Buyer" or "Ecopetrol" and, in conjunction with Seller, the "Parties" or individually a "Party").

RECITALS

1. WHEREAS, Interconnection Eléctrica S.A. E.S.P. (Hereinafter the "Company" or "ISA") is a public service company, of mixed nature, of Colombian nationality, whose main social object is the provision of the public service for the transmission of electric power.
2. WHEREAS, on the Execution Date, the majority shareholder of ISA is the Ministry, which, it is part of the central sector of the national order and holds five hundred and sixty-nine million four hundred and seventy-two thousand five hundred and sixty-one (569,472,561) ordinary shares corresponding to fifty-one point forty-one hundred (51.41%) of the subscribed capital and of the outstanding shares of ISA (the "Shares for Sale").
3. WHEREAS, Ecopetrol is a *sociedad por acciones del tipo de las anónimas*, of commercial nature, of mixed economy, of the national order, linked to the Ministry of Mines and Energy and has as majority shareholder the Seller, with a participation rate of eighty- eight point forty-nine percent (88.49%).
4. WHEREAS, in accordance with the provisions of article 4 of Law 1118 of 2006, within the objectives of Ecopetrol is the research, development and commercialization of conventional and alternative sources of energy and the carrying out of any related activities, complementary or useful for the development of the above. Likewise, in accordance with the provisions of article 35, paragraph 35.7, of Decree 1760 of 2003 and the statutes of Ecopetrol, Ecopetrol has the possibility of acquiring interests in other companies.
5. WHEREAS, the Company is subject to the supervision and control of the Superintendency of Public Domestic Services and to the concurrent control of the Financial Superintendency of Colombia in its capacity as issuer of securities registered in the National Register of Securities and Issuers ("RNVE") And on the Colombian Stock Exchange ("BVC").
6. WHEREAS, the sale of the Company's Shares is not subject to the right of preference as it is traded in the BVC, and are subject to the American Depository Receipts (ADR) Tier/Level I program, which is traded on the U.S. Over the Counter (OTC) market.

Execution Version

7. WHEREAS, within the Global Disposal Plan presented to the Congress of the Republic, the Ministry's General Directorate of State Participation Interests evaluated the possibility of disposing of the Shares for Sale and, in session No. 103 On July 1, 2020, submitted for approval by the Assets Committee of the Ministry the proposal to dispose of the Shares for Sale.
8. WHEREAS, the Assets Committee of the Ministry, in session No. 103 of July 1, 2020, unanimously approved to proceed to explore the structuring of a possible disposition of the Shares in Sale.
9. WHEREAS, on January 26, 2021, the Buyer submitted to the Seller a non-binding offer (the "NBO") to acquire the Shares for Sale.
10. WHEREAS, as a result of NBO, on February 12, 2021, the Seller and the Buyer entered into an exclusivity agreement in force until June 30, 2021, which was subsequently extended by private document until August 31, 2021 (the "Exclusivity Agreement"), pursuant to which they committed to negotiate in good faith in order to seek to conclude a definitive agreement on the Shares for Sale (the "Transaction").
11. WHEREAS, in the performance of the Exclusivity Agreement, on February 26, 2021, the Seller, the Buyer and the Company signed a confidentiality agreement, amended on May 10, 2021.
12. WHEREAS, the Seller, through Interadministrative Agreement 7.005.2021 signed on April 22, 2021 (the "Advisory Agreement"), engaged Financiera de Desarrollo Nacional S.A. (the "FDN"), with the aim of providing comprehensive advice on the structuring and implementation of the disposal of the Shares in Sale.
13. WHEREAS, the Advisory Agreement granted FDN the right to receive a variable fee to be paid by the Buyer at Closing. Likewise, it also granted the investment bank to be engaged by the FDN the right of the for the development of the advisory, to receive a variable fee to be paid by the Buyer.
14. WHEREAS, pursuant to the Advisory Agreement, on May 24, 2021, the FDN engaged BTG Pactual Comisionista de Bolsa S.A., to advise the FDN regarding investment banking services in the structuring and implementation of the transference of the Shares for Sale.
15. WHEREAS, pursuant to the Exclusivity Agreement, on July 30, 2021, the Buyer submitted to the Seller a binding offer for the purchase of the Shares for Sale.
16. WHEREAS, the Assets Committee of the Ministry, in session No. 112 of August 11, 2021, defined the position of the Ministry in relation to the Transaction.
17. WHEREAS, in accordance with the foregoing, the Seller, with the aim of reorganizing the ownership of the Shares for Sale while maintaining indirect control of the Shares for Sale, intends to sell the Shares for Sale to the Buyer and the Buyer intends to acquire the Shares for Sale, in accordance with the provisions of this Agreement.

Execution Version

18. WHEREAS, the disposal of the Shares for Sale by the Seller to the Buyer, as established in this Agreement, is governed by the provisions of Article 20 of Law 226 of 1995 which provides: "*The disposition of shares made between State organs shall not comply with the procedure foreseen in this Act, but, for this purpose, only the administrative contracting rules in force shall apply.*"
19. WHEREAS, considering that the Seller is the majority shareholder and the beneficial owner of both the Company and the Buyer, the transfer of the Shares for Sale is considered to be carried out between persons constituting the same beneficial owner , and thus, according to article 6.15.1.1.2 of Decree 2555 of 2010, the sale can be done off the stock exchange.
20. WHEREAS, likewise, being a sale of shares between entities constituting the same beneficial owner , in the terms of Article 6.15.1.1.3 of Decree 2555 of 2010, the Buyer is not required to make a Public Offer of Acquisition on the remaining shares of the Company as established by the Financial Superintendency of Colombia by means of a communication issued by said entity with number 2021165926-000-000 of July 30, 2021.
21. WHEREAS, the Superintendency of Industry and Trade in Concept issued under file number 21-286196-1-0, dated July 23, 2021, ruled that the Transaction is not an operation subject to prior control of business integrations, expressly stating that "*in the event in which it takes place, the parties involved do not have a duty of prior information before the Superintendency of Industry and Commerce, in line with the provisions of article 9 of Law 1340 of 2009*".
22. WHEREAS, Article 3 of Law 80 of 1993 states in turn that "*public servants shall take into account that when entering into Agreements and executing them, entities seek the fulfillment of the purposes, the continuous and efficient delivery of public services and the effectiveness of the rights and interests of those who work with them to achieve these ends*".
23. WHEREAS, Article 2.2.1.2.1.4.4 of Decree 1082 of 2015 provides that the selection method for procurement between State entities corresponds to direct contracting and, consequently, provisions of Article 2.2.1.2.1.4.1 of said Decree apply to it.
24. WHEREAS, the Director General of State Participation Interests of the Ministry of Finance and Public Credit, by means of Memorandum No. 3-2021-011661, on August 11, 2021, filed with the Direct Contracting Group the documents presented by the FDN in compliance with the Interadministrative Agreement 7.005-2021, related to the contractual process under the modality of direct contracting of the Transaction, along with the preliminary studies and supports, as well as the draft of the resolution justifying direct contracting and the draft of the Agreement, whose elaboration and negotiation considered and complied with the guidelines provided by the Ministry; the aforementioned documents were duly approved by the Director General of State Participation Interests of the Ministry of Finance and Public Credit, in her capacity as supervisor of the Advisory Agreement.

Execution Version

25. WHEREAS, the preliminary studies and supports mentioned in the previous recital contain the motivations and justifications of the Ministry for carrying out the Transaction contemplated here.
26. WHEREAS, on August 11, 2021, the Seller, in accordance with Article 2.2.1.2.1.4.1 of Decree 1082 of 2015, issued the administrative act justifying direct contracting.
27. WHEREAS, this Agreement is entered pursuant to the free will of the Parties, in accordance with Articles 13 and 40 of Law 80 of 1993, as well as with the principles established in Article 3 of Law 489 of 1998.
28. WHEREAS, Buyer has obtained all necessary corporate authorizations for the conclusion and execution of this Agreement (the "Buyer's Corporate Authorizations"), copies of which are attached to this Agreement as Exhibit A.

ACCORDINGLY, and pursuant to the above-mentioned recitals (the "Recitals") the Parties have agreed to conclude this Agreement, in the terms contained in the following clauses:

CLAUSE I INTERPRETATION AND DEFINITIONS

1.1. Definitions. The following terms, when capitalized in this Agreement, shall have the meanings assigned to them in this Section:

"Shares" means each and every outstanding stock of the Company, i.e., 1,107,677,894 common shares.

"Shares for Sale" has the meaning set forth in the Recitals.

"Exclusivity Agreement" has the meaning set forth in the Recitals.

"Net Debt Adjustment" has the meaning set forth in Section 2.3(f).

"External Advisors" means the FDN, who has been engaged by the Ministry as its advisor for the Transaction, and its subcontractor BTG Pactual S.A. Comisionista de Bolsa.

"Governmental Authority" means (i) any public, domestic, foreign or supranational organ or entity of the national, departmental, municipal, district order or any other order, belonging to any branch of public power or with autonomous constitutional powers or functions, in all the above cases, together with all its decentralized entities, when applicable, (ii) any agency, commission or entity, with or without legal personality, with legal, regulatory, disciplinary competence, , or other administrative competence, which, in accordance with applicable public law rules, have the authority to issue, apply or enforce Laws of general or particular application; (iii) any authority of the jurisdictional branch, with permanent or transitional powers, including but not limited to a court, tribunal, arbitrator or judge, exercising jurisdictional functions; (iv) any public official, officer or officer of the entities described in sections (i) to (iii) above; And (v) any individual exercising public functions pursuant to the Law.

Execution Version

"Buyer's Corporate Authorizations" has the meaning set forth in the Recitals.

"Third Party Authorizations" means the authorizations or consents of, or notices or communications to, any third party that are required for the closing of the Transaction.

"Governmental Authorizations" means the notices or communications to any Governmental Authority required to complete the Transaction, listed under Annex 5.2.

"BVC" has the meaning assigned to that term in the recitals.

"Cash" means all values reflected, at any given time, in the CUIF active accounting accounts of the Company's consolidated financial statements included in Schedule B.

"Closing" has the meaning set forth in Section 2.5.

"Company" to "ISA" has the meaning set forth in the Recitals.

"Acquired Companies" collectively means the Company and its Subsidiaries.

"Chilean Acquired Companies" means ISA Inversiones Chile SpA and Interchile S.A.

"Buyer" has the meaning set forth in the preamble to this Agreement .

"Agreement" has the meaning set forth in the preamble.

"Advisory Agreement" has the meaning set forth in the Recitals.

"Loan Agreement" means the loan agreement to be executed by the Buyer to finance all or part of the Purchase Price, which will be preceded by the approval of the agreement's drafts by the General Directorate of Public Credit and National Treasury of the Ministry.

"Deceval" means Depósito Centralizado de Valores de Colombia – Deceval S.A. "Judicial Ruling" has the meaning set forth in Section 8.3.

"Debt" means all values reflected, in a certain moment, in the CUIF passive accounting accounts of the Company's consolidated financial statements included in Schedule B.

"Net Debt" means debt on a given date, *minus* the Cash on the same date.

"Closing Net Debt" has the meaning set forth in Section 2.3(d).

"Target Net Debt" means the Net Debt projected by the Company , in accordance with the threshold of the specified months provided under the charts in Annex C.

"Business Day" means any day other than Saturday, Sunday, or a day on which banking establishments are not authorized to, or obliged to, remain closed to the public in the Republic of Colombia.

"Ecopetrol" has the meaning set forth in the preamble of this Agreement.

Execution Version

"FDN" has the meaning set forth in the Recitals.

"Closing Date" has the meaning set forth in Section 2.5.

"Extended Closing Date" has the meaning set forth in Section 5.4.

"Execution Date" has the meaning set forth in the preamble of this Agreement.

"Deadline" has the meaning assigned to that term in Section 8.1(a).

"Lien" means in respect of the Shares for Sale, any pledge, security of property or similar affectation on them that limits their free disposition.

"Tax(s)" means all taxes, fees, contributions, surcharges, charges, whether national, departmental, municipal or other taxes required, or which withholding is required by any Governmental Authority.

"Indirect Sales Tax in Chile" has the meaning set forth in Section 5.11(a).

"Confidential Information" has the meaning set forth in Section 5.7(a).

"Law" means any legislative acts, laws, ordinances, agreements, decrees (of any nature), resolutions, circulars, orders, regulations, rulings and any other dispositions at the national, departmental, municipal or district level, or at any other level, local, foreign, or supranational, general or particular, issued by a Governmental Authority.

"Best Efforts" means, with respect to any action or result contemplated in this Agreement, the highest level of diligence and care that a good businessman, professional and duly informed of such action or result, employs in the management of his or her own important business.

"Ministry" has the meaning set forth in the preamble of this Agreement.

"Business" means the following activities carried out by any of the Acquired Companies, in the jurisdictions in which they have a presence: (i) the transportation of electrical energy, including the design, construction, operation and maintenance of electric power transmission lines and their connections to the electrical system of generators, network operators, regional transporters and large consumers, among others; (ii) the coordination of the operation of the electrical system; (iii) the design, construction, operation and maintenance of highway and road infrastructure; (iv) the development and provision of information technology and telecommunications services, focused on the provision of digital solutions and digital infrastructure and fiber optics; And (v) the activities included in the corporate purpose of the company statutes of the Acquired Companies.

"Notices" has the meaning set forth in Section 9.1.

"NBO" has the meaning set forth in the Recitals.

"External Advisors Fees" has the meaning set forth in Section 2.2(d).

Execution Version

"Parties" has the meaning set forth in the preamble to this Agreement.

"Permit" means any permit, authorization or license granted by a Governmental Authority, in accordance with applicable Law.

"Person" means any natural person, legal person, Governmental Authority, or other entity or organization capable of being the recipient of rights or obligations, with or without legal capacity and, in general, any entity that is considered as or assimilated to a natural or legal person in accordance with the applicable Law.

"Restricted persons" means any Person included in any list promulgated by: (i) the United Nations Security Council or its committees pursuant to resolutions 1267 (1999), 1373 (2001) of the Security Council or related or subsequent resolutions relating to matters relating to money laundering or the financing of terrorism (reference is made to www.un.org/terrorism); (ii) the World Bank (including the World Bank List of Firms and Ineligible Persons); (iii) individuals, groups and entities covered by Common Position 2001/931/CFSP of the Council of the European Union on the application of specific measures to combat terrorism; (iv) the European Union consolidated list of persons, groups and entities subject to financial sanctions issued under the Common Foreign and Security Policy of the European Union; and (v) the Office for Foreign Assets Control (OFAC) SDN lists.

"Loss" means, in relation to any Person, and as soon as they have been effectively caused, the loss, damages, costs, expenses, outlays, fines, penalties and, in general, any amount that must be assumed by such Person.

"Colombian Pesos" or "COP\$" means the lawful currency in the Republic of Colombia.

"Chilean Pesos" means the lawful currency in the Republic of Chile.

"Base Purchase Price" has the meaning set forth in Section 2.3(a).

"Base Price per Share" has the meaning set forth in Section 2.3(a).

"Final Purchase Price" has the meaning set forth in Section 2.3(b).

"Applicable Accounting Principles" means, in respect of a Person, the accounting standards and principles applicable to that Person in accordance with applicable Law and which, in the case of the Company, refer to International Financial Reporting Standards (IFRS), as they have been implemented in Colombia in accordance with Law 1314 of 2009 and its regulatory decrees.

"Representatives" has the meaning set forth in Section 5.7(b).

"Chilean Tax Withholding" has the meaning assigned to that term in Section 5.11(b).

"RNVE" has the meaning set forth in the Recitals.

"Data Room" means the virtual data room administered by *Datasite* containing the information about the Business of the Acquired Companies, made available by the Company at

Execution Version

the request of the Seller, to the Buyer during the period April 21, 2021 to July 6, 2021, on the understanding that between July 6 and July 22, 2021, specific requests for information sent by the Buyer through the virtual data room.

"CND, ASIC and LAC Services" means the services provided by the National Dispatch Center – CND, the Trade Exchange System Manager – ASIC, and the Settlement and Account Manager – LAC, of XM, in the wholesale energy market of the Republic of Colombia.

"Subsidiary" means those legal entities in which the Company has a direct to indirect shareholding or equity stake.

"Reference Rate" has the meaning set forth in Section 2.2(c).

"Third Party" means any Person who is not a party to this Agreement.

"Transaction" has the meaning set forth in the Recitals.

"Court" has the meaning set forth in Section 9.4.

"USD" means United States dollars.

"Seller" has the meaning set forth in the preamble to this Agreement.

1.2. "XM" means XM Compañía de Expertos en Mercados S.A. E.S.P. References to legal provisions. Any reference to a legal provision shall include such provision as it is reformed, modified, or added to the extent that such amendment, modification or addition is or may be applicable to any Clause and/or Section of this Agreement.

1.3. Interpretation.

(a) The words "Party" or "Parties" shall refer only to the Parties to this Agreement.

(b) The titles of the clauses and sections are included for reference and convenience purposes, but in no way limit, define or describe the interpretation to be given to the Agreement.

(c) References in the text to Clauses, Sections and Annexes shall only refer to Clauses, Sections to Annexes of this Agreement, unless expressly stated otherwise.

(d) The Annexes referred to in this Agreement are incorporated herein and form an integral part thereof.

(e) Terms that are capitalized within the Annexes and are not defined within the Annexes shall have the meaning assigned to them in this Agreement.

(f) Terms defined in plural include the term defined in singular and vice versa, and terms defined in masculine include the term defined in feminine and vice versa.

Execution Version

(g) When the words "including" to "including" or similar terms are used, they are deemed to be followed by the expression "without limitation", even if such expression is not found in this Agreement in writing.

(h) The technical or scientific words that are not expressly defined in this Agreement shall have the meanings corresponding to them according to the respective science technique and the other words shall be understood in their natural and obvious sense, according to the general use thereof.

(i) "Written," "written," and similar terms refer to printed, or handwritten documents and any other written communication mechanism (including digital media) that permits reproduction.

(j) References to agreements or contracts refer to such agreements or contracts as modified, amended or supplemented from time to time, in accordance with their terms.

(k) References to days shall be understood as Business Days unless otherwise specified.

(l) If an obligation is to be fulfilled or an action is to be carried out, as provided for in this Agreement, on a date that turns out not to be a Business Day, then the corresponding obligation or action must be fulfilled or carried out on the Business Day immediately following.

(m) The term "waiver" shall be understood exclusively as the legal power of a party not to demand or to have a right of that party and not to the rights of another party.

CLAUSE II PURCHASE AND SALE OF SHARES FOR SALE; PURCHASE PRICE AND CLOSING

2.1. Purpose; Purchase and Sale of the Shares for Sale.

(a) Purpose. To sell the Nation's interest in the Company to the Buyer of the Shares for Sale, of which the Seller is the holder.

(b) Purchase and Sale of the Shares for Sale. Subject to the terms and conditions set forth in this Agreement, on the Closing Date and once fulfilled or waived, as applicable, the conditions precedent for Closing set forth in Clause VI, Seller shall sell, and Buyer shall purchase, the Shares for Sale, free of any Lien, in consideration of the Final Purchase Price.

2.2. Final Purchase Price and Payment Method.

(a) Purchase Price. The Purchase Price for all the Shares for Sale shall be equal to the Final Purchase Price.

(b) Currency of Payment. Payment of the Final Purchase Price will be made in USD.

(c) Reference Rate. The exchange rate that will be used to convert the Final Purchase Price of Colombian Pesos to USD will be the representative market rate (rate certified by the Financial Superintendency of Colombia) in force on the Closing Date; i.e., the exchange

Execution Version

rate representative of the market that the Financial Superintendency of Colombia certifies at the close of the market on the Business Day immediately preceding the Closing Date (the "Reference Rate").

(d) Fees of External Advisors. Within ninety (90) calendar days after the Closing Date, the Buyer shall make the payment of fees to the External Advisors, on behalf of the Seller, at the expense of the Buyer for an amount equivalent to two billion Colombian Pesos plus VAT (COP\$2,000,000,000), plus zero point zero one percent (0.01%) of the Final Purchase Price, plus VAT (the "External Advisors Fees"), in accordance with the electronic transfer instructions included in Schedule 2.2(d).

2.3. Determination of the Final Purchase Price.

(a) The base purchase price for the Shares for Sale will be equal to TWENTY-FIVE THOUSAND COLOMBIAN PESOS (COP\$ 25,000.00) per Share in Sale (the "Base Price per Share"), for a total of FOURTEEN BILLION TWO HUNDRED AND THIRTY-SIX THOUSAND EIGHT HUNDRED AND FOURTEEN MILLION TWENTY-FIVE THOUSAND PESOS (COP\$ 14,236,814,025,000.00), for all Shares for Sale (the "Base Purchase Price").

(b) The Final Purchase Price shall be equal to: The Base Purchase Price *plus or minus*, as applicable, the Net Debt Adjustment, if applicable (the "Final Purchase Price").

(c) Notwithstanding the provisions of this Section 2.3, The Net Debt Adjustment shall not apply, and the Final Purchase Price shall be equal to the Base Purchase Price if the closing occurs before September 1, 2021 or if the difference between the Closing Net Debt and the net target debt is not greater to 5.0%.

(d) In the event that the Closing occurs on or after September 1, 2021, Seller shall have five (5) Business Days prior to the Closing Date to cause the Vice President of the Company to inform the Parties of the value of the Company's Net Debt as of the cutoff date of the most recent monthly financial statements (The "Closing Net Debt"). Based on the financial information provided by the Company pursuant to this paragraph (d), the Parties shall calculate the Net Debt Adjustment and the Final Purchase Price in accordance with the procedure provided under Annex D. In order to determine the Closing Net Debt, variations over the Debt or Cash arising from the acquisition or sale of companies or businesses by the Acquired Companies, shall not be considered.

(e) For purposes of the provisions under this Section 2.3, the most recent monthly financial statements shall be those with a cut-off on the last day of the month immediately preceding the Closing Date, if the Closing takes place *after* the 15th day of the respective month. If the closing occurs *on or before* the 15th day of the respective month, the most recent monthly financial statements are those with cut off on the last day of the second-to-last month prior to the Closing Date.

(f) The Net Debt Adjustment shall be calculated as follows ("Net Debt Adjustment"): (i) if the Closing Net Debt exceeds the Target Net Debt by more than 5.0%, the adjustment for Nets Debt shall be equal to 51.41% of the amount by which the 5.0% threshold is exceeded, and shall be subtracted from the Base Purchase Price; Or (ii) if the Closing Net Debt is more than 5.0% less than the Target Net Debt, the Net Debt Adjustment shall be equal to 51.41%

Execution Version

of the amount by which the 5% threshold is exceeded, and shall be added to the Base Purchase Price. For the avoidance of Doubt, Annex D includes three (3) examples of the calculation of the Net Debt Adjustment.

(g) Notwithstanding the provisions of Section 2.3(f), the adjustment for Net Debt may not exceed the sum of four hundred Colombian Pesos (COP\$400) with respect to the Base Price per Share.

(h) Taking into account the points set out in paragraph (d) of this Section, the Closing Net Debt shall be prepared by the Company, in accordance with Applicable Accounting Principles and shall be consistent with past Company methods and practices, and shall be applied for determining the Final Purchase Price, unless they contain manifest errors.

2.4. Payment on the Closing Date.

(a) On the Closing Date, Buyer shall pay the Seller the Final Purchase Price, less the USD equivalent amount of the Chilean Tax Withholding as defined in Section 5.11(b), by wire transfer in immediately available funds to the bank account indicated in Annex 2.4(a).

(b) Once the Final Purchase Price is determined pursuant to Section 2.3 and as soon as the Reference Rate is known pursuant to Section 2.2(c), Seller shall notify Buyer in writing of the value of the Chilean Tax Withholding.

(c) The amount of the Chilean Tax Withholding will be retained by the Buyer for the purpose that the Buyer may fulfill his legal obligation to withhold and pay the Indirect Sales Tax in Chile on the Seller's charge, as established by Chilean Law. Therefore, once these withholdings are paid in the terms provided for in this Agreement, the amounts corresponding to the Chilean Tax Withholding will be rebuffed as delivered directly to the Seller as part of the Final Purchase Price.

2.5. Closing. The sale, transfer and registration of the Shares for Sale in the Shareholders' Record Book administered by Deceval, as well as the payment of the Final Purchase Price (the "Closing") must occur jointly on the sixth Business Day following the fulfillment or waiver, as applicable, of all the conditions precedents for Closing set forth in Clause VI (other than those to be fulfilled at Closing), or at any other date agreed by the Parties, and at such place as Buyer and Seller agree in writing (the "Closing Date").

2.6. Actions on the Closing Date.

(a) The Parties agree that the following actions will be taken on the Closing Date:

(i) The Buyer shall give a wire instruction to his bank to disburse the Final Purchase Price, less the Chilean Tax Withholding, to the Seller's bank account indicated in Annex 2.4(a).

(ii) Verified by the Seller the availability of the resources in his account, the Seller shall immediately cause the Company, as the direct depositor of the Shares for Sale, to deliver to Deceval the transfer instruction signed by the Company and addressed to

Execution Version

Deceval, instructing Deceval to register the Buyer as the owner of the Shares for Sale, free of any Lien.

(b) If, prior to Closing, any Party is notified of an order, decision, judgment or similar issued by a Governmental Authority preventing Closing, and if by that time Seller has already received payment of the Final Purchase Price without completing the registration of the Shares for Sale in favor of the Buyer, Seller shall immediately and in any event not later than the Business Day following receipt of payment and in any case before 1:00 p.m. Colombia time, return to Buyer the amount deposited in Seller's account to the account of origin of the transfer made by Buyer in Schedule 2.6(b).

2.7. Buyer Deliverables on Closing Date. Buyer agrees to deliver or have delivered to Seller on the Closing Date:

(a) A certificate of good standing and legal officers of the Buyer with no more than five (5) calendar days of issuance.

(b) Evidence of the wire instruction for the Final Purchase Price, less the USD equivalent of the Chilean Tax Withholding, as defined in Section 5.11(b) to the Seller.

(c) A certificate issued by Buyer's legal representative, substantially under the terms and conditions of Schedule 2.7(c), certifying (i) that Buyer's Corporate Authorizations remain in effect and are fully binding, and (ii) compliance with the conditions precedent set forth in Section 6.3.

2.8. Seller's Deliverables at Closing Date. Seller agrees to deliver or have delivered to Buyer on the Closing Date:

(a) Copy of the transfer instruction signed by the Seller, addressed to the Company, instructing the Company to order Deceval with the registration of the Buyer as the new owner of the Shares for Sale, free of any Lien.

(b) Copy of the transfer instruction signed by the Company and addressed to Deceval, instructing Deceval to register the Buyer as the owner of the Shares for Sale, free of any Lien.

(c) Notification of the Chilean Tax Withholding..

(d) An electronic document issued by Deceval, substantially resembling the model in Annex 2.8(d), attesting the Buyer's entry as the owner of the Shares for Sale in the Buyer's corresponding investor subaccount and the registration of the Shares for Sale in the Company's stockholder ledger book.

(e) A certificate issued by Seller's legal representative, substantially under the terms and conditions of Schedule 2.8(e), certifying compliance with the conditions set forth in Section 6.2(a), (b), (c) and (e).

Execution Version

2.9. Closing Certificate. Within ninety (90) calendar days following the date on which the Buyer is required to fulfill its obligations under Sections 5.11, as appropriate, the Parties shall sign a certificate substantially resembling the terms of Annex 2.9.

CLAUSE III
SELLER'S REPRESENTATIONS AND WARRANTIES

Seller represents and warrants that the following statements are correct and true as of the Execution Date and will be correct and true as of the Closing Date, unless made (expressly or due to their nature) in a different date, in which case, they will be correct and true as from that date:

3.1. Powers; Capacity and Authorizations.

(a) The Seller has full power and authority, including all internal approvals and consents, and from any Governmental Authority that may be required, to enter into this Agreement, to fulfill its obligations and to execute the operations provided for therein. The obligations of Seller under this Agreement are and shall be valid, binding, and enforceable for and with respect to Seller.

(b) Seller has and shall have all internal approvals and consents necessary to enter into and execute this Agreement, and on the Execution Date and the Closing Date, respectively, all internal authorizations necessary and required to fulfill its obligations and commitments under this Agreement.

3.2. No conflict. The execution and closing of this Agreement by the Seller and the fulfillment of the commitments, obligations and covenants contained in this Agreement by the Seller:

(a) Do not conflict with or give rise to the violation or breach of any Law or regulation that binds the Seller.

(b) Except for Governmental Authorizations, do not require or require the obtaining of any Permit, or any action, filing or notification before a Governmental Authority, or result in a breach of any term or provision of a Law or order of a Governmental Authority applicable to Seller.

(c) On the Execution Date, it does not conflict with any court order that prevents Seller from fulfilling the commitments, obligations and covenants contained in this Agreement.

3.3. Ownership of Shares for Sale. The Seller is the sole and exclusive owner of the Shares for Sale, equivalent to five hundred and sixty-nine million four hundred and seventy-two thousand five hundred and sixty-one (569,472,561) shares, which are free of any Lien. The Shares for Sale have not been disposed nor promised for sale to any Third Party. Upon completion of the Closing, the Buyer shall have validly acquired the shares for sale free of any Lien.

3.4. Existence and capacity of the Company. The Company is a public services company of a mixed nature, constituted as a *sociedad anónima por acciones, de carácter comercial, de nacionalidad colombiana*, with domicile in Medellin, which has within its social

Execution Version

object the provision of the public service of transmission of electric power, the development of systems, Telecommunications activities and services, the development of infrastructure projects and their commercial exploitation, among other activities, which are detailed in their statutes, subject to the supervision and control of the Superintendency of Public Domestic Services and the concurrent control of the Financial Superintendency of Colombia. It is duly constituted and validly existing in accordance with the Laws of the Republic of Colombia.

3.5. Capital.

(a) The share capital of the Company is represented in ordinary shares. On the Closing Date, before giving effect to the purchase and sale of the Shares for Sale, one billion one hundred seven million six hundred seventy-seven thousand eight hundred ninety-four (1,107,677,894) common Shares have been issued and are in circulation; and seventeen million eight hundred twenty thousand one hundred twenty two (17,820,122) shares have been reacquired by the Company. Therefore, the percent (100%) of the subscribed and paid-up capital of the Company is represented in one billion one hundred twenty-five million four hundred ninety-eight thousand sixteen (1,125,498,016) shares. The total Shares for Sale have been validly issued, are fully paid and represent fifty -one point forty-one percent (51.41%) of the total Shares outstanding of the Company. There are no restrictions on the transfer of Shares for Sale.

(b) The Shares of the Company are listed, traded in the BVC, and are subject to the American Depository Receipts (ADR) Tier/Level I program, which are traded on the U.S. OTC market.

(c) The Company has not approved the reacquisition of Shares in the Company nor has issued options, convertible bonds or any other similar instrument that authorizes a Person to (i) subscribe to or acquire Shares in the Company's capital, (ii) exchange securities for Shares in the Company's capital to (iii) receive any other securities that may be converted, be exchanged to qualify for the subscription of Shares of the Company or to participate in the Company's dividends or profits.

(d) Except for the second payment of the 2020 dividends decreed at the Company's ordinary shareholders' meeting held on March 26, 2021, as of the Closing Date, there is no decreed dividend pending payment to Seller.

3.6. SIPLA. The Company has a Manual for the Prevention of Money Laundering and Terrorist Financing (SIPLA) through which a series of procedures and control measures are formalized to prevent, among other things, the Company from conducting operations with Restricted Persons.

3.7. Anti-corruption system. The Company has a Code of Ethics and Behavior, as well as an Anti-Corruption and Anti-Bribery Management Guide that formalizes a series of control procedures and measures and enshrines guidelines and principles of ethical conduct. in order to manage the potential risks of corruption, their associated risks, diligently monitor relationships with counterparties and generally seek to prevent the materialization of acts of corruption or bribery.

Execution Version

3.8. Absence of other statements. Except for the statements made by Seller in this Clause III and subject to the limitations set forth in this Agreement, neither Seller, nor the Acquired Companies nor their shareholders (including, but not limited to, any other Governmental Authority), Nor any other Person acting on behalf of them makes any representations or warranties, express or implied. Seller hereby disclaims any other representations, whether made by Seller or from any of its directors, officers, employees, agents, representatives or other persons with respect to Seller or the Acquired Companies or any matter relating to this Agreement; the documents of the Transaction or with the obligations arising hereunder. Therefore, except as stated in this Clause III and subject to the limitations set forth in this Agreement, neither the Seller, nor the Acquired Companies, nor their respective directors, officers, employees, agents or representatives (or any other person acting on their behalf) make to Buyer or its directors, officers, employees, agents, representatives or other Persons a statement of any warranty, express or implied, with respect to any statement or information given or disclosed (including, but not limited to, Documents and other information provided in connection with this Agreement or other documents of the Transaction or obligations under any of the foregoing) by Seller, the Acquired Companies or their respective directors, officers, employees, consultants, agents or representatives, and consequently, they do not assume responsibility for them.

CLAUSE IV
BUYER REPRESENTATIONS AND WARRANTIES

Buyer warrants that the following statements are correct and true on the Execution Date and will be correct and true on the Closing Date, unless made (expressly by reason of their nature) in respect of a different date, in which case, they will be correct and true on that date:

4.1. Powers; Capacity and Authorizations.

(a) The Buyer has full power and authority, including all internal approvals and consents, and from any Governmental Authority that may be required, to enter into this Agreement, to fulfill its obligations and execute the operations provided for therein. The obligations of Buyer under this Agreement are and will be valid, binding, and enforceable for and with respect to Buyer,

(b) Buyer has and will have all Buyer's Corporate Authorizations necessary to enter into and execute this Agreement, and on the Execution Date and the Closing Date, respectively, all Buyer's Corporate Authorizations required to fulfill its obligations and commitments under this Agreement.

4.2. No conflict. The execution and Closing of this Agreement by the Buyer, and the fulfillment of the commitments, obligations and covenants contained in this Agreement, by the Buyer:

(a) Do not conflict with or give rise to the violation or breach of any Law or regulation that binds the Buyer;

(b) Except for Governmental Authorizations, do not require or require the obtaining of any Permit, or any action, radiation upon notification to a Governmental Authority, or shall result in a breach of any term or provision of a Law or order of a Governmental Authority applicable to the Buyer;

Execution Version

(c) On the Execution Date, it does not conflict with any court order that prevents Buyer from fulfilling the commitments, obligations and agreements contained in this Agreement.

4.3. SIPLA. The Buyer has a Manual for the Prevention of Money Laundering and Terrorist Financing (SIPLA) which formalizes a series of procedures and control measures aimed at preventing, among other things, the Buyer from conducting operations with Restricted Persons.

4.4. Anti -corruption system. The Buyer has a Comprehensive Ethical Policy and Transparency, the Code of ethics and Conduct of the Ecopetrol Group, the Anti -Corruption Manual, the Manual for the Management of Money Laundering Risk (LA) and the Financing of Terrorism (FT), the Anti-Fraud Manual, Instructions for the management and prevention of conflicts of interest and ethical conflicts, Guide for the Management of Gifts and Entertainment and the Compliance Program of Ecopetrol and its Business Group, through which a series of procedures and control measures are formalized, as well as guidelines and principles of ethical conduct are established, in order to manage the potential risks of corruption, their associated risks, to monitor diligently the relations with counterparties and in general to seek to prevent the materialization of an actor of corruption or bribery.

4.5. Knowledge of the Situation of the Company. Buyer acknowledges and agrees that the sale of the Shares for Sale is in the state in which they are ("*as is – where is*") and that the only statements made by the Seller to Buyer in connection with the Shares for Sale, are those included in Clause III.

4.6. Basis for decisions. The Buyer has engaged such consultants as he considers appropriate and convenient, including legal, technical, regulatory and financial experts, and has had access to information made available by the Company, at the request of the Seller in the Data Room in relation to the Acquired Companies, to evaluate the financial situation, legal status and state of affairs of the Acquired Companies, and the conclusion of this Agreement and all transactions contemplated herein. The Buyer has conducted due diligence on the Acquired Companies and has received through the Data Room answers to certain of the questions he has asked regarding the Acquired Companies and their respective businesses. The terms and conditions of this Agreement reflect Buyer's acceptance of the risks identified and quantified by Buyer during the due diligence process and Seller is not responsible for the materialization of such risks. Except as expressly provided in this Agreement. The Buyer has taken into account the economic, social, political and security conditions of Colombia and in the jurisdictions in which the Acquired Companies must undertake their Businesses, and their decision to purchase the Shares for Sale under the conditions provided for in this Agreement, It is based solely on its own analyzes, projections, forecasts, research and the statements contained in Clause III. Likewise, the Buyer acknowledges that, except as expressly provided for in this Agreement, the Seller assumes no responsibility for facts or circumstances related to (i) risks arising from the liquidity insolvency of the Acquired Companies; (ii) existence, value, limitations, quality and legal status of the rights, assets or assets of the Acquired Companies; (iii) hidden liabilities associated exclusively with the Acquired Companies, including environmental liabilities of the Acquired Companies; (iv) regulatory changes, including changes in the calculation of the transmission fee; and (v) contingency of any of the Acquired Companies.

Execution Version

4.7. Sufficiency of Funds. On the Closing Date and prior to the fulfillment of the condition precedent contained in Section 6.2(d), Buyer shall have sufficient funds to make payment of the Final Purchase Price and the costs and expenses related to the Transaction; as well as the External Advisors Fees. Except as provided in Section 6.2(d), Buyer's obligations under this Agreement are not subject to any condition regarding Buyer's or any other Person's ability to obtain financing for the completion of the Transaction. The source of the resources for the payment of the Final Purchase Price is lawful.

4.8. Absence of other representations and guarantees. The Buyer makes no express or implied statement or warranty, oral or written, other than those expressly contained in this Clause IV.

CLAUSE V OTHER AGREEMENTS BETWEEN THE PARTIES

5.1. Negative Covenants. Until the Closing Date, except as expressly allowed by this Agreement or as provided for the express written consent of the Buyer (consent which may not be denied without justification), the Seller undertakes not to propose, and not to vote favorably at general meeting meetings of shareholders of the Company, any of the following proposals in relation to the Company:

- (a) Amendments to its bylaws;
- (b) Increase in capital, shares reacquisitions, or payment of dividends in shares, notwithstanding the powers of the Board of Directors of the Company to increase the authorized capital in the cases established in Article 19 numeral 19.4 of Law 142 of 1994;
- (c) Capital reductions with reimbursement of contributions;
- (d) Issuance of any kind of shares or other interests, or debt securities convertible into shares, or involving equity holdings;
- (e) Conversion of debt securities into shares;
- (f) Mergers, transformations, reorganizations, segregations, global disposal of assets or spinoffs;
- (g) Dissolution or wind up;
- (h) Except for the sale of the shares of the Company and its Subsidiaries in Internexa S.A., the sale, wind up, transfer to any title or disposition or lease of the Company's assets or assets, in one or more related transactions, whose amount is greater than fifteen percent (15%) of ISA's market capitalization, or the sale or transfer in whole or in part of the Company's trading establishment;
- (i) Except for the dividends for the year 2020 decreed at the Ordinate shareholders' meeting of the Company held on March 26, 2021, to order the payment of any dividend in cash and/or in kind;

Execution Version

- (j) Modify the dividend distribution policy, if applicable;
- (k) To decree the formation of special reserves other than the legal reserve;
- (l) Remove or appoint the Company's Tax reviewer and modify the amount of its fees outside of the ordinary business turn;
- (m) Agree or approve the bylaws reserves, except as required by applicable Law;
- (n) Decrease the subscribed capital or cancel the registration of Shares in the RNVE or the BVC;
- (o) Approve modifications to the remuneration policy of the Board of Directors and to senior management of the Company, only when the Company is recognized for payments with shares or granted stock options over the Shares;
- (p) Approve modifications to the Board 's succession policy.

5.2. Governmental authorizations. The Parties shall cooperate with each other in good faith and shall make their Best Efforts as soon as possible after the Execution Date, to obtain all necessary Governmental Authorizations in connection with the conclusion and performance of this Agreement, listed in Schedule 5.2.

5.3. Third Party Authorizations. The Parties shall cooperate with each other in good faith and shall make every effort to obtain, as soon as possible after the Signing Date, all Third Party Authorizations necessary in connection with the conclusion and performance of this Agreement.

5.4. Obtaining Funds. In the event that Closing does not occur within ten (10) Business Days following compliance with the suspensive conditions contained in Sections 6.1 and 6.2(a), 6.2(b), 6.2(c) and 6.2(e), solely as a result of failure to comply with the condition under Section 6.2(d), then: (i) Buyer shall immediately notify Seller of such circumstance and shall provide Seller with full evidence of the facts or causes for which the condition set forth in Section 6.2(d) was not met; (ii) the Closing Period shall be extended to a date not later than the Closing Date set forth in Section 8.1(a) (the "Extended Closing Date"); (iii) Buyer shall use its Best Efforts to obtain, in the shortest possible time, funds for payment of the Final Purchase Price on or before the Extended Closing Date provided such sources are reasonable from the point of view of Buyer's business and are consistent with Buyer's policies; and (iv) Buyer shall inform Seller five (5) Business Days in advance of the date on which it will have the resources to proceed with the Closing of the Transaction, which may not be later than the Extended Closing Date.

5.5. Better Efforts; Cooperation. The Parties shall make their Best Efforts and shall cooperate to take, or to have them carried out, all necessary, appropriate or desirable actions under applicable Laws, in order to fulfill the terms of the Agreement for closing and to make effective the closing and the Transaction covered by this Agreement as soon as reasonably possible after the Execution Date. The foregoing shall include, without limitation, in good faith, at the latest three (3) days to schedule it before Closing, in detail and to the extent possible in practice, the final

Execution Version

form of the documents used, the actions to be taken, And the processes that will be applicable before, during and immediately after Closing, as well as the designation of the persons who will be responsible for each of these documents, actions and processes.

5.6. Inabilities and Incompatibilities. The Parties hereby declare, under the gravity of an oath, that they are not included in any of the inabilities and incompatibilities provided for in Law 80 of 1993 and other Laws that modify or supplement it, including without limitation articles 26, numeral 7°, 44 and 52 of said disposition.

5.7. Confidentiality.

(a) Without prejudice to the disclosure obligations of the Company and the Buyer as issuers of securities registered in the RNVE and the BVC in accordance with the provisions of Decree 2555 of 2010, and the obligations of the Seller to publish in the SECOP the documents of the process and the administrative acts of the contracting process in accordance with Law 1150 of 2007 and Decree 1082 of 2015, and as agreed in this Section, as from the Execution Date, each Party agrees to keep in reserve and confidential all information provided by the other Party under this Agreement, or prior to the signing of this Agreement, relating to the Acquired Companies, the Business, assets, customers, operation, and business matters (the "Confidential Information") and you agree not to disclose such information to any Third Party without the prior written approval of the Party that provided such information.

(b) As of the Execution Date, the Parties shall maintain, and shall ensure that each of their respective directors, officers, employees, agents, consultants and other advisers and representatives (their "Representatives") maintain the confidentiality of the Confidential Information, do not disclose Confidential Information except with the express written consent of the other Party and except as provided in this Section 5.7, and that the Confidential Information is not used for the own benefit or for the benefit of any other Person.

(c) The foregoing does not restrict the right of either Party to disclose such information (i) to its respective Representatives to the extent reasonably required to facilitate the delivery or performance of this Agreement, (ii) to any Governmental Authority to the extent reasonably required in connection with any process related to the execution of this Agreement, including without limitation in the case of requests made by judicial or control authorities and the Congress of the Republic of Colombia, and (iii) to the extent required by applicable Law or by a decision, order or decree of an applicable Governmental Authority, court or stock exchange. Each Party shall notify its respective Representatives of the obligations of confidentiality under this Section 5.7 and shall be liable for any breach or breach of such obligations by its Representatives.

(d) If either Party or any of its respective Representatives is legally bound to make any disclosure prohibited or otherwise restricted by this Agreement, then that Party, to the extent legally permitted, (i) shall promptly notify the other Party in writing, (ii) shall consult and assist with the other Party in order to obtain a court order or other appropriate remedy to prevent such relief and (iii) shall make commercially reasonable efforts to obtain an protective order or other reliable guarantee that any information so disclosed will be treated confidentially.

Execution Version

Subject to the provisions of the preceding sentence, the disclosing Party or such Representatives may only make such disclosure that is legally binding or otherwise required to make.

(e) The restrictions and obligations under this Section 5.7 shall not apply to any information: (i) that is independently developed by the receiving Party and not based on the Confidential Information provided or that is legally received from another source, free of any restriction and without violation of applicable Law or this Agreement; (ii) that has become publicly available without violation of applicable Law or this Agreement; (iii) that prior to its disclosure, It was already in the possession of the Receiving Party or its respective Representatives provided that the Receiving Party and/or its Representatives have not been aware that such Confidential Information was subject to confidentiality or reservation obligations or (iv) that the Party that provided the Confidential Information agrees in writing that it is free from such restrictions.

(f) Subject to the disclosure obligations of the Company and the Buyer as issuers of securities in accordance with the provisions of Decree 2555 of 2010, And the obligations of the Seller to publish in the SECOP the documents of the process and the administrative acts of the contracting process in accordance with Law 1150 of 2007 and Decree 1082 of 2015, the confidentiality obligations of the Parties herein shall remain in effect for a term of three (3) years from the Execution Date. Subsequent to the Closing Date, Buyer's confidentiality obligations shall also apply with respect to information provided in relation to the Acquired Companies or the Company's exclusive -owned Business that has been disclosed to Buyer under such indication.

5.8. Dividends. If the Closing takes place on or before December 6, 2021, the dividends decreed by the Company and outstanding in 2021, shall be the Buyer's. If the Parties agree to extend the Deadline and the closing occurs on or after December 7, 2021, the dividends decreed by the Company and outstanding in 2021 shall be the Seller. At the Execution Date, the value of dividends decreed and outstanding for payment in favor of the holder of the Shares for Sale in 2021 amounts to COP\$371,011.373,491.50, and the date of payment approved for them is December 14, 2021.

5.9. Disinvestment of Ecopetrol Energía S.A.S. E.S.P. The Buyer undertakes to divest in Ecopetrol Energía S.A.S. E.S.P. in the shortest possible time and in a prompt and diligent manner, in line with the terms of the communication with registered number: S-2021-003346 dated August 3, 2021 signed by the Executive Director of the Commission for the Regulation of Energy and Gas (CREG) and attached hereto as Annex 5.9.

5.10. Obligations in relation to CND, ASIC and LAC Services.

(a) Corporate governance practices in XM. With respect to the CND, ASIC and LAC Services, the Buyer agrees, within ninety (90) calendar days following Closing and in accordance with its powers as shareholder of the Company, to request that the Company causes XM to: (i) convene an extraordinary shareholders meeting of XM, and (ii) in said meeting propose and vote favorably on the decisions listed below (including statutory reforms, if applicable); decisions that, if approved by the shareholders meeting of XM, shall be implemented within the six (6) months following the holding of such meeting:

Execution Version

(i) Independence of the Board of Directors. That all members of the XM Board of Directors have independent status in relation with the Company and the Buyer under the terms of the second paragraph of Article 44 of Law 964 of 2005, and in addition that they comply with the following independence requirement : Not to exercise or have exercised, or have a relative within the fourth degree of consanguinity, second degree of affinity, and first civil degree which is or has been, an employee, director, or contractor of the Buyer or any of its affiliates or Subsidiaries, during the two (2) years immediately preceding his appointment.

(ii) XM General Manager Designation. That the appointment of any new XM general manager shall be governed by the following rules: (i) the general manager shall be elected by a simple majority of the members of its board of directors, and (ii) for its selection and appointment process, XM's board of directors will engage the service of a headhunter company with experience selecting executives for listed companies. The Board of Directors of XM will submit to the Board a list of at least five (5) candidates who meet the requirements and conditions of preparation and technical experience in the energy sector, performance in similar positions, and the academic profile as defined.

(iii) Independence of other corporate governance bodies. That the remaining governing bodies of XM , as appropriate, are composed of XM employees and/or members of its board of directors.

(iv) Policies in the provision of services. That XM enacts and implements internal policies establishing express prohibitions on XM employees participating directly in the provision of the CND, ASIC and LAC Services, and simultaneously, in the provision of services to the Company or Buyer and vice versa.

(v) Neutrality and confidentiality. That XM enacts and implements strict policies of neutrality, confidentiality and non-disclosure of information relating to the CND, ASIC and LAC Services, including any flow of information between XM, the Company and the Buyer. The foregoing shall not prevent XM from continuing to provide CND, ASIC and LAC Services to all market players. Accordingly, it shall not prevent XM providing or developing new services for the Company and third parties, including Buyer, other than CND, ASIC and LAC Services. The abovementioned, shall not prevent employees working in CND, ASIC, and LAC Services from conducting training sessions and transferring technical knowledge (excluding CND, ASIC, and LAC information) within XM.

(vi) Separate accounting. Ensure that revenues, costs and expenses arising from the exercise of CND, ASIC and LAC Services are handled in separate accounts and books.

(b) Corporate Governance Practices of the Company with respect to XM. With respect to the CND, ASIC and LAC Services, the Buyer undertakes, within ninety (90) calendar days following Closing and in accordance with its authority as shareholder of the Company, to propose to the Company the following actions (including, if necessary, that a shareholders' meeting of Is Company be convened):

Execution Version

(i) Absence of a business group. That undertakes all activities aimed at avoiding the unity of purpose and direction existing between the Company and XM, in the terms of Law 222 of 1995.

(ii) Confidentiality. That strict confidentiality and non-disclosure policies are adopted and implemented for information that the Company may have in connection with the CND, ASIC and LAC Services.

(iii) Relocation of facilities to provide CND, ASIC and LAC services. That the decision regarding that the CND, ASIC and LAC Services are provided at facilities other than those of the Company and the Buyer is addressed.

In the event that any of the actions provided for in this Section 5.10(b) require decisions by the Company's shareholders' meeting, the Buyer agrees to vote positively on the corresponding propositions.

(c) Governmental Authority Decision Regarding CND, ASIC and LAC Services. If, after Closing, a competent Governmental Authority in Colombia adopts a firm decision on the management structure of the wholesale energy market that impacts the provision of CND, ASIC and LAC Services, the Buyer undertakes to request the Company to take all necessary measures to implement such decision, provided that the decision covers the respective remuneration.

(d) No business group. The Buyer shall refrain from declaring unity of purpose and direction with XM, in the terms of Law 222 of 1995.

(e) The obligations contained in this Section 5.10 shall apply provided that Buyer has the status of indirect shareholder of XM and the CND, ASIC and LAC Services continue to be provided from XM.

5.11. Agreements Related to Tax Withholding.

(a) The Parties acknowledge and agree that the Chilean Tax Withholding has as its sole purpose to fulfill the legal obligation of the Buyer to carry it out and that it shall be taken into account or as a credit against the tax payable in the Republic of Chile by the Seller — as taxable and liable entity, and as subject of the same right— over the capital gain triggered from the indirect sale of Chilean Acquired Companies as a result of the Closing of the Transaction (the "Indirect Sales Tax in Chile").

(b) The Chilean Tax Withholding will be determined by the Seller, in Chilean Pesos, in accordance with paragraph (b) of paragraph 3 of article 58 of the Law on the Income Tax of Chile, contained in article 1 of Decree Law No. 824 of 1974 and will be converted to USD at the exchange rate observed by the Central Bank of Chile at the close of the market on Business Day immediately prior to the Closing Date (the "Chilean Tax Withholding").

(c) Seller shall inform Buyer of the amount equivalent to the Chilean Tax Withholding, in USD, on the day immediately prior to the Closing Date. Seller shall also inform, within four (4) Business Days of the Execution Date, the portion of the Final Purchase Price corresponding to

Execution Version

the Chilean Companies Acquired, the tax cost deducted and its determination form, the tax rate used (35%) and the value of the Indirect Sales Tax in Chile and any other information reasonably requested by the Buyer. To comply with the above, the Parties shall agree, between the Execution Date and the Closing Date, on the format to be used for the submission of this information.

(d) Within the following month after the Closing Date, the Seller, the Buyer and the Chilean Companies Acquired, each independently, shall submit an informative statement to the competent Governmental Authority in Chile, reflecting all such information required for this purpose, Contained in Form 1921 or any form that replaces it. If the Buyer notifies the Seller, at least three (3) Business Days in advance, that it will file the Indirect Sales Tax in Chile with Form 50, the Parties shall submit Form 1921 no later than the same date as Form 50 as reported to the Buyer. The Parties shall cooperate with each other to ensure that each of the informative statements to be submitted by the Seller, the Buyer and the Acquired Chilean Companies are consistent with each other and with the corresponding Form.

(e) The Buyer shall prepare and submit the declaration of the Chilean Tax Withholding and pay it, using for that purpose the form that is applicable according to the filing date. The Buyer shall send the corresponding proof of the declaration and payment of the Chilean Tax Withholding to the Seller within fifteen (15) Business Days following the filing date of the corresponding form. Seller shall provide such cooperation as is reasonably required by Buyer to enable Buyer to comply with the obligations set forth in this section and shall use its Best Efforts to obtain as soon as possible after the Execution Date, The special authorization for the Buyer to pay the Chilean Tax Withholding in USD, before the competent Governmental Authority in Chile.

(f) Without prejudice to any other obligation provided for in Chilean Tax Law, the Buyer's only obligations with respect to the delivery of the Chilean Tax Withholding shall be those expressly provided for in subparagraphs (d) and (e).

CLAUSE VI
CONDITIONS PRECEDENT

6.1. Parties' Obligations Conditions Precedent: The obligation of each of the Parties to carry out the Closing is subject to the fulfillment, on or before the Closing Date, of each of the following conditions: There shall be no applicable Law prohibiting, making illegal, submitting or preventing the Closing of the Transaction or any applicable order of any nature issued by any Governmental Authority, including any judicial or administrative act, restrictive measures, precautionary measures, Liens or other orders of a similar nature, have the effect of making the Transaction illegal, invalid, null, ineffective and unenforceable, or that it prevents perfect the Closing;

(a) All Governmental Authorizations necessary for Closing that are listed in Annex 5.2 and that in accordance with said Annex must be obtained before the Closing Date, must have been obtained.

6.2. Buyer 's Closing Obligation — Conditions Precedent. Buyer's obligation to carry out the Closing is subject to Buyer's performance (or waiver by Buyer), on or before the Closing Date, of the conditions set forth in Section 6.1 and also to the following conditions:

Execution Version

(a) The Seller must have complied in all material respects with all its obligations set forth in this Agreement.

(b) Seller shall have provided Buyer with the notice provided for in Section 2.8(c).

(c) Seller's representations and warranties contained in Clause III shall be true and correct in all respects on the Execution Date and the Closing Date, except for non-material matters which may be remedied, and except to the extent that any statement or warranty of Seller refers to any other specific date, in which case such statement of warranty shall have been true and correct in all material respects by that date.

(d) The Loan Agreement must have been entered into and the Buyer must have received the disbursement under the Loan Agreement, unless the failure to conclude the Loan Agreement, or the fact that the Buyer does not receive the disbursement, is due to causes attributable to Buyer including failure to fulfill his obligations or commitments under the Loan Agreement. For the avoidance of doubt, failure to comply with any condition preceding disbursement under the Loan Agreement, which depends on or consists of the act of a Third Party (including Acquired Companies or a Governmental Authority), or to an event of force majeure and/or inaccuracies in representations and warranties given in respect of the companies acquired in the Loan Agreement, shall not be understood as facts or causes imputable to the Buyer.

(e) All Third-Party Authorizations required to refine the Closing that must be obtained prior to the Closing Date must have been obtained prior to the Closing Date.

6.3. Seller's Closing Obligation —Conditions Precedent . Seller's obligation to perform the Closing is subject to Seller's performance (or waiver by Seller), on or before the Closing Date, of the conditions set forth in Section 6.1 and also to the following conditions:

(a) The Buyer must have fulfilled in all material respects all of its obligations set forth in this Agreement.

(b) Buyer must have delivered to Seller the document listed in Section 2.7(a).

(c) Buyer's representations and warranties in Clause IV shall be true and correct in all respects on the Execution Date and the Closing Date, except for non-material matters which may be remedied, and except to the extent that any statement or warranty of Buyer refers to any other specific date, in which case such statement or warranty shall have been true and correct in all material respects by that date.

6.4. Fictional Condition fulfilled. The breaching Party who has contravened any of the provisions of this Agreement shall not be entitled to terminate it, and shall be obliged to complete the Closing under the terms set forth herein if such breach has caused or contributed to causing the conditions set forth in Sections 6.1, 6.2 and 6.3 to be failed or did not occur before the Deadline.

CLAUSE VII LIABILITY AND INDEMNITY

Execution Version

7.1. Responsibility of the Parties. Each Party shall be liable, up to ordinary negligence, for the Losses of the other Party that are directly attributable to it as a consequence of (i) the breach of its obligations under this Agreement, or (ii) the falsehood, breach or inaccuracy of the declarations and warranties provided for in this Agreement, as declared by final non appealable court decision, and said liability will be limited to a total amount equal to the Final Purchase Price, except in the event of intent or gross negligence, and without prejudice to the restitution obligations. provided in Section 8.3.

7.2. Indemnification. Each Party undertakes to keep the other and its officers, directors, shareholders, employees, advisers or Representatives harmless, of Third Party Claims up to a total amount equal to the Final Purchase Price provided that there is no fault of the Party to be indemnified (including its officers, directors, shareholders, employees, advisers or Representatives) and in relation to: (i) any Loss arising from non-compliance with ordinary negligence of its obligations under this Agreement; or (ii) for any type and all sort of claim, liability, Loss or obligation, including compensation and judicial and extrajudicial costs, incurred or suffered by each Party, arising from the breach with ordinary negligence, of the obligations under this Agreement. The foregoing indemnity will also apply when there are actions carried out with willful misconduct or gross negligence, provided that this has been declared by a competent judicial authority. Indemnification shall proceed provided that the Party has been convicted by a non-appealable court decision.

7.3. Special Indemnity for Indirect Sales Tax in Chile.

(a) Notwithstanding the provisions of Sections 7.1 and 7.2, Seller shall keep the Buyer, the Acquired Companies and their officers, directors, shareholders, employees, advisers or Representatives harmless, For ANY TYPE AND ALL Losses, INCLUDING SEPARATION AND JUDICIAL AND Extrajudicial Costs, Incurred or Incurred, in Relation to the Indirect Sales Tax in Chile, Without it being necessary that such Losses or obligations be attributable to the breach of Seller's obligations under this Agreement or to the falsehood, breach, or inaccuracy of Seller 's representations and warranties under this Agreement. The foregoing provided that the Buyer has not failed to comply with the obligations expressly set forth in Section 5.11, if applicable, a case in which the Seller shall only be responsible for keeping the Buyer harmless from losses and obligations related to the calculation of the Indirect Sales Tax in Chile that are not a direct consequence of the Buyer's breach of obligations.

(b) The Buyer shall keep the Seller, its officers, directors, shareholders, employees, and other employees free, as provided in Sections 7.1 and 7.2. Advisors or Representatives, for any kind and any Loss, including indemnities and judicial and extrajudicial costs, incurred or suffered, relating to the breach of Buyer's obligations expressly set forth in Section 5.11.

7.4. Limits on the obligation to indemnify. Indemnification obligations under this Agreement shall be subject to the following limitations:

(a) The maximum amount to be indemnified shall be equivalent to the Final Purchase Price. This limit shall not apply in respect of Losses arising from willful misconduct or grave negligence, nor to the restitution obligations provided under Section 8.3.

Execution Version

(b) Payments made by a Party indemnifying any Loss shall be limited to the amount of the Loss resulting from deduction of the amount of any insurance policy indemnity or any right to indemnification, or other similar payment actually received by the Indemnified Party. The Indemnified Party shall use its Best Efforts to recover under insurance policies, other indemnification rights, or other agreements similar to Loss.

(c) The amounts to be paid by a party indemnifying shall be deducted from any tax benefit or any other quantifiable nature actually received, applied and realized (To the understanding that such compensable party at the request of the indemnifying party shall provide the indemnifying party with written certification establishing a reasonable detailed calculation of such net tax benefit).

(d) Each of the Indemnified Parties shall use its Best Efforts to mitigate any Loss by realizing any event or circumstance from which a Loss can reasonably be expected to be caused.

7.5. Lack of Other Resources.

(a) The Parties acknowledge and agree that, subsequent to the Closing and except in cases of gross negligence or willful misconduct, their sole and exclusive remedies with respect to any and all claims they may have in connection with the transactions covered by this Agreement, for any breach of any statement, warranty, or obligation under this Agreement or related to the subject matter of this Agreement, are the right and procedures for indemnification under this Clause VII. In light of the foregoing, each Party expressly and irrevocably waives any and all rights to claim and any legal action for any breach of any statement, warranty or obligation of this Agreement that you may have against the other party and each of its officers, as applicable, except as provided in this Clause VII, Clause III and Clause IV. In particular, the Buyer waives the right to bring, inter alia, the action of invalidity relative to the Acquired Companies, undisclosed liabilities and the guarantee of good performance, in both cases in relation to the Acquired Companies except in the case of falsehood, non-compliance or inaccuracy of the representations and warranties contained in Clause III and Clause IV.

(b) For the avoidance of doubt, Seller acknowledges (i) that Buyer does not waive any potential actions or claims it may have under this Agreement and the applicable Law associated with (A) a breach of the representations and warranties given by Seller in Clause III, or (B) claims for undisclosed liabilities or defects relating to the facts stated in Clause III, and (ii) that neither the knowledge acquired by Buyer or by its advisors and representatives during due diligence, It may be used or used in any way to limit Seller's liability in the event of falsehood, breach or inaccuracy of the representations and warranties given to Seller in this Agreement. The Buyer declares that, at the Execution Date, from the review of the information put to its consideration in the Data Room, he is not aware of any facts that would allow the Seller's statements contained in Clause III to be found to be false or inaccurate.

CLAUSE VIII
TERMINATION

8.1. Termination. This Agreement may be terminated before the Closing Date at the following events:

Execution Version

(a) By either Party, by written notice to the other Party, and without prejudice to Section 8.2, in the event that the Closing has not taken place by 6 December 2021 (the "Deadline"), *Notwithstanding*, by mutual agreement of the Parties, the Deadline may be extended and in such a case the Parties in good faith shall make their Best Efforts to determine whether it is appropriate to adjust the Final Purchase Price;

(b) By mutual agreement of the Parties, expressly and in writing, by means of a document signed by the duly authorized representatives of the Parties;

(c) For either Party, by written notification sent to the other Party, and without prejudice to Section 8.2, in the event that any competent Governmental Authority has issued an order, rule, decree, a resolution or decision that prohibits the transaction or prevents the performance of your obligations under this Agreement, the execution of which must take place prior to the Closing. For the avoidance of doubt, the issuance of precautionary measures or similar orders by any Governmental Authority, which results in Closing not later than the Deadline, shall authorize either Party to terminate this Agreement in accordance with this Section 8.1(c) without claim for damages.

8.2. Survival of obligations. All provisions of this Agreement which give rise to obligations to be fulfilled subsequent to the execution or termination thereof shall survive such execution or termination and shall continue to be fully in force under the terms set forth in this Agreement.

8.3. Effects of a Judicial Ruling. If, after Closing, a judicial authority declares the Agreement null and void in its entirety, by means of a final decision (the "Judicial Ruling"), the Parties shall return each other and take all necessary measures to reverse the Transaction and, in addition, to the extent legally possible and to the extent permitted by the Judicial Decision, in the same situation as they were immediately before the Closing Date.

CLAUSE IX
GENERAL

9.1. Notifies and Communications. All Notices, communications and requests under this Agreement must be made in writing (the "Notices"). To be considered validly carried out, it must be carried out under one of the following modalities: (i) by personal delivery; (ii) by courier service or by registered or certified mail (with the amount paid and acknowledgment of receipt requested by the party that directs it) To the respective Parties at the addresses set out below (or any other physical address of a Party indicated in a notice sent under this Section 9.1), and in any event (iii) by electronic mail, To the respective Parties at the e-mail addresses listed below (or any other e-mail address of a Party as indicated in a notice sent under this Section 9.1), Which shall be deemed to have been received on the following Business Day provided (a) it has been obtained from the e-mail sending it confirmation of receipt of the e-mail recipient; Or (b) that a copy has been sent to certified mail within two (2) Business Days of sending to e-mail. In all cases, communications, notifications, requests, claims, demands and other Notices, will be made to the day following that the delivery is made to the shipment, according to the case.

If it is to the Buyer, to:

Execution Version

Name: Juan Manuel Rojas Payan
Position: Vice President of Strategy and New Business
Ecopetrol S.A.
Address: Carrera 13 # 36-24 – Main Building
Electronic belt: juan.rojas@ecopetrol.com.co

With copy to (which shall not constitute a notice):

Attention: Fernan Bejarano Arias
Electronic belt: fernan.bejarano@ecopetrol.com.co

Attention: Maria Paula Camacho Rozo
Electronic belt: maria.camacho@ecopetrol.com.co

If to Seller, to:

Name: Adriana Mazuera
Position: Director General of State Units
Address: Carrera 8 No. 6C-38
E-mail:
adriana.mazuera@minhacienda.gov.co and
empresas@minhacienda.gov.co

With copy to (which shall not constitute a notice):

Attention: Andrés Bravo – General Counsel of
State participations
E-mail: andres.bravo@minhacienda.gov.co

Each Party may change its address for Notifications upon written delivery of the new address to the other Party. All Notices shall be deemed received on the Business Day following receipt of the respective communication.

9.2. Modifications, assignments and waivers.

(a) The provisions of this Agreement may be modified only by agreement of the Parties, which shall be expressly signed by their duly authorized representatives and with the appropriate approvals, and therefore the amendment shall not be deemed perfect until such written notice is given.

(b) Any Party may waive the performance of the obligations or commitments of the other, provided that such waiver is expressly stated and in writing duly signed by the representative of the Party granting such waiver.

(c) Any delay or omission by the Parties in exercising any rights in their favor under this Agreement(i) shall not be deemed, and each Party acknowledges that it will not interpret them

Execution Version

as, disclaimers of the rights conferred upon it by the Agreement and applicable Laws, And (ii) shall not be deemed to be waiving or condoning of the correlative obligation of the other Party.

(d) Neither the Seller nor the Buyer may assign in whole or in part this Agreement, or the rights and obligations arising therefrom, without the prior written authorization of the other party.

9.3. Applicable Law. This Agreement shall be governed by and shall be interpreted in accordance with the Laws of the Republic of Colombia, especially the provisions of Law 80 of 1993, Law 1150 of 2007 and regulatory decrees, the civil and commercial rules that are applicable to it and any other that modify them, add or complement.

9.4. Conflict resolution. Any controversy or dispute relating to this Agreement, apart from the executive collection of obligations, shall be settled by an Arbitral Tribunal (the "Tribunal"), in accordance with the provisions of Law 1563 of 2012 and other rules that modify and/or supplement it, in accordance with the following rules.

(a) The arbitrators shall be three (3) and shall be qualified lawyers with proven expertise or experience in commercial, financial, or administrative law.

(b) The arbitrators shall be appointed by mutual agreement between the Parties. The arbitrator(s) who cannot be appointed by mutual agreement within a term not exceeding twenty (20) calendar days shall be appointed at the request of either Party, for the Arbitration Center of the Chamber of Commerce of Bogota between the arbitrators from the List A of the Arbitration Center.

(c) Arbitration shall be governed by the provisions of Law 1563 of 2012 or the rule that modifies, supplements or replaces it.

(d) The seat of the Tribunal will be the city of Bogota and the arbitration proceedings will be administered by the Arbitration and Conciliation Center of the Bogota Chamber of Commerce.

(e) The Court shall decide according to the Law.

9.5. Exemplars. This Agreement shall consist of two (2) originals of the same value, which shall be considered a single Agreement and shall be effective only once each and every such copy is duly signed by all the Parties.

9.6. Entire Agreement. This Agreement (together with all Annexes) constitutes the entire agreement between the Parties with respect to the subject matter, obligations and commitments set forth herein and therefore supersedes any prior written or oral agreement or understanding, that the Parties had had on this matter and the Transaction contemplated in this Agreement.

9.7. Severability. If any provision of this Agreement is prohibited, void, ineffective, or could not be enforced under applicable Law or by decision of a competent Governmental Authority, such nullity, ineffectiveness, or unenforceability shall not affect the other provisions of

Execution Version

the Agreement, these provisions shall remain in full force and binding on the Parties, unless the prohibited, void, ineffective or unenforceable provision was essential to the Agreement so that interpretation or performance of the Agreement in the absence of such provision would be impossible. In making such determination, the Parties shall negotiate in good faith to modify this Agreement in such a way as to reflect the original intent of the Parties as faithfully as possible, in an acceptable manner to both Parties and so that the Transaction and other operations provided for in this Agreement are completed as originally intended to the fullest extent possible.

9.8. Absence of Third Party beneficiaries. Except for the External Advisors Fees, this Agreement only generates obligations in favor of the Parties, and therefore nothing in this Agreement, either express or implied, confer or is intended to confer on any other Person any right, benefit or remedy of any nature under or by reason of this Agreement.

9.9. Constitution in arrears. The Parties expressly waive the judicial requirement for the constitution in default, in the event of the breach of any of the obligations set forth in this Agreement.

9.10. Good Faith. The Parties shall act in good faith for the conclusion and execution of this Agreement.

Execution Version

IN ACCORDANCE WITH THE AGREEMENT, the Parties enter into this Agreement on the date indicated in the heading of the Agreement.

THE BUYER – ECOPETROL S.A.

**THE SELLER – THE NATION – MINISTRY OF FINANCE
AND PUBLIC CREDIT**

/s/ Felipe Bayón Pardo

Felipe Bayón Pardo
President of Ecopetrol S.A.

/s/ José Manuel Restrepo Abondano

José Manuel Restrepo Abondano
Minister of Finance and Public Credit

Appendix A
Buyer's Corporate Authorizations

Attached.

Secretary General & Support to Presidency
+57 (1) 234 4116
secretaria.general@ecopetrol.com.co

THE SECRETARY GENERAL OF ECOPETROL S.A.

CERTIFIES:

That the Board of Directors of Ecopetrol S.A., (Ecopetrol), at its extraordinary meeting of July 30, 2021, unanimously, on the recommendation of the Business Committee, authorized the President of Ecopetrol to:

- Submit a binding offer for the acquisition of 569,472,561 common shares of Interconnection Eléctrica S.A. E.S.P. S.A. (ISA), which are currently owned by the Nation - Ministry of Finance and Public Credit and which correspond to 51.41% of ISA's outstanding ordinary shares.
- To advance the negotiation process for the acquisition of these shares, as well as to sign the respective inter-administrative agreement with the Nation - Ministry of Finance and Public Credit and to advance the necessary steps for the improvement of the purchase and sale of ISA shares.

That the Ecopetrol Board of Directors at the same session unanimously, upon recommendation of the Special Valuation Committee, approved the maximum value payable for each (1) of ISA's common shares.

This certification is issued in Bogota, D.C., on July 30, 2021.

MONICA JIMENEZ GONZALEZ
Secretary General

Annex B
Accounting accounts of the Company that make up the Fund and Debt

Box

Account	Description
111	Cash and cash equivalents
1105010	Cash in Main Cash
1112090	Other fiduciary assignments
1110050	Current Account in Banks and Corporations
1110060	Savings Account in Banks and Corporations
1110090	MEM Cash Bank Account
1112030	Over Night Operations
1115040	Commitment to Resale Fixed Income Investments
1120050	In transit funds in current accounts
1120060	In transit funds in savings accounts
1120900	Funds in Transit Other
1120910	Overnight Operations Chg Diff
1125040	Special Funds - Bank Current Account
1125900	Special Funds - Other Deposits
1201010	Investment Administration Liquidity Fixed Income in TES
1201040	RF Investment Electrical Certificate Valorizable
1201060	Investment Administration Liquidity Fixed Income in CDT's
1201090	Mortgage cards
1201100	Investment Fixed Income Private Bond Domestic Currency
1201150	Fixed Income Investment Public Bond Domestic Currency
1201900	Other Domestic Fixed Income Investments
1201910	Fixed RTA Investment Change Diff
1202040	Investment Rights in Securities and Trust Funds
1202900	Other Equity Investments
1206010	Liquidity Management Investment RTA VBLE Right Forward
1206020	Investment Administration Liquidity R VBLE Obligation Forward
1206030	Lnteres x Cash x Cash operation Liquidity
1206040	Lnteres x Pay x Operation Coverage Policy
1105020	Cash in Minor Cash
112_1	Investments >90 days
1201070	Investment Administration Liquidity Fixed Income in CDT's>90D
1201099	Investment Administration Liquidity greater than 90 days
121	Restricted cash
1112081	LP Restricted Cash
1112080	CP Restricted Cash
	Brazil Funds
1926030	Trust Mercantile-Constitution Autonomous patrimony

Debt

Account	Description
211_N	Financial liabilities – Capital
211_N_B	Financial liabilities – CP bonds
2208120	Bond and Title Issued Company No National Date/Ciera
2208910	D.C Bonds CP
2312099	Required Bond Derivative Cts
2312077	Derivative Agreements obligations (swap) CP bonds
211_N_OB	Financial liabilities – Obligations – CP
2312010	Required Derived Cts
2301020	Financial obligations - overdrafts obtained
2302010	Credit obtained Commercial Banking
2302020	Credit obtained by Banca Fomento
2302030	Loan Earned Credit for CP Lease
2302040	Credit obtained by another Shareholders or Partners entity
2302090	Credits obtained by other entities
2302910	CP Invoice Obligation Change Diff
2302080	Credits - Purchase ISBR future dollars
2322800	Interest Credits-Purchase Future Dollars ISBR
2302070	Credits obtained 4131 Brazil CP
2302110	Credits obtained Electroworks
221_N	Financial liabilities – Capital
221_N_B	Financial liabilities – LP bonds
2208121	Bond and Title Issued Company No National Date/Ciera
2208911	D.C Bonds
2312088	Derivative Agreements obligations (swap) LP bonds
221_N_OB	Financial liabilities – LP financial obligations
2312011	Obligations on Derivative Agreements (Swap)
2302011	Credit obtained Commercial Banking
2302021	Credit obtained by Banca Fomento
2302041	Credit obtained by another Shareholders or Partners entity
2302091	Credits obtained by other entities
2302911	LP Invoice Obligation Change Diff
2312012	Coverage Assessment
2302031	LP Lease Credit Earned
2302071	Credits obtained 4131 Brazil LP
2302121	Credit obtained Banco do Nordeste do Brasil

Annex C
Target Net Debt

Date	Debt ¹ (COP)	Box ² (COP)	Net debt Objective (COP)
Jul-21	27,350,082,029,790	5,926,787,072,922	21,423,294,956,868
Aug-21	27,370,530,363,415	5,868,235,132,274	21,502,295,231,141
Sep-21	27,326,797,009,927	5,717,784,793,377	21,609,012,216,550
Oct-21	27,241,687,302,860	5,678,460,314,145	21,563,226,988,715
Nov-21	27,565,156,996,149	5,802,412,871,498	21,762,744,124,651
Dec-21	27,420,481,164,112	4,636,246,637,968	22,784,234,526,144

¹ According to the accounts in Annex B.

² According to the accounts in Annex B.

Annex D

³ Note for interpretation of the annex: The quoted titles of the step-by-step explanations refer to the titles in the table on the left side.

Escenario de Aumento de Precio Base
Cuota en COP

Fecha de Cierre	10-04-21	
Créditos del día 15 del mes?	SI	- Paso 1: Teniendo en cuenta la Fecha de Cierre, se define el mes base para la definición de la Deuda Neta de Cierre y la Deuda Neta Objetivo.
Mes del último cierre disponible	Ago20	El mes base corresponde al de los últimos estados financieros mensuales disponibles, teniendo en cuenta: a) el mes inmediatamente anterior a la Fecha de Cierre, si el Cierre tiene lugar después del día 15 del respectivo mes; o b) el penúltimo mes anterior a la Fecha de Cierre, si el Cierre tiene lugar en o antes del día 15 del respectivo mes.
Fecha de Referencia Resultante	31-Ago-21	
Deuda Neta de Cierre (COP mil)	\$20,205,645	- Paso 2: Se define la Deuda Neta de Cierre según el valor previsto por la Vicepresidencia Financiera de la Compañía según los últimos estados financieros mensuales disponibles (mes base definido en el Paso 1).
Deuda Neta Objetivo (COP mil)	\$21,042,295	- Paso 3: Se define la Deuda Neta Objetivo según el valor indicado en el Anexo C para la fecha de los últimos estados financieros mensuales disponibles (mes base definido en el Paso 1).
Rango sobre Deuda Neta Objetivo	5.00%	- Umbral para definir el rango de variación aceptable para no tener Ajuste por Deuda Neta, según lo dispuesto en la cláusula 2.3 del Contrato.
Máximo Ajuste por Acción (COP)	COP 400	- Valor máximo para el Ajuste por Deuda Neta, según lo dispuesto en la cláusula 2.3 del Contrato.
Piso del Rango: Deuda Neta Objetivo + 5.0% (COP mil)	\$20,627,100	- Paso 4: Se define el rango de variación sin ajuste para la Deuda Neta Objetivo, considerando una variación positiva de +5.0% como "Piso del Rango", y una variación negativa de -5.0% como "Techo del Rango".
Techo del Rango: Deuda Neta Objetivo + 5.0% (COP mil)	\$22,577,410	
Deuda Neta de Cierre está en el rango?	No	- Paso 5: Se verifica si la Deuda Neta de Cierre está dentro del "Rango de Variación sin Ajuste" para la Deuda Neta Objetivo. Si está dentro del rango, no hay lugar a Ajuste por Deuda Neta. Si es inferior al "Piso del Rango", hay lugar a un Ajuste por Deuda Neta que se suma al Precio de Compra Base. Si es superior al techo del rango, hay lugar a un Ajuste por Deuda Neta que disminuye el Precio de Compra Base.
Requiere ajuste?	SI	
Ajuste desde la cantidad en que se exceda el umbral del 5%		
Ajuste Total por Deuda Neta (COP mil)	\$21,510	- Paso 6: Si hay lugar a ajuste, se calcula el monto total según el ajuste calculado de severidad sobre: a) El "Techo del Rango" de Deuda Neta Objetivo menos la Deuda Neta de Cierre, si la Deuda Neta de Cierre es superior al "Techo del Rango" de Deuda Neta Objetivo; o b) El "Piso del Rango" de Deuda Neta Objetivo menos la Deuda Neta de Cierre, si la Deuda Neta de Cierre es inferior al "Piso del Rango" de Deuda Neta Objetivo. Posteriormente, el monto total sin ajuste calculado se divide por el número total de acciones en circulación de la Compañía para definir el "Ajuste a Precio por Acción Resultante del Rango".
Acciones en Circulación (mil)	1,307,678	
Ajuste a Precio por Acción Resultante del Rango (COP)	COP 200	
Ajuste a Precio por Acción Resultante del Rango (COP)	COP 200	- Paso 7: "Ajuste a Precio por Acción Resultante del Rango" calculado en el Paso 6, se compara con COP \$400 por acción (definido en la cláusula 2.3 del Contrato). Si el "Ajuste a Precio por Acción Resultante del Rango" es inferior a COP \$ 400 por acción, dicho "Ajuste a Precio por Acción Resultante del Rango" será utilizado para el cálculo del Ajuste por Deuda Neta, de lo contrario, si el "Ajuste a Precio por Acción Resultante del Rango" es superior a COP \$ 400 por acción, COP \$ 400 por acción será utilizado para el cálculo del Ajuste por Deuda Neta.
Máximo Ajuste por Acción (COP)	COP 400	
Ajuste a Precio por Acción (COP)	COP 200	
Acciones en Venta	569,672,561	- Paso 8: El "Ajuste a Precio por Acción" calculado en el Paso 7, se multiplica por 569,672,561, obteniendo el Ajuste por Deuda Neta aplicable al Precio de Compra Base.
Ajuste por Deuda Neta (COP mil)	COP \$23,895	

Escenario Sin Ajuste de Precio Base
Cuota en COP

Fecha de Cierre	10-04-21	
Créditos del día 15 del mes?	SI	- Paso 1: Teniendo en cuenta la Fecha de Cierre, se define el mes base para la definición de la Deuda Neta de Cierre y la Deuda Neta Objetivo.
Mes del último cierre disponible	Ago20	El mes base corresponde al de los últimos estados financieros mensuales disponibles, teniendo en cuenta: a) el mes inmediatamente anterior a la Fecha de Cierre, si el Cierre tiene lugar después del día 15 del respectivo mes; o b) el penúltimo mes anterior a la Fecha de Cierre, si el Cierre tiene lugar en o antes del día 15 del respectivo mes.
Fecha de Referencia Resultante	31-Ago-21	
Deuda Neta de Cierre (COP mil)	\$20,205,600	- Paso 2: Se define la Deuda Neta de Cierre según el valor previsto por la Vicepresidencia Financiera de la Compañía según los últimos estados financieros mensuales disponibles (mes base definido en el Paso 1).
Deuda Neta Objetivo (COP mil)	\$21,042,295	- Paso 3: Se define la Deuda Neta Objetivo según el valor indicado en el Anexo C para la fecha de los últimos estados financieros mensuales disponibles (mes base definido en el Paso 1).
Rango sobre Deuda Neta Objetivo	5.00%	- Umbral para definir el rango de variación aceptable para no tener Ajuste por Deuda Neta, según lo dispuesto en la cláusula 2.3 del Contrato.
Máximo Ajuste por Acción (COP)	COP 400	- Valor máximo para el Ajuste por Deuda Neta, según lo dispuesto en la cláusula 2.3 del Contrato.
Piso del Rango: Deuda Neta Objetivo + 5.0% (COP mil)	\$20,627,100	- Paso 4: Se define el rango de variación sin ajuste para la Deuda Neta Objetivo, considerando una variación positiva de +5.0% como "Piso del Rango", y una variación negativa de -5.0% como "Techo del Rango".
Techo del Rango: Deuda Neta Objetivo + 5.0% (COP mil)	\$22,577,410	
Deuda Neta de Cierre está en el rango?	SI	- Paso 5: Se verifica si la Deuda Neta de Cierre está dentro del "Rango de Variación sin Ajuste" para la Deuda Neta Objetivo. Si está dentro del rango, no hay lugar a Ajuste por Deuda Neta. Si es inferior al "Piso del Rango", hay lugar a un Ajuste por Deuda Neta que se suma al Precio de Compra Base. Si es superior al techo del rango, hay lugar a un Ajuste por Deuda Neta que disminuye el Precio de Compra Base.
Requiere ajuste?	No	
Ajuste desde la cantidad en que se exceda el umbral del 5%		
Ajuste Total por Deuda Neta (COP mil)	\$0	
Acciones en Circulación (mil)	1,307,678	
Ajuste a Precio por Acción Resultante del Rango (COP)	-	
Ajuste a Precio por Acción Resultante del Rango (COP)	0	
Máximo Ajuste por Acción (COP)	COP 400	
Ajuste a Precio por Acción (COP)	-	
Acciones en Venta	569,672,561	
Ajuste por Deuda Neta (COP mil)	-	

Annex 2.2(d)

Wire Instructions for Payment of External Advisors

Below the electronic transfer instructions for payment of the fees of the External Advisors, as set forth in Section 2.2(d) of the Agreement, that amount to the sum of two billion pesos (COP\$2,000.000,000) plus zero point zero one percent (0.01%) of the Final Purchase Price, plus VAT.

The payment of the fees of the External Advisors shall be made to the following bank accounts with the dates of the following holders and in the following proportions:

Holder: Financiera de Desarrollo Nacional S.A.
NIT: 860,509,022-9
Account Number: 0051514419
Type: Savings
Bank: Davivienda.
VAT excl. Value: IANV 2.000.net.000

Holder: BTG Pactual S.A. Stock Exchange Commissioner
NIT: 890,907,157-0
Account Number: 61131794651
Type: Current
Bank: Bancolombia
Value excluding VAT: Zero point zero one percent (0.01%) of the Final Purchase Price

The FDN shall send the corresponding collection account for all fees or in separate accounts for FDN and BTG respectively, in compliance with the processes and documents required by the Buyer to make the payment.

Annex 2.4(a)
Seller Bank Account

Payment to Seller shall be made to the following bank account with Seller's title:

Headline:	National Treasury Directorate
Identification:	899999090-2
No. Account:	36951764
Account Type:	Current
Bank:	Citibank N.Y.
Intermediary Bank:	Not required
SWIFT:	CITIUS33
ABA:	021000089

Annex 2.6(b).
Buyer's Bank Account

Headline:	ECOPETROL SA
Identification:	899,999,068-1
No. Account:	36884135
Account Type:	IBDDA
Bank:	Citibank N.A.
Intermediary Bank:	N/A.
SWIFT:	CITIUS33
ABA:	021000089
Address:	111 Wall Street, New York NY 10043, United States

Annex 2.7(c)
Buyer's Certificate

Bogota, [●] of [●] of 2021

Gentlemen
Ministry of Finance and Public Credit
Attention:
Bogota, Colombia

REFERENCE: Inter-Administrative Agreement for the Sale of
Actions
Buyer's Closing Certification

Dear Sirs,

This certificate is signed and delivered in compliance with Section 2.7(c) of the Interadministrative Agreement for the Sale of Shares dated [●], [●], 2021 (the "Agreement"), signed between Ecopetrol S.A. (the "Buyer"), and the Nation Ministry of Finance and Public Credit (The "Seller"). Capitalized terms not expressly defined herein shall have the same meaning as those terms in the Agreement.

Buyer certifies that on the Closing Date:

Buyer's Corporate Authorizations remain in effect and are fully binding; and

The conditions set forth in Section 6.3 of the Agreement have been met.

Kind regards,

Signature:

Name:
Position: Legal Representative
Ecopetrol S.A.

Annex 2.8(d)
Electronic document Deceval

		CERTIFICADO No. <input type="text"/>
		CUBO Y FECHA BOGOTÁ, <input type="text"/> DE <input type="text"/> DE <input type="text"/> PM: <input type="text"/>
CERTIFICADO DE VALORES EN DEPOSITO		
EL DEPOSITO CENTRALIZADO DE VALORES DE COLOMBIA DECEVAL S.A. MT. 52.182.012 EN EJERCICIO DE SUS FACULTADES LEGALES Y DE LAS OTORGADAS POR EL CONTRATO DE DEPOSITO DE VALORES CELEBRADO CON: <input type="text"/>		
CERTIFICA:		
QUE LOS DERECHOS EN ACCIONES: <input type="text"/> CUYAS CARACTERISTICAS DE RELACIONAN A CONTINUACION HAN SIDO ANOTADAS EN CUENTAS DE DEPOSITO ASERIAS A NOMBRE DEL TITULAR O TITULARES EN DECEVAL S.A. CON DILIGENCIA A LA ENTREGA Y ENDOSO EN ADMINISTRACION DE VALORES AL DEPOSITO EFECTUADOS POR PARTE DEL DEPOSITANTE DIRECTO, A LAS ORDENES DE EXPEDICION INPRATIDAS POR EL EMISOR O ADMINISTRADOR DE LA EMISION Y POR LAS ORDENES DE TRANSFERENCIA EFECTUADAS POR SU TITULAR.		
NOMBRE O RAZON SOCIAL Y NIT O Cedula DE CIUDADANA DEL (LOS) TITULAR(ES): 1. <input type="text"/> EN <input type="text"/>		
CUENTA No:	<input type="text"/>	FECHA DE VENCIMIENTO:
EMISOR:	<input type="text"/>	PERIODICIDAD:
ADMINISTRADOR EMISION:	<input type="text"/>	ISFI:
EJECUCION:	<input type="text"/>	COG DE DEPOSITO:
FECHA DE EXPEDICION:	<input type="text"/>	EXPRESADO EN:
TASA DE INTERES:	<input type="text"/>	SALDO EN TRANSITO:
PAGADERO O CAPITALIZABLE:	<input type="text"/>	SALDO EN REPO PASIVO:
SALDO TOTAL:	<input type="text"/>	
SALDO DISPONIBLE:	<input type="text"/>	
SALDO BLOQUEADO:	<input type="text"/>	
SALDO EN REPO ACTIVO:	<input type="text"/>	
EL PRESENTE DOCUMENTO SOLO TIENE VALENCIA AL MOMENTO DE SU EXPEDICION Y CONSTITUYE UNA CERTIFICACION POR LA CUAL SE ACREDITA LA PROPIEDAD DE LOS VALORES ANOTADOS EN CUENTAS DE DEPOSITO. ESTE DOCUMENTO NO ES TRANSFERIBLE NI NEGOCIABLE. NO ES VALIDO PARA EL EJERCICIO DE DERECHOS PATRIMONIALES.		

Annex 2.8(e)
Seller's Certificate

Bogota, [•] of [•] of 2021

Gentlemen
Ecopetrol S.A.
Attention:
Bogota, Colombia

REFERENCE: Inter-Administrative Agreement for the Sale of
Actions
Buyer's Closing Certification

Dear Sirs,

This certificate is signed and delivered in compliance with Section 2.8(e) of the Interadministrative Agreement for the Sale of Shares dated [•], [•], 2021 (the "Agreement"), signed between Ecopetrol S.A. (the "Buyer"), and the National Ministry of Finance and Public Credit. (The "Seller"). Capitalized terms not expressly defined herein shall have the same meaning as those terms in the Agreement.

Seller certifies that on the Closing Date the conditions set forth in Section 6.2(a), (b), (c) and (e) of the Agreement have been met.

Kind regards,

Signature:

Name:
Position: Minister of Finance
Ministry of Finance and Public Credit

Annex 2.9
Closing Act

CLOSING CERTIFICATE FOR THE INTERADMINISTRATIVE AGREEMENT FOR THE PURCHASE AND SALE OF SHARES BETWEEN THE NATION – MODITORY OF THE TREASURY AND PUBLIC CREDIT AND ECOPETROL S.A.

The present act is signed between the Nation - Ministry of Finance and Public Credit (the "Seller" or "Ministry"), with tax identification number 899,999-0902, represented in this act by [*], of legal age, identified with the citizenship card no. [*] and (2) Ecopetrol S.A., a *sociedad por acciones, de economía mixta de carácter comercial, de orden nacional*, linked to the Ministry of Mines and Energy ("Ecopetrol" or the "Buyer"), with tax identification number 899,999,068 - 1, represented in this act by [*], of legal age of majority, Identified with Citizenship No. [*], in relation to the Interadministrative Stock Purchase Agreement No. [*] (the "Agreement") dated 11 August 2021, signed between the Ministry and Ecopetrol.

Capitalized terms used herein and not otherwise defined shall have the meanings ascribed to them in the Agreement.

1. CLOSING

By this Act, the Seller and the Buyer certify the following with respect to the closing activities, which occurred on [*], [*], 2021, as follows:

(a) In accordance with Sections 6.1, 6.2 and 6.3 of the Agreement, all of the above conditions were verified for the obligations of the Parties.

(b) Pursuant to Section 2.6, (i) the Buyer instructed his bank to disburse the Final Purchase Price, less the Chilean Tax Withholding, to the Seller's bank account set forth in Schedule 2.4(a) and (ii) verified by Seller the availability of the resources on his account, The Seller immediately caused the Company, as a direct depositor, to deliver to Deceval the transfer instruction signed by the Company and addressed to Deceval, instructing Deceval to register the Buyer as the owner of the Shares for Sale, free of any Lien.

(c) Pursuant to Section 2.7 of the Agreement, Buyer delivered to Seller:

(i) A certificate of existence and representation of the Buyer with no more than five (5) calendar days of issuance.

(ii) The Buyer made the payment of the Final Purchase Price, less the Chilean Tax Withholding, to the Seller by bank transfer of funds immediately available to the Seller's bank account indicated in Schedule 2.4(a) of the Agreement. Subsequently, the availability of the resources in the Seller's bank account was verified.

(iii) A certificate signed by the Buyer's legal representative certifying:

1. That Buyer's Corporate Authorizations remain in effect and are fully binding,

2. Compliance with the conditions set forth in Section 6.3 of the Agreement.

(d) Under the terms set forth in Section 2.8, Seller delivered to Buyer:

(i) Copy of the transfer instruction signed by the Seller, addressed to the Company, instructing him to request Deceval to register the Buyer as the owner of the Shares for Sale, free of any Lien.

(ii) Copy of the transfer instruction signed by the Company and delivered to Deceval, instructing Deceval to register the Buyer as the owner of the Shares for Sale, free of any Lien.

(iii) The notification of the amount of the Chilean Tax Withholding, including the portion of the Final Purchase Price corresponding to the Chilean Companies Acquired, the tax cost deducted and its determination, the tax rate used (35%) and the value of the Indirect Sales tax in Chile.

(iv) An electronic document issued by Deceval, attesting the entry of the Buyer as the owner of the Shares for Sale in the corresponding investor subaccount of the Buyer and the registration of the Shares for Sale in favor of the Buyer in the register book of shareholders of the Company.

(v) A certificate issued by Seller's legal representative certifying compliance with the conditions set forth in Section 6.2(a), (b), (c) and (e) of the Agreement.

2. EXTERNAL ADVISORS FEES

Seller and Buyer certify that on [*], [*], 2021, payment was made by Buyer to the External Advisors under Section 2.2(d) of the Agreement. For clarity, the payment to the External Advisers was equal to [*]. This is based on the certification issued by the FDN.

3. INDIRECT SALES TAX IN CHILE

With respect to the Indirect Sales Tax in Chile, *[be completed according to the activities actually performed under Section 5.11]*.

4. FINAL SETTLEMENT

Seller and Buyer declare and agree that as of the date hereof, the Buyer is at peace and except for payment of the Final Purchase Price and payment to the External Advisors and accordingly such obligations have been completed under the terms of the Agreement.

[More Signature Page]

On record, this certificate was signed on [*] days of [*] the month of [*] 2022.

[•]
DC [•]
Minister of Finance and Public Credit
Ministry of Finance and Public Credit

Continuation of the Closing Certificate

[•]
DC [•]
Legal Representative
Ecopetrol S.A.

[Closing Act Signature Page]

Annex 5.2
 Governmental Authorizations

No.	Requirement	Responsible	Term	Status	Comments/Support
COLOMBIA					
1.	Notification of transfer between the same real beneficiary to the Financial Superintendency of Colombia	MHCP — Subscribes MHCP	Post – Signature	<input type="checkbox"/> Complete	Communication and media attesting that the parties are the same real beneficiary
2.	Instruction directed to DECEVAL requesting (i) an entry into account of the transfer; and (ii) a change of depositary if applicable.	MHCP sends to ISA and ISA communicates to Deceval	The dig of the fastener	<input type="checkbox"/> Complete	Communication delivered by email
3.	Publication relevant information	Ecopetrol and ISA	Signing of the Agreement Closing date	<input type="checkbox"/> Complete	Relevant information page of Ecopetrol, ISA and SFC.
BRAZIL					
4.	Communication to the Agência Nacional de Energia Elétrica (" <u>ANEEL</u> ")	MHCP	Before signing.	<input checked="" type="checkbox"/> Complete	Communication signed by the legal representative of each concessionaire. Prior to closing receive confirmation of the 1 understanding or approval
5.	Relevant Facts Information relevant to the Securities Commission in Brazil ("CVM")	MHCP CTEEP and TAESA publish relevant information	Signing of the Agreement Closing date	<input type="checkbox"/> Complete	Relevant information page of the issuers.

No.	Requirement	Responsible	Term	Status	Comments/Support
CHILE					
6.	Notifications to the Ministry of Public Works informing the structure of the Transaction	MHCP (Subscribes: Concessionaires)	First notification on the day the essential fact of the signing of the Agreement is published Second notification on closing day	<input type="checkbox"/> Complete	Notification presented by each concessionary company. Ideally it should coincide with the publication of the essential fact on the page of the CMF
7.	Essential factual information to the Commission for the Financial Market in Chile ("CMF")	(MHCP) (These are publications made by Interchile and each concessionary company as essential facts on the page of the CMF)	Signing of the Agreement The closing day	<input type="checkbox"/> Complete	Relevant information page of the issuers.

Annex 5.9
Communication from CREG

Attached

Bogota, D.C.

Doctor
FELIPE BAYON PARDO
President
ECOPETROL
Race 13 # 36-24, floor 5
Bogota D.C

Subject: Its communication of August 2, 2021
Filed CREG E-2021-008771 of August 2, 2021
General CREG File

Dear Dr. Bayon,

We have received your communication identified in the reference above, pursuant to which it requests from this Commission an opinion regarding the scope of Article 2 of Resolution CREG 095 of 2007, in light of a possible acquisition of 51.4% of the shareholding of Interconexión Eléctrica S.A. E.S.P. by ECOPETROL S.A.

As stated in its communication, Ecopetrol S.A. interprets that:

"(...) in the light of the provisions of the quoted disposition, the agent participating in the marketing segment and holding a shareholding in a transmitter exceeding the permitted thresholds, has the possibility of having a transition period of six (6) months to adjust its participation in that activity so it meets the boundaries of vertical integration.

That is, we understand that according to the provisions of Resolution CREG 095 of 2007, a trader that purchases more than 15% of a transmitter with revenues exceeding 2% of the system's revenues may cease its activities in the market, having six (6) months counted from the occurrence of this fact to cease said activities."

In addition, in this communication it states "...we bring up certain rules which have been issued by the Commission in order to observe the reality of the transactions carried out by agents and that involve some kind of integration in the market, where (the authority) has provided with reasonable time frames for shareholders to comply with previously established integration limits."¹

In this regard, the Commission, at its session number 1011 of August 2, 2021, discussed the issue raised and approved the following pronouncement authorizing the Executive Director to sign it.

¹ It cites resolutions CREG 001 of 2006, 163 of 2008 and 024 of 2009.

The provision contained in Article 2 of Resolution CREG 095 of 2007 applies to generators, distributors and marketers, or companies that are vertically integrated and develop jointly more than one of these activities. These agents were able to acquire more than 15% of the share capital of a company that develops the national transmission activity, provided that this does not represent more than 2% of the total transmission income of the National Transmission System.

If, after the acquisition of more than 15% of the capital of the national transmission company, it exceeds the income threshold (2%) above, it is necessary that generators, distributors and marketers, or companies that are vertically integrated and jointly develop more than one of these activities, dispose within the following six (6) months the shares exceeding 15% of the share capital of the transmitter. To verify the stated income limit, the standard provides for cutoffs December 31 of each year.

Based on the assumptions described above, and given that Interconexión Eléctrica S.A. E.S.P. currently exceeds (before the planned purchase by ECOPETROL S.A.) the income threshold of 2% in the National Transmission System, the period of six (6) months established to make the disposition would not be applicable in the present case.

Additionally, after reviewing the current regulation, it should be noted that this does not foresee any time period for situations such as that described by ECOPETROL S.A. Therefore, in compliance with the principles established in Resolution CREG 080 of 2019, the Commission understands that the companies involved in the Transaction must take the necessary measures so that, in the shortest possible time and with their best diligence, they comply with the limits established for the integration of activities associated with the provision of the electric power service.

By way of example, this Commission would take the form of an act of diligence to include a clause in the Agreement which would oblige companies to take forward the necessary actions to comply with the existing regulations.

This concept is issued in the terms and scope provided for in article 28 of Law 1755 of 2015, which replaces title 11 of the Code of Administrative Procedure and Administrative Disputes.

Best regards,

JORGE ALBERTO VALENCIA MARIN
Executive Director

Exhibit 4.21

Execution Version

LOAN AGREEMENT

among

ECOPETROL S.A.,

as **Borrower**,

THE LENDERS PARTY HERETO,

THE BANK OF NOVA SCOTIA,

as **Administrative Agent**,

and

BANCO SANTANDER, S.A., CITIGROUP GLOBAL MARKETS INC., JPMORGAN CHASE
BANK, N.A. and THE BANK OF NOVA SCOTIA

as **Joint Lead Arrangers and Joint Bookrunners**

Dated as of August 17, 2021

TABLE OF CONTENTS

	Page
SECTION 1 DEFINITIONS AND PRINCIPLES OF CONSTRUCTION	
1.1. Defined Terms	1
1.2. Principles of Construction	23
SECTION 2 THE LOAN	
2.1. Commitments	24
2.2. Mechanics for Requesting the Disbursement	24
2.3. Funding	24
2.4. Reserved	25
2.5. Termination and Reduction of Commitments	25
2.6. Notes	25
2.7. Interest	26
2.8. Reserved	31
2.9. Additional or Increased Costs	31
2.10. Breakage Costs, Other Expenses and Losses	31
2.11. Illegality	32
2.12. Lender Replacement	32
SECTION 3 PAYMENTS	
3.1. Repayment; Time and Manner	33
3.2. Voluntary Prepayment	33
3.3. Mandatory Prepayments	34
3.4. Payments; Pro Rata Treatment	35
3.5. Extension of Payment Dates	36
SECTION 4 TAXES	
4.01. Covered Taxes	36
SECTION 5 CONDITIONS PRECEDENT	
5.1. Conditions Precedent on the Agreement Date	38
5.2. Additional Conditions Precedent to the Disbursement	39

SECTION 6
REPRESENTATIONS AND WARRANTIES

6.01.	Representations and Warranties of the Borrower	40
-------	--	----

SECTION 7
COVENANTS

7.1.	Affirmative Covenants of the Borrower	45
7.2.	Negative Covenants of the Borrower	48

SECTION 8
EVENTS OF DEFAULT AND REMEDIES

8.1.	Events of Default	49
8.2.	Remedies	51

SECTION 9
GOVERNING LAW AND JURISDICTION

9.1.	Governing Law	52
9.2.	Submission to Jurisdiction	52
9.3.	Service of Process	53
9.4.	Waiver of Immunity	53
9.5.	Waiver of Security Requirements	54
9.6.	No Limitation	54
9.7.	International Banking Facility	54

SECTION 10
THE ADMINISTRATIVE AGENT

10.1.	Appointment	55
10.2.	Nature of Duties	55
10.3.	Lack of Reliance on the Administrative Agent	56
10.4.	Reliance	56
10.5.	Consultation with Experts	56
10.6.	Indemnification	56
10.7.	The Administrative Agent in Its Individual Capacity	57
10.8.	Resignation by the Administrative Agent; Successor Administrative Agent	57
10.9.	No Amendment to Duties of Administrative Agent Without Consent	58
10.10.	Administrative Agent Conflict of Interest	58
10.11.	Erroneous Payment	58

SECTION 11
MISCELLANEOUS

11.1.	Computations	62
11.2.	Notices	62
11.3.	Benefit of Agreement; Assignment; Participations	63
11.4.	No Waiver; Remedies Cumulative	66

11.5.	Entire Agreement	66
11.6.	Amendment or Waiver; etc.	66
11.7.	Counterparts	67
11.8.	Expenses; Indemnity	68
11.9.	Judgment Currency	69
11.10.	English Language	70
11.11.	Severability	70
11.12.	Waiver of Jury Trial	70
11.13.	Captions	70
11.14.	Damages Waiver	70
11.15.	Confidentiality	70
11.16.	Survival	71
11.17.	No Fiduciary Duty	71
11.18.	Patriot Act	72
11.19.	Exequatur	72
11.20.	Acknowledgement and Consent to Bail-In of Affected Financial Institutions	72

SCHEDULES AND ANNEXES

Schedule 1 Existing Liens	1-1
Schedule 2 Commitment	2-1
Annex A Form of Disbursement Request	A-1
Annex B Form of Promissory Note	B-1
Annex C Form of Instructions Letter	C-1
Annex D Form of Officers' Certificate	D-1
Annex E Form of Assignment and Assumption Agreement	E-1

This LOAN AGREEMENT (together with the Schedules and Exhibits attached hereto, this “*Agreement*”), dated as of August 17, 2021 is made by and among Ecopetrol S.A., a mixed economy company organized and existing under the laws of Colombia (the “*Borrower*”); the Lenders (as defined below) and The Bank of Nova Scotia, as administrative agent (the “*Administrative Agent*”). Capitalized terms used herein shall be defined as provided in Section 1.

BACKGROUND

WHEREAS:

- (A) by this Agreement, the Lenders agree to extend a senior unsecured term loan through a single disbursement to the Borrower in accordance with the terms and conditions set forth herein for an aggregate principal amount up to four billion dollars (U.S. \$4,000,000,000);
- (B) such term loan may be utilized by the Borrower for the acquisition of 51.4% of the outstanding shares of Interconexión Eléctrica S.A. from the Ministry of Finance; and
- (C) the Borrower has obtained all required approvals, including the approval from the Ministry of Finance through Resolution No. 1928 of August 13, 2021, to enter into this Agreement.

NOW, THEREFORE, in consideration of the premises and the mutual covenants herein contained, the parties hereto agree as follows:

SECTION 1 DEFINITIONS AND PRINCIPLES OF CONSTRUCTION

1.1. Defined Terms. For the purposes of this Agreement, unless otherwise defined herein, the following terms have the meanings specified below.

“**Administrative Agent**” has the meaning ascribed to such term in the preamble to this Agreement.

“**Administrative Agent Fee Letter**” means the Administrative Agent fee letter executed on or prior to the Agreement Date between the Borrower and the Administrative Agent.

“**Adverse Acquisition Order**” has the meaning ascribed to such term in Section 5.02(f).

“**Affected Financial Institution**” means (a) any EEA Financial Institution or (b) any UK Financial Institution.

“**Affiliate**” means, with respect to any Person, any other Person that, directly or indirectly through one or more intermediaries, Controls, or is Controlled by, or is under common Control with, such first Person.

“**Agreement**” means this Loan Agreement, including any Annex, Exhibit, Schedule and other attachment thereto.

“**Agreement Date**” means the date first set forth above, such date being the date as of which this Agreement was executed and delivered by the parties hereto and the conditions to effectiveness of the obligations of the Lenders under this Agreement set forth in Section 5.01 have been satisfied.

“**Alternative Base Rate**” means for any day, a fluctuating rate per annum equal to the highest of (a) the Federal Funds Effective Rate plus 0.50%, (b) the prime rate published in *The Wall Street Journal* for such day; *provided that*, if *The Wall Street Journal* ceases to publish for any reason such rate of interest, “Alternative Base Rate” shall mean the prime lending rate as set forth on the applicable Bloomberg page for such day (or any successor page or such other service as determined by the Administrative Agent from time to time for purposes of providing quotations of prime lending interest rates) and (c) the LIBOR for an Interest Period of one month plus one percent (1%). Each change in the Alternative Base Rate shall be effective on the date such change is effective.

“**Anti-Corruption Laws**” means the FCPA, the UK Bribery Act of 2010, the Corruption of Foreign Public Officials Act (Canada) and the rules and regulations promulgated thereunder, the Colombian Criminal Code (*Código Penal Colombiano*), Law 1474 of 2011 (*Estatuto Anticorrupción*) of Colombia, Law 1778 of 2016 of Colombia and all other laws, rules, and regulations of any jurisdiction from time to time applicable to the Borrower or any of its Subsidiaries concerning or relating to bribery or corruption.

“**Anti-Money Laundering Laws**” means, collectively, (a) Title III of the USA Patriot Act of 2001 (Pub. L. No. 107-56), (b) the Colombian Criminal Code (*Código Penal Colombiano*) as it applies to money laundering activities, (c) Chapter VII Title I Part III of Circular Externa 029 of 2014 (*Circular Básica Jurídica*) of the Superintendency of Finance, (d) the Proceeds of Crime (Money Laundering) and Terrorist Financing Act (Canada), and (e) any other law, regulation, order, decree or directive of any relevant jurisdiction applicable to the Borrower or any of its Subsidiaries having the force of law and relating to anti-money laundering.

“**Applicable Law**” means, with respect to any Person, any Colombian or other applicable constitution, statute, law, rule, regulation, ordinance, judgment, order, decree, or any published directive, guideline, requirement or other governmental rule or restriction which has the force of law, and any determination by, or interpretation of any of the foregoing by, any judicial authority or Governmental Authority, binding on a given Person whether in effect as of the date hereof or as of any date thereafter.

“**Applicable Margin**” means 0.80% *per annum*.

“**Assignment and Assumption Agreement**” means an assignment and assumption agreement substantially in the form of Annex E.

“**Authorized Officer**” means, with respect to any Person, the chief executive officer, the president, any vice president, any assistant vice president, the chief financial officer

or treasurer, the assistant treasurer or equivalent officers of such Person, and any other officer or representative of such Person, who is duly authorized to act under such Person's charter documents or Applicable Law, and to act in the capacity in which they are acting pursuant to the certificate referred to in Section 5.01(b).

"Available Tenor" means, as of any date of determination and with respect to the then-current Benchmark, as applicable, any tenor for such Benchmark or payment period for interest calculated with reference to such Benchmark, as applicable, that is or may be used for determining the length of an Interest Period pursuant to this Agreement as of such date and not including, for the avoidance of doubt, any tenor for such Benchmark that is then-removed from the definition of "Interest Period" pursuant to clause (v) of Section 2.07(d).

"Bail-In Action" means the exercise of any Write-Down and Conversion Powers by the applicable Resolution Authority in respect of any liability of an Affected Financial Institution.

"Bail-In Legislation" means (a) with respect to any EEA Member Country implementing Article 55 of Directive 2014/59/EU of the European Parliament and of the Council of the European Union, the implementing law, regulation rule or requirement for such EEA Member Country from time to time which is described in the EU Bail-In Legislation Schedule and (b) with respect to the United Kingdom, Part I of the United Kingdom Banking Act 2009 (as amended from time to time) and any other law, regulation or rule applicable in the United Kingdom relating to the resolution of unsound or failing banks, investment firms or other financial institutions or their affiliates (other than through liquidation, administration or other insolvency proceedings).

"BASEL III" means (a) the agreements on capital requirements, leverage ratio and liquidity standards contained in "Basel III: A global regulatory framework for more resilient banks and banking systems," "Basel III: International framework for liquidity risk measurement, standards and monitoring" and "Guidance for national authorities operating the countercyclical capital buffer" published by the Basel Committee on Banking Supervision in December 2010, each as amended, supplemented or restated and (b) any further guidance or standards published by the Basel Committee on Banking Supervision relating to Basel III.

"Benchmark" means, initially, LIBOR; provided that if a Benchmark Transition Event, a TERM SOFR Transition Event or an Early Opt-in Election, as applicable, and its related Benchmark Replacement Date have occurred with respect to LIBOR or the then-current Benchmark, then "Benchmark" means the applicable Benchmark Replacement to the extent that such Benchmark Replacement has replaced such prior benchmark rate pursuant to clause (i) or (ii) of Section 2.07(d).

"Benchmark Replacement" means, for any Available Tenor, the first alternative set forth in the order below that can be determined by the Administrative Agent for the applicable Benchmark Replacement Date:

- (1) the sum of: (a) Term SOFR and (b) the related Benchmark Replacement Adjustment;

- (2) the sum of: (a) Daily Compounded SOFR and (b) the related Benchmark Replacement Adjustment;
- (3) the sum of: (a) the alternate benchmark rate that has been selected by the Administrative Agent and the Borrower as the replacement for the then- current Benchmark for the applicable Corresponding Tenor giving due consideration to (i) any selection or recommendation of a replacement benchmark rate or the mechanism for determining such a rate by the Relevant Governmental Body or (ii) any evolving or then-prevailing market convention for determining a benchmark rate as a replacement for the then-current Benchmark for U.S. dollar-denominated syndicated credit facilities at such time and (b) the related Benchmark Replacement Adjustment;

provided that, in the case of clause (1), such Unadjusted Benchmark Replacement is displayed on a screen or other information service that publishes such rate from time to time as selected by the Administrative Agent in its reasonable discretion; provided further that, notwithstanding anything to the contrary in this Agreement or in any other Loan Document, upon the occurrence of a Term SOFR Transition Event, and the delivery of a Term SOFR Notice, on the applicable Benchmark Replacement Date the "Benchmark Replacement" shall revert to and shall be deemed to be the sum of (a) Term SOFR and (b) the related Benchmark Replacement Adjustment, as set forth in clause (1) of this definition (subject to the first proviso above). If the Benchmark Replacement as determined pursuant to clause (1), (2) or (3) above would be less than the Floor, the Benchmark Replacement will be deemed to be the Floor for the purposes of this Agreement and the other Loan Documents.

"Benchmark Replacement Adjustment" means, with respect to any replacement of the then- current Benchmark with an Unadjusted Benchmark Replacement for any applicable Interest Period and Available Tenor for any setting of such Unadjusted Benchmark Replacement:

- (1) for purposes of clauses (1) and (2) of the definition of "Benchmark Replacement," the first alternative set forth in the order below that can be determined by the Administrative Agent:
 - (a) the spread adjustment, or method for calculating or determining such spread adjustment, (which may be a positive or negative value or zero) as of the Reference Time such Benchmark Replacement is first set for such Interest Period that has been selected or recommended by the Relevant Governmental Body for the replacement of such Benchmark with the applicable Unadjusted Benchmark Replacement for the applicable Corresponding Tenor;
 - (b) the spread adjustment (which may be a positive or negative value or zero) as of the Reference Time such Benchmark Replacement is first set for such Interest Period that would apply to the fallback rate for a derivative transaction referencing the ISDA Definitions to be effective upon an index cessation event with respect to such Benchmark for the

applicable Corresponding Tenor; and

- (2) for purposes of clause (3) of the definition of “Benchmark Replacement,” the spread adjustment, or method for calculating or determining such spread adjustment, (which may be a positive or negative value or zero) that has been selected by the Administrative Agent and the Borrower for the applicable Corresponding Tenor giving due consideration to (i) any selection or recommendation of a spread adjustment, or method for calculating or determining such spread adjustment, for the replacement of such Benchmark with the applicable Unadjusted Benchmark Replacement by the Relevant Governmental Body on the applicable Benchmark Replacement Date or (ii) any evolving or then-prevailing market convention for determining a spread adjustment, or method for calculating or determining such spread adjustment, for the replacement of such Benchmark with the applicable Unadjusted Benchmark Replacement for U.S. dollar- denominated syndicated credit facilities;

provided that, in the case of clause (1) above, such adjustment is displayed on a screen or other information service that publishes such Benchmark Replacement Adjustment from time to time as selected by the Administrative Agent in its reasonable discretion.

“**Benchmark Replacement Conforming Changes**” means, with respect to any Benchmark Replacement, any technical, administrative or operational changes (including changes to the definition of “Alternative Base Rate,” the definition of “Business Day,” the definition of “Interest Period,” timing and frequency of determining rates and making payments of interest, timing of borrowing requests or prepayment, conversion or continuation notices, length of lookback periods, the applicability of breakage provisions, and other technical, administrative or operational matters) that the Administrative Agent decides may be appropriate to reflect the adoption and implementation of such Benchmark Replacement and to permit the administration thereof by the Administrative Agent in a manner substantially consistent with market practice (or, if the Administrative Agent decides that adoption of any portion of such market practice is not administratively feasible or if the Administrative Agent determines that no market practice for the administration of such Benchmark Replacement exists, in such other manner of administration as the Administrative Agent decides is reasonably necessary in connection with the administration of this Agreement and the other Loan Documents).

“**Benchmark Replacement Date**” means the earliest to occur of the following events with respect to the then-current Benchmark:

- (1) in the case of clause (1) or (2) of the definition of “Benchmark Transition Event,” the later of (a) the date of the public statement or publication of information referenced therein and (b) the date on which the administrator of such Benchmark (or the published component used in the calculation thereof) permanently or indefinitely ceases to provide all Available Tenors of such Benchmark (or such component thereof);
- (2) in the case of clause (3) of the definition of “Benchmark Transition Event,” the date of the public statement or publication of information referenced

therein;

- (3) in the case of a Term SOFR Transition Event, the date that is thirty (30) days after the date a Term SOFR Notice is provided to the Lenders and the Borrower pursuant to clause (ii) of Section 2.07(d); or
- (4) in the case of an Early Opt-in Election, the sixth (6th) Business Day after the date notice of such Early Opt-in Election is provided to the Lenders, so long as the Administrative Agent has not received, by 5:00 p.m. (New York City time) on the fifth (5th) Business Day after the date notice of such Early Opt-in Election is provided to the Lenders, written notice of objection to such Early Opt-in Election from Lenders comprising the Required Lenders.

For the avoidance of doubt, (i) if the event giving rise to the Benchmark Replacement Date occurs on the same day as, but earlier than, the Reference Time in respect of any determination, the Benchmark Replacement Date will be deemed to have occurred prior to the Reference Time for such determination and (ii) the "Benchmark Replacement Date" will be deemed to have occurred in the case of clause (1) or with respect to any Benchmark upon the occurrence of the applicable event or events set forth therein with respect to all then-current Available Tenors of such Benchmark (or the published component used in the calculation thereof).

"Benchmark Transition Event" means the occurrence of one or more of the following events with respect to the then-current Benchmark:

- (1) a public statement or publication of information by or on behalf of the administrator of such Benchmark (or the published component used in the calculation thereof) announcing that such administrator has ceased or will cease to provide all Available Tenors of such Benchmark (or such component thereof), permanently or indefinitely, provided that, at the time of such statement or publication, there is no successor administrator that will continue to provide any Available Tenor of such Benchmark (or such component thereof);
- (2) a public statement or publication of information by the regulatory supervisor for the administrator of such Benchmark (or the published component used in the calculation thereof), the Federal Reserve Board, the Federal Reserve Bank of New York, an insolvency official with jurisdiction over the administrator for such Benchmark (or such component), a resolution authority with jurisdiction over the administrator for such Benchmark (or such component) or a court or an entity with similar insolvency or resolution authority over the administrator for such Benchmark (or such component), which states that the administrator of such Benchmark (or such component) has ceased or will cease to provide all Available Tenors of such Benchmark (or such component thereof) permanently or indefinitely, provided that, at the time of such statement or publication, there is no successor administrator that will continue to provide any Available Tenor of such Benchmark (or such component thereof); or

- (3) a public statement or publication of information by the regulatory supervisor for the administrator of such Benchmark (or the published component used in the calculation thereof) announcing that all Available Tenors of such Benchmark (or such component thereof) are no longer representative.

For the avoidance of doubt, a “Benchmark Transition Event” will be deemed to have occurred with respect to any Benchmark if a public statement or publication of information set forth above has occurred with respect to each then-current Available Tenor of such Benchmark (or the published component used in the calculation thereof).

“**Benchmark Unavailability Period**” means the period (if any) (x) beginning at the time that a Benchmark Replacement Date pursuant to clauses (1) or (2) of that definition has occurred if, at such time, no Benchmark Replacement has replaced the then-current Benchmark for all purposes hereunder and under any Loan Document in accordance with Section 2.07(d) and (y) ending at the time that a Benchmark Replacement has replaced the then-current Benchmark for all purposes hereunder and under any Loan Document in accordance with this Section titled “Benchmark Replacement Setting.”

“**Borrower**” has the meaning ascribed to such term in the preamble to this Agreement.

“**Borrower Financial Statements**” means the consolidated financial statements of the Borrower dated December 31, 2020 (audited).

“**Business Day**” means any day, except a day which is a Saturday or a Sunday, on which (a) the Federal Reserve lender of New York is open for business, (b) for purposes of determining LIBOR, dealings in U.S. Dollar deposits are carried on in the London interbank market and (c) commercial lenders in Bogota, Colombia, Toronto, Canada and New York, New York (United States) are open for domestic and foreign exchange business.

“**Capital Adequacy Requirement**” means, with respect to any Person, any requirement of law or any regulation affecting the amount of capital required or expected to be maintained by such Person (or the lending office of such Person) or any Person Controlling such Person.

“**Capitalized Lease Obligation**” means, for any Person, the obligations of such Person to pay rent or other amounts under a lease of (or other agreement conveying the right to use) property (whether real, personal or mixed) acquired or leased (other than leases for transponders) by such Person to the extent such obligations are required to be classified and accounted for as a lease (or any successor classification that results in the reflection of a liability on such Person’s balance sheet) on a balance sheet of such Person under IFRS, and, for purposes of this Agreement, the amount of such obligations shall be the capitalized amount of such obligations, determined in accordance with the IFRS.

“**Code**” means the Internal Revenue Code of 1986, as amended, and the regulations promulgated and rulings issued thereunder.

“**Colombia**” means the Republic of Colombia (*República de Colombia*).

“Colombian Central Bank” means the Central Bank of Colombia (*Banco de la República de Colombia*) or any other Governmental Authority of Colombia charged with the responsibility of issuing, managing and controlling legal currency in Colombia and determining Colombian foreign exchange policy.

“Colombian Peso” means the lawful currency of Colombia.

“Commercial Code” means the Colombian Commercial Code (*Código de Comercio*).

“Commitment” means, for each Lender and on a several basis, the obligation of such Lender to make a Disbursement to the Borrower hereunder, in an aggregate principal amount up to but not exceeding the amount set forth opposite such Lender’s name on Schedule 2 hereto; *provided* that such amount shall be reduced by any reduction or termination of the Total Commitment pursuant to Section 2.05.

“Confidential Information” means information that the Borrower furnishes to the Administrative Agent or any Lender in writing in connection with this Agreement, but does not include any such information (a) that is or becomes generally available to the public, (b) that is or becomes available to the Administrative Agent or any Lender from a source other than the Borrower not known to be bound by any confidentiality obligations to the Borrower, (c) that is in the Administrative Agent’s or any Lender’s possession including any such information in respect of which the Administrative Agent or such Lender does not know to be bound by any confidentiality obligations to the Borrower (but in any event excluding any information furnished by the Borrower that is designated as confidential in writing) or (d) is independently developed by the Administrative Agent or any Lender without reference to such information.

“Connection Income Taxes” means Other Connection Taxes that are imposed on or measured by net income (however denominated) or that are franchise Taxes or branch profits Taxes.

“Consolidated Total Assets” means, at any date, the total amount of assets of the Borrower, as of the end of the last period preceding such date for which a balance sheet is prepared and published in accordance with Applicable Law, on a consolidated basis as determined in accordance IFRS.

“Control” means, in relation to any specified Person, (a) holding, directly or indirectly, fifty percent (50%) or more of the outstanding voting securities or ownership interests of such specified Person or (b) having the contractual power to designate a majority of the directors of a corporation, or in the case of an unincorporated entity, a majority of the individuals who exercise similar functions of such specified Person (and *“Controlled”* and *“Controlling”* shall be construed accordingly).

“Corresponding Tenor” with respect to any Available Tenor means, as applicable, either a tenor (including overnight) or an interest payment period having approximately the same length (disregarding business day adjustment) as such Available Tenor.

“**Covered Taxes**” means, with respect to the Administrative Agent or any Lender, (a) Taxes, other than Excluded Taxes or Other Connection Taxes, imposed by a Taxing Jurisdiction on or with respect to any payment made by or on account of any obligation of the Borrower under any Loan Document, and (b) to the extent not otherwise described in (a), Other Taxes.

“**CRD IV**” means (a) Regulation (EU) No 575/2013 of the European Parliament and of the Council of 26 June 2013 on prudential requirements for credit institutions and investment firms; and (b) Directive 2013/36/EU of the European Parliament and of the Council of 26 June 2013 on access to the activity of credit institutions and the prudential supervision of credit institutions and investment firms, amending Directive 2002/87/EC and repealing Directives 2006/48/EC and 2006/49/EC, to the extent that Regulation (EU) No 575/2013 and Directive 2013/36/EU implement Basel III.

“**Daily Compounded SOFR**” means, for any day, SOFR, with interest accruing on a compounded daily basis, with the methodology and conventions for this rate (which will include compounding in arrears with a lookback) being established by the Administrative Agent in accordance with a methodology and the conventions for this rate selected or recommended by the Relevant Governmental Body for determining “Daily Compounded SOFR” for syndicated business loans; provided that, if the Administrative Agent decides that any such convention is not administratively feasible for the Administrative Agent, then the Administrative Agent may establish another convention in its reasonable discretion.

“**Defaulting Lender**” means, any Lender that (a) has failed to (i) fund all or any portion of a Disbursement within two (2) Business Days of the Disbursement Date unless such Lender notifies the Administrative Agent in writing that such failure is the result of such Lender’s determination that one or more of the conditions precedent to the Disbursement (each of which conditions precedent, together with any applicable default, shall be specifically identified in such writing) has not been satisfied, or (ii) pay to the Administrative Agent or any other Lender any other amount required to be paid by it hereunder within two (2) Business Days of the date when due, (b) has notified the Administrative Agent in writing that it does not intend to comply with its obligation to make a Disbursement hereunder, or has made a public statement to that effect (unless such writing or public statement relates to such Lender’s obligation to fund a Disbursement hereunder and states that such position is based on such Lender’s determination that a condition precedent to the Disbursement (which condition precedent, together with any applicable default, shall be specifically identified in such writing or public statement) cannot be satisfied), (c) has failed, within three (3) Business Days after written request by the Administrative Agent or the Borrower, to confirm in writing to the Administrative Agent and the Borrower that it will comply with its prospective funding obligations hereunder (*provided* that such Lender shall cease to be a Defaulting Lender pursuant to this clause (c) upon receipt of such written confirmation by the Administrative Agent and the Borrower), unless such Lender complies with its obligation to fund on the Disbursement Date or (d) has, or has a direct or indirect parent company that has, (i) become the subject of a proceeding under any insolvency laws, (ii) had appointed for it a receiver, custodian, conservator, trustee, administrator, assignee for the benefit of creditors or similar Person charged with reorganization or liquidation of its business or assets, including the Federal Deposit Insurance Corporation of the United States or any other state or federal regulatory authority acting in such a capacity, or (iii) become the

subject of a Bail-In Action; *provided* that a Lender shall not be a Defaulting Lender solely by virtue of the ownership or acquisition of any equity interest in that Lender or any direct or indirect parent company thereof by a Governmental Authority so long as such ownership interest does not result in or provide such Lender with immunity from the jurisdiction of courts within the United States or from the enforcement of judgments or writs of attachment on its assets or permit such Lender (or such Governmental Authority) to reject, repudiate, disavow or disaffirm any contracts or agreements made with such Lender. Any determination by the Administrative Agent that a Lender is a Defaulting Lender under any one or more of clauses (a) through (d) above shall be conclusive and binding absent manifest error, and such Lender shall be deemed to be a Defaulting Lender upon delivery of written notice of such determination to the Borrower and each Lender.

“**Disbursement**” has the meaning ascribed to such term in Section 2.01.

“**Disbursement Date**” means the date of the Disbursement as specified in the Disbursement Request; *provided* that the Disbursement Date shall be a Business Day no later than 8 (eight) Business Days from the Agreement Date.

“**Disbursement Request**” has the meaning ascribed to such term in Section 2.02.

“**Dollars**,” “**U.S. Dollars**,” or “**U.S. \$**” means the lawful currency of the United States of America.

“**Early Opt-in Election**” means, if the then-current Benchmark is LIBOR, the occurrence of:

(a) a notification by the Administrative Agent to (or the request by the Borrower to the Administrative Agent to notify) each of the other parties hereto that at least five currently outstanding U.S. dollar-denominated syndicated credit facilities at such time contain (as a result of amendment or as originally executed) a SOFR-based rate (including SOFR, a term SOFR or any other rate based upon SOFR) as a benchmark rate (and such syndicated credit facilities are identified in such notice and are publicly available for review), and

(b) the joint election by the Administrative Agent and the Borrower to trigger a fallback from LIBOR and the provision by the Administrative Agent of written notice of such election to the Lenders.

“**EEA Financial Institution**” means (a) any credit institution or investment firm established in any EEA Member Country which is subject to the supervision of an EEA Resolution Authority, (b) any entity established in an EEA Member Country which is a parent of an institution described in clause (a) of this definition or (c) any financial institution established in an EEA Member Country which is a subsidiary of an institution described in clauses (a) or (b) of this definition and is subject to consolidated supervision with its parent.

“**EEA Member Country**” means any of the member states of the European Union, Iceland, Liechtenstein, and Norway.

“EEA Resolution Authority” means any public administrative authority or any person entrusted with public administrative authority of any EEA Member Country (including any delegee) having responsibility for the resolution of any EEA Financial Institution.

“Eligible Transferee” means and includes a commercial bank, an insurance company, a mutual fund, a financial institution, or any fund that invests in commercial loans or similar extensions of credit (other than an individual, the Borrower, or any of its Affiliates).

“Equity Interests” means any and all shares, interests, participations or other equivalents (however designated) of capital stock of a corporation, any and all equivalent ownership interests in a Person (other than a corporation), including partnership interests and membership interests, and any and all warrants, rights or options to purchase or other arrangements or rights to acquire any of the foregoing.

“Erroneous Payment” has the meaning ascribed to such term in Section 10.11(a).

“Erroneous Payment Deficiency Assignment” has the meaning ascribed to such term in Section 10.11(d)(i).

“Erroneous Payment Impacted Class” has the meaning ascribed to such term in Section 10.11(d)(i).

“Erroneous Payment Return Deficiency” has the meaning ascribed to such term in Section 10.11(d)(i).

“Erroneous Payment Subrogation Rights” has the meaning ascribed to such term in Section 10.11(e).

“EU Bail-In Legislation Schedule” means the EU Bail-In Legislation Schedule published by the Loan Market Association (or any successor person), as in effect from time to time.

“Event of Default” has the meaning ascribed to such term in Section 8.01.

“Excluded Taxes” means any of the following Taxes imposed on or with respect to any Lender or the Administrative Agent or required to be withheld or deducted from a payment to any Lender or the Administrative Agent, (a) Taxes imposed on or measured by net income (however denominated), franchise Taxes, and branch profits Taxes, in each case (i) imposed as a result of such Lender or Administrative Agent being organized under the laws of, or having its principal office or, in the case of any Lender, its applicable lending office located in, the jurisdiction imposing such Tax (or any political subdivision thereof) or (ii) that are Other Connection Taxes, (b) in the case of a Lender, withholding Taxes imposed on amounts payable to or for the account of such Lender with respect to an applicable interest in the Loan pursuant to a law in effect on the date on which (i) such Lender acquires such interest in the Loan (other than pursuant to an assignment request by the Borrower under Section 2.12) or (ii) such Lender changes its lending office, except in each case to the extent that, pursuant to Section 4.01, amounts with respect to such Taxes were payable either to such Lender’s assignor

immediately before such Lender became a party hereto or to such Lender immediately before it changed its lending office, (c) Taxes that would not have been imposed but for the Lender's or the Administrative Agent's failure to make any disclosure with the relevant taxing authority as required by Applicable Law, unless such Lender or Administrative Agent has reasonably and in good faith determined that any such disclosure would expose it to any material adverse effect, or to provide any reasonably requested documentation and/or certification to the Borrower or any other Person or (d) any withholding Taxes imposed due to a Lender's failure to comply with FATCA.

"External Indebtedness" means Indebtedness of the Borrower other than Internal Indebtedness.

"Existing Notes" has the meaning ascribed to such term in Section 2.06(g).

"Fair Market Value" means, with respect to any asset or property, the price which could be negotiated in an arm's-length transaction, for cash, between an informed and willing seller under no compulsion to sell and an informed and willing buyer under no compulsion to buy.

"FATCA" means (1) Sections 1471 through 1474 of the Code, as of the date of this Agreement (or any amended or successor version that is substantively comparable and not materially more onerous to comply with) and any current regulations or official interpretations thereof, (2) any treaty, law or regulation of any other jurisdiction or relating to an intergovernmental agreement between the U.S. and any other jurisdiction, which (in either case) facilitates the implementation of any law or regulation referred to in clause (1) above, and (3) any agreements entered into pursuant to Section 1471(b)(1) of the Code or pursuant to the implementation of any treaty, law or regulation referred to in clause (1) or (2) above with the U.S. Internal Revenue Service, the U.S. government or the government or tax authority of any other jurisdiction.

"FCPA" means the Foreign Corrupt Practices Act of 1977, as amended, and the rules and regulations thereunder.

"Federal Funds Effective Rate" means, for any day, the weighted average of the rates on overnight Federal funds transactions with members of the Federal Reserve System arranged by Federal funds brokers as published on the next succeeding Business Day by the Federal Reserve Bank of New York or, if such rate is not so published for any day that is a Business Day, the average (rounded upwards, if necessary, to the next 1/100 of 1%) of the quotations for such day for such transactions received by the Administrative Agent from three Federal funds brokers of recognized standing selected by it; *provided* that, if the Federal Funds Effective Rate shall be less than zero, such rate shall be deemed to be zero for purposes of this Agreement.

"Federal Reserve Bank of New York's Website" means the website of the Federal Reserve Bank of New York at <http://www.newyorkfed.org>, or any successor source.

"Federal Reserve Board" means the Board of Governors of the Federal Reserve System of the United States.

“**Fee Letters**” means (a) the Administrative Agent Fee Letter and (b) the Joint Lead Arranger Fee Letter.

“**Floor**” means the benchmark rate floor, if any, provided in this Agreement initially (as of the execution of this Agreement, the modification, amendment or renewal of this Agreement or otherwise) with respect to LIBOR.

“**Flow of Funds Memo**” has the meaning ascribed to such term in Section 2.03(a).

“**Good Faith Contest**” means, with respect to the payment of Taxes or any related claims or liabilities by any Person, the satisfaction of each of the following conditions: (a) the validity or amount thereof is being diligently contested in good faith by such Person by appropriate proceedings timely instituted, (b) in the case of Taxes or related claims and liabilities of the Borrower, the Borrower has established adequate cash reserves with respect to the contested items in accordance with IFRS, (c) during the period of such contest, the enforcement of any contested item is effectively stayed, and (d) such contest or proceedings and any resultant failure to pay or discharge the claimed or assessed amount do not and could not otherwise reasonably be expected to result in a Material Adverse Effect.

“**Governmental Approval**” means any authorization, approval, consent, license, concession, ruling, permit, tariff, rate, certification, order, validation, exemption, waiver, variance, opinion of, or registration, filing or recording with, or report or notice to, any Governmental Authority.

“**Governmental Authority**” means any national, state, county, city, town, village, municipal or other local governmental department, commission, board, bureau, agency, authority or instrumentality of the United States, Colombia, the United Kingdom, Canada or any other national, multinational or international authority, or any political subdivision of any thereof, and any person exercising executive, legislative, judicial, regulatory or administrative functions of or pertaining to any of the foregoing entities, and in each case having jurisdiction over the Persons or matters in question.

“**IFRS**” means the International Financial Reporting Standards issued by the International Accounting Standards Board, as in effect from time to time, and as interpreted and applied by the Colombian National Accounting Office (*Contaduría General de la Nación*), on a basis consistent with the Borrower’s operations and reflected in the Borrower’s financial statements.

“**Impacted Interest Period**” has the meaning assigned to it in the definition of “LIBOR.”

“**Indebtedness**” of any Person means, without duplication, (a) any indebtedness of such Person for borrowed money or evidenced by a note, debenture or similar instrument (including a purchase money obligation) given in connection with the acquisition of any property or assets, including securities, (b) obligations to pay the deferred purchase price of property or services, except accounts payable and accrued expenses arising in the ordinary course of business and payable within one hundred eighty (180) days, (c) any derivative transaction

entered into in connection with, protection against, or benefit from fluctuation in any rate or price (provided that, for the calculation of the value of any derivative transaction, only the net mark-to-market value shall be taken into account), (d) Capitalized Lease Obligations; (e) Indebtedness of others described in clauses (a) through (d) above secured by (or for which the holder thereof has an existing right, contingent or otherwise, to be secured by) a Lien on the property of such Person, whether or not the respective Indebtedness so secured has been assumed by such Person, (f) any guarantee by such Person of any Indebtedness of others described in the preceding clauses (a) through (d) above, and (g) any amendment, renewal, extension or refunding of any such Indebtedness.

“**Indemnatee**” has the meaning ascribed to such term in Section 11.08(b).

“**Initial Lender**” means each of Banco Santander, S.A., Citibank, N.A., JPMorgan Chase Bank, N.A., and The Bank of Nova Scotia.

“**Instructions Letter**” means the irrevocable instructions letter executed by the Borrower substantially in the form of Annex C.

“**Interest Determination Date**” means the second (2nd) Business Day prior to the commencement of any Interest Period relating to the Loan.

“**Interest Payment Date**” means the date which is the third month anniversary of the Agreement Date and continuing on each third month anniversary thereof until the Maturity Date and on the Maturity Date.

“**Interest Period**” means the Interest Period determined in accordance with Section 2.07(b).

“**Internal Indebtedness**” means any Indebtedness payable to Colombian residents in Colombian Pesos.

“**Interpolated Rate**” means, at any time, for any Interest Period, the rate *per annum* (rounded to the same number of decimal places as the LIBO Screen Rate) determined by the Administrative Agent (which determination shall be conclusive and binding absent manifest error) to be equal to the rate that results from interpolating on a linear basis between: (a) the LIBO Screen Rate for the longest period for which the LIBO Screen Rate is available) that is shorter than the Impacted Interest Period; and (b) the LIBO Screen Rate for the shortest period (for which that LIBO Screen Rate is available) that exceeds the Impacted Interest Period, in each case, at such time.

“**ISDA Definitions**” means the 2006 ISDA Definitions published by the International Swaps and Derivatives Association, Inc. or any successor thereto, as amended or supplemented from time to time, or any successor definitional booklet for interest rate derivatives published from time to time by the International Swaps and Derivatives Association, Inc. or such successor thereto.

“Joint Lead Arranger Fee Letter” means the fee letter executed on or prior to the date of this Agreement between the Borrower and the Joint Lead Arrangers and Joint Bookrunners.

“Judgment Currency” has the meaning ascribed to such term in Section 11.09(a).

“Judgment Currency Conversion Date” has the meaning ascribed to such term in Section 11.09(a).

“Lender” (i) prior to a replacement pursuant to Section 2.12 or to an assignment pursuant to Section 11.03(b), means, the Initial Lenders, and (ii) on and after a replacement pursuant to Section 2.12 or an assignment pursuant to Section 11.03(b), means, individually or collectively, as the case may be, the Initial Lenders and/or one or more assignees, who have executed an Assignment and Assumption Agreement and are registered as Lenders by the Administrative Agent in terms of Section 11.03(e).

“Liabilities” has the meaning ascribed to such term in Section 10.06.

“LIBO Screen Rate” has the meaning assigned to it in the definition of “LIBOR.”

“LIBOR” means, with respect to any Interest Period for the Loan, the London interbank offered rate as administered by ICE Benchmark Administration (or any other Person that takes over the administration of such rate) for U.S. Dollars for a period of three (3) months as displayed on pages LIBOR01 or LIBOR02 of the Reuters screen that displays such rate (or, in the event such rate does not appear on a Reuters page or screen, on any successor or substitute page on such screen that displays such rate, or on the appropriate page of such other information service that publishes such rate from time to time as selected by the Administrative Agent in its reasonable discretion; in each case the “*LIBO Screen Rate*”) on the Interest Determination Date; *provided* that if the LIBO Screen Rate shall be less than zero, such rate shall be deemed to be zero for the purposes of this Agreement; *provided further* that if the LIBO Screen Rate shall not be available at such time for such Interest Period (an “*Impacted Interest Period*”) then LIBOR shall be the Interpolated Rate; *provided* that if any Interpolated Rate shall be less than zero, such rate shall be deemed to be zero for purposes of this Agreement.

“Lien” means any lien, lease, mortgage, pledge, hypothecation, or other encumbrance or security interest.

“Loan Documents” means this Agreement, the Notes, the Instructions Letter, the Fee Letters and any other document the Borrower may from time to time designate as such with the prior approval of the Ministry of Finance to the extent required under Applicable Law.

“Loan” means, at any time, the aggregate of the outstanding amount of the Disbursement at such time. To the extent relating to any particular Lender, references herein to the Loan means the portion of the Loan allocable to such Lender.

“**Margin Stock**” means “margin stock” as defined in Regulations U and X of the Federal Reserve Board (or any successor thereto), as the same may be modified and supplemented and in effect from time to time.

“**Material Adverse Effect**” means any event, circumstance, occurrence or condition that, as of any date of determination, results in or otherwise constitutes a material and adverse effect on: (a) the ability of the Borrower to perform any material obligations under the Loan Documents, (b) the validity or enforceability of any Loan Document or any material provision thereof, or (c) the financial condition, business or operations of the Borrower (taken as a whole for purposes of this clause (c)).

“**Material Subsidiary**” means a Subsidiary of the Borrower which on any given date of determination accounts for more than 10% of the Borrower’s Consolidated Total Assets.

“**Maturity Date**” means the second-year anniversary of the Disbursement Date, *provided* that if such date is not a Business Day, the Maturity Date shall be the immediately preceding Business Day.

“**Ministry of Finance**” means the Ministry of Finance and Public Credit of Colombia (*Ministerio de Hacienda y Crédito Público*).

“**Net Equity Proceeds**” means an amount equal to any cash proceeds from a capital contribution to, or the issuance of any Equity Interests of, the Borrower, net of underwriting discounts and commissions and other reasonable costs and expenses associated therewith, including reasonable legal fees and expenses.

“**Note**” means (a) a promissory note issued pursuant to Section 2.06, or (b) any replacement promissory note issued pursuant to this Agreement, in each case, in compliance with the requirements for promissory notes under the Commercial Code (as amended) and any other law or regulation applicable to promissory notes in Colombia.

“**Notices**” has the meaning ascribed to such term in Section 11.02(a).

“**OFAC**” means the Office of Foreign Assets Control of the U.S. Department of the Treasury.

“**Other Connection Taxes**” means, with respect to any Lender or the Administrative Agent, Taxes imposed as a result of a present or former connection between such Lender or Administrative Agent and the jurisdiction imposing such Tax (other than connections arising from such Lender or the Administrative Agent having executed, delivered, become a party to, performed its obligations under, received payments under, engaged in any other transaction pursuant to or enforced any Loan Document, or sold or assigned an interest in any Loan Document).

“**Other Taxes**” means all present or future stamp, court or documentary, intangible, recording, filing or similar Taxes that arise from any payment made under, from the execution, delivery, performance, enforcement or registration of any Loan Document except any

such Taxes that are Other Connection Taxes imposed with respect to an assignment (other than an assignment made pursuant to Section 2.12).

“Participant Register” has the meaning ascribed to such term in Section 11.03(f).

“PATRIOT Act” means the Uniting and Strengthening America by Providing Appropriate Tools Required to Intercept and Obstruct Terrorism Act of 2001 (Title III of Pub. L. 107-56 (signed into law October 26, 2001)).

“Payment Recipient” has the meaning ascribed to such term in Section 10.11(a).

“Permitted Lien” means any of the following:

- (a) Liens arising by operation of law, such as merchants’, maritime or other similar Liens arising in the ordinary course of business or Liens in respect of taxes, assessments or other governmental charges that are not yet delinquent or that are being contested in good faith by appropriate proceedings;
- (b) Liens arising in the ordinary course of business in connection with Indebtedness maturing not more than one year after the date on which the Indebtedness was originally incurred and which is related to the financing of export, import or other trade transaction;
- (c) Liens resulting from the deposit of funds or evidences of Indebtedness in trust for the purpose of discharging or defeasing Indebtedness of the Borrower or any Material Subsidiary;
- (d) Liens on assets or property of a Person existing at the time such Person is merged into, consolidated with or acquired by the Borrower or any Material Subsidiary or becomes a Material Subsidiary; *provided* that any such Lien is not incurred in contemplation of such merger, consolidation or acquisition (unless such Lien was created to secure or provide for the payment of any part of the purchase price of such property or assets) and does not secure any property of the Borrower or any Material Subsidiary other than the property and assets subject to such Lien prior to such merger, consolidation or acquisition;
- (e) Liens existing as of the date hereof and set forth on Schedule 1;
- (f) Liens securing Indebtedness (including in the form of Capitalized Lease Obligations and purchase money Indebtedness) incurred for the purpose of financing the cost (including the cost of design, development, site acquisition, construction, integration, manufacture or acquisition) of real or personal property (tangible or intangible) which is incurred contemporaneously therewith or within one hundred eighty (180) days thereafter; *provided* that (i) such Liens secure Indebtedness in an amount not in excess of the cost of such property (plus an amount equal to the reasonable fees and expenses incurred in connection with the incurrence of such Indebtedness) and (ii) such Liens do

not extend to any property of the Borrower other than the property for which such Indebtedness was incurred;

(g) Liens to secure the performance of statutory and common law obligations, bids, trade contracts, judgments, surety or appeal bonds, performance bonds or other obligations of a like nature incurred in the ordinary course of business;

(h) Liens to secure debt securities;

(i) Liens granted in favor of the Borrower and/or any Wholly Owned Subsidiary to secure Indebtedness owing to the Borrower or such Wholly Owned Subsidiary;

(j) Legal or equitable encumbrances deemed to exist by reason of the inclusion of customary negative pledge provisions in any financing document of the Borrower or any Subsidiary;

(k) Liens securing Internal Indebtedness;

(l) Liens created in favor of a bank or financial institution which is party to a letter of credit transaction as account party on drafts, bills of lading and other documents which are the subject of such letter of credit transaction;

(m) Liens on cash or cash equivalents to secure obligations under agreements or arrangements referred to in clause (c) of the definition of "Indebtedness";

(n) Any Lien in respect of Indebtedness representing the extension, refinancing, renewal or replacement (or successive extensions, refinancings, renewals or replacements) of Indebtedness secured by Liens referred to in clauses (b), (c), (d), (e), (f), (g), (h), (i), and (j) above; *provided* that the principal of the Indebtedness secured thereby does not exceed the principal of the Indebtedness secured thereby immediately prior to such extension, renewal or replacement, plus any accrued and unpaid interest or capitalized interest payable thereon, reasonable fees and expenses incurred in connection therewith, and the amount of any prepayment premium necessary to accomplish any refinancing; *provided further*, that such extension, renewal or replacement shall be limited to all or a part of the property (or interest therein) subject to the Lien so extended, renewed or replaced (plus improvements and construction of such property);

(o) Pledges and deposits made in the ordinary course of business in compliance with workers' compensation, unemployment insurance and other social security laws or regulations;

(p) Easements, zoning restrictions, rights-of-way and similar encumbrances on real property imposed by law or arising in the ordinary course of business that do not secure any monetary obligations and do not materially detract from the value of the affected property or interfere with the ordinary conduct of business of the Borrower or any of its Subsidiaries;

(q) Liens arising out of government concessions or licenses held by the Borrower or any of its Subsidiaries;

(r) Liens to secure the purchase of, or created in connection with the financing of all or any part of the purchase price or cost of the acquisition, purchase, construction, development, extension, expansion and/or improvement by the Borrower or any of its Subsidiaries of, any assets (or right of interest therein), *provided* that (i) such Liens cover only such assets (or right or interest therein, as the case may be), or any assets forming part of or connected with such assets (or any right or interest therein), or products or proceeds from such assets, or revenue or profit from such assets or such products or proceeds (or any right or interest therein), or the shares or other ownership interests in any Person substantially all of whose assets consist of such assets, revenue or profit, (ii) such Liens secure no more than the purchase price or other consideration paid for, and/or costs of construction, development, expansion, extension and/or improvement, of such assets (or any right or interest therein), including any financing or refinancing costs associated therewith, and (iii) such Liens granted in connection with any extension, expansion and/or improvement of assets cover only assets other than assets existing at the date of this Agreement;

(s) Liens in respect of Indebtedness the principal amount of which in the aggregate, together with all other Liens not otherwise qualifying as Permitted Liens pursuant to another part of this definition of Permitted Liens, does not exceed 15% of the Borrower's Consolidated Total Assets at the time of its constitution. For purposes of this definition, the value of any Lien securing Indebtedness will be computed on the basis of the lesser of (i) the outstanding principal amount of such secured Indebtedness and (ii) the higher of (x) the book value or (y) the Fair Market Value of property securing such Indebtedness; and

(t) Any extension, renewal or replacement of the foregoing.

"Person" means any individual, firm, company, limited liability company, corporation, partnership (including association and whether or not having separate legal personality), joint stock company, trust, unincorporated organization or any other enterprise, or a Governmental Authority.

"Potential Default" means an event that with the lapse of time (including any applicable grace period) or the giving of notice, or both, would become an Event of Default.

"Proportionate Share" means, with respect to each Lender and as of any date of determination: (a) prior to the Disbursement Date, the ratio of such Lender's Commitment to the sum of the Total Commitment; and (b) thereafter, the then-current ratio of the outstanding principal amount of the Loan held by such Lender to the aggregate outstanding principal amount of the Loan under this Agreement.

"Reference Time" with respect to any setting of the then-current Benchmark means (1) if such Benchmark is LIBOR, 11:00 a.m. (London time) on the day that is two London

banking days preceding the date of such setting, and (2) if such Benchmark is not LIBOR, the time determined by the Administrative Agent in its reasonable discretion.

“**Register**” has the meaning ascribed to such term in Section 11.03(e).

“**Regulation U**” means Regulation U of the Federal Reserve Board, as in effect from time to time and all official rulings and interpretations thereunder or thereof.

“**Regulatory Change**” means the introduction or change after the date of this Agreement of or in United States or foreign national, state or municipal laws or regulations applicable to the relevant Lender in respect of its obligations hereunder or in the interpretation or administration thereof, or the adoption or making after such date of any directives or requests (whether or not having the force of law) by any United States or foreign national, state, or municipal court or monetary authority, or other Governmental Authority applicable to the relevant Lender in respect of its Loan; *provided* that notwithstanding anything herein to the contrary, (a) the Dodd-Frank Wall Street Reform and Consumer Protection Act and all requests, rules, guidelines or directives thereunder or issued in connection therewith, (b) all requests, rules, guidelines or directives promulgated by the Bank for International Settlements, the Basel Committee on Banking Supervision (or any successor or similar authority) or the United States, Canada or foreign regulatory authorities, in each case pursuant to Basel III, and (c) CRD IV and any law or regulation that implements or applies CRD IV, shall in each case be deemed to be a “Regulatory Change,” regardless of the date enacted, adopted or issued.

“**Related Parties**” means, with respect to any specified Person, such Person’s Affiliates and the respective directors, officers, employees, agents and advisors of such Person and such Person’s Affiliates.

“**Relevant Governmental Body**” means the Federal Reserve Board and/or the Federal Reserve Bank of New York, or a committee officially endorsed or convened by the Federal Reserve Board and/or the Federal Reserve Bank of New York or any successor thereto.

“**Replaced Lender**” has the meaning ascribed to such term in Section 2.12(b).

“**Replacement Lenders**” has the meaning ascribed to such term in Section 2.12(b).

“**Required Lenders**” means the Lender or Lenders whose Proportionate Shares collectively represent more than 50% of the aggregate amount of the Proportionate Shares of all Lenders; *provided* that the Proportionate Share of any Defaulting Lender shall be disregarded in determining the Required Lenders at any time.

“**Resolution Authority**” means an EEA Resolution Authority or, with respect to any UK Financial Institution, a UK Resolution Authority.

“**Sanctioned Country**” means, at any time, a country or territory which is itself the subject or target of any Sanctions (at the time of this Agreement Crimea, Cuba, Iran, North Korea and Syria).

“Sanctioned Person” means, at any time, any Person (a) that is the subject or target of any Sanctions, (b) listed in the Specially Designated Nationals and Blocked Persons list published by the U.S. Department of the Treasury, the Consolidated Screening List published by the U.S. Department of Commerce, the Consolidated List of Financial Sanctions Targets in the UK published by Her Majesty’s Treasury of the United Kingdom, the United Nations Security Council Consolidated List published by the United Nations Security Council, the European Union Consolidated Financial Sanctions List published by the European Union or the Consolidated Canadian Autonomous Sanctions List published by the Government of Canada, (c) operating, organized or resident in a Sanctioned Country or (d) Controlled by any such Person or Persons (in the aggregate) described in clauses (a), (b) or (c) above.

“Sanctions” means economic or financial sanctions or trade embargoes imposed, administered or enforced from time to time by U.S. Governmental Authorities (including, but not limited to, those administered by OFAC the U.S. Department of Commerce, and the U.S. Department of State), the United Nations Security Council, the European Union, Canada, or Her Majesty’s Treasury of the United Kingdom.

“SOFR” means, with respect to any Business Day, a rate per annum equal to the secured overnight financing rate for such Business Day published by the SOFR Administrator on the SOFR Administrator’s Website on the immediately succeeding Business Day.

“SOFR Administrator” means the Federal Reserve Bank of New York (or a successor administrator of the secured overnight financing rate).

“SOFR Administrator’s Website” means the website of the Federal Reserve Bank of New York, currently at <http://www.newyorkfed.org>, or any successor source for the secured overnight financing rate identified as such by the SOFR Administrator from time to time.

“Subsidiary” means, with respect to any Person, any other Person (a) the securities of which having ordinary voting power to elect a majority of the board of directors (or other persons having similar functions) or (b) the other ownership interests of which ordinarily constituting a majority voting interest, are at the time, directly or indirectly, owned or Controlled by such first Person, or by one or more of its Subsidiaries, or by such first Person and one or more of its Subsidiaries; unless otherwise specified, “Subsidiary” means a Subsidiary of the Borrower.

“Tax” means any present or future income, stamp or other taxes, levies, imposts, duties, charges, fees, assessments, deductions or withholdings (including value-added taxes) or other charges of whatever nature now or hereafter imposed by any jurisdiction or by any political subdivision or taxing authority thereof or therein with respect to payments made by or for the Borrower hereunder or under any Loan Document and all interest, penalties or similar liabilities with respect thereto.

“Taxing Jurisdiction” means, with respect to any Lender, any jurisdiction other than (a) a jurisdiction (other than Colombia or New York) through which payments to such

Lender by the Borrower under any Loan Document shall be made and (b) the jurisdiction under the laws of which such Lender is organized or established.

“Term SOFR” means, for the applicable Corresponding Tenor as of the applicable Reference Time, the forward-looking term rate based on SOFR that has been selected or recommended by the Relevant Governmental Body.

“Term SOFR Notice” means a notification by the Administrative Agent to the Lenders and the Borrower of the occurrence of a Term SOFR Transition Event.

“Term SOFR Transition Event” means the determination by the Administrative Agent that (a) Term SOFR has been recommended for use by the Relevant Governmental Body, (b) the administration of Term SOFR is administratively feasible for the Administrative Agent and (c) a Benchmark Transition Event has previously occurred resulting in a Benchmark Replacement in accordance with this Section titled “Benchmark Replacement Setting” that is not Term SOFR.

“Total Commitment” means, on any day, the aggregate Commitments on such day. The original aggregate principal amount of the Commitments is U.S. \$4,000,000,000.

“U.S.” or **“United States”** means the United States of America.

“UK Financial Institution” means any BRRD Undertaking (as such term is defined under the PRA Rulebook (as amended from time to time) promulgated by the United Kingdom Prudential Regulation Authority) or any person falling within IFPRU 11.6 of the FCA Handbook (as amended from time to time) promulgated by the United Kingdom Financial Conduct Authority, which includes certain credit institutions and investment firms, and certain affiliates of such credit institutions or investment firms.

“UK Resolution Authority” means the Bank of England or any other public administrative authority having responsibility for the resolution of any UK Financial Institution.

“Unadjusted Benchmark Replacement” means the applicable Benchmark Replacement excluding the related Benchmark Replacement Adjustment.

“Wholly Owned” means, with respect to any corporate entity, any Person of which 100% of the outstanding capital stock (other than qualifying shares, if any) having by its terms ordinary voting power (not dependent on the happening of a contingency) to elect the board of directors (or equivalent controlling governing body) of that Person, is at the time owned or Controlled directly or indirectly by that corporate entity, by one or more wholly owned Subsidiaries of that corporate entity or by that corporate entity and one or more wholly owned Subsidiaries.

“Write-Down and Conversion Powers” means, (a) with respect to any EEA Resolution Authority, the write-down and conversion powers of such EEA Resolution Authority from time to time under the Bail-In Legislation for the applicable EEA Member Country, which write-down and conversion powers are described in the EU Bail-In Legislation Schedule, and (b) with respect to the United Kingdom, any powers of the applicable Resolution Authority under

the Bail-In Legislation to cancel, reduce, modify or change the form of a liability of any UK Financial Institution or any contract or instrument under which that liability arises, to convert all or part of that liability into shares, securities or obligations of that person or any other person, to provide that any such contract or instrument is to have effect as if a right had been exercised under it or to suspend any obligation in respect of that liability or any of the powers under that Bail-In Legislation that are related to or ancillary to any of those powers.

1.2. Principles of Construction.

(a) The meanings set forth for defined terms in Section 1.01 or elsewhere in this Agreement shall be equally applicable to both the singular and plural forms of the terms defined.

(b) Unless otherwise specified, all references in this Agreement to Sections, Annexes, Exhibits, and Schedules are to Sections, Annexes, Exhibits, and Schedules in or to this Agreement.

(c) The headings of the Sections in this Agreement are included for convenience only and shall not in any way affect the meaning or construction of any provision of this Agreement.

(d) Acknowledging that the parties hereto have participated jointly in the negotiation and drafting of this Agreement, if any ambiguity or question of intent or interpretation arises as to any aspect of this Agreement, then this Agreement will be construed as if drafted jointly by each of parties hereto and no presumption or burden of proof will arise favoring or disfavoring any party by virtue of the authorship of any provision of this Agreement.

(e) References in this Agreement or the Notes to any belief, decision, discretion or other action held, made, determined, exercised or taken by the Administrative Agent or any Lender shall mean any such belief, decision, discretion or other action to be held, made, determined, exercised or taken in good faith to the extent required under the laws of the State of New York.

(f) Any reference herein to “including” shall mean “including without limitation.”

(g) References to any document or agreement, including this Agreement, shall be deemed to include references to such documents or agreements as amended, supplemented or replaced from time to time in accordance with its terms and (where applicable) subject to compliance with the requirements set forth therein.

(h) Unless the context requires otherwise (i) any reference herein to any Person shall be construed to include such Person’s successors and assigns, and (ii) any reference to any law or regulation herein shall, unless otherwise specified, refer to such law or regulation as amended, modified or supplemented from time to time or to the successor law or regulation.

SECTION 2 THE LOAN

2.1. Commitments. The Lenders severally agree to extend to the Borrower on any Business Day during the eight (8) Business Day period following the Agreement Date, subject to the terms and conditions of this Agreement, one disbursement (the “*Disbursement*”) of the Loan in U.S. Dollars in a principal amount such that, the principal amount of the Disbursement does not exceed the Total Commitment at such time nor, in the case of each Lender, such Lender’s Commitment at such.

2.2. Mechanics for Requesting the Disbursement. The Disbursement shall be made by the Lenders ratably in accordance with their respective Commitment at such time. The Borrower shall request the Disbursement in writing by using a request substantially in the form of Annex A hereto (the “*Disbursement Request*”). The Disbursement Request shall be irrevocable and binding on the Borrower (except as provided below) and shall be given to the Administrative Agent no later than 12:00 p.m. (New York time) three (3) Business Days before the proposed Disbursement Date (or such shorter period as may be agreed by the Administrative Agent acting upon the direction of the Required Lenders); *provided* that in the event an Adverse Acquisition Order occurs in the view of the Borrower, the Disbursement Request shall be revocable by the Borrower and no costs or expenses pursuant to Section 2.10 shall be due or payable. The Administrative Agent shall promptly provide to each Lender a copy of the Disbursement Request received from the Borrower.

2.3. Funding.

(a) Subject to the terms of this Agreement, each Lender shall make available on the Disbursement Date such Lender’s Disbursement requested in the Disbursement Request in immediately available funds to the Administrative Agent via Fed Wire or SWIFT, to arrive by 9:00 am New York time to such account as may be notified from time to time by the Administrative Agent to the Lenders in writing. The Borrower shall provide, no later than 6:00 p.m. (New York time) on the Business Day immediately preceding the proposed Disbursement Date, an irrevocable direction (the “*Flow of Funds Memo*”) to the Administrative Agent to transfer and apply the proceeds of the Disbursement in the manner set forth in the Flow of Funds Memo, which will be in form and substance satisfactory to the Administrative Agent.

(b) The Administrative Agent shall immediately transfer the proceeds funded pursuant to Section 2.03(a) in immediately available funds to the Borrower on the same day via Fed Wire or SWIFT to arrive by 12:00 pm New York time to the account designated by the Borrower in the Disbursement Request.

(c) Notwithstanding any provision of this Agreement to the contrary, no Lender shall be required to make any Disbursement hereunder if, as a result thereof, the amount of its Commitment would thereby be exceeded or the Total Commitment would thereby be exceeded. The Loan is not revolving in nature; amounts borrowed and repaid or prepaid hereunder in respect of the principal amount of the Loan may not be reborrowed.

(d) The rights and obligations of the Lenders are several and not joint or joint and several. The failure of a Lender to fund any Disbursement shall not relieve any other Lender of its obligation under this Agreement to fund its Disbursement on the Disbursement Date. The failure by any Lender to perform its obligations hereunder shall not affect the obligations of the Borrower towards any other party hereto nor shall any Lender or the Administrative Agent be responsible for the failure of any other Lender to advance its Disbursement.

2.4. Reserved.

2.5. Termination and Reduction of Commitments. The Borrower may terminate the unutilized Total Commitment, or reduce the amount thereof, by giving irrevocable written notice to the Administrative Agent not later than 5:00 P.M. on the third (3rd) Business Day prior to the date of such termination or reduction, *provided* reductions of the unutilized Total Commitment shall be apportioned among the Lenders and shall reduce each Lender's unutilized Commitment according to such Lender's ratable share of the unutilized Total Commitment and shall be in the amount of \$5,000,000 or in integral multiples of \$1,000,000 in excess thereof. Each Lender's Commitment and the Total Commitment will be reduced to zero on the earlier of (a) the close of business on the eighth (8th) Business Day following the Agreement Date and (b) the Disbursement Date immediately following the Disbursement.

2.6. Notes.

(a) The Borrower's obligation to pay the principal of and interest on the Loan to the Lenders shall be evidenced by a blank promissory note substantially in the form of Annex B (each, a "Note"). Each Note shall be valid and enforceable as to its principal amount at any time only to the extent of the amount disbursed and outstanding under the Loan evidenced thereby; and, as to interest, only to the extent of the interest accrued and unpaid thereon. Each Note shall be (i) payable to a Lender, (ii) dated the Disbursement Date and (iii) payable at the date referred to in the corresponding Instructions Letter. On the Disbursement Date, the Borrower shall provide to the Administrative Agent for distribution to each Lender (i) a duly executed Note for such Lender and (ii) a duly executed Instructions Letter substantially in the form of Annex C, pursuant to which the Borrower authorizes such Lender to complete its Note issued in accordance with this Section 2.06.

(b) In case of loss, theft, partial or complete destruction or mutilation of a Note, the affected Lender shall be entitled to request to the Borrower, and the Borrower shall promptly (but in any event within ten (10) Business Days of such notice) execute and deliver to such Lender in lieu thereof a new Note, dated the same date as the lost, stolen, destroyed or mutilated Note, in replacement of the Note; *provided* that, in the case of any mutilated Note, such mutilated Note shall be returned to the Borrower. Each Lender shall, prior to delivery of any replacement Note by the Borrower also comply with the procedures established by articles 802 to 821 of the Commercial Code and 398 of Law 1564 of 2012 (*Código General del Proceso*) or any other Applicable Law in connection with the case of loss, theft, partial or complete destruction or mutilation of a Note. In the event that any lost or stolen Note is subsequently found, such Lender shall cancel such Note and deliver such cancelled Note to the Borrower; *provided further* that the Borrower shall have already delivered a substitute Note to the Administrative Agent. In the event of execution and delivery of a new Note as contemplated by

this clause (b), such Lender shall reimburse and indemnify the Borrower for and against any and all direct liabilities, obligations, losses, damages, penalties, claims, actions, judgments, suits, costs, expenses or disbursements of whatsoever kind or nature which may be imposed on, asserted against or incurred by the Borrower as a result of any negotiation with, or presentation by, any Person for collection of any sums due under or with respect to such Lender's original Note being lost or stolen, excluding any such liabilities, obligations, losses, damages, penalties, claims, actions, judgments, suits, costs, expenses or disbursements caused by the Borrower. All replacement Notes issued in connection with this Agreement shall be signed by an Authorized Officer of the Borrower.

(c) The payment of any part of the principal of any such Note shall discharge the obligation of the Borrower under this Agreement to pay the portion of the principal of the Loan evidenced by such Note *pro tanto*, and the payment of any principal of the Loan in accordance with the terms hereof shall discharge the obligations of the Borrower under the Notes evidencing the Loan *pro tanto*.

(d) Upon discharge of all obligations of the Borrower under the Loan, the Lenders shall cancel all the Notes and promptly return them to the Borrower.

(e) The Notes shall only be sold, assigned or transferred in accordance with the provisions of this Agreement and Applicable Law.

(f) Each Lender agrees and covenants that it will not complete or seek enforcement of its Notes other than in accordance with the instructions set forth in the corresponding Instructions Letter.

(g) In the case of a permitted assignment pursuant to Section 11.03, (i) if requested by the assignee and if such assignment is of the aggregate Disbursement amount(s) held by the assigning Lender, the Lender shall deliver to the Administrative Agent for further delivery to the Borrower concurrently with the execution and delivery by the Borrower to the Administrative Agent of the new Notes in the manner contemplated in clause (ii) below, the Note held by such assigning Lender evidencing the Disbursement (for any assigning Lender, together with the related Instructions Letter, the "*Existing Notes*" of such assigning Lender) and (ii) if requested by the assigning Lender or the relevant assignee, the Administrative Agent shall as promptly as reasonably practicable request that the Borrower, and the Borrower hereby agrees to, execute and deliver to the Administrative Agent as promptly as reasonably practicable (for further delivery to such assigning Lender (if applicable) and such assignee) a new Note or Notes (together with the related Instructions Letter) evidencing the Disbursement(s) held by such assigning Lender (if applicable) and such assignee (in exchange for Existing Notes to the extent such assignment is of the aggregate amount of Disbursement(s) held by the assigning Lender).

2.7. Interest.

(a) Interest.

(i) The Borrower agrees to pay interest in respect of the unpaid principal amount of the Disbursement from the Disbursement Date until the principal amount of

the Disbursement is repaid in full, at a rate *per annum* equal to LIBOR for each relevant Interest Period plus the Applicable Margin.

(ii) To the extent permitted by law, interest on any due and unpaid amounts of principal or interest in respect of the Loan shall bear interest at a rate *per annum* equal to the rate which is 2.0% in excess of the rate borne by the Loan immediately prior to the respective payment default. The parties hereto acknowledge that, as of the Agreement Date, the payment of interest on interest (as described in this Section 2.07(a)(ii)), including default interest, is prohibited under Colombian law as currently in effect, subject to applicability of the rules set forth in Article 886 of the Commercial Code, it being understood that any outstanding interest obligations that remain unpaid for more than one (1) year may (upon the satisfaction of the rules set forth in Article 886 of the Commercial Code) be subject to interest on interest under Colombian law as currently in effect.

(iii) Interest in respect of the Loan shall be payable in arrears commencing on the first Interest Payment Date occurring after the Disbursement Date and upon the payment or prepayment of principal of the Loan (but only on the amount paid or prepaid); *provided* that if any Interest Payment Date would fall on a day that is not a Business Day, such Interest Payment Date shall be extended to the next succeeding Business Day, unless such next succeeding Business Day would fall in the next succeeding calendar month, in which case such Interest Payment Date shall be the preceding Business Day.

(iv) All computations of interest hereunder shall be made on the actual number of days elapsed over a year of 360 days.

(v) On each Interest Determination Date, the Administrative Agent shall determine LIBOR for the relevant Interest Period and shall promptly notify the Borrower and the Lenders thereof. Each such determination shall, absent manifest error, be final and conclusive and binding on all parties hereto.

(vi) In no event shall the interest applicable under this Agreement exceed the interest rate limits set forth by Applicable Law.

(b) Interest Periods. Each Interest Period shall be a three-month period; *provided* that:

- (i) (a) the initial Interest Period for the Disbursement shall commence on the Disbursement Date and end on the first Interest Payment Date thereafter; and (b) each Interest Period occurring after the initial Interest Period for the Disbursement shall commence on the day on which the next preceding Interest Period therefor expires; and
- (ii) the final Interest Period shall end on the Maturity Date.

(c) Alternate Rate of Interest.

(i) If the Administrative Agent shall have determined (which determination shall be conclusive and binding for all purposes, absent manifest error), or the Required Lenders have advised the Administrative Agent, at any time, provided that no Benchmark Transition Event shall have occurred at such time, that:

(A) on any Interest Determination Date, U.S. Dollar deposits of sufficient amount and maturity for funding a disbursement are not available to the Required Lenders in the London interbank market in the ordinary course of business; or

(B) on any Interest Determination Date, by reason of circumstances affecting the relevant market, adequate and fair means do not exist for ascertaining the rate of interest to be applicable to the Loan (or any portion thereof); or

(C) on any Interest Determination Date, the relevant rate of interest referred to in the definition of LIBOR that is to be used to determine the rate of interest for the Loan (or any portion thereof) does not cover the funding cost to the Required Lenders of making or maintaining the portion of the Loan to be made or held by it; or

(D) it has become unlawful at any time for any Lender to make any Disbursement or maintain any portion of the Loan based upon LIBOR;

then the Administrative Agent shall notify the Borrower and the Lenders thereof. Upon receipt of such notice, (A) the Borrower's right to request the making by any affected Lender of, and the affected Lender's obligations to make available or continue to maintain, its portion of the affected Loan based upon LIBOR shall be suspended, and (B) each such Lender's portion of the affected Loan shall instead bear interest at the rate per annum equal to the sum of (x) the Alternative Base Rate, plus (y) the Applicable Margin, it being expressly understood and agreed that the same Alternative Base Rate and Applicable Margin shall apply for each Lender so affected effective as of the date of effectiveness of such event; *provided, however*, that in no event shall the interest rate determined as provided above exceed the interest rate limits set forth by the Colombian Central Bank for loans to state-owned entities.

(d) Benchmark Replacement Setting.

(i) Notwithstanding anything to the contrary herein or in any other Loan Document, if a Benchmark Transition Event or an Early Opt-in Election, as applicable, and its related Benchmark Replacement Date have occurred prior to the Reference Time in respect of any setting of the then-current Benchmark, then (x) if a Benchmark Replacement is determined in accordance with clause (1) or (2) of the definition of "Benchmark Replacement" for such Benchmark Replacement Date, such Benchmark Replacement will replace such Benchmark for all purposes hereunder and under any Loan Document in respect of such Benchmark setting and subsequent Benchmark settings without any amendment to, or further action or consent of any other party to, this Agreement or any other Loan Document and (y) if a Benchmark Replacement is determined in accordance with clause (3) of the definition of "Benchmark Replacement" for such Benchmark Replacement Date, such Benchmark Replacement will replace such Benchmark for all purposes hereunder and under any Loan Document in respect of any Benchmark setting at or after 5:00 p.m. (New York City time) on the fifth (5th) Business Day after the date notice of such Benchmark Replacement is provided to the Lenders without any amendment to, or further action or consent of any other party to, this Agreement or any other Loan Document so long as the Administrative Agent has not received, by such time, written notice of objection to such Benchmark Replacement from Lenders comprising the Required Lenders.

(ii) Notwithstanding anything to the contrary herein or in any other Loan Document and subject to the proviso below in this paragraph, if a Term SOFR Transition Event and its related Benchmark Replacement Date have occurred prior to the Reference Time in respect of any setting of the then-current Benchmark, then the applicable Benchmark Replacement will replace the then-current Benchmark for all purposes hereunder or under any Loan Document in respect of such Benchmark setting and subsequent Benchmark settings, without any amendment to, or further action or consent of any other party to, this Agreement or any other Loan Document; *provided that*, this clause (ii) shall not be effective unless the Administrative Agent has delivered to the Lenders and the Borrower a Term SOFR Notice.

(iii) In connection with the implementation of a Benchmark Replacement, the Administrative Agent will have the right to make Benchmark Replacement Conforming Changes from time to time and, notwithstanding anything to the contrary herein or in any other Loan Document, any amendments implementing such Benchmark Replacement Conforming Changes will become effective without any further action or consent of any other party to this Agreement or any other Loan Document.

(iv) The Administrative Agent will promptly notify the Borrower and the Lenders of (1) any occurrence of a Benchmark Transition Event, a Term SOFR Transition Event or an Early Opt-in Election, as applicable, and its related Benchmark Replacement Date, (2) the implementation of any Benchmark Replacement, (3) the effectiveness of any Benchmark Replacement Conforming Changes, (4) the removal or reinstatement of any tenor of a Benchmark pursuant to clause (v) below and (5) the commencement or conclusion of any Benchmark Unavailability Period. Any

determination, decision or election that may be made by the Administrative Agent or, if applicable, any Lender (or group of Lenders) pursuant to this Section 2.07(d), including any determination with respect to a tenor, rate or adjustment or of the occurrence or non- occurrence of an event, circumstance or date and any decision to take or refrain from taking any action or any selection, will be conclusive and binding absent manifest error and may be made in its or their sole discretion and without consent from any other party to this Agreement or any other Loan Document, except, in each case, as expressly required pursuant to this Section 2.07(d); *provided, however*, that in no event shall the interest rate determined as provided above exceed the interest rate limits set forth by the Colombian Central Bank for loans to state-owned entities.

(v) Notwithstanding anything to the contrary herein or in any other Loan Document, at any time (including in connection with the implementation of a Benchmark Replacement), (i) if the then-current Benchmark is a term rate (including Term SOFR or LIBOR) and either (A) any tenor for such Benchmark is not displayed on a screen or other information service that publishes such rate from time to time as selected by the Administrative Agent in its reasonable discretion or (B) the regulatory supervisor for the administrator of such Benchmark has provided a public statement or publication of information announcing that any tenor for such Benchmark is or will be no longer representative, then the Administrative Agent may modify the definition of "Interest Period" for any Benchmark settings at or after such time to remove such unavailable or non-representative tenor and (ii) if a tenor that was removed pursuant to clause (i) above either (A) is subsequently displayed on a screen or information service for a Benchmark (including a Benchmark Replacement) or (B) is not, or is no longer, subject to an announcement that it is or will no longer be representative for a Benchmark (including a Benchmark Replacement), then the Administrative Agent may modify the definition of "Interest Period" for all Benchmark settings at or after such time to reinstate such previously removed tenor.

(vi) Upon the Borrower's receipt of notice of the commencement of a Benchmark Unavailability Period, the Borrower may revoke any request for a LIBOR Disbursement of, conversion to or continuation of LIBOR Loans to be made, converted or continued during any Benchmark Unavailability Period and, failing that, the Borrower will be deemed to have converted any such request into a request for a Borrowing of or conversion to Alternative Base Rate Loans. During any Benchmark Unavailability Period or at any time that a tenor for the then-current Benchmark is not an Available Tenor, the component of Alternative Base Rate based upon the then-current Benchmark or such tenor for such Benchmark, as applicable, will not be used in any determination of Alternative Base Rate.

(vii) With respect to this Section 2.07(d), any reasonable discretion required to be exercised by the Administrative Agent shall be exercised after giving due consideration to recommendations by the Relevant Governmental Body or to evolving or then-prevailing market conventions, in each case as appropriate and as set forth in this Section 2.07(d) and the related defined terms used therein, and not with a view to obtaining a commercial advantage for the Lenders; *provided*, that none of the Administrative Agent or any Lender can represent, guarantee, warrant or accept any

responsibility for, and shall not have any liability with respect to, any such alternative, successor or replacement rate implemented pursuant to this Section 2.07, including without limitation, whether the composition or characteristics of any alternative, successor or replacement reference rate will be similar to, or produce the same value or economic equivalence of, LIBOR or have the same volume or liquidity as it did prior to its discontinuance or unavailability.

2.8. Reserved.

2.9. Additional or Increased Costs.

(a) If, due to any Regulatory Change that: (i) changes the basis of taxation of any amounts payable to any Lender (other than (A) Covered Taxes, (B) Taxes described in clauses (b) through (d) of the definition of Excluded Taxes, and (C) Connection Income Taxes); (ii) imposes, modifies or holds applicable any reserve, special deposit, deposit insurance or similar requirement, including any compulsory loan requirement, insurance charge or other assessment (other than, for any period for which such Lender is subject to a Capital Adequacy Requirement, the reserves against "Eurocurrency liabilities" under Regulation D of the Federal Reserve Board) against assets of, deposits with or for the account of, or Loan extended by, such Lender; or (iii) imposes any other condition affecting this Agreement or the Note held by such Lender, and the effect of any of the foregoing is to increase the cost to such Lender of making its Disbursement or maintaining its proportion of the Loan or to reduce any amount received or receivable by such Lender hereunder (whether of principal, interest or otherwise), then the Borrower shall from time to time, upon written demand by such Lender, pay to the Administrative Agent for the benefit of such Lender, additional amounts sufficient to compensate such Lender for such increased cost or reduction suffered.

(b) Each demand for payment by a Lender under this Section 2.09 shall be accompanied by a certificate showing in reasonable detail the basis for the calculation of the amounts demanded in good faith, which certificate, in the absence of manifest error, shall be conclusive and binding for all purposes. The Borrower shall pay such Lender, as the case may be, the amount shown as due on any such certificate within twenty (20) Business Days after receipt thereof.

(c) No Lender shall be entitled to demand or be compensated for any additional amounts under this Section 2.09 (i) to the extent that such additional amounts relate to any period of time more than one hundred eighty (180) days prior to the date upon which such Lender first notifies the Borrower of such additional amounts, or (ii) if such Lender is causing the incremental cost to be incurred for a reason not provided for in Section 2.09(a) above.

(d) If the Borrower is required to pay any amount to a Lender pursuant to this Section 2.09, it may prepay the portion of the Loan held by such Lender in accordance with Section 3.02. Notwithstanding anything to the contrary herein, the provisions of Sections 3.02(a), 3.04(b) and 3.04(c) shall not apply to any such prepayment.

2.10. Breakage Costs, Other Expenses and Losses. Except as otherwise provided herein, the Borrower agrees to compensate any Lender, promptly upon its written

request (which request shall set forth in reasonable detail the basis for requesting such compensation), for all reasonable and documented losses, expenses and liabilities which such Lender may sustain (including any loss, expense or liability incurred by reason of the liquidation or reemployment of deposits or other funds required by such Lender to fund its portion of the Disbursement, but excluding any loss of anticipated profits) if: (i) the Borrower fails to borrow in accordance with a Disbursement Request, (ii) the Borrower fails to make a voluntary prepayment of the Loan on an Interest Payment Date therefor in accordance with a prepayment notice given pursuant to Section 3.02, (iii) the Borrower otherwise prepays the Loan on any date other than an Interest Payment Date therefor or (iv) the assignment of a Loan by a Lender pursuant to a request by the Borrower pursuant to Section 2.12 shall occur on a day other than an Interest Payment Date. Each Lender's calculation of the amount of compensation owing pursuant to this Section 2.10 shall be made in good faith and in a commercially reasonable manner. A Lender's basis for requesting compensation pursuant to this Section 2.10 and a Lender's calculation of the amount thereof made in accordance with the requirements of this Section 2.10 shall, absent manifest error, be final and conclusive and binding on all parties hereto. The Borrower shall pay such Lender, as the case may be, the amount shown as due on any such certificate within twenty (20) Business Days after receipt thereof.

2.11. Illegality. Notwithstanding any other provision herein, if after the Agreement Date the adoption of or any change in any Applicable Law or in the interpretation or application thereof by a competent Governmental Authority shall make it unlawful for any Lender to make its Disbursement or maintain its portion of the Loan as contemplated by this Agreement and the Notes, such Lender shall give notice thereof to the Administrative Agent and the Borrower describing in reasonable detail the relevant provisions of such Applicable Law, following which (a) the Commitment of such Lender shall forthwith be suspended until such Lender notifies the Administrative Agent and the Borrower that the circumstances causing such suspension no longer exist and (b) if such Applicable Law shall so mandate, such Lender's portion of the Loan then outstanding shall be prepaid by the Borrower on or before the date required and permitted by Applicable Law, together with all accrued interest thereon (unless actions taken pursuant to Section 2.12 shall make such prepayment unnecessary).

2.12. Lender Replacement.

(a) (i) Upon the occurrence of any event giving rise to the operation of Section 2.09 with respect to any Lender that results in such Lender charging to the Borrower additional or increased costs, (ii) upon any adoption or change of the type described in Section 2.11, or (iii) the Borrower being required to pay Covered Taxes or additional amounts to any Lender or any Governmental Authority pursuant to Section 4.01, then such Lender shall use reasonable efforts to designate a different lending office for funding its Disbursement or booking its Loan hereunder or to assign its rights and obligations hereunder to another of its offices, branches or affiliates, if, in the judgment of such Lender, such designation or assignment would eliminate or reduce amounts payable pursuant to Sections 2.09 or 4.01, as the case may be, in the future, or would eliminate or reduce the effect of any adoption or change described in Section 2.11 or would not subject such Lender to any unreimbursed cost or expense and would not otherwise be disadvantageous to such Lender. The Borrower hereby agrees to pay all reasonable and documented costs and expenses incurred by any Lender in connection with any such designation or assignment.

(b) (i) Upon the occurrence of any event giving rise to the operation of Section 2.09 with respect to any Lender that results in such Lender charging to the Borrower additional or increased costs, (ii) upon any adoption or change of the type described in Section 2.11, (iii) in the case of a refusal by a Lender to consent to a proposed change, waiver, discharge or termination with respect to this Agreement which has been approved by the Required Lenders as provided in Section 11.06(b), or (iv) the Borrower being required to pay Covered Taxes or additional amounts to any Lender or any Governmental Authority pursuant to Section 4, the Borrower shall have the right at its sole expense and effort, if (A) no Event of Default then exists or would exist after giving effect to such replacement, (B) in the case of any such assignment resulting from a claim for compensation under Section 2.09 or payments required to be made pursuant to Section 4, such assignment will result in a reduction in such compensation or payments and (C) in the case of any such assignment resulting from any adoption or change of the type described in Section 2.11, such assignment would eliminate or reduce the effect of any adoption or change described in Section 2.11, to replace such Lender (the “*Replaced Lender*”) with one or more Eligible Transferees (collectively, the “*Replacement Lenders*”); *provided* that, at the time of any replacement pursuant to this Section 2.12, each Replacement Lender shall enter into an Assignment and Assumption Agreement pursuant to Section 11.03(b)(ii), pursuant to which the Replacement Lender shall acquire the applicable portion of the Loan due to the Replaced Lender, and shall pay to the Replaced Lender in respect thereof an amount equal to the principal of, and all accrued interest on, the acquired portion of the Loan of the Replaced Lender plus all other amounts payable to Replaced Lender hereunder. A Lender shall not be required to make any such assignment and delegation if, prior thereto, as a result of a waiver by such Lender or otherwise, the circumstances entitling the Borrower to require such assignment and delegation cease to apply.

(c) Upon the execution of the respective Assignment and Assumption Agreement, the payment of any applicable amount referred to in the proviso to Section 2.12(b), recordation of the assignment on the Register by the Administrative Agent pursuant to Section 11.03(e) and delivery to the Replacement Lender(s) of the appropriate Note(s) executed by the Borrower, each Replacement Lender shall become a Lender hereunder and the Replaced Lender shall cease to constitute a Lender hereunder, but shall continue to be entitled to any amounts that have accrued and remain unpaid prior to such assignment under Section 2.09, 2.10, Section 4 and the indemnification provisions under Sections 10.06 and 11.08 of this Agreement, each of which shall survive as to such Replaced Lender.

SECTION 3 PAYMENTS

3.1. Repayment; Time and Manner. The outstanding principal amount of the Loan shall be due and payable, and shall be unconditionally repaid by the Borrower to the Administrative Agent for the benefit of the Lenders on the Maturity Date.

3.2. Voluntary Prepayment. The Borrower may from time to time, without premium or penalty, prepay all or any part of the Loan on any Interest Payment Date; *provided, however*, that: (a) any partial prepayment shall be in a minimum principal amount of U.S.\$5,000,000, or a multiple of U.S.\$1,000,000 in excess thereof; (b) the Borrower shall have given the Administrative Agent at least three (3) Business Days’ prior written notice of the

proposed prepayment date and the amount of principal to be prepaid (which notice shall be irrevocable; and (c) the Borrower shall have paid in full all amounts then due under this Agreement as of such prepayment date, including interest which has accrued to the prepayment date on the amount being prepaid and any amounts under Section 2.10.

3.3. Mandatory Prepayments.

(a) Issuance of Equity Securities. On the date of receipt by the Borrower of any Net Equity Proceeds, the Borrower shall prepay the Loans in an aggregate amount equal to 100% of such Net Equity Proceeds.

(b) Issuance of Debt. From and after the Disbursement Date, on the date of receipt by the Borrower of any cash proceeds from the issuance of any External Indebtedness which (i) is publicly offered or privately placed in securities markets, (ii) is in the form of, or represented by, bonds, notes or other similar securities or any guarantees thereof and (iii) is, or was intended at the time of issue to be, quoted, listed or traded on any stock exchange, automated trading system or over-the-counter securities market, the Borrower shall prepay the Loans in an aggregate amount equal to 100% of such proceeds, net of underwriting discounts and commissions, upfront and other fees and other reasonable costs and expenses associated therewith, including reasonable legal fees and expenses; *provided that* the proceeds from the issuance of all such External Indebtedness issued after the Disbursement Date in an aggregate amount equal to or less than one billion U.S. Dollars (US\$1,000,000,000) need not be applied to prepay the Loans.

(c) Interconexión Eléctrica S.A. Acquisition.

(i) In the event an Adverse Acquisition Order occurs after Disbursement of the Loans to the Borrower but prior to the consummation of the acquisition of 51.4% of the outstanding shares of Interconexión Eléctrica S.A. from the Ministry of Finance, the Borrower shall prepay the Loans in full within one Business Day of the Disbursement Date; *provided that* (A) if the Loans are repaid in full on the Disbursement Date, then no interest shall be payable in connection with such Loans and if the Loans are repaid in full on the next Business Day, then interest shall be payable at an interest rate equal to overnight LIBOR plus the Applicable Margin and (B) no fees pursuant to the Fee Letters or costs or expenses pursuant to Section 2.10 shall be payable in connection with such prepayment; and

(ii) In the event the acquisition of 51.4% of the outstanding shares of Interconexión Eléctrica S.A. from the Ministry of Finance is consummated and is subsequently deemed to be void or invalid or ordered to be unwound, then, upon receipt by the Borrower of any cash payments or other compensation in respect of the purchase price of the acquisition of 51.4% of the outstanding shares of Interconexión Eléctrica S.A. from the Ministry of Finance or any other Person in connection with the return of the purchase price of ISA, the Borrower shall prepay the Loans in an aggregate amount equal to such cash payment within five Business Days of receipt of such cash payment.

(d) Purchase Price Difference. In the event the principal amount of Loans listed in the Flow of Funds Memo as required to pay the purchase price of the acquisition of 51.4% of the outstanding shares of Interconexión Eléctrica S.A. is less than the principal amount of Loans requested in the Disbursement Request, an amount equal to the difference between the amount set forth in the Disbursement Request and the amount set forth in the Flow of Funds Memo shall be returned to the Lenders; *provided* that no interest shall be payable in connection with such returned amount of the Loan, no fees pursuant to the Fee Letters shall be payable with respect to the portion of the Loans returned and no costs or expenses pursuant to Section 2.10 shall be payable in connection with such returned amount.

3.4. Payments; Pro Rata Treatment.

(a) The Borrower shall make each payment hereunder or under any Note (including principal and interest) without set-off or counterclaim and not later than 12:00 p.m. (New York time) on the day when due, in Dollars, to the Administrative Agent by wire-transfer to an account outside of Colombia specified by the Administrative Agent in writing at least five (5) Business Days prior to the applicable payment date, in immediately available funds. Payments received by the Administrative Agent after 1:00 p.m. (New York time) on any Business Day shall be deemed to be received on the next Business Day.

(b) The Administrative Agent agrees that, promptly after its receipt of any payment from or on behalf of the Borrower pursuant to Section 3.04(a) above, it shall (except as otherwise expressly provided in this Agreement) distribute such payment to the Lenders (unless it has consented in writing to waive its pro rata share of such payment) pro rata based upon its respective share in the Loan, if any, of the obligations with respect to which such payment was received, *provided* that this clause (b) shall not apply to payments or prepayments to the Lender in connection with a claim under Sections 2.09, 2.10, 2.11 or Section 4. If at any time insufficient funds are received by and available to the Administrative Agent to pay fully all amounts of principal, interest and fees then due hereunder, such funds shall be applied (i) *first*, towards payment of interest and fees then due hereunder, ratably among the parties entitled thereto in accordance with the amounts of interest and fees then due to such parties, and (ii) *second*, towards payment of principal then due hereunder, ratably among the parties entitled thereto in accordance with the amounts of principal and then due to such parties.

(c) If any Lender shall, whether by voluntary payment, by realization upon security, through the exercise of any right of set-off or banker's lien, by counterclaim or cross action or by the enforcement of any right under this Agreement or any Note, receive payment of the aggregate amount of principal or interest then due and owing to such Lender which is greater than the proportion due to such Lender, then such Lender receiving such proportionately greater payment shall (i) notify the Administrative Agent and each other Lender of the receipt of such payment and (ii) purchase (for cash at face value) participations in the Loan of other Lenders in accordance with Section 11.03(c) to the extent necessary so that the benefit of all such payments shall be shared by the Lenders ratably in accordance with the aggregate amount of principal of and accrued interest on their respective Loan; *provided* that (i) if any such participations are purchased and all or any portion of the payment giving rise thereto is recovered, such participations shall be rescinded and the purchase price restored to the extent of such recovery, without interest, and (ii) the provisions of this paragraph shall not be construed to apply to any

payment made by the Borrower pursuant to and in accordance with the express terms of this Agreement or any payment obtained by a Lender as consideration for the assignment of or sale of a participation in its Loan to any assignee or participant. The Borrower consents to the foregoing. This clause (c) shall not apply to payments or prepayments to any Lender in connection with a claim under Sections 2.09, 2.10, 2.11 or Section 4.

3.5. Extension of Payment Dates. Unless otherwise provided herein, whenever any payment to the Administrative Agent or the Lenders under this Agreement or any Note shall be due (other than by reason of acceleration) on a day that is not a Business Day, the date of payment thereof shall be extended to the next succeeding Business Day.

SECTION 4 TAXES

4.01. Covered Taxes.

(a) Any and all payments by or on account of any obligation of the Borrower under any Loan Document shall be made without deduction or withholding for any Taxes, except as required by Applicable Law. If the Borrower shall be required by Applicable Law to withhold or deduct any Taxes from or in respect of any such sum payable to or for the benefit of the Administrative Agent or any Lender, then the Borrower shall be entitled to make such deduction or withholding and shall timely pay the full amount deducted or withheld to the relevant taxing authority or other authority in accordance with Applicable Law and, if such Tax is a Covered Tax imposed by a Taxing Jurisdiction, then the sum payable by the Borrower shall be increased as necessary so that after making all required deductions (including deductions applicable to additional sums payable under this Section 4.01) such Lender or the Administrative Agent receives an amount equal to the sum it would have received had no such deductions been made. Each Lender agrees and covenants that it will fill the blank spaces left in any Note in accordance with the corresponding Instructions Letter. For the avoidance of doubt, neither the Lenders nor the Administrative Agent will claim a higher amount under the Note for deduction or withholding for any taxes other than Covered Taxes. For Colombian income tax purposes, the Borrower represents that this Credit Agreement is deemed as public foreign indebtedness.

(b) The Borrower shall indemnify each Lender and/or the Administrative Agent for the full amount of Covered Taxes imposed by a Taxing Jurisdiction that are payable or paid by such Lender or the Administrative Agent (including any Covered Taxes imposed by a Taxing Jurisdiction on amounts payable under this Section 4.01 arising therefrom or with respect thereto), whether or not such Covered Taxes were correctly or legally asserted. Each Lender or the Administrative Agent shall give notice to the Borrower of the assertion of any claim against such Lender or the Administrative Agent relating to its Covered Taxes as promptly as possible (and in any event within thirty (30) days) after receipt of formal written notice of such assertion, *provided* that failure by a Lender or the Administrative Agent to provide any such notice within ninety (90) days shall relieve Borrower of its obligation to indemnify the Lenders or the Administrative Agent pursuant to this Section 4.01. Within ten (10) Business Days of receipt of any such notice from a Lender or the Administrative Agent, the Borrower shall either:

(i) advise such Lender or the Administrative Agent that it intends to indemnify such Lender or the Administrative Agent in respect of such Covered Taxes pursuant to this paragraph (b), in which case it shall promptly indemnify in respect of such amounts, or

(ii) advise such Lender or the Administrative Agent that it intends to commence a Good Faith Contest with respect to such Covered Taxes at the Borrower's sole cost and expense, in which case it shall promptly commence such Good Faith Contest.

(c) Except to the extent of any Good Faith Contest with respect to Covered Taxes, an indemnity made by the Borrower pursuant to this indemnification shall be made within twenty (20) Business Days after the date the relevant Lender makes written demand therefor, which demand shall be accompanied by a certificate describing in reasonable detail the basis thereof. If the Borrower shall have commenced a Good Faith Contest with respect to any such Covered Taxes and no indemnity payment has been made to the Lender, and such Covered Taxes are ultimately determined to be payable by the relevant Lender in a final judicial proceeding or otherwise, the Borrower shall indemnify such Lender or the Administrative Agent for such Covered Taxes and for any other liability including penalties and interest charged by the relevant taxing authority arising therefrom or with respect thereto.

(d) Within ten (10) days after the date of any indemnification of Covered Taxes by the Borrower, the Borrower shall furnish to the Lender or the Administrative Agent the original or a certified copy of a receipt evidencing indemnification thereof or, if later, promptly after the date on which it receives such receipt and the Borrower shall promptly furnish to the Lender or the Administrative Agent any other information, documents and receipts that the Lender or the Administrative Agent may from time to time reasonably request to establish to its satisfaction that full and timely indemnification has been made of all Covered Taxes required to be indemnified under this Section 4.01.

(e) If the Administrative Agent or any Lender determines in good faith that it has finally and irrevocably received or been granted a refund in respect of any Covered Taxes as to which indemnification has been made by the Borrower pursuant to this Section 4.01, it shall within ten (10) days after the date the Administrative Agent or any Lender has received or been granted a refund, remit such refund (including any interest received in respect thereof from the relevant Governmental Authority), net of all reasonable Taxes and out-of-pocket costs and expenses payable as a result thereof, to the Borrower; *provided*, that the Borrower agrees to promptly return any such refund to the Administrative Agent or the relevant Lender in the event the Administrative Agent or such Lender is required to repay such refund to the relevant taxing authority. The Administrative Agent and the Lender shall provide the Borrower with a copy of any notice of assessment (or any similar documentation) from the relevant taxing authority (redacting any unrelated Confidential Information contained therein) requiring repayment of such refund. This paragraph shall not be construed to require the Administrative Agent or any Lender to make available its Tax returns (or any other information relating to its Taxes that it deems confidential) to the Borrower or any other Person.

SECTION 5 CONDITIONS PRECEDENT

5.1. Conditions Precedent on the Agreement Date.

The obligations of the Lenders under this Agreement shall be subject to the Administrative Agent's confirmation of satisfaction or waiver (in each case acting on the instruction of the Lenders) of each of the following conditions precedent on or before the Agreement Date:

(a) This Agreement. This Agreement shall have been duly authorized, fully executed and delivered by the parties hereto, shall be in full force and effect and originals shall have been delivered to the Administrative Agent (with evidence that this Agreement has been registered and/or published with the appropriate authorities in Colombia, if such registration and/or publication is required under Applicable Law).

(b) Existence and Authority. The Administrative Agent shall have received a certificate signed by an Authorized Officer of the Borrower, dated as of the Agreement Date, substantially in the form of Annex D, with respect to (i) the authority of the Borrower to execute, deliver, perform and observe the terms and conditions of the Loan Documents; (ii) the identity, authority and capacity (including specimen signatures) for each Person who, on behalf of the Borrower, signed any Loan Document; and (iii) the Borrower's valid existence under the laws of Colombia.

(c) Governmental Approvals. The Administrative Agent shall have received copies, certified as true, correct and complete copies by an Authorized Officer of the Borrower, of each consent, license, authorization or approval of, and exemption by, any Governmental Authority, including an authorization to execute this Agreement issued by the Ministry of Finance given by means of a Resolution, prior approval of the minutes by the General Directorate of Public Credit and National Treasury (*Dirección General de Crédito Público y Tesoro Nacional*) (Article 2.2.1.2.1.6 of Decree 1068 of 2015) as evidenced by the publication of the Resolution in the Official Diary, which will be satisfied by the order of the General Directorate of Public Credit and National Treasury of the Ministry of Finance pursuant to article 18 of Law 185 of 1995 (other than those referenced in Section 5.02(c)): (i) for the execution, delivery, performance, and observance by the Borrower of the Loan Documents, including all approvals, if any, relating to the availability and transfer of U.S. Dollars required to make all payments due under the Loan Documents; and (ii) for the validity, binding effect, and enforceability of the Loan Documents, and each of the foregoing shall be in full force and effect.

(d) Legal Opinions. The Administrative Agent shall have received opinions dated as of the Agreement Date of (i) Gómez – Pinzón Abogados S.A.S., Colombian counsel to the Lenders, (ii) Baker & McKenzie S.A.S., Colombian counsel to the Borrower, (iii) Shearman & Sterling LLP, New York counsel to the Borrower and (iv) Milbank LLP, New York counsel to the Lenders and, in each case, covering such matters as are reasonably agreed between applicable counsel to the Lenders and the counsel

delivering such opinion and addressed to the Lenders and the Administrative Agent and reasonably acceptable to the Administrative Agent.

(e) Appointment of Process Agent. The Administrative Agent shall have received delivery of evidence that (i) the Borrower has irrevocably appointed as its agent for service of process the Person or Persons so specified in Section 9.03, and (ii) the designated agent has accepted the appointment (and been paid in full by the Borrower) for a term extending at least one year beyond the Maturity Date and has agreed to forward forthwith to the Borrower all legal process addressed to the Borrower that is received by such agent.

(f) Fee Letters; Engagement. The Administrative Agent shall have received a copy of the Administrative Agent Fee Letter and the Joint Lead Arranger Fee Letter.

(g) Borrower Financial Statements. The Administrative Agent shall have received copies of the Borrower Financial Statements.

(h) KYC. To the extent requested at least three (3) Business Days prior to the date hereof by the Administrative Agent or any Lender, the Administrative Agent or such Lender, as the case may be, shall have received such requested documents required to comply with their respective "know your customer" procedures.

5.2. Additional Conditions Precedent to the Disbursement. The obligation of the Lenders to make the Disbursement shall be subject to the satisfaction of the Administrative Agent with notice to the Borrower and the Lenders (or waiver by the Administrative Agent acting on the instruction of the Required Lenders), prior to the making of the Disbursement, of each of the following conditions precedent:

(a) No Event of Default. No Event of Default or Potential Default shall be continuing both before and immediately after giving effect to the aggregate amounts of the Disbursement and the application of the proceeds thereof.

(b) Disbursement Request. The Administrative Agent shall have received a duly executed and completed Disbursement Request.

(c) Governmental Approvals.

(i) The Administrative Agent shall have received a copy, certified as a true, correct and complete copy by an Authorized Officer of the Borrower, of the registration of the relevant Disbursement under the Agreement before the Colombian Central Bank by means of timely filing Form No. 6 "Información de Endeudamiento Externo Otorgado a Residentes" ("Form No. 6"); and

(ii) The Authorized Officer of the Borrower shall have delivered to the Administrative Agent and the General Directorate of Public Credit and National Treasury of the Ministry of Finance, a certification representing that the proceeds of the Disbursement will be applied to the acquisition of 51.4% of the outstanding shares of Interconexión Eléctrica S.A. from the Ministry of Finance and attaching

a true, correct and complete copy of the favorable opinion of the National Planning Department (*Departamento Nacional de Planeación*) currently in full force and effect authorizing the Borrower to incur indebtedness.

(d) Note. The Administrative Agent shall have received, a duly executed Note and an Instructions Letter with respect thereto for each Lender issued in accordance with Section 2.06.

(e) Representations and Warranties. The representations and warranties made by the Borrower in this Agreement shall be true and correct in all material respects on and as of the Disbursement Date both before and immediately after giving effect to the Disbursement and the application of the proceeds thereof other than any such representations or warranties that, by their terms, refer to a specific date other than the Disbursement Date, in which case such representations and warranties shall be true and correct in all material respects on and as of such specific date; *provided* that representations and warranties qualified as to materiality shall be true and correct in all respects as of such date.

(f) No Litigation. As of the Disbursement Date, there shall be no decision or order in effect by any court or arbitrator or Government Authority that (i) imposes a precautionary measure on the consummation of the acquisition of 51.4% of the outstanding shares of Interconexión Eléctrica S.A. from the Ministry of Finance, (ii) orders the suspension of the acquisition of 51.4% of the outstanding shares of Interconexión Eléctrica S.A. from the Ministry of Finance, (iii) revokes, rescinds, suspends, terminates or holds invalid the acquisition of 51.4% of the outstanding shares of Interconexión Eléctrica S.A. from the Ministry of Finance, (iv) orders a competitive process for the acquisition of 51.4% of the outstanding shares of Interconexión Eléctrica S.A. from the Ministry of Finance, (v) has an effect similar to the foregoing or (vi) otherwise prevents the consummation of the acquisition of 51.4% of the outstanding shares of Interconexión Eléctrica S.A. from the Ministry of Finance (individually and collectively, an “*Adverse Acquisition Order*”).

(g) Flow of Funds Memo. The Borrower shall have delivered to the Administrative Agent, no later than 6:00 p.m. (New York time) on the Business Day immediately preceding the proposed Disbursement Date, the Flow of Funds Memo.

SECTION 6 REPRESENTATIONS AND WARRANTIES

6.01. Representations and Warranties of the Borrower. The Borrower represents and warrants, as of the Agreement Date and as of the Disbursement Date, that:

(a) Existence and Authority. The Borrower is duly organized and validly existing under the laws of Colombia, has all requisite power, authority and legal right to own its property and carry on its business as now conducted, and has taken all actions necessary to authorize it to execute, deliver, perform, and observe the terms and conditions of the Loan Documents.

(b) Governmental Approvals. All consents, licenses, permits, authorizations and approvals of, and exemptions by, any Governmental Authority that are necessary: (i) for the execution, delivery, performance and observance by the Borrower of the Loan Documents, including approvals relating to the availability and transfer of U.S. Dollars required to make all payments due under the Loan Documents; and (ii) for the validity, binding effect and enforceability of the Loan Documents, have, in each case, been obtained and are in full force and effect, as set forth in Section 5.01(c) and 5.02(c).

(c) Recordation. To ensure the legality, validity, enforceability, priority or admissibility in evidence in Colombia of any of the Loan Documents, it is not necessary that any of the Loan Documents be registered, recorded, enrolled or otherwise filed with any court or Governmental Authority, except as set forth in Section 5 hereof, or be notarized; or that any documentary, stamp or other similar tax, imposition or charge of any kind be paid on or in respect of any of the Loan Documents.

(d) Restrictions. The execution, delivery and performance or observance by the Borrower of the terms of, and consummation by the Borrower of the transactions contemplated by, this Agreement do not and will not conflict with or result in a breach or violation of: (i) the *Estatutos Sociales* of the Borrower; (ii) any law of Colombia or any other ordinance, decree, constitutional provision, regulation or other requirement of any Governmental Authority in effect as of the date on which this representation is made; or (iii) any order, writ, injunction, judgment, decree or award of any court or other tribunal. Further, the Borrower's execution and delivery of the Loan Documents, the performance and observance of its obligations thereunder, and the consummation of the transactions contemplated by this Agreement do not and will not conflict in any material respect with or result in a material breach of any material agreement or instrument to which the Borrower is a party or to which it or any of its revenues, properties or assets may be subject, or result in the creation or imposition of any Lien upon any of the revenues, properties or assets of the Borrower pursuant to any such material agreement or instrument.

(e) Binding Effect and Ranking. The Borrower has duly executed and delivered each Loan Document on or before the Agreement Date, other than the Note which will be delivered on the Disbursement Date. Each Loan Document constitutes a direct, general, and unconditional obligation of the Borrower that is legal, valid, and binding upon the Borrower and enforceable against the Borrower in accordance with its respective terms, except as such enforceability may be limited by Colombian public order laws, applicable insolvency, reorganization, liquidation, moratorium, readjustment of debt or other similar laws affecting the enforcement of creditors' rights generally, and by the application of general principles of equity, regardless of whether such enforceability is considered in a proceeding at law or in equity. The Borrower's payment obligations under the Loan Documents constitute the direct, general, unsecured, unsubordinated and unconditional obligations of the Borrower and rank, in all respects, at least *pari passu* in priority of payment with all other senior, unsecured and unsubordinated External Indebtedness of the Borrower.

(f) Choice of Law. Under the conflict of laws principles in Colombia, the choice of law provisions of this Agreement and any Note are valid, binding and not subject to revocation by the Borrower, and in any proceedings brought in Colombia for enforcement of this Agreement and any Note, the choice of the law of the State of New York as the governing law of such documents will be recognized and such law will be applied. Notwithstanding the foregoing or anything to the contrary in Section 9.01, all matters governing the authorization and execution of the Loan Documents by the Borrower are governed by and construed in accordance with the laws of Colombia.

(g) Commercial Activity. Except as provided for in (i) Articles 192, 195, 298 and 299 of Law 1437 of 2011 (*Código de Procedimiento Administrativo y de lo Contencioso Administrativo*), as amended by Articles 80, 81 and 87 of Law 2080 of 2021, and (ii) Articles 593, 594 and 595 of Law 1564 of 2012 (*Código General del Proceso*), the Borrower acknowledges that the execution and performance of this Agreement and each other Loan Document is a commercial activity and to the extent that the Borrower has or hereafter may acquire any immunity from any legal action, suit or proceedings, from jurisdiction of any court or from set-off or any legal process (whether service or notice, attachment prior to judgment, attachment in aid of execution of judgment, execution of judgment or otherwise) with respect to itself or any of its property or assets, whether or not held on its own account, the Borrower hereby irrevocably and unconditionally waives and agrees not to plead or claim such immunity in respect of its obligations under this Agreement or any other Loan Document.

(h) Legal Proceedings. There are no actions, suits, litigation, arbitration or administrative proceedings pending or, to the best of the Borrower's knowledge and belief, threatened against the Borrower which are reasonably likely to be adversely determined and, if adversely determined, could reasonably be expected to have a Material Adverse Effect.

(i) Borrower Financial Statements. The Borrower Financial Statements present fairly in all material respects the financial condition of the Borrower and its consolidated Subsidiaries at the date of such statements and the results of the operations of the Borrower and its consolidated Subsidiaries for the fiscal year or other time period to which such statements refer, in the case of unaudited Financial Statements, subject to changes resulting from audit and nominal year-end adjustments and the absence of footnotes. The Borrower Financial Statements have been prepared in accordance with IFRS consistently applied. Except as reflected in the Borrower Financial Statements, there are no liabilities or obligations with respect to the Borrower or any of its consolidated Subsidiaries of any nature whatsoever (whether absolute, accrued, contingent or otherwise, and whether or not due) for the period to which the Borrower Financial Statements relate that, either individually or in the aggregate, would be materially adverse to the Borrower. As of the Agreement Date, since the date of the financial statements of the Borrower dated December 31, 2020 (audited), there has been no event, condition or circumstance that has had or could reasonably be expected to have a Material Adverse Effect, *provided* that changes in the oil and gas prices and any related changes in the economy or financial markets generally, whether international, national,

regional or local shall not be deemed to be a Material Adverse Effect for purposes of this representation.

(j) No Corrupt Practices; Anti-Money Laundering Laws. None of the Borrower or, to the knowledge of the Borrower, any of its Subsidiaries, or any director, officer, agent, employee or other person acting on behalf of the Borrower or any of its Subsidiaries is aware of or has taken any action, directly or indirectly, that would result in a violation by such persons of the FCPA or any other applicable Anti-Corruption Law, or any Anti-Money Laundering Laws; and the Borrower and to the knowledge of the Borrower each of its Subsidiaries has implemented policies designed to promote and achieve continued compliance by the Borrower, its Subsidiaries, and their respective directors, officers, employees and agents with all Anti-Corruption Laws and Anti-Money Laundering Laws. The Borrower will not, and will take the necessary steps to prevent any Subsidiary to, directly or indirectly, use any part of the proceeds of the Disbursement, or lend, contribute or otherwise make available such proceeds to any Subsidiary, joint venture partner or other Person in any manner that would give rise to a violation of any Anti-Corruption Law or Anti-Money Laundering Law.

(k) Sanctions; Office of Foreign Assets Control Regulations. None of the Borrower or, to the knowledge of the Borrower, any of its Subsidiaries or any director, officer, employee or agent of the Borrower or any of its Subsidiaries is a Sanctioned Person or to the Borrower's knowledge is currently or has, in the past (5) years, engaged in any activity that would reasonably be expected to result in the Borrower or any Subsidiary being designated as a Sanctioned Person. The Borrower and each of its Subsidiaries has implemented policies designed to promote and achieve continued compliance by the Borrower, its Subsidiaries and their respective directors, officers, employees and agents with applicable Sanctions. The Borrower will not use, and will take the necessary steps to prevent that any Subsidiary, directly or indirectly, uses the proceeds of the Disbursement, or lend, contribute or otherwise make available such proceeds to any Subsidiary, joint venture partner or other Person: (i) to fund or facilitate any activities or business of or with any Sanctioned Person, or in any Sanctioned Country, or (ii) in any other manner that would give rise to a violation of Sanctions by any party hereto, including any Lender.

(l) No Event of Default. No Event of Default and no Potential Default has occurred and is continuing.

(m) No Material Adverse Effect. As of the Agreement Date only, the Borrower is not aware of any information or events that have resulted, or that could reasonably be expected to result, in a Material Adverse Effect relating to the Borrower, *provided* that changes in the oil and gas prices and any related changes in the economy or financial markets generally, whether international, national, regional or local shall not be deemed to be a Material Adverse Effect for purposes of this representation.

(n) Compliance with Laws. Each of the Borrower and, to the knowledge of the Borrower, its Material Subsidiaries is in compliance with all Applicable Laws (including environmental laws), all Governmental Approvals held by or binding upon the

Borrower or its assets and all applicable restrictions imposed by all Governmental Authorities, domestic or foreign, except (i) in the case of Anti-Corruption Law, Anti- Money Laundering Law or Sanctions, as provided in clauses (j) or (k) above, and (ii) in any other case, where the failure to do so, individually or in the aggregate, could not reasonably be expected to result in a Material Adverse Effect.

(o) Regulation.

(i) Investment Company. The Borrower is not an “investment company” as defined in the Investment Company Act of 1940.

(ii) Margin Stock. The Borrower is not engaged principally, or as one of its important activities, in the business of extending credit for the purpose, whether immediate, incidental or ultimate, of buying or carrying “margin stock” within the meaning of Regulation U, and no part of the proceeds of the Loan will be used for the purpose, whether immediate, incidental or ultimate, of buying or carrying any such “margin stock.”

(p) Taxes.

(i) The Borrower has timely filed or caused to be filed all material Tax returns and reports required to have been filed and has paid or caused to be paid all material Taxes required to have been paid by it, except Taxes that are contested by the Borrower on a timely basis in good faith and by appropriate proceedings and for which adequate reserves therefor have been established on the books of the Borrower in conformity with IFRS.

(ii) There are no Taxes imposed by any Governmental Authority either on or by virtue of the execution, enforcement or admissibility into evidence of any of the Loan Documents or any of the transactions thereby or on any payment to be made pursuant to any Loan Document.

(q) Validity under Colombian Law. The Loan Documents are in proper form under Colombian law for their enforcement thereof. To ensure the legality, validity or enforceability of, and the priority of the obligations incurred by the Borrower under the Loan Documents in Colombia, or establish the admissibility into evidence of any of the Loan Documents in any court in Colombia, it is not necessary that any Loan Document be filed or recorded with any Colombian governmental agency or body, or court, except for those referred to in Section 5.01(c) or Section 5.02(c), or that any stamp or similar tax be paid in Colombia on or in respect of any Loan Document for its enforcement in Colombia.

(r) Recognition of Final Judgments. A final judgment for a fixed or readily calculable sum of money rendered by any court of the State of New York or the United States of America located in the State of New York based upon any of the Loan Documents (excluding the Notes) would be declared enforceable in Colombia in the courts of Colombia against the Borrower without reexamination, review of the merits of the cause of action in respect of which the original judgment was given or re-litigation of

the matters adjudicated; *notwithstanding, however*, that recognition of such judgment in Colombia shall be subject to Colombian procedural Applicable Laws, in particular Articles 251, 605, 606 and 607 of Law 1564 of 2012 (*Código General del Proceso*).

(s) Disclosure of Information. No information that has been made available to the Administrative Agent or any Lenders or the representatives or agents of the foregoing by or on behalf of the Borrower in connection with the transactions contemplated hereby, taken as a whole, contains any untrue statement of a material fact or omits to state a material fact necessary to make the statements made therein not misleading in light of the circumstances in which they are made; *provided* that with respect to any projected financial information, the Borrower represents only that such information was prepared in good faith based upon assumptions believed to be reasonable at the time.

(t) Properties. The Borrower has good title to, or valid leasehold interests in, all material property necessary to conduct its business as conducted from time to time in good working order and condition, except to the extent failure to do so could not reasonably be expected to have a Material Adverse Effect.

(u) Insurance. The Borrower maintains insurance with financially sound and reputable insurers against losses, damages or other risks (including, without limitation, risks and liability to Persons and property) to its assets and properties as are customarily maintained by prudent and experienced Persons engaged in the same or similar businesses operating in the same or similar jurisdictions and the Borrower deems, in its reasonable judgment, to be appropriate.

SECTION 7 COVENANTS

7.1. Affirmative Covenants of the Borrower. The Borrower covenants and agrees that, until all amounts owing under the Loan Documents (other than contingent indemnification obligations) have been paid in full, the Borrower shall:

(a) Notice of Defaults. Promptly but in no event later than ten (10) Business Days after the Borrower becomes aware of the occurrence of an Event of Default or of any Potential Default, furnish to the Administrative Agent written notice of the particulars of such occurrence and the corrective action proposed to be taken by the Borrower with respect thereto.

(b) Financial Reports. No later than one hundred and eighty (180) days after the end of each of the Borrower's fiscal years, commencing with the fiscal year ending December 31, 2021, the Borrower shall furnish to the Administrative Agent a copy of the Borrower's annual consolidated financial statements, including its balance sheet, statement of income, and statement of cash flow for that fiscal year, all of which shall have been audited by an independent accounting firm of internationally recognized standing. If shares of the Borrower are not listed and available for trading on at least one of the New York Stock Exchange or the Colombian Stock Exchange (*Bolsa de Valores*

de Colombia), the Borrower shall furnish to the Administrative Agent, no later than ninety (90) days after the end of each of the Borrower's fiscal quarters, a copy of the Borrower's quarterly unaudited consolidated interim financial statements. All financial reports to be submitted to the Administrative Agent shall be prepared in accordance with IFRS, shall be in the English language (or accompanied by an accurate English translation), shall (in the case of the Borrower's annual consolidated financial statements) include the auditor's opinion and any accompanying notes, and shall fairly present in all material respects the financial condition of the Borrower and the results of its operations for the periods covered.

(c) Inspections. The Borrower will permit, upon reasonable prior notice and during normal business hours, representatives of the Administrative Agent or any Lender, at their own cost and expense, to make no more than three (3) inspections *per annum* of the Borrower's books and records, and cause the officers and employees of the Borrower to give full cooperation and assistance in connection therewith; *provided* that, if an Event of Default has occurred and is continuing the Borrower will reimburse the Administrative Agent and any such Lender for such costs and expenses, and the numbers of inspections permitted pursuant to this Section 7.01(c) shall be as reasonably determined by the Administrative Agent or the Lenders, as the case may be. The Administrative Agent and the Lenders shall use reasonable efforts to coordinate such visits and inspections in order to reduce their number, frequency and cost.

(d) Government Approvals. Promptly obtain and maintain all consents, licenses, permits, authorizations and approvals of, and exemptions by, any Governmental Authority that are necessary: (i) for the execution, delivery, performance, and observance by the Borrower of the Loan Documents, including all approvals relating to the availability and transfer of U.S. Dollars required to make all payments due under the Loan Documents; and (ii) for the validity, binding effect and enforceability of the Loan Documents. The Borrower shall make all public filings required by law in connection with the execution of this Agreement, including any requirements to publish the Agreement in the *Sistema Electrónico para la Contratación Pública – SECOP*.

(e) Pari Passu. Ensure that its payment obligations under this Agreement and the Notes will at all times constitute the direct, general, unsecured, unsubordinated and unconditional obligations of the Borrower and rank in all respects at least *pari passu* in priority of payment with all other senior, unsecured and unsubordinated External Indebtedness of the Borrower, other than that which is preferred solely by the insolvency and/or bankruptcy Applicable Laws of Colombia, including the Law 1116 of 2006 of Colombia ("*Law 1116*").

(f) Other Acts. From time to time, do and perform any and all acts and execute any and all documents as may be necessary or as reasonably requested by the Administrative Agent in order to effect the purposes of this Agreement and to protect the rights of the Administrative Agent and the Lenders hereunder and under the Notes.

(g) Material Adverse Effect. As soon as practicable, but in any event no later than ten (10) Business Days after it has knowledge of the same, provide notification to the Administrative Agent of any Material Adverse Effect.

(h) Compliance with Laws. The Borrower will, and will use its reasonable best efforts to cause each of its Material Subsidiaries to, comply with all Applicable Laws (including environmental laws), all Governmental Approvals held by or binding upon it or its assets and all applicable restrictions imposed by all Governmental Authorities, domestic or foreign, in respect of the conduct of its business and the ownership of its property, except (other than with respect to any Anti-Corruption Laws, Anti-Money Laundering Laws or Sanctions) to the extent any non-compliance is not reasonably expected to have a Material Adverse Effect.

(i) Maintenance of Existence. Except as otherwise permitted by Section 7.02(b), the Borrower shall maintain its corporate existence and take all reasonable actions to maintain all rights, privileges and the like necessary or desirable in the normal conduct of business, activities or operations, except to the extent failure to do so could not reasonably be expected to have a Material Adverse Effect.

(j) Preservation of Assets. The Borrower will maintain all material property necessary to conduct its business as conducted from time to time in good working order and condition, except to the extent failure to do so could not reasonably be expected to have a Material Adverse Effect.

(k) Insurance. The Borrower will maintain insurance on its material property with financially sound and reputable insurance companies against such risks, of such types, on such properties and in such amounts as may from time to time be prudent for the Borrower's businesses, as determined by the Borrower in the exercise of its reasonable judgment.

(l) Use of Proceeds. The Borrower will use the proceeds of the Disbursement for the acquisition of 51.4% of the outstanding shares of Interconexión Eléctrica S.A. from the Ministry of Finance in accordance with the favorable opinion from the National Planning Department (*Departamento Nacional de Planeación*) for the Borrower to incur indebtedness. No part of the proceeds of the Disbursement will be used by the Borrower to purchase or carry any Margin Stock or to extend loans to others for the purpose of purchasing or carrying any Margin Stock.

(m) Taxes. The Borrower will file all tax returns required to be filed in any jurisdiction and pay and discharge all taxes shown to be due and payable on such returns and all other taxes, assessments, governmental charges, concession fees or levies imposed on it or any of its property, income or franchises, to the extent such taxes and assessments have become due and payable and before they have become delinquent, and all claims for which sums have become due and payable that have or might become a Lien (other than a Permitted Lien) on its Property except where (i) the amount, applicability or validity of such tax, assessment of claim is contested by the Borrower on a timely basis in good faith

and by appropriate proceedings or (ii) the failure to do so could not reasonably be expected to have a Material Adverse Effect.

(n) Books and Records. The Borrower shall keep proper books and records and accounts adequate to reflect truly and fairly in all material respects its financial condition and results of operations in conformity with IFRS and Applicable Law.

(o) Sanctions. The Borrower will maintain in effect policies and procedures designed to promote compliance by the Borrower, its Subsidiaries, and their respective directors, officers, employees, and agents with Sanctions.

(p) Anti-Money Laundering Laws. The Borrower will maintain in effect policies designed to promote compliance by the Borrower, its Subsidiaries, and their respective directors, officers, employees, and agents with the FCPA and any other applicable Anti-Corruption Laws and Anti-Money Laundering Laws.

7.2. Negative Covenants of the Borrower. The Borrower covenants and agrees that, until all amounts owing under the Loan Documents (other than contingent indemnification obligations) and the Notes have been paid in full, it shall not:

(a) Liens. Directly or indirectly (or permit any Material Subsidiary to directly or indirectly) create, incur, assume, permit or suffer to exist any Liens, except Permitted Liens, to secure the payment of Indebtedness of the Borrower or any Material Subsidiary.

(b) Merger, Consolidation, Dissolution, and Sale.

(i) The Borrower shall not merge or consolidate with any other Person, dissolve or terminate its legal existence, or, directly or indirectly, sell, lease, transfer or otherwise dispose of, or permit any of its Material Subsidiaries to sell, lease, transfer or otherwise dispose of all or substantially all of the properties of the Borrower and its Material Subsidiaries (taken as a whole), unless in each case (1) for any such transaction involving the Borrower, the successor entity or entities, each of which shall be organized under the laws of Colombia or any country that is a member of the Organization for Economic Cooperation and Development (OECD), shall assume all the obligations of the Borrower under this Agreement and the Notes, (2) immediately after giving effect to the transaction, no Event of Default shall have occurred and be continuing, and (3) for any such transaction involving the Borrower, the Borrower delivers such certificates, opinions of its counsel and other documents regarding such transaction as may be required by the Administrative Agent in form and substance reasonably satisfactory to the Administrative Agent.

(ii) For the avoidance of doubt: (A) in addition to the foregoing permitted transactions, the following transactions are expressly permitted under this Section 7.02(b): (1) mergers and consolidations of Subsidiaries into the Borrower, and (2) mergers, consolidations, sales, leases, transfers, divestitures or reorganizations among Subsidiaries; and (B) nothing in this Section 7.02(b) shall prohibit the Borrower or any Subsidiary from entering into build-lease-transfer,

build-operate-transfer or similar project financing arrangements, *provided* that such arrangements are for (x) new greenfield projects or (y) the expansion of existing project assets or properties in which such arrangements extend only to the expansion assets and not in any substantial respect to the existing assets.

(c) Sanctions. The Borrower will not, and will take the necessary steps to prevent any Subsidiary to, directly or indirectly, use any part of the proceeds of the Disbursement, or lend, contribute or otherwise make available such proceeds to any Subsidiary, joint venture partner or other Person: (i) to fund or facilitate any activities or business of or with any Sanctioned Person, or in any Sanctioned Country, or (ii) in any other manner that would give rise to a violation of Sanctions by any party hereto, including any Lender.

(d) Anti-Money Laundering Laws. The Borrower will not use, and will take the necessary steps to prevent that any Subsidiary, directly or indirectly, uses any part of the proceeds of the Disbursement, or lend, contribute or otherwise make available such proceeds to any Subsidiary, joint venture partner or other Person in any manner that would give rise to a violation any Anti-Corruption Law or Anti-Money Laundering Law.

(e) Change in Business. The Borrower will not engage in any activities or businesses other than any activities or businesses conducted by the Borrower or its Subsidiaries as of the Agreement Date (and with respect to the activities or business of ISA, the Disbursement Date) or any activities or businesses reasonably ancillary or related thereto.

(f) Transactions with Affiliates. The Borrower will not enter into any material transaction or series of related transactions with any Affiliate of the Borrower, other than on terms and conditions substantially as favorable to the Borrower as would reasonably be obtained at that time in a comparable arm's-length transaction with a Person other than such Affiliate.

SECTION 8 EVENTS OF DEFAULT AND REMEDIES

8.1. Events of Default.

Each of the following events or conditions shall be an "*Event of Default*":

(a) any failure by the Borrower to pay when due (i) any amount of principal owing under a Loan Document, (ii) any amount of interest owing under a Loan Document within five (5) Business Days of the due date thereof or (iii) any fee or other amount (other than principal or interest) owing under a Loan Document within thirty (30) days of the earlier of the date the Borrower receives (x) the invoice or (y) a written demand from any Lender or the Administrative Agent;

(b) any failure by the Borrower to comply with its obligations under Sections 7.01(a), (e), (g), (i) or, (l) or Section 7.02;

(c) any representation or warranty made by the Borrower in any Loan Document or in connection herewith, or any statement made in any certificate, report or financial statement furnished by the Borrower, has been demonstrated to have been false or misleading in any material respect when made or deemed made, *provided* that such false or misleading statement shall not constitute an Event of Default if such condition or circumstance is (i) subject to cure and (ii) the facts or conditions giving rise to such misrepresentation or misstatement are cured in such a manner as to eliminate such misrepresentation or misstatement within thirty (30) days after the Borrower's having knowledge thereof;

(d) any failure by the Borrower to perform or comply with any of the covenants or provisions set forth in a Loan Document (exclusive of any events specified as an Event of Default in any other subsection of this Section 8.01), which failure remains uncured for a period of thirty (30) days, or in the case of Section 7.01(h) (solely to the extent it relates to compliance with Anti-Corruption Laws, Anti-Money Laundering Laws or Sanctions) five (5) Business Days, after the Administrative Agent or any Lender has given written notice thereof to the Borrower;

(e) any event specified in any agreement or instrument under which there may be issued, or by which there may be secured or evidenced, External Indebtedness of the Borrower or any Material Subsidiary thereof shall occur and shall result in such External Indebtedness in an aggregate principal amount in excess of fifty million U.S. Dollars (U.S.\$50,000,000) (or its equivalent) becoming or being declared due and payable prior to the date on which it would otherwise have become due and payable;

(f) (A)(i) the Borrower shall be unable generally to pay its debts as they fall due or shall admit in writing its inability to pay its debts as they fall due or shall become insolvent; (ii) the Borrower shall apply for or consent to the appointment of any liquidator, receiver, trustee, *síndico*, *conciliador* or administrator for all or a substantial part of its business, properties, assets, or revenues; or (iii) a liquidator, receiver, trustee, or administrator shall be appointed for the Borrower and such appointment shall continue undismissed, undischarged or unstayed for a period of ninety (90) days; (B) the Borrower shall institute (by petition, application, answer, consent or otherwise) any bankruptcy, arrangement, readjustment of debt, dissolution, liquidation, *proceso de reestructuración*, *proceso de reorganización*, *proceso de insolvencia*, *concurso mercantil*, *quiebra*, or similar executory or judicial proceeding; (C) a bankruptcy, arrangement, readjustment of debt, dissolution, liquidation, *proceso de reestructuración*, *proceso de reorganización*, *proceso de insolvencia*, *concurso mercantil*, *quiebra*, or similar executory or judicial proceeding shall be instituted against the Borrower and such proceeding shall remain undismissed, undischarged or unstayed for a period of ninety (90) days; (D) the Borrower shall take any action seeking to take advantage of any other law relating to its bankruptcy, insolvency, liquidation, termination, dissolution, winding up, or composition, or readjustment of debts; or (E) the Borrower shall take any corporate or similar action for the purpose of effecting any of the foregoing; *provided* that for as long as Colombia's applicable insolvency laws provide for restrictions on or sanctions associated with the ability of the Lenders, directly or indirectly, to exercise the right to declare an Event of Default under this Section 8.01(f), the Lenders and Borrower hereto agree that nothing in

this Section 8.01(f) shall (A) prevent the commencement of any restructuring proceeding in Colombia, whether voluntary or involuntary, in respect of the Borrower, (B) prohibit the Borrower from entering into a restructuring proceeding in Colombia, or (C) cause an unfavorable effect (*efecto desfavorable*) upon the Borrower;

(g) any final, non-appealable judgment against the Borrower or any Material Subsidiary (i) shall have been entered on a claim not covered by insurance in an aggregate amount of fifty million U.S. Dollars (U.S. \$50,000,000) (or its equivalent in another currency) or more, and (ii) such judgment has not been removed, vacated, discharged or satisfied for a period of sixty (60) days from the date of such final judgment;

(h) any Governmental Authority shall have (i) condemned, seized or otherwise expropriated (either through a single act or a series of acts) all or substantially all of the property of the Borrower or (ii) taken any action that materially curtails the authority of the Borrower to conduct its business;

(i) any authorization, approval, Governmental Approval, consent, license, exemption, filing, registration, notarization or other requirement of any Governmental Authority necessary to enable the Borrower to comply with its obligations under any Loan Document shall have been revoked, rescinded, suspended, held invalid or otherwise limited in effect in a manner that could reasonably be expected to have a Material Adverse Effect;

(j) any Loan Document ceases to be in full force and effect or is declared in a final, non-appealable judgment to be unenforceable against the Borrower (in each case, other than as a result of any action or inaction on the part of the Administrative Agent or any Lender), the validity or enforceability of any Loan Document at any time is challenged by the Borrower; or the Borrower repudiates any Loan Document, or does or causes to be done any act or thing evidencing an intention to repudiate any Loan Document; or

(k) Colombia shall cease to own and control at least 50.1% of the outstanding economic and voting ownership interests of the Borrower or any successor entity permitted under the terms hereof and the Borrower shall fail to prepay the Loan within the thirty (30) days following that event.

8.2. Remedies. If any Event of Default shall occur and be continuing, the Administrative Agent may (and shall, upon the direction of Required Lenders), by notice to the Borrower, declare (a) any and all amounts of principal outstanding under this Agreement and the Notes to be forthwith due and payable together with accrued interest and any and all other amounts payable or owing hereunder, whereupon the same shall become forthwith due and payable and (b) declare the Commitments to be terminated forthwith, whereupon the Commitments shall immediately terminate; *provided* that if such event is an Event of Default specified in Section 8.01(f) above, automatically the Commitments shall immediately terminate and the Loan hereunder (with accrued interest thereon) and all other amounts owing under this Agreement and the Notes shall immediately become due and payable. Presentment, demand,

protest or notice of any kind (other than the notice provided for in the first sentence of this paragraph) are expressly waived, anything in this Agreement to the contrary notwithstanding. The aforementioned right to accelerate is in addition to and not a substitute for any other rights and remedies available under this Agreement and under Applicable Law.

SECTION 9 GOVERNING LAW AND JURISDICTION

9.1. Governing Law. THIS AGREEMENT SHALL BE GOVERNED BY, AND CONSTRUED IN ACCORDANCE WITH, THE LAWS OF THE STATE OF NEW YORK.

Notwithstanding the foregoing, all matters governing the authorization and execution of the Loan Documents by the Borrower shall be governed by and construed in accordance with the laws of Colombia.

9.2. Submission to Jurisdiction. EACH OF THE PARTIES TO THIS AGREEMENT AGREES THAT ANY SUIT, ACTION OR PROCEEDING WITH RESPECT TO THIS AGREEMENT, ANY OTHER LOAN DOCUMENT OR ANY JUDGMENT ENTERED BY ANY COURT IN RESPECT THEREOF MAY BE BROUGHT IN THE UNITED STATES DISTRICT COURT FOR THE SOUTHERN DISTRICT OF NEW YORK AND, EXCEPT IN THE CASE OF ANY SUIT, ACTION, PROCEEDING OR JUDGMENT BROUGHT AGAINST THE LENDERS OR THE ADMINISTRATIVE AGENT, IN THE SUPREME COURT OF THE STATE OF NEW YORK SITTING IN NEW YORK COUNTY (INCLUDING ITS APPELLATE DIVISION), OR IN ANY OTHER APPELLATE COURT IN THE STATE OF NEW YORK. EACH PARTY TO THIS AGREEMENT HEREBY IRREVOCABLY SUBMITS TO THE NON-EXCLUSIVE JURISDICTION OF SUCH COURTS FOR THE PURPOSE OF ANY SUCH SUIT, ACTION, PROCEEDING OR JUDGMENT AND HEREBY IRREVOCABLY SUBMITS TO THE NON-EXCLUSIVE JURISDICTION OF THE UNITED STATES DISTRICT COURT FOR THE SOUTHERN DISTRICT OF NEW YORK FOR THE PURPOSE OF ANY SUCH SUIT, ACTION, PROCEEDING OR JUDGMENT. EACH PARTY CONSENTS THAT ANY SUCH ACTION OR PROCEEDING MAY BE BROUGHT IN SUCH COURTS AND WAIVES ANY OBJECTION THAT IT MAY NOW OR HEREAFTER HAVE TO THE VENUE OF ANY SUCH ACTION OR PROCEEDING IN ANY SUCH COURT OR THAT SUCH ACTION OR PROCEEDING WAS BROUGHT IN AN INCONVENIENT COURT AND AGREES NOT TO PLEAD OR CLAIM THE SAME. EACH PARTY HERETO FURTHER SUBMITS, FOR THE PURPOSE OF ANY SUCH SUIT, ACTION, PROCEEDING OR JUDGMENT BROUGHT OR RENDERED AGAINST IT, TO THE APPROPRIATE COURTS OF THE JURISDICTION OF ITS DOMICILE. EACH OF THE PARTIES TO THIS AGREEMENT AGREES THAT A JUDGMENT, AFTER EXHAUSTION OF ALL AVAILABLE APPEALS, IN ANY SUCH ACTION OR PROCEEDING SHALL BE CONCLUSIVE AND BINDING UPON IT, AND MAY BE ENFORCED IN ANY OTHER JURISDICTION, INCLUDING BY A SUIT UPON SUCH JUDGMENT, A CERTIFIED COPY OF WHICH SHALL BE CONCLUSIVE EVIDENCE OF THE JUDGMENT.

9.3. Service of Process.

(a) In the case of the courts of the State of New York or of the federal courts sitting in the State of New York, the Borrower hereby designates, appoints and empowers CT Corporation System, located at 111 8th Avenue, New York, NY 10011, as its authorized agent to accept, receive, and acknowledge for and on behalf of the Borrower, service of any and all process that may be served in any action, suit or proceeding of the nature referred to above in the State of New York, which appointment shall be irrevocable until the appointment and acceptance of a successor authorized agent pursuant to the provisions of Section 9.03(d).

(b) The Borrower further agrees that such service of process may be made personally or by mailing or delivering a copy of the summons and complaint or other legal process in any such legal suit, action or proceeding to the Borrower, in care of its respective agent designated above at the aforesaid address (or, if the Borrower shall have designated a successor agent for service of process, the address of the successor agent for service of process), and each such agent is hereby authorized, respectively, to accept, receive, and acknowledge the same for and on behalf of the Borrower. Service upon each such agent shall be deemed to be personal service on the Borrower and shall be legal and binding upon the Borrower for all purposes notwithstanding any failure to mail copies of such legal process to the Borrower or any failure on the part of the Borrower to receive the same, and shall be deemed completed upon the delivery thereof to such agent whether or not such respective agent shall give notice thereof to the Borrower or upon the earliest other date permitted by Applicable Law (including the United States Foreign Sovereign Immunities Act of 1976, as amended).

(c) To the extent permitted by Applicable Law, including treaties by which the United States and Colombia are bound, the Borrower further irrevocably agrees to the service of process of any of the aforementioned courts in any suit, action or proceeding by the mailing of copies thereof by certified mail, postage prepaid, return receipt requested, to the Borrower at the address referenced in Section 11.02, such service to be effective upon the date indicated on the postal receipt returned from the Borrower.

(d) The Borrower agrees that it will at all times continuously maintain an agent to receive service of process in the State of New York on behalf of itself and its properties and revenues, and, in the event that for any reason its agent designated above shall not serve as agent for the Borrower to receive service of process in the State of New York on its behalf, the Borrower shall promptly appoint a successor satisfactory to the Administrative Agent so to serve, advise the Administrative Agent thereof, and deliver to the Administrative Agent evidence in writing of the successor agent's acceptance of such appointment for a term extending at least one year beyond the Maturity Date and that such successor agent has been paid in full for such term. The foregoing provisions constitute, among other things, a special arrangement for service between the parties to this Agreement for the purposes of 28 U.S.C. § 1608.

9.4. Waiver of Immunity.

(a) TO THE EXTENT THAT THE BORROWER MAY BE OR BECOME ENTITLED, IN ANY JURISDICTION IN WHICH JUDICIAL PROCEEDINGS MAY AT ANY TIME BE COMMENCED WITH RESPECT TO THIS AGREEMENT OR ANY OTHER

LOAN DOCUMENT, TO CLAIM FOR ITSELF OR ITS PROPERTIES OR REVENUES ANY IMMUNITY FROM SUIT, COURT JURISDICTION, ATTACHMENT PRIOR TO JUDGMENT, ATTACHMENT IN AID OF EXECUTION OF A JUDGMENT, EXECUTION OF A JUDGMENT OR FROM ANY OTHER LEGAL PROCESS OR REMEDY RELATING TO ITS OBLIGATIONS UNDER THIS AGREEMENT OR ANY OTHER LOAN DOCUMENT, AND TO THE EXTENT THAT IN ANY SUCH JURISDICTION THERE MAY BE ATTRIBUTED SUCH AN IMMUNITY (WHETHER OR NOT CLAIMED), THE BORROWER HEREBY IRREVOCABLY AGREES NOT TO CLAIM AND HEREBY IRREVOCABLY WAIVES SUCH IMMUNITY TO THE FULLEST EXTENT PERMITTED BY THE LAWS OF SUCH JURISDICTION BUT SUBJECT TO THE LIMITATIONS PROVIDED IN (I) ARTICLES 192, 195, 298 AND 299 OF LAW 1437 OF 2011 (*CÓDIGO DE PROCEDIMIENTO ADMINISTRATIVO Y DE LO CONTENCIOSO ADMINISTRATIVO*), AS AMENDED BY ARTICLES 80, 81 AND 87 OF LAW 2080 OF 2021 AND (II) ARTICLES 593, 594 AND 595 OF LAW 1564 OF 2012 (*CÓDIGO GENERAL DEL PROCESO*).

(b) THE BORROWER AGREES THAT THE WAIVERS SET FORTH IN PARAGRAPH (a) ABOVE SHALL HAVE THE FULLEST EFFECT PERMITTED UNDER THE FOREIGN SOVEREIGN IMMUNITIES ACT OF 1976 OF THE UNITED STATES OF AMERICA (28 U.S.C. §§ 1602-1611) AND ARE INTENDED TO BE IRREVOCABLE AND NOT SUBJECT TO WITHDRAWAL FOR PURPOSES THEREOF.

9.5. Waiver of Security Requirements. TO THE EXTENT THE BORROWER MAY, IN ANY ACTION, SUIT OR PROCEEDING BROUGHT IN ANY OF THE COURTS REFERRED TO IN SECTION 9.02 OR OTHERWISE ARISING OUT OF OR IN CONNECTION WITH THIS AGREEMENT OR ANY OTHER LOAN DOCUMENT, BE ENTITLED TO THE BENEFIT OF ANY PROVISION OF LAW REQUIRING THE ADMINISTRATIVE AGENT OR ANY LENDER IN SUCH ACTION, SUIT OR PROCEEDING TO POST SECURITY FOR THE COSTS OF THE BORROWER OR TO POST A BOND OR TO TAKE SIMILAR ACTION, AS THE CASE MAY BE, THE BORROWER HEREBY IRREVOCABLY WAIVES SUCH BENEFIT, IN EACH CASE TO THE FULLEST EXTENT NOW OR HEREAFTER PERMITTED UNDER APPLICABLE LAW.

9.6. No Limitation. Nothing in this Section 9 shall affect the right of the Administrative Agent or any Lender to serve process in any other manner permitted by Applicable Law or to commence legal proceedings or otherwise proceed against the Borrower in Colombia or in any other jurisdiction.

9.7. International Banking Facility. The Borrower, a nonbank entity located outside the United States, understands that it is the policy of the Federal Reserve Board that extensions of credit by international banking facilities (as defined in Section 204.8(a) of Regulation D of the Federal Reserve Board) may be used only to finance the non-U.S. operations of a customer (or its foreign affiliates) located outside the United States as provided in Section 204.8(a)(3)(vi) of Regulation D of the Federal Reserve Board. Therefore, the Borrower agrees that the proceeds of the Loans by the international banking facility of any of the Lenders (as defined in Section 204.8(a) of Regulation D of the Federal Reserve Board) will be used solely to

finance the Borrower's operations outside the United States or that of the Borrower's non-U.S. Affiliates.

SECTION 10 THE ADMINISTRATIVE AGENT

10.1. Appointment. Each Lender hereby designates and appoints The Bank of Nova Scotia, as Administrative Agent to act as specified herein. The Bank of Nova Scotia, as Administrative Agent, is authorized to execute and deliver this Agreement and to take such action on behalf of the Lenders under the provisions of this Agreement and to exercise such powers and to perform such duties hereunder as are specifically delegated to or required of the Administrative Agent by the terms hereof and thereof and such other powers as are reasonably incidental thereto.

10.2. Nature of Duties.

(a) The Administrative Agent shall:

- (i) promptly inform the Lenders of the contents of any notice or document received by it from the Borrower; and
- (ii) promptly provide each notice as may be required of it pursuant to this Agreement.

(b) The Administrative Agent may perform any of its duties hereunder by or through its officers, directors, agents or any other authorized employee. The exculpatory provisions of this Section 10 shall apply to any such sub-agent and to the Related Parties of the Administrative Agent and any such sub-agent.

(c) The Administrative Agent shall have no duties or responsibilities except those expressly set forth in this Agreement. The duties of the Administrative Agent to the Lenders shall be mechanical and administrative in nature; the Administrative Agent shall not have by reason of this Agreement a fiduciary relationship in respect of any Lender; and nothing in this Agreement, expressed or implied, is intended to or shall be so construed as to impose upon the Administrative Agent any obligations in respect of this Agreement or the Loan except as expressly set forth herein or therein. Without limiting the generality of the foregoing, (i) the Administrative Agent shall not be subject to any fiduciary or other implied duties, regardless of whether a Potential Default or Event of Default has occurred and is continuing, (ii) the Administrative Agent shall not have any duty to take any discretionary action or exercise any discretionary powers, except discretionary rights and powers expressly contemplated hereby that the Administrative Agent is required to exercise in writing as directed by the Required Lenders (or such other number or percentage of the Lenders as shall be necessary under the circumstances as provided herein), and (iii) except as expressly set forth herein, the Administrative Agent shall not have any duty to disclose, and shall not be liable for the failure to disclose, any information relating to the Borrower or any of its Subsidiaries that is communicated to or obtained by the bank serving as Administrative Agent or any of its Affiliates in any capacity. The Administrative Agent shall not be liable for any action taken or not taken by it with the consent or at the request of the Required Lenders (or such other number or

percentage of the Lenders as shall be necessary under the circumstances as provided herein) or in the absence of its own gross negligence or willful misconduct. The Administrative Agent shall be deemed not to have knowledge of any Potential Default or Event of Default unless and until written notice thereof is given to the Administrative Agent by the Borrower or a Lender, and the Administrative Agent shall not be responsible for or have any duty to ascertain or inquire into (A) any statement, warranty or representation made in or in connection with this Agreement, (B) the contents of any certificate, report or other document delivered hereunder or in connection herewith, (C) the performance or observance of any of the covenants, agreements or other terms or conditions set forth herein, (D) the validity, enforceability, effectiveness or genuineness of this Agreement or any other agreement, instrument or document, or (E) the satisfaction of any condition set forth in Section 5 or elsewhere herein, other than to confirm receipt of items expressly required to be delivered to the Administrative Agent.

10.3. Lack of Reliance on the Administrative Agent. Independently and without reliance upon the Administrative Agent, the Lenders, to the extent they deem appropriate, have made and shall continue to make (i) their own independent investigation of the financial condition and affairs of the Borrower in connection with the Loan and the taking or not taking of any action in connection herewith and (ii) their own appraisal of the credit worthiness of the Borrower, and the Administrative Agent and each other Lender shall have no duty or responsibility, either initially or on a continuing basis, to provide any Lender with any information with respect to this Agreement or the Borrower other than as expressly provided herein. Each Lender shall, independently and without reliance upon the Administrative Agent or any other Lender and based on such documents and information (which may contain material, non-public information within the meaning of the United States securities laws concerning the Borrower and its Affiliates) as it shall from time to time deem appropriate, continue to make its own decisions in taking or not taking action under or based upon this Agreement, any related agreement or any document furnished hereunder or thereunder and in deciding whether or to the extent to which it will continue as a Lender or assign or otherwise transfer its rights, interests and obligations hereunder.

10.4. Reliance. The Administrative Agent shall be entitled to rely, and shall be fully protected in relying, upon any writing, resolution, notice, statement, certificate, telex, teletype or telecopier message, cablegram, radiogram, order or other document or telephone message signed, sent or made by any Person that the Administrative Agent believed to be the proper Person, and, with respect to all legal matters pertaining to this Agreement and its duties hereunder, upon advice of counsel selected by it.

10.5. Consultation with Experts. The Administrative Agent may consult with legal counsel, independent certified public accountants and other experts selected by it in connection with the performance of its duties hereunder and shall not be liable for any action taken or omitted to be taken by it in good faith in accordance with the advice of such counsel, accountants or experts.

10.6. Indemnification. To the extent the Administrative Agent is not reimbursed and indemnified by the Borrower, the Lenders will reimburse and indemnify the Administrative Agent in proportion to its respective interest (determined at the time such reimbursement or indemnity is sought) for and against any and all liabilities, obligations, losses,

damages, penalties, claims, actions, judgments, suits, costs, expenses or disbursements of whatsoever kind or nature (collectively, “*Liabilities*”) which may be imposed on, asserted against or incurred by the Administrative Agent in performing its duties hereunder or in any way relating to or arising out of this Agreement; *provided* that no Lender shall be liable for any portion of such Liabilities resulting from the Administrative Agent’s gross negligence or willful misconduct.

10.7. The Administrative Agent in Its Individual Capacity. The Administrative Agent and the Lenders may accept deposits from, lend money to, and generally engage in any kind of banking, trust, financial advisory role or other business with the Borrower or any affiliate thereof as if it were not performing the duties specified herein, and may accept fees and other consideration from the Borrower for services in connection with this Agreement and otherwise without having to account for the same to another Lender. Notwithstanding anything to the contrary expressed or implied herein, the Administrative Agent and the Lenders shall not be bound to: (a) account to any other Person for any sum or the profit element of any sum received by it for its own account or (b) disclose to any other Person any information relating to the Borrower if such disclosure would or might in its opinion constitute a breach of any law or regulation or be otherwise actionable by suit of any Person.

10.8. Resignation by the Administrative Agent; Successor Administrative Agent.

(a) The Administrative Agent may resign from the performance of all its functions and duties hereunder at any time by giving thirty (30) calendar days’ prior written notice to the Borrower and the Lenders. Such resignation shall take effect upon the appointment of a successor Administrative Agent pursuant to clauses (b) or (c) below or as otherwise provided below; *provided* that, in the event the Borrower determines in good faith that the Administrative Agent’s gross negligence or willful misconduct has resulted in a breach of the Administrative Agent’s obligations under this Agreement, the Borrower may, by written notice to the Administrative Agent and the Lenders, require the Administrative Agent to resign in accordance with this paragraph, which notice shall (without any further action) be deemed to be a notice of resignation delivered by the Administrative Agent to the Lenders. Upon any such resignation, the Lenders shall have the right to appoint a successor, who shall be a bank with an office in New York, New York, or an Affiliate of any such bank.

(b) Upon any such notice of resignation (other than in the course of a deemed resignation pursuant to clause (a) above), the Lenders shall appoint a successor Administrative Agent hereunder or thereunder who shall be a bank with an office in New York, New York, or an Affiliate of any such bank.

(c) In the event of a resignation (other than in the course of a deemed resignation pursuant to clause (a) above) if a successor Administrative Agent shall not have been so appointed within such thirty (30) calendar day period, the Administrative Agent, with the consent of the Borrower (not to be unreasonably withheld), may then appoint a successor Administrative Agent who shall serve as Administrative Agent hereunder or thereunder until such time, if any, as the Lenders appoint a successor Administrative Agent as provided above.

(d) If the Administrative Agent becomes insolvent or unable to meet its debts as they mature or if a receiver of it or of all or any substantial part of its property shall be appointed or if an order of any court of competent jurisdiction shall be entered approving any petition filed by or against it under the provisions of any applicable bankruptcy or insolvency law, or if any public officer shall take charge or control of the Administrative Agent or of its property or affairs, for the purpose of rehabilitation, conservation or liquidation, the Lenders shall appoint a successor Administrative Agent in accordance with clause (b) above. If a successor Administrative Agent shall not have been so appointed pursuant to clause (b) above, the Lenders shall appoint a successor Administrative Agent pursuant to clause (c) above, as the case may be.

10.9. No Amendment to Duties of Administrative Agent Without Consent. The Administrative Agent shall not be bound by any waiver, amendment, supplement or modification of this Agreement which affects its rights or duties under this Agreement unless it shall have given its prior written consent, as Administrative Agent, thereto.

10.10. Administrative Agent Conflict of Interest. With respect to its Commitment and the Loans made by it, if any, The Bank of Nova Scotia (and any successor acting as Administrative Agent or in any other capacity in connection herewith or the transactions contemplated hereby) in its capacity as a Lender hereunder shall have the same rights, powers and obligations hereunder as any other Lender and may exercise such rights and powers as though it were not acting as the Administrative Agent or in any other capacity in connection herewith or the transactions contemplated hereby, and the term "Lenders" shall, unless the context otherwise indicates, include The Bank of Nova Scotia in its individual capacity. The Bank of Nova Scotia (and any successor acting as Administrative Agent or in any other capacity in connection herewith or the transactions contemplated hereby) and its Affiliates may (without having to account therefor to any Lender) accept deposits from, lend money to, make investments in and generally engage in any kind of banking, trust or other business with the Borrower and its Affiliates as if it were not acting as a Lender and/or the Administrative Agent or in any other capacity in connection herewith or the transactions contemplated hereby, and The Bank of Nova Scotia (and any such successor) and its Affiliates may accept fees and other consideration from the Borrower and said other Persons for services in connection with this Agreement or otherwise without having to account for the same to the Lenders. The Lenders acknowledge that, pursuant to such activities, The Bank of Nova Scotia or its Affiliates may receive information regarding the Borrower or its Affiliates (including information that may be subject to confidentiality obligations in favor of the Borrower or such Affiliate) and acknowledge that the Administrative Agent or The Bank of Nova Scotia acting as Lender or in any other capacity in connection herewith or the transactions contemplated hereby shall be under no obligation to provide such information to them. In addition, The Bank of Nova Scotia and its Affiliates may be engaged in a broad range of transactions that involve interests that differ from, and may conflict with, those of the Borrower and its Affiliates, and neither The Bank of Nova Scotia nor any of its Affiliates has any obligation to disclose any such interest by virtue of any advisory agency or fiduciary relationship or otherwise.

10.11. Erroneous Payment.

(a) If the Administrative Agent (x) notifies a Lender, or any Person who has received funds on behalf of a Lender (any such Lender or other recipient, a “**Payment Recipient**”) that the Administrative Agent has determined in its sole discretion (whether or not after receipt of any notice under immediately succeeding clause (b)) that any funds (as set forth in such notice from the Administrative Agent) received by such Payment Recipient from the Administrative Agent or any of its Affiliates were erroneously or mistakenly transmitted to, or otherwise erroneously or mistakenly received by, such Payment Recipient (whether or not known to such Lender or other Payment Recipient on its behalf) (any such funds, whether transmitted or received as a payment, prepayment or repayment of principal, interest, fees, distribution or otherwise, individually and collectively, an “**Erroneous Payment**”) and (y) demands in writing the return of such Erroneous Payment (or a portion thereof), such Erroneous Payment shall at all times remain the property of the Administrative Agent pending its return or repayment as contemplated below in this Section 10.11 and held in trust for the benefit of the Administrative Agent, and such Lender shall (or, with respect to any Payment Recipient who received such funds on its behalf, shall cause such Payment Recipient to) promptly, but in no event later than two (2) Business Days thereafter (or such later date as the Administrative Agent may, in its sole discretion, specify in writing), return to the Administrative Agent the amount of any such Erroneous Payment (or portion thereof) as to which such a demand was made, in same day funds (in the currency so received), together with interest thereon (except to the extent waived in writing by the Administrative Agent) in respect of each day from and including the date such Erroneous Payment (or portion thereof) was received by such Payment Recipient to the date such amount is repaid to the Administrative Agent in same day funds at the greater of the Federal Funds Effective Rate and a rate determined by the Administrative Agent in accordance with banking industry rules on interbank compensation from time to time in effect. A notice of the Administrative Agent to any Payment Recipient under this clause (a) shall be conclusive, absent manifest error.

(b) Without limiting immediately preceding clause (a), each Lender or any Person who has received funds on behalf of a Lender, agrees that if it receives a payment, prepayment or repayment (whether received as a payment, prepayment or repayment of principal, interest, fees, distribution or otherwise) from the Administrative Agent (or any of its Affiliates) (x) that is in a different amount than, or on a different date from, that specified in this Agreement or in a notice of payment, prepayment or repayment sent by the Administrative Agent (or any of its Affiliates) with respect to such payment, prepayment or repayment, (y) that was not preceded or accompanied by a notice of payment, prepayment or repayment sent by the Administrative Agent (or any of its Affiliates), or (z) that such Lender, or other such recipient, otherwise becomes aware was transmitted, or received, in error or by mistake (in whole or in part), then in each such case:

(i) it acknowledges and agrees that (A) in the case of immediately preceding clauses (x) or (y), an error and mistake shall be presumed to have been made (absent written confirmation from the Administrative Agent to the contrary) or (B) an error and mistake has been made (in the case of immediately preceding clause (z)), in each case, with respect to such payment, prepayment or repayment; and

(ii) such Lender shall use commercially reasonable efforts to (and shall use commercially reasonable efforts to cause any other recipient that receives funds on its respective behalf to) promptly (and, in all events, within two (2) Business Days of its knowledge of the occurrence of any of the circumstances described in immediately preceding clauses (x), (y), and (z)) notify the Administrative Agent of its receipt of such payment, prepayment or repayment, the details thereof (in reasonable detail) and that it is so notifying the Administrative Agent pursuant to this Section 10.11(b).

For the avoidance of doubt, the failure to deliver a notice to the Administrative Agent pursuant to this Section 10.11(b) shall not have any effect on a Payment Recipient's obligations pursuant to Section 10.11(a) or on whether or not an Erroneous Payment has been made.

(c) Each Lender hereby authorizes the Administrative Agent to set off, net and apply any and all amounts at any time owing to such Lender under any Loan Document, or otherwise payable or distributable by the Administrative Agent to such Lender under any Loan Document with respect to any payment of principal, interest, fees or other amounts, against any amount that the Administrative Agent has demanded to be returned under immediately preceding clause (a).

(d)

(i) In the event that an Erroneous Payment (or portion thereof) is not recovered by the Administrative Agent for any reason, after demand therefor in accordance with immediately preceding clause (a), from any Lender that has received such Erroneous Payment (or portion thereof) (and/or from any Payment Recipient who received such Erroneous Payment (or portion thereof) on its respective behalf) (such unrecovered amount, an "***Erroneous Payment Return Deficiency***"), upon the Administrative Agent's notice to such Lender at any time, then effective immediately (with the consideration therefor being acknowledged by the parties hereto), (A) such Lender shall be deemed to have assigned its Loans (but not its Commitments) with respect to which such Erroneous Payment was made (the "***Erroneous Payment Impacted Class***") in an amount equal to the Erroneous Payment Return Deficiency (or such lesser amount as the Administrative Agent may specify) (such assignment of the Loans (but not Commitments) of the Erroneous Payment Impacted Class, the "***Erroneous Payment Deficiency Assignment***") (on a cashless basis and such amount calculated at par plus any accrued and unpaid interest (with the assignment fee to be waived by the Administrative Agent in such instance)), and is hereby (together with the Borrower) deemed to execute and deliver an Assignment and Assumption with respect to such Erroneous Payment Deficiency Assignment, and such Lender shall deliver any Notes evidencing such Loans to the Borrower or the Administrative Agent (but the failure of such Person to deliver any such Notes shall not affect the effectiveness of the foregoing assignment), (B) the Administrative Agent as the assignee Lender shall be deemed to have acquired the Erroneous Payment Deficiency Assignment, (C) upon such deemed acquisition,

the Administrative Agent as the assignee Lender shall become a Lender, as applicable, hereunder with respect to such Erroneous Payment Deficiency Assignment and the assigning Lender shall cease to be a Lender, as applicable, hereunder with respect to such Erroneous Payment Deficiency Assignment, excluding, for the avoidance of doubt, its obligations under the indemnification provisions of this Agreement and its applicable Commitments which shall survive as to such assigning Lender, (D) the Administrative Agent and the Borrower shall each be deemed to have waived any consents required under this Agreement to any such Erroneous Payment Deficiency Assignment, and (E) the Administrative Agent will reflect in the Register its ownership interest in the Loans subject to the Erroneous Payment Deficiency Assignment. For the avoidance of doubt, no Erroneous Payment Deficiency Assignment will reduce the Commitments of any Lender and such Commitments shall remain available in accordance with the terms of this Agreement.

(ii) Subject to Section 11.03 (but excluding, in all events, any assignment consent or approval requirements (whether from the Borrower or otherwise)), the Administrative Agent may, in its discretion, sell any Loans acquired pursuant to an Erroneous Payment Deficiency Assignment and upon receipt of the proceeds of such sale, the Erroneous Payment Return Deficiency owing by the applicable Lender shall be reduced by the net proceeds of the sale of such Loan (or portion thereof), and the Administrative Agent shall retain all other rights, remedies and claims against such Lender (and/or against any recipient that receives funds on its respective behalf). In addition, an Erroneous Payment Return Deficiency owing by the applicable Lender (x) shall be reduced by the proceeds of prepayments or repayments of principal and interest, or other distribution in respect of principal and interest, received by the Administrative Agent on or with respect to any such Loans acquired from such Lender pursuant to an Erroneous Payment Deficiency Assignment (to the extent that any such Loans are then owned by the Administrative Agent) and (y) may, in the sole discretion of the Administrative Agent, be reduced by any amount specified by the Administrative Agent in writing to the applicable Lender from time to time.

(e) The parties hereto agree that (x) irrespective of whether the Administrative Agent may be equitably subrogated, in the event that an Erroneous Payment (or portion thereof) is not recovered from any Payment Recipient that has received such Erroneous Payment (or portion thereof) for any reason, the Administrative Agent shall be subrogated to all the rights and interests of such Payment Recipient (and, in the case of any Payment Recipient who has received funds on behalf of a Lender, to the rights and interests of such Lender) under the Loan Documents with respect to such amount (the “**Erroneous Payment Subrogation Rights**”) (provided that the Loan Parties’ obligations under the Loan Documents in respect of the Erroneous Payment Subrogation Rights shall not be duplicative of such obligations in respect of Loans that have been assigned to the Administrative Agent under an Erroneous Payment Deficiency Assignment) and (y) an Erroneous Payment shall not pay, prepay, repay, discharge or otherwise satisfy any obligations owed by the Borrower or any other Loan Party; provided that this Section 10.11 shall not be interpreted to increase (or accelerate the due date for), or have the effect of increasing (or accelerating the due date for), the obligations of the Borrower relative to

the amount (and/or timing for payment) of the Obligations that would have been payable had such Erroneous Payment not been made by the Administrative Agent; *provided, further*, that for the avoidance of doubt, immediately preceding clauses (x) and (y) shall not apply to the extent any such Erroneous Payment is, and solely with respect to the amount of such Erroneous Payment that is, comprised of funds received by the Administrative Agent from the Borrower for the purpose of making such Erroneous Payment.

(f) To the extent permitted by applicable law, no Payment Recipient shall assert any right or claim to an Erroneous Payment, and hereby waives, and is deemed to waive, any claim, counterclaim, defense or right of set-off or recoupment with respect to any demand, claim or counterclaim by the Administrative Agent for the return of any Erroneous Payment received, including, without limitation, any defense based on “discharge for value” or any similar doctrine.

(g) Each party’s obligations, agreements and waivers under this Section 10.11 shall survive the resignation or replacement of the Administrative Agent, any transfer of rights or obligations by, or the replacement of, a Lender, the termination of the Commitments and/or the repayment, satisfaction or discharge of all obligations (or any portion thereof) under any Loan Document.

SECTION 11 MISCELLANEOUS

11.1. Computations. Each determination of an interest rate or fee by the Administrative Agent or any Lender pursuant to any provision of this Agreement or any Note, in the absence of manifest error, shall be conclusive and binding on the Borrower. All computations of interest and fees hereunder and under any Note shall be made on the basis of a year of three hundred sixty (360) days and actual days elapsed. All such calculations shall include the first day and exclude the last day of the period of calculation.

11.2. Notices.

(a) All notices or other communications required or permitted to be given hereunder (the “*Notices*”) may be given to the following addresses:

If to the Borrower: ECOPETROL S.A.

Carrera 13 No. 36-24, Piso 7, Bogota D.C.
Attn: Head of Capital Markets
Phone: + 57 1 2343233
Email: FinanzasCorporativas_ECP@ecopetrol.com.co /
investors@ecopetrol.com.co

If to the Administrative Agent:

The Bank of Nova Scotia
Agency Services
40 King Street West, 62nd floor

Toronto
Ontario, Canada M5W 2X6
Attn: Clement Yu
Phone: +1 416 933 7425
Email: clement.yu@scotiabank.com ; venita.ramjattan@scotiabank.com

If to any Lender, as set forth on the signature page or in its Assignment and Assumption Agreement, as applicable.

Any party shall have the right to change its address for Notices hereunder to any other location by giving ten (10) days' written Notice to the other parties in the manner set forth herein above.

(b) All Notices shall be in writing and shall be considered as properly given (A) if delivered in person, (B) if sent by overnight delivery service (including Federal Express, United Parcel Service and other similar reputable overnight delivery services), (C) in the event reputable overnight delivery services are not readily available, if mailed by first class mail, postage prepaid, registered or certified with return receipt requested, (D) if transmitted by facsimile confirmed by telephone or (E) if transmitted by electronic communication as provided in Section 11.02(d).

(c) Notices delivered in person or by overnight courier service, or mailed by registered or certified mail, shall be effective upon receipt by the addressee. Notices transmitted by facsimile shall be deemed to have been given when transmitted, if confirmation of a successful transmission has been received (except that, in all instances, if not given during normal business hours on a Business Day for recipient, shall be deemed to have been given at the opening of business on the next Business Day for the recipient). Notices delivered through electronic communications to the extent provided in Section 11.02(d) shall be effective as provided in such Section.

(d) (i) Notices hereunder may be delivered or furnished by electronic communication (including email) pursuant to procedures approved by the relevant recipient.

(i) Unless the relevant recipient otherwise prescribes, Notices sent to an email address shall be deemed received upon the sender's receipt of an acknowledgement from the intended recipient (such as by the "return receipt requested" function, as available, return email or other written acknowledgement); *provided* that if such Notice is not sent during the normal business hours of the recipient, such Notice shall be deemed to have been sent at the opening of business on the next Business Day of the recipient.

11.3. Benefit of Agreement; Assignment; Participations.

(a) This Agreement shall be binding upon and inure to the benefit of and be enforceable by the respective successors and assigns of the parties hereto; *provided, however*, that (1) the Borrower may not assign or transfer any of its rights, obligations or interest under any Loan Document, except with the prior written consent of the Lenders and (2) no Lender may

assign or transfer any of its rights, obligations or interest under any Loan Document except in accordance with this Section 11.03 and the requirements of Applicable Law.

(b) Any Lender may:

(i) assign all, or if less than all, a portion equal to at least \$10,000,000 of the outstanding of the Loan due to it to (1) its parent company and/or any Affiliate of such Lender which is at least 50% owned by such Lender or its parent company, (2) one or more other Lenders or (3) in the case of any Lender that is a fund or trust that invests in bank loans or that manages or advises (directly or through an Affiliate) any fund or trust that invests in bank loans, any fund or trust that invests in bank loans and is managed or advised by the same investment advisor as a Lender, by an Affiliate of such investment advisor or by a Lender, as the case may be; *provided* that the assigning Lender shall give notice to the Borrower of any such assignment (which notice shall include the identity of the proposed assignee) fifteen (15) days prior to the effective date of such assignment in order for the Borrower to complete its internal and regulatory processes; or

(ii) assign all, or if less than all, a portion equal to at least \$10,000,000 of outstanding principal amount of the Loan due to it to one or more Eligible Transferees (treating any fund that invests in bank loans and any other fund that invests in bank loans and is managed or advised by the same investment advisor as such fund or by an Affiliate of such investment advisor, as a single Eligible Transferee); and each such assignee shall become a party to this Agreement as a Lender by execution of an Assignment and Assumption Agreement;

provided that, in each case:

(w) the assigning Lender shall surrender to the Borrower the old Note(s) held by it (or furnish a standard indemnity letter from such Lender in respect of any lost Note(s) reasonably acceptable to the Borrower), and new Notes will be issued, at the Borrower's expense, to such new Lender and to the assigning Lender (in the case of a partial assignment);

(x) so long as no Event of Default has occurred and is continuing, written consent of the Borrower shall be required in connection with any assignment pursuant to clause (ii) of this Section 11.03(b) (which consent, in each case, shall not be unreasonably withheld or delayed); *provided* that, the Borrower shall be deemed to have consented to an assignment unless it shall have objected thereto by written notice to the Administrative Agent within fifteen (15) Business Days after having received notice thereof;

(y) if an Event of Default has occurred and is continuing and the Administrative Agent has delivered notice thereof to the Borrower, the Borrower shall be deemed to have consented to any assignment following the date of such notice pursuant to clause (ii) of this Section 11.03(b); *provided* that, the assigning Lender shall be required to give notice to the Borrower of any such assignment (which notice shall include the identity of the proposed assignee) prior to the assignee being considered a

Lender in order for the Borrower to complete its internal and regulatory processes; *provided further*, that, failure by the Borrower to complete any such process shall not affect the validity of such assignment; and

(z) the Administrative Agent shall receive at the time of each assignment, from the assigning or assignee Lender, the payment of a non-refundable assignment fee of \$5,000, which fee shall be paid by the assignee Lender.

Notwithstanding the foregoing provisions of Section 11.03(b), no such transfer or assignment will be effective until recorded by the Administrative Agent on the Register pursuant to Section 11.03(e) below and the Administrative Agent shall provide notice to the Borrower of any such transfer or assignment within three (3) Business Days thereof. To the extent that an assignment of all or any portion of a Lender's Loan pursuant to this Section 11.03(b) would, due to circumstances existing at the time of such assignment, result in increased costs under Section 2.09, 2.10 or 4.01 from those being charged by the respective assigning Lender prior to such assignment, then the Borrower shall not be obligated to pay such increased costs (although the Borrower shall be obligated to pay any other increased costs of the type described above resulting from changes after the date of the respective assignment).

(c) In addition to the foregoing, any Lender may grant participations or enter into transactions with one or more Persons under which payments are to be made by reference to the Borrower and its obligations, this Agreement or payment hereunder including without limitation any unfunded risk participation, insurance or reinsurance transaction, all in its rights hereunder without the consent of the Borrower; *provided, however*, that such Lender shall remain a "Lender" for all purposes hereunder and the participant shall not constitute a "Lender" hereunder and, *provided further*, that no Lender shall grant any participation or enter into any such transaction under which the participant or counterparty shall have direct or indirect rights to approve any amendment to or waiver of this Agreement except to the extent such amendment or waiver would (i) extend the Maturity Date, or reduce the rate or extend the time of payment of interest or fees thereon (except in connection with a waiver of applicability of any post-Default increase in interest rates) or reduce the principal amount thereof, or (ii) consent to the assignment or transfer by the Borrower of any of its rights and obligations under any Loan Document. In the case of any such participation or transaction, the participant or counterparty shall not have any rights under any Loan Document (the participant's counterparty's rights against such Lender in respect of such participation to be those set forth in the agreement executed by such Lender in favor of the participant or counterparty relating thereto) and all amounts payable by the Borrower hereunder shall be determined as if such Lender had not sold such participation or entered into such transaction. All costs and expenses incurred in connection with the transactions contemplated in this Section 11.03(c) will be borne by the Lender entering into such transaction.

(d) Nothing in this Agreement shall prevent or prohibit any Lender from at any time pledging or assigning a security interest in all or any portion of its Loan and Notes hereunder to secure obligations of such Lender, including any pledge or assignment to secure obligations to a Federal Reserve Bank. No pledge or assignment pursuant to this clause (d) shall release the transferor Lender from any of its obligations hereunder.

(e) The Administrative Agent shall maintain at one of its offices in the United States a copy of each Assignment and Assumption Agreement delivered to it and a register for the recordation of the name and address of each Lender, and principal amounts (and stated interest) of the Loan owing to the Lenders pursuant to the terms hereof from time to time (the "*Register*"). The entries in the Register shall be conclusive absent manifest error, and the Borrower or the Lenders shall treat each Person whose name is recorded in the Register pursuant to the terms hereof as a Lender hereunder for all purposes of this Agreement. The Register shall be available for inspection by the Borrower and the Lenders, at any reasonable time and from time to time upon reasonable prior notice.

(f) Each Lender that sells a participation shall, acting solely for this purpose as a non-fiduciary agent of the Borrower, maintain a register on which it enters the name and address of each participant and the principal amounts (and stated interest) of each participant's interest in the Loan or other obligations under the Loan Documents (the "*Participant Register*"); *provided* that no Lender shall have any obligation to disclose all or any portion of the Participant Register (including the identity of any participant or any information relating to a participant's interest in any commitments, loans, letters of credit or its other obligations under any Loan Document) to any Person except to the extent that such disclosure is necessary to establish that such commitment, loan, letter of credit or other obligation is in registered form under Section 5f.103-1(c) of the United States Treasury Regulations and Section 1.163-5(b) of the proposed United States Treasury Regulations. The entries in the Participant Register shall be conclusive absent manifest error, and such Lender shall treat each Person whose name is recorded in the Participant Register as the owner of such participation for all purposes of this Agreement notwithstanding any notice to the contrary. For the avoidance of doubt, the Administrative Agent (in its capacity as Administrative Agent) shall have no responsibility for maintaining a Participant Register.

11.4. No Waiver; Remedies Cumulative. No failure or delay on the part of either the Borrower or the Administrative Agent or any Lender in exercising any right, power or privilege under any Loan Document and no course of dealing between or among the Borrower and the Administrative Agent or any Lender shall operate as a waiver of such right, power or privilege; nor shall any single or partial exercise of any right, power or privilege hereunder, under any Loan Document preclude any other right, power or privilege hereunder or thereunder. The rights and remedies expressly provided herein are cumulative and not exclusive of any rights or remedies that either the Borrower or the Administrative Agent or any Lender would otherwise have. No notice to or demand on the Borrower in any case shall entitle the Borrower to any other or further notice or demand in similar or other circumstances or constitute a waiver of the rights of either the Borrower or the Administrative Agent or any Lender to any other or further action in any circumstances without notice or demand.

11.5. Entire Agreement. The Loan Documents contain the entire agreement among the parties hereto regarding the Loan.

11.6. Amendment or Waiver; etc.

(a) Neither this Agreement nor any terms hereof may be changed, waived, discharged or terminated unless such change, waiver, discharge or termination is in writing

signed by the Borrower, and approved by the Ministry of Finance to the extent required by Colombian public indebtedness regulations, and the Required Lenders; *provided* that no such change, waiver, discharge or termination shall, without the consent of all the parties hereto (i) extend any scheduled date of payment or the Maturity Date or the date by which the Commitments terminate if the Disbursement has not occurred or reduce the rate or extend the time of payment of interest (other than as a result of any waiver of the applicability of any post-Default increase in interest rates) thereon, or reduce the fees payable hereunder or principal amount of the Loan, (ii) amend, modify or waive any provision of this Section 11.06, (iii) amend or modify the definition of Required Lenders, (iv) amend or modify Section 3.04 in a manner that would alter the *pro rata* sharing of payments required thereby, (v) consent to the assignment or transfer by the Borrower of any of its rights and obligations under any Loan Document (except in accordance with the terms hereof), (vi) change Section 3.04(b) or 3.04(c) in a manner that would alter the *pro rata* sharing of payments required thereby or any other provision in a manner that would alter the *pro rata* allocation among the Lenders without the written consent of each Lender directly affected thereby, (vii) change the payment currency of any amount payable under this Agreement, or (viii) amend, modify or waive any provision of Section 5; *provided further*, that no such change, waiver, discharge or termination shall (x) increase the Commitment of any Lender without the written consent of such Lender, or (y) without the consent of the Administrative Agent, amend, modify or waive any provision of Section 10 as same applies to the Administrative Agent or any other provision as same relates to the rights or obligations of the Administrative Agent.

(b) If, in connection with any proposed change, waiver, discharge or termination of or to any of the provisions of this Agreement requiring the consent of Required Lenders and for which the consent of the Required Lenders is obtained but the consent of one or more other Lenders is not obtained, then the Borrower shall have the right, so long as all non-consenting Lenders are treated as described in clauses (A) or (B) below, to either (A) replace each such non-consenting Lender or Lenders with one or more Replacement Lenders pursuant to Section 2.12 so long as, at the time of such replacement, each such Replacement Lender consents to the proposed change, waiver, discharge or termination for which consent of the Required Lenders was obtained, or (B) repay the portion of the outstanding Loan due to such non-consenting Lender, so long as the Loan, together with accrued and unpaid interest and all other amounts, owing to such Lender are repaid concurrently with the effectiveness of such termination and at such time, unless the respective Lender continues to have an outstanding Loan hereunder, such Lender shall no longer constitute a "Lender" for purposes of this Agreement, but shall continue to be entitled to any amounts that have accrued prior to such replacement or repayment and remain unpaid under Section 2.09, 2.10, Section 4 and the indemnification under Section 10.06, which shall survive as to such replaced or repaid Lender; *provided* that, unless the Loan which is repaid pursuant to preceding clause (B) is immediately replaced in full at such time through the addition of new Lenders and/or outstanding Loan of existing Lenders (who in each case must specifically consent thereto), then in the case of any action pursuant to preceding clause (B), the Required Lenders (determined after giving effect to the proposed action) shall specifically consent thereto.

11.7. Counterparts. This Agreement may be executed in any number of counterparts and by the different parties hereto on separate counterparts, each of which, when executed and delivered, shall be effective for purposes of binding the parties hereto, but all of

which shall together constitute one and the same instrument. Delivery of an executed counterpart of a signature page of this Agreement by telecopy, emailed pdf or any other electronic means that reproduces an image of the actual executed signature page shall be effective as delivery of a manually executed counterpart of this Agreement. The words "execution," "signed," "signature," "delivery," and words of like import in or relating to any document to be signed in connection with this Agreement and the transactions contemplated hereby shall be deemed to include electronic signatures, deliveries or the keeping of records in electronic form, each of which shall be of the same legal effect, validity or enforceability as a manually executed signature, physical delivery thereof or the use of a paper-based recordkeeping system, as the case may be, to the extent and as provided for in any applicable law, including the Federal Electronic Signatures in Global and National Commerce Act, the New York State Electronic Signatures and Records Act, or any other similar state laws based on the Uniform Electronic Transactions Act.

11.8. Expenses; Indemnity.

(a) The Borrower shall pay all reasonable and documented out-of-pocket expenses incurred by the Administrative Agent, and the Lenders, which expenses shall include reasonable attorney's fees and expenses for no more than one Colombian counsel and one New York counsel to the Administrative Agent and the Lenders collectively, in connection with any amendments, modifications or waivers of the provisions hereof or thereof (whether or not the transactions contemplated hereby or thereby shall be consummated). The Borrower shall pay all reasonable and documented out-of-pocket expenses incurred by each of the Administrative Agent or any Lender, including the documented fees, charges and disbursements of any counsel for the Administrative Agent or any Lender, in connection with the enforcement or protection of its rights in connection with the Loan Documents, including its rights under this Section.

(b) The Borrower shall indemnify the Administrative Agent, the Lenders, their respective Affiliates, and their respective directors, officers, employees, attorneys and agents (each such Person being called an "*Indemnatee*") against, and hold each Indemnatee harmless from, any losses, claims, damages, liabilities and related expenses, which expenses shall include reasonable attorney's fees and expenses for no more than one Colombian counsel and one New York counsel to the Lenders and one Colombian counsel and one New York counsel to the Administrative Agent, arising out of, in connection with, or as a result of: (i) the execution or delivery of the Loan Documents, any demand for payment, other presentation or request under the Loan Documents, (ii) the Loan or the use or proposed use of the proceeds therefrom, (iii) any payment or other action taken or omitted to be taken in connection with the Loan Documents, (iv) any actual environmental liability related in any way to the Borrower or any of its Material Subsidiaries, and (v) any actual or prospective claim, litigation, investigation or proceeding relating to any of the foregoing whether based on contract, tort or any other theory, whether brought by a third party or by the Borrower or any of its Subsidiaries and regardless of whether any Indemnatee is a party thereto; *provided* that such indemnity shall not, as to any Indemnatee, be available to the extent that such losses, claims, damages, liabilities or related expense (x) are determined by a court of competent jurisdiction by final and non-appealable judgment to have resulted from the gross negligence or willful misconduct of such Indemnatee or (y) result from a claim brought by the Borrower against an Indemnatee for breach of such Indemnatee's obligations under any Loan Document, if the Borrower has obtained a final non-

appealable judgment in its favor on such claims as determined by a court of competent jurisdiction. This Section 11.08 shall not apply with respect to Taxes (which shall be covered by Section 4.01) other than any Taxes that represent losses, claims, damages, liabilities and related expenses arising from any non-Tax claim.

(c) To the extent that the Borrower fails to pay any amount required to be paid by it to the Administrative Agent under paragraph (a) of this Section 11.08, the Lenders severally agree to pay to the Administrative Agent such Lender's portion of the Disbursement (determined as of the time that the applicable unreimbursed expense or indemnity payment is sought) of such unpaid amount; *provided* that the unreimbursed expense or indemnified loss, claim, damage, liability or related expense, as the case may be, was incurred by or asserted against the Administrative Agent.

11.9. Judgment Currency.

(a) The Borrower's obligations under the Loan Documents to make payments in Dollars shall not be discharged or satisfied by any tender or recovery pursuant to any judgment expressed in or converted into any currency other than Dollars, except to the extent that such tender or recovery results in the receipt by the Administrative Agent or any Lender of the full amount of Dollars expressed to be payable to the Administrative Agent or such Lender under the Loan Documents. If for the purpose of obtaining or enforcing judgment against the Borrower in any court or in any jurisdiction outside of Colombia, it becomes necessary to convert into or from any currency other than Dollars (such other currency being hereinafter referred to as the "*Judgment Currency*") an amount due in Dollars, the conversion shall be made at the rate of exchange determined, in each case, as of the day on which the judgment is given (such Business Day being hereinafter referred to as the "*Judgment Currency Conversion Date*"). If, for the purpose of obtaining or enforcing judgment against the Borrower in any court in Colombia, it becomes necessary to convert into or from any Judgment Currency an amount due in Dollars, the conversion shall be made at the Colombian market representative rate certified by the Colombian Superintendence of Finance for the date of payment.

(b) If there is a change in the rate of exchange prevailing between the Judgment Currency Conversion Date and the date of actual payment of the amount due by the Borrower, the Borrower covenants to pay, or cause to be paid, such additional amounts, if any (but in any event not a lesser amount), as may be necessary to ensure that the amount paid by the Borrower in the Judgment Currency, when converted at the rate of exchange prevailing on the date of payment to the Administrative Agent or such Lender by the Borrower, shall produce the amount of Dollars which could have been purchased with the amount of Judgment Currency stipulated in the judgment or judicial award at the rate of exchange prevailing on the Judgment Currency Conversion Date. Any such amount of Dollars not discharged by such Borrower payment of Judgment Currency shall continue to be due as an outstanding and unpaid obligation under this Agreement and shall accrue interest at the rate then applicable to the Loan in accordance with Section 2.07 until paid in full. If there is a change in the rate of exchange prevailing between the Judgment Currency Conversion Date and the date of actual payment by the Borrower of the amount due to the Administrative Agent or such Lender that results in the Borrower paying an amount in excess of that necessary to discharge or satisfy any judgment, the Administrative Agent or such Lender shall transfer or cause to be transferred to the Borrower the

amount of such excess (net of any Taxes and reasonable and customary costs incurred in connection therewith).

(c) For purposes of applying the rate of exchange under this Section 11.09, the amount of Judgment Currency converted shall include any premium and costs payable in connection with the purchase of Dollars.

11.10. English Language.

(a) If any Loan Document (or any provision of any Loan Document) other than the Notes is originally written in any language other than English, the version which is in English shall prevail in case of any discrepancy with any version in any other language.

(b) Within one hundred twenty (120) days following the Agreement Date, the Borrower will provide to the Administrative Agent official translations into Spanish of the Loan Documents requested by the Administrative Agent for use in connection with any enforcement of remedies under this Agreement and the other Loan Documents in Colombia and the Administrative Agent and the Lenders agree that such official Spanish translations shall govern for purposes of any such enforcement of remedies in Colombia, *provided* that for so long as the Borrower is acting in good faith to prepare such official translations, the Borrower may take up to an additional sixty (60) days after the expiration of such one hundred twenty (120) day period to complete such translations.

11.11. Severability. To the extent permitted by Applicable Law, the illegality or unenforceability of any provision of this Agreement shall not in any way affect or impair the legality or enforceability of the remaining provisions of this Agreement.

11.12. Waiver of Jury Trial. EACH PARTY HERETO HEREBY IRREVOCABLY WAIVES TO THE FULLEST EXTENT PERMITTED BY APPLICABLE LAW ALL RIGHT EACH MAY HAVE TO A TRIAL BY JURY IN ANY ACTION, SUIT, PROCEEDING OR COUNTERCLAIM DIRECTLY OR INDIRECTLY ARISING OUT OF OR RELATING TO THIS AGREEMENT, THE TRANSACTIONS CONTEMPLATED HEREBY OR ANY OTHER LOAN DOCUMENT TO WHICH IT IS A PARTY (WHETHER BASED ON CONTRACT, TORT OR ANY OTHER THEORY).

11.13. Captions. The table of contents and captions and section headings appearing herein are included solely for convenience of reference and are not intended to affect the interpretation of any provision of this Agreement.

11.14. Damages Waiver. To the fullest extent permitted by Applicable Law, no party shall assert, and each hereby waives, any claim, on any theory of liability, for indirect, special, punitive, consequential or exemplary damages (as opposed to direct or actual damages) arising out of, in connection with, or as a result of, this Agreement, any other Loan Document or any agreement or instrument contemplated hereby or thereby, the transactions contemplated hereby or thereby, the Loan or the use of the proceeds thereof.

11.15. Confidentiality. Each of the Administrative Agent and each Lender agrees to maintain the confidentiality of the Confidential Information, except that Confidential

Information may be disclosed (a) to its Affiliates and to its and its Affiliates' directors, officers, employees and agents, trustees, including accountants, legal counsel and other advisors (it being understood that the Persons to whom such disclosure is made will be informed of the confidential nature of such Confidential Information and instructed to keep such Confidential Information confidential), (b) to the extent requested by any Governmental Authority purporting to have jurisdiction over it (including any self-regulatory authority, such as the National Association of Insurance Commissioners), (c) to the extent required by Applicable Laws or regulations or by any subpoena or similar legal process, (d) to any other party to this Agreement, (e) in connection with the exercise of any remedies hereunder or any suit, action or proceeding relating to this Agreement or the enforcement of rights hereunder, (f) subject to an agreement containing provisions substantially the same as those of this Section, to (i) any assignee of or participant in, or any prospective assignee of or participant in, any of its rights or obligations under this Agreement or (ii) any actual or prospective counterparty (or its advisors) to any swap or derivative transaction relating to the Borrower or its obligations, (g) to its insurers and reinsurers, (h) with the consent of the Borrower or (i) to the extent such Confidential Information (i) becomes publicly available other than as a result of a breach of this Section, (ii) becomes available to the Administrative Agent or any Lender on a non-confidential basis from a source other than the Borrower, or (iii) is not, in the reasonable belief of the Administrative Agent including any such information in respect of which the Administrative Agent or any Lender reasonably believes that it is not bound by any confidential obligation (but in any event excluding any information furnished by the Borrower that is designated as confidential in writing). Any Person required to maintain the confidentiality of Confidential Information as provided in this Section shall be considered to have complied with its obligation to do so if such Person has exercised the same degree of care to maintain the confidentiality of such Confidential Information as such Person would accord to its own confidential information.

Each of the Administrative Agent and each Lender acknowledges that (a) the Confidential Information may include material non-public information concerning the Borrower or any of its Subsidiaries and (b) it has developed compliance procedures regarding the use of material nonpublic information and for the handling of such material non-public information in accordance with Applicable Law, including United States Federal and state securities laws.

11.16. Survival. The expiration or termination of this Agreement does not terminate or affect any obligation hereunder that either expressly or by its nature survives the expiration or termination of this Agreement. Such obligations include, but are not limited to, those described in Sections 2.09, 2.10, 4.01, 9, 10.06, 11.08, 11.09 and 11.14, which shall survive expiration or termination of this Agreement; *provided, however*, that no change in Applicable Law after the expiration or termination of this Agreement shall increase the Borrower's obligations with respect to amounts paid prior to such expiration or termination.

11.17. No Fiduciary Duty. In connection with all aspects of each transaction contemplated hereby (including in connection with any amendment, waiver or other modification hereof or of any other Loan Document), the Borrower acknowledges and agrees that: (a) (i) the arranging and other services regarding this Agreement provided by the Administrative Agent and the Lenders are arm's-length commercial transactions between the Borrower and its Affiliates, on the one hand, and the Administrative Agent, and the Lenders, on the other hand, (ii) the Borrower has consulted its own legal, accounting, regulatory and tax advisors to the extent it has

deemed appropriate, and (iii) the Borrower is capable of evaluating, and understands and accepts, the terms, risks and conditions of the transactions contemplated hereby and by the other Loan Documents; (b) (i) the Administrative Agent and the Lenders are and have been acting solely as a principal and, except as expressly agreed in writing by the relevant parties, have not been, are not, and will not be acting as an advisor, agent or fiduciary for the Borrower or any of its Affiliates, or any other Person and (ii) neither the Administrative Agent nor any Lender has any obligation to the Borrower or any of its Affiliates with respect to the transactions contemplated hereby except those obligations expressly set forth herein and in the other Loan Documents; and (c) the Administrative Agent and the Lender and their respective Affiliates may be engaged in a broad range of transactions that involve interests that differ from those of the Borrower and its Affiliates, and neither the Administrative Agent nor any Lender has any obligation to disclose any of such interests to the Borrower or its Affiliates. To the fullest extent permitted by law, the Borrower hereby waives and releases any claims that it may have against the Administrative Agent or any Lender with respect to any breach or alleged breach of agency or fiduciary duty in connection with any aspect of any transaction contemplated hereby.

11.18. Patriot Act. Each Lender that is subject to the requirements of the Patriot Act hereby notifies the Borrower that pursuant to the requirements of the Patriot Act, it is required to obtain, verify and record information that identifies the Borrower, which information includes the name and address of the Borrower and other information that will allow such Lender to identify the Borrower in accordance with the Patriot Act.

11.19. Exequatur. A judgment obtained in a New York Court arising out of or relating to this Agreement, or the transactions contemplated thereby, will be enforced against the Borrower in the courts of Colombia; *provided* that such judgment has previously obtained an Exequatur, which is regulated by Colombian law.

11.20. Acknowledgement and Consent to Bail-In of Affected Financial Institutions. Notwithstanding anything to the contrary in any Loan Document or in any other agreement, arrangement or understanding among any such parties, each party hereto acknowledges that any liability of any Affected Financial Institution arising under any Loan Document, to the extent such liability is unsecured, may be subject to the write-down and conversion powers of the applicable Resolution Authority and agrees and consents to, and acknowledges and agrees to be bound by:

- (a) the application of any Write-Down and Conversion Powers by the applicable Resolution Authority to any such liabilities arising hereunder that may be payable to it by any party hereto that is an Affected Financial Institution; and
- (b) the effects of any Bail-in Action on any such liability, including, if applicable:
 - (i) a reduction in full or in part or cancellation of any such liability;
 - (ii) a conversion of all, or a portion of, such liability into shares or other instruments of ownership in such Affected Financial Institution, its parent undertaking, or a bridge institution that may be issued to it or otherwise conferred

on it, and that such shares or other instruments of ownership will be accepted by it in lieu of any rights with respect to any such liability under this Agreement or any other Loan Document; or

(iii) the variation of the terms of such liability in connection with the exercise of the write-down and conversion powers of the applicable Resolution Authority.

[Remainder of Page Intentionally Left Blank]

IN WITNESS WHEREOF, each of the parties hereto has caused this Agreement to be duly executed and delivered as of the date first above written.

ECOPETROL S.A., as Borrower

By: /s/ Felipe Bayón Pardo

Name: Felipe Bayón Pardo

Title: *Chief Executive Officer*

[Ecopetrol - Signature page to Loan Agreement]

THE BANK OF NOVA SCOTIA, as
Administrative Agent

By: /s/ Clement Yu

Name: Clement Yu

Title: Director

[Ecopetrol - Signature Page to the Loan Agreement]

BANCO SANTANDER, S.A., as Lender

By: /s/ Lucas Visela

Name: Lucas Visela

Title:

By: /s/ Luis Casero Ynpiesta

Name: Luis Casero Ynpiesta

Title: Vice President

[Ecopetrol - Signature Page to the Loan Agreement]

CITIBANK, N.A., as Lender

By: /s/ Adrian Guzzoni

Name: Adrian Guzzoni

Title: Authorized Signatory

[Ecopetrol - Signature Page to the Loan Agreement]

JPMORGAN CHASE BANK, N.A., as Lender

By: /s/ Christophe Vohmann

Name: Christophe Vohmann

Title: Executive Director

[Ecopetrol - Signature Page to the Loan Agreement]

THE BANK OF NOVA SCOTIA, as Lender

By: /s/ Daniel Gracian

Name: Daniel Gracian

Title: Director, International Banking

By: /s/ Ana Espinoza

Name: Ana Espinoza

Title: Director, International Banking

[Ecopetrol - Signature Page to the Loan Agreement]

SCHEDULE 1

EXISTING LIENS

None.

SCHEDULE 2

COMMITMENT

Lender	Commitment
Banco Santander, S.A.	\$1,000,000,000
Citibank, N.A.	\$1,000,000,000
JPMorgan Chase Bank, N.A.	\$1,000,000,000
The Bank of Nova Scotia	\$1,000,000,000
TOTAL:	\$4,000,000,000

ANNEX A
FORM OF DISBURSEMENT REQUEST
DISBURSEMENT REQUEST

[[●][●], 20[●]]¹

The Bank of Nova Scotia, as Administrative Agent
Agency Services
40 King Street West, 62nd floor
Toronto
Ontario, Canada M5W 2X6
Attn: Clement Yu
Phone: +1 416 933 7425
Email: clement.yu@scotiabank.com ; venita.ramjattan@scotiabank.com

Ladies and Gentlemen:

Reference is made to the Loan Agreement dated as of August 17, 2021 (the “*Agreement*”) by and among **ECOPETROL S.A.** (the “*Borrower*”) and The Bank of Nova Scotia, as Administrative Agent, and the Lenders party thereto. Unless otherwise defined herein, terms defined in the Agreement shall have the same meaning in this Disbursement Request.

The Borrower hereby requests the Lenders to make a Disbursement to the Borrower in an aggregate principal amount of \$[●] (the “*Disbursement Amount*”) on [[●][●], 2021] (the “*Disbursement Date*”) under the Agreement, as follows:

DISBURSEMENT AMOUNT: \$[●]
DISBURSEMENT DATE: [[●][●], 20[●]]
MATURITY DATE: [[●][●], 202[●]]
INTEREST PERIOD: 3 months
FIRST INTEREST PERIOD: From [] to [] (# of days)

The Borrower hereby instructs the Administrative Agent to disburse the Loan to account No. account No. [●] with [●], ABA No. [●], Attn.: [●], on the Disbursement Date, by 12:00 p.m. New York time.

The Borrower hereby certifies that the following statements are true on the date hereof, and will be true on the Disbursement Date:

¹ Disbursement Request to be delivered to the Administrative Agent not later than 12:00 p.m., New York time, three (3) Business Days before the proposed Disbursement Date (or such shorter period as may be agreed by the Administrative Agent acting upon the direction of the Lenders).

(a) the representations and warranties made by the Borrower in Section 6 of the Agreement are true and correct in all material respects on and as of the Disbursement Date for this Disbursement both before and immediately after giving effect to the Disbursement and the application of the proceeds thereof other than any such representations or warranties that, by their terms, refer to a specific date other than the Disbursement Date, in which case such representations and warranties shall be true and correct in all material respects on and as of such specific date; *provided* that representations and warranties qualified as to materiality are true and correct on and as of such date,

(b) no Event of Default or Potential Default has occurred and is continuing both before and immediately after giving effect to the Disbursement and the application of the proceeds thereof, and

(c) pursuant to Section 5.02(c) of the Agreement, the proceeds of the Disbursement Amount will be applied to the acquisition of 51.4% of the outstanding shares of Interconexión Eléctrica S.A. from the Ministry of Finance and attached as Annex 1 is a true, correct and complete copy of a favorable opinion of the National Planning Department (*Departamento Nacional de Planeación*) currently in full force and effect authorizing the Borrower to incur indebtedness.

Sincerely yours,

ECOPETROL S.A.

By: _____

Name: _____

Title: _____

Annex A-2

ANNEX B
FORM OF PROMISSORY NOTE

FORM OF PROMISSORY NOTE ² Blank Promissory Note No. 01	FORMATO DE PAGARÉ Pagaré en Blanco No. 01
<p>ECOPETROL S.A., corporation incorporated by public deed number 2931 of Notary Second issued on Bogota of July 7 of 2003, registered under the commercial registry under the registration number 1291197, identified with the tax identification number NIT 899.999.068-1, with full capacity to issue securities, and domiciled in Bogotá D.C. (hereinafter the “Borrower”), represented herein by the undersigned [Felipe Bayón Pardo], of legal age, domiciled in Bogotá D.C., Colombia, identified with citizenship card number 80.407.311, issued in Usaquén, Bogotá, acting as Chief Executive Officer of Ecopetrol, as evidenced in the <i>Certificado de Existencia y Representación Legal</i> of the Borrower to execute this document, hereby promises to pay unconditionally and irrevocably, to [•] domiciled in [•] and its registered assigns (hereinafter the “Creditor”), or any holder in due course, on the date of expiration of this promissory note, the amounts indicated below:</p> <p>1. Amounts in U.S. Dollars:</p> <p>1.1 The amount of</p>	<p>ECOPETROL S.A., sociedad anónima constituida por escritura pública número 2931 de la Notaría Segunda de Bogotá otorgada el 07 de julio de 2003, inscrita en el registro mercantil bajo el Registro 1291197, identificada con NIT 899.999.068-1 y domiciliada en Bogotá D.C. (en adelante el “Deudor”), representada en este acto por el suscrito [Felipe Bayón Pardo], mayor de edad, domiciliado en Bogotá D.C., Colombia, identificado con la cédula de ciudadanía número 80.407.311, expedida en Usaquén, Bogotá, actuando en calidad de Presidente de Ecopetrol, como consta en el Certificado de Existencia y Representación Legal del Deudor para suscribir el presente documento, declara que pagará de manera incondicional e irrevocable, a [•], con domicilio en [•] y sus cesionarios registrados (en adelante el “Acreedor”), o a cualquier tenedor legítimo, incluyendo el endosatario, en la fecha de vencimiento del presente pagaré, las sumas que se indican a continuación:</p> <p>1. Sumas en Dólares de los Estados Unidos de América:</p> <p>1.1 La suma de</p>
<p>United States dollars (USD\$ _____) corresponding to the principal amount disbursed and due.</p>	<p>dólares de los Estados Unidos de América (US\$ _____) por concepto de capital desembolsado y adeudado a la fecha.</p>

² English translation is for convenience. The Spanish version will be executed and delivered on the Disbursement Date.

<p>1.2 The amount of (1) _____ United States dollars (USD\$ _____) corresponding to the interests accrued and due; and</p> <p>1.3 The amount of (1) _____ United States dollars (USD\$ _____) corresponding to default interests accrued and unpaid; and</p> <p>1.4. The amount of (1) _____ United States dollars (USD\$ _____) corresponding to other guaranteed expenses and amounts accrued and due by the Borrower.</p> <p>2. The amounts referred to under section 1 above shall bear interest as follows:</p> <p>2.1 The amount referred to under section 1.1 above shall bear default interests at the interest rate applicable to the loan plus two percent (2%) annually.</p> <p>2.2 The amount referred to under section 1.2 above shall bear interests at the interest rate applicable to the loan plus two percent (2%) annually, from the date of the judicial lawsuit or agreement with the Borrower following maturity, subject to applicability of the rules set forth in Article 886 of the Commercial Code, it being understood that any outstanding interest obligations that remain unpaid for more than one (1) year may (upon the satisfaction of the rules set forth in Article 886 of the Commercial Code) be subject to interest on interest under Colombian law as currently in effect.</p> <p>3. All payments under this Promissory Note shall be made by the Borrower, in the city of New York, United States of America, in immediately available funds, tax-free, and without any deduction, withholding or set-off, on the following date:</p> <p>_____.</p> <p>4. The Borrower expressly agrees that the obligations set forth under this Promissory Note correspond to foreign exchange</p>	<p>1.2 La suma de (1) _____ _____ dólares de los Estados Unidos de América (US\$ _____) _____ por concepto de intereses remuneratorios causados y pendientes de pago;</p> <p>1.3 La suma de (1) _____ _____ dólares de los Estados Unidos de América (US\$ _____) por concepto de intereses de mora causados y pendientes de pago; y</p> <p>1.4 La suma de (1) _____ _____ dólares de los Estados Unidos de América (US\$ _____) por concepto de otros gastos y montos garantizados, causados y pendientes de pago a cargo del Deudor.</p> <p>2. Las sumas indicadas en el numeral 1 anterior devengarán intereses así:</p> <p>2.1 La suma indicada en el numeral 1.1 anterior devengará intereses de mora a la tasa de interés anual remuneratoria aplicable al préstamo adicionada en dos por ciento (2%) anual.</p> <p>2.2 La suma indicada bajo el numeral 1.2 devengará intereses de mora a la tasa de interés anual remuneratoria aplicable al préstamo adicionada en dos por ciento (2%) anual, desde la fecha de la demanda judicial o por acuerdo posterior al vencimiento con el Deudor, tomando en cuenta que cualquier obligación no satisfecha con respecto al pago de intereses debidos por más de un 1 año (sujeto a la satisfacción de las normas previstas en el artículo 886 del Código de Comercio) estarán sujetas al pago de interés sobre interés bajo la ley colombiana vigente.</p> <p>3. Todos los pagos bajo el presente Pagaré deben ser realizados por el Deudor en la ciudad de Nueva York, Estados Unidos de América, en fondos inmediatamente disponibles, libres de impuestos, retenciones y sin deducción o compensación alguna en la siguiente fecha:</p> <p>_____.</p> <p>4. El Deudor expresamente acepta que las obligaciones incorporadas en este Pagaré</p>
---	--

<p>operations and therefore shall be paid in United States Dollars.</p> <p>5. The Borrower, as borrower, irrevocably waives the presentation, protest, notice of default or any other notice, notification or additional requirement of any kind, for the collection of this Promissory Note.</p> <p>6. The Borrower agrees to pay all the costs, fees and expenses incurred to the collection or enforcement of this Promissory Note.</p> <p>7. The Borrower agrees to pay all the taxes that may be due under this Promissory Note, including, if applicable, the stamp duty, and entitles the Lender, if necessary, to pay them on behalf of the Borrower.</p> <p>8. The Borrower expressly agrees that in the event of extension, renewal or modification of its obligation under this Promissory Note, this security shall remain valid and in effect until the date agreed under such extension, renewal or modification.</p> <p>9. This Promissory Note shall be governed by and construed in accordance with the laws of the Republic of Colombia and the undersigned Borrower hereby agrees that the laws that govern its creation are the laws of the Republic of Colombia, place where this Promissory Note has been executed by the Borrower.</p> <p>10. This Promissory Note shall be executed in the competent court in the Republic of Colombia.</p>	<p>corresponden a operaciones cambiarias y, en consecuencia, serán pagadas en dólares de los Estados Unidos de América.</p> <p>5. El Deudor, como deudor, renuncia irrevocablemente a la presentación, protesto, constitución en mora o cualquier otro tipo de aviso, notificación o requisito adicional de cualquier naturaleza para el cobro de este Pagaré.</p> <p>6. El Deudor, acepta que serán de su cargo los gastos y honorarios profesionales que se generen por la cobranza de este Pagaré.</p> <p>7. El Deudor acepta que serán de su cargo todos los impuestos que pueda causar el presente Pagaré, incluyendo, si resultare aplicable, el impuesto de timbre, quedando el Acreedor autorizado para pagarlos por cuenta del Deudor si fuere necesario.</p> <p>8. El Deudor acepta expresamente que, en caso de prórroga, novación o modificación de la obligación a su cargo contenida en este Pagaré, el presente Pagaré continuará vigente hasta la fecha pactada en dicha prórroga, novación o modificación.</p> <p>9. El presente Pagaré se encuentra regido por, y será interpretado de conformidad con, las leyes de la República de Colombia y el suscrito Deudor, expresamente declara y acuerda que las leyes que rigen su creación son las de las leyes de la República de Colombia, lugar donde ha sido firmado por el Deudor.</p> <p>10. El presente Pagaré podrá ser ejecutado ante los tribunales competentes en la República de Colombia.</p>
---	--

It is hereby understood that this Promissory Note was filled or completed _____ day of _____ year _____, in the city of _____.

The Borrower,
ECOPETROL S.A.

By: _____

Name: Felipe Bayón Pardo
Identification: 80.407.311
Capacity: Chief Executive Officer.

Se deja constancia que este Pagaré se llenó o completó el día _____ del mes de _____ del año _____, en la ciudad de _____.

El Deudor,
ECOPETROL S.A.

Por: _____
Nombre: Felipe Bayón Pardo
Identificación: 80.407.311
Cargo: Presidente.

Annex B-4

ANNEX C
FORM OF INSTRUCTIONS LETTER

INSTRUCTIONS LETTER	CARTA DE INSTRUCCIONES
<p>Bogotá, [Date]</p> <p>Messrs.</p> <p>[•] and / or its assignee and successors.</p> <p>Reference: Instructions to complete the Promissory Note with Blank Spaces No. 01</p> <p>Dear Sirs:</p> <p>ECOPETROL S.A., corporation incorporated by public deed number 2931 of Notary Second issued on Bogota of July 7 of 2003, registered under the commercial registry under the registration number 1291197, identified with the tax identification number NIT 899.999.068-1, and domiciled in Bogotá D.C. (hereinafter the “Borrower”), represented herein by the undersigned Felipe Bayón Pardo, of legal age, domiciled in Bogotá D.C., Colombia, identified with citizenship card number 80.407.311, issued in Usaquén, Bogotá, acting as Chief Executive Officer of Ecopetrol, as evidenced in the <i>Certificado de Existencia y Representación Legal</i> of the Borrower to execute this document, in accordance with article 622 of the Colombian Commercial Code, hereby imparts instructions and irrevocable and permanent powers to [•] and / or its successors or assignees (hereinafter the “Lender”) (in English the “Lender”), a foreign financial institution duly organized and existing under the laws of its country, acting in its capacity as Lender under the Loan Agreement (as defined below), to fill each and every one of the blank spaces left in the Promissory Note identified at the heading of this Instructions Letter (hereinafter the “Promissory Note”), in the event the</p>	<p>Bogotá, [Fecha]</p> <p>Señores.</p> <p>[•] y/o sus cesionario y causahabientes</p> <p>Referencia: Instrucciones para diligenciar el Pagaré con Espacios en Blanco No. 01.</p> <p>Estimados Señores:</p> <p>ECOPETROL S.A., sociedad anónima constituida por escritura pública número 2931 de la Notaría Segunda de Bogotá otorgada el 07 de julio de 2003, inscrita en el registro mercantil bajo el Registro 1291197, identificada con NIT 899.999.068-1 y domiciliada en Bogotá D.C. (en adelante el “Deudor”), representada en este acto por el suscrito Felipe Bayón Pardo, mayor de edad, domiciliado en Bogotá D.C., Colombia, identificada con la cédula de ciudadanía número 80.407.311, expedida en Usaquén, Bogotá, actuando en calidad Presidente de Ecopetrol, como consta en el Certificado de Existencia y Representación Legal del Deudor para suscribir el presente documento, conforme al artículo 622 del Código de Comercio Colombiano, por medio de la presente carta imparte instrucciones y facultades irrevocables y permanentes a [•], con domicilio en [•], y/o sus cesionarios o causahabientes (en adelante el “Acreedor”) (en inglés the “Lender”), una entidad financiera extranjera debidamente constituida y actualmente existente bajo las leyes de su país, en su carácter de Acreedor bajo el Contrato de Crédito (tal y como se define más adelante), para llenar todos y cada uno de los espacios en blanco dejados en el Pagaré identificado en el encabezamiento de esta</p>

<p>obligations set forth under the Promissory Note become due and in accordance to the terms set forth below:</p> <p>1. BACKGROUND AND CAUSE.</p> <p>On August 17, 2021, the Borrower and the Lender executed the Loan Agreement (hereinafter the “Loan Agreement”) whereby, the Lender agreed to lend, and the Borrower agreed to borrow [•] DOLLARS OF THE UNITED STATES OF AMERICA (USD\$[•]) (hereinafter the “Term Loan”), with a maximum deadline for payment of [•], counted from [•] as set forth in the Loan Agreement. As a condition precedent to grant and disburse the Loan, it was agreed that the Borrower should have issued and delivered the Promissory Note whereby the Term Loan are evidenced.</p> <p>2. AUTHORIZATION TO FILL THE PROMISSORY NOTE.</p> <p>Should (a) the Borrower fail in whole or in part to pay (i) any amount of principal on the date on which such payment is due under the Loan Agreement, (ii) any amount of interest within five (5) Business Days of the date on which such payment is due under the Loan Agreement or (iii) any fee or other amount (other than principal or interest) owing under a Loan Document within thirty (30) days of the earlier of the date the Borrower receives (x) the invoice or (y) a written demand from any Lender or the Administrative Agent or (b) any other Events of Default (in English “Events of Default”) described therein leading to the acceleration of the amounts due and payable occur, and such amounts are not paid; the Lender or its assignees, endorsees or successors may fill in the blank spaces of the Promissory Note identified above, without prior notice, presentation, protest, notice of default or any other notice, notification or additional requirement of any</p>	<p>Carta de Instrucciones (en adelante, el “Pagaré”), cuando se hagan exigibles las obligaciones contenidas en dicho Pagaré en los términos que se indican a continuación:</p> <p>1. ANTECEDENTES Y CAUSA.</p> <p>El día 17 de Agosto de 2021 el Acreedor y el Deudor suscribieron el Contrato de Crédito (en adelante, el “Contrato de Crédito”) para entregar a título de mutuo o préstamo la suma de [•] DE DÓLARES DE LOS ESTADOS UNIDOS DE AMÉRICA (US\$[•])(en adelante el “Préstamo”), con un plazo máximo para su pago de [•] , contados a partir de [•] tal y como se establece en el Contrato de Crédito. Como condición para el otorgamiento y desembolso del Préstamo, se estableció que el Deudor debía haber otorgado y entregado el Pagaré mediante el cual se evidencia el Préstamo.</p> <p>2. AUTORIZACIÓN PARA LLENAR EL PAGARÉ.</p> <p>En el evento en que (a) el Deudor incumpla en todo o en parte su obligación de pago de (i) cualquier monto de capital en las fechas previstas de conformidad con el Contrato de Crédito, (ii) cualquier monto de intereses dentro de los cinco (5) Días Hábiles a partir de las fechas previstas de conformidad con el Contrato de Crédito o (iii) cualquier honorario u otro monto (distinto de principal o intereses) debido bajo un Documento del Crédito dentro los treinta (30) días en que el Deudor reciba (x) la factura o (y) un requerimiento escrito de cualquier Acreedor o del Agente Administrativo, lo que ocurra primero o (b) ocurra cualquier otro de los Eventos de Incumplimiento (en inglés “Events of Default”) allí descritos que conlleven al vencimiento anticipado de las sumas adeudadas y éstas no fueren pagadas; el Acreedor o sus cesionarios, endosatarios o causahabientes, podrá llenar los espacios en blanco del Pagaré arriba identificado, sin</p>
--	--

<p>nature, in accordance with this Instructions Letter.</p> <p>3. VALUE OR AMOUNT OF THE PROMISSORY NOTE.</p> <p>The Borrower expressly and irrevocably authorizes that the Lender and / or its successors or assignees fill in the blank spaces of the Promissory Note mechanically (with a typewriter) or manually in accordance with the instructions below:</p> <p>3.1 The blank space included under Section 1.1. of the Promissory Note shall be completed with the outstanding amounts of principal (in letters and numbers) to the date in which the Promissory Note is completed and that are due on such date by the Borrower to the Lender under the Loan (in English, the “Loan”), including amounts due and outstanding due to maturity or any acceleration in accordance to the Loan Agreement.</p> <p>3.2 The blank spaces included in Section 1.2. of the Promissory Note shall be completed as follows: blank spaces identified with number (1) with the outstanding amounts of interest (in letters and numbers) calculated over the principal amount set forth under section 1.1 of the Promissory Note in accordance to the provisions set forth under the Loan Agreement. As set forth under the Promissory Note, interest referred to under section 1.2 of the Promissory Note shall bear default interest, it being understood that any outstanding interest obligations that remain unpaid for more than one (1) year may (upon the satisfaction of the rules set forth in Article 886 of the Commercial Code) be subject to interest on interest under Colombian law as currently in effect.</p> <p>3.3 The blank spaces included in Section 1.3. of the Promissory Note shall be completed as follows: blank spaces identified with</p>	<p>necesidad de previo aviso, presentación, protesto, constitución en mora, cualquier otro tipo de aviso, notificación o requisito adicional de cualquier naturaleza de conformidad con esta Carta de Instrucciones.</p> <p>3. VALOR O IMPORTE DEL TÍTULO.</p> <p>El Deudor autoriza expresa e irrevocablemente que el Acreedor y/o sus sucesores o sus causahabientes llenen los espacios en blanco del Pagaré de manera mecánica (a máquina) o a mano de conformidad con las instrucciones que se indican a continuación:</p> <p>3.1. El espacio en blanco identificado con el numeral 1.1. del Pagaré se llenará con las sumas de capital (en letras y números) que a la fecha en que el Pagaré sea llenado y que el Deudor adeude, en tal fecha, a favor del Acreedor por concepto del Préstamo (en inglés, el “Loan”), incluyendo las sumas adeudadas y pendientes de pago por virtud de vencimiento del plazo o cualquier aceleración de conformidad con el Contrato de Crédito.</p> <p>3.2. Los espacios en blanco incluidos en el numeral 1.2. del Pagaré se llenarán así: los espacios identificados con el numeral (1) con las sumas devengadas por concepto de los intereses remuneratorios (en letras y números) calculados sobre el capital indicado en el numeral 1.1. del Pagaré de conformidad con lo previsto en el Contrato de Crédito. Tal como se indica en el Pagaré, los intereses remuneratorios indicados en el punto 1.2 del mismo causarán intereses de mora, tomando en cuenta que cualquier obligación no satisfecha con respecto al pago de intereses debidos por más de un 1 año (sujeto a la satisfacción de las normas previstas en el artículo 886 del Código de Comercio) estarán sujetas al pago de interés sobre interés bajo la ley colombiana vigente.</p> <p>3.3. Los espacios en blanco incluidos en el numeral 1.3. del Pagaré se llenarán así: lo</p>
--	--

<p>number (1) with the outstanding amounts of the default interest (in letters and numbers) calculated over the principal amounts, interest payments and any other amounts due and outstanding, either due to maturity, acceleration or otherwise, in accordance with the provisions of the Loan Agreement.</p> <p>3.4 The blank spaces included in Section 1.4. of the Promissory Note shall be completed as follows: blank spaces identified with number (1) with the amounts (in letters and numbers) of any sum owed by the Borrower to the Lender whether for fees, costs, expenses, taxes, breakage costs, indemnities or any other amounts owed by the Borrower to the Lender at the maturity date of the Promissory Note in accordance with the provisions of the Loan Agreement.</p> <p>4. MATURITY.</p> <p>The blank space included under Section 3 of the Promissory Note corresponding to the maturity date, shall be completed including the date in which the Promissory Note is filled or completed.</p> <p>5. DATE AND CITY OF ISSUANCE.</p> <p>The Lender is entitled to include as date and city of issuance the date and city in which it decides to fill or complete the Promissory Note.</p> <p>6. SUCCESSORS AND ASSIGNEES.</p> <p>Blanks spaces can be completed by the successors or assignees of the Loan in accordance with Section 11.03 of the Loan Agreement.</p> <p>The Promissory Note completed in accordance to the provisions set forth herein, shall be directly enforceable without any further requirements.</p>	<p>espacios identificados con el numeral (1) con las sumas devengadas por concepto de los intereses moratorios (en letras y números) calculados sobre las cuotas de capital o de intereses o cualquier otro monto vencido y pendiente de pago, bien sea por cumplimiento del plazo, por aceleración o de cualquier otra forma, de conformidad con lo previsto en el Contrato de Crédito.</p> <p>3.4 Los espacios en blanco incluidos en el numeral 1.4. del Pagaré se llenarán así: lo espacios identificados con el numeral (1) con las sumas (en letras y números) adeudadas por el Deudor a favor del Acreedor por concepto de honorarios, costos, gastos, impuestos, costos de rompimiento de fondeo, indemnizaciones o cualquier otro concepto que el Deudor adeude al Acreedor en la fecha de vencimiento del Pagaré, de conformidad con el Contrato de Crédito.</p> <p>4. VENCIMIENTO.</p> <p>El espacio en blanco en el numeral 3 del Pagaré correspondiente a la fecha de vencimiento, se llenará con la fecha del día en que se llene o complete el Pagaré.</p> <p>5. FECHA Y CIUDAD DE EMISIÓN.</p> <p>El Acreedor está facultado para colocar como fecha y la ciudad de emisión el día y la ciudad en que se decida llenar o completar el Pagaré.</p> <p>6. SUCESORES O CAUSAHABIENTES.</p> <p>Los espacios en blanco pueden ser llenados por los sucesores o causahabientes del Préstamo de conformidad con la Sección 11.03 del Contrato de Crédito.</p> <p>El Pagaré así llenado será exigible inmediatamente y prestará mérito ejecutivo sin más requisitos.</p> <p>Atentamente,</p>
---	--

<p>Sincerely, The Borrower, ECOPETROL S.A. By: _____ Name: Felipe Bayón Pardo Identification: 80.407.311 Capacity: Chief Executive Officer.</p>	<p>El Deudor, ECOPETROL S.A. Por: _____ Nombre: Felipe Bayón Pardo Identificación: 80.407.311 Cargo: Presidente</p>
---	---

Annex C-5

ANNEX D
FORM OF OFFICERS' CERTIFICATE

OFFICERS' CERTIFICATE

The undersigned hereby certifies that he is an Authorized Officer of ECOPETROL S.A., a corporation organized and existing under the laws of Colombia (the "*Borrower*") and hereby certifies on behalf of the Borrower that:

This Certificate is furnished pursuant to Section 5.01(b) of the Loan Agreement dated as of August 17, 2021, among the Borrower, The Bank of Nova Scotia, as Administrative Agent and the Lenders party thereto (the "*Agreement*"). Unless otherwise defined herein, terms defined in the Agreement shall have the same meaning in this Certificate.

The undersigned named below (a) has been duly elected, has duly qualified as, and is an officer of the Borrower as of the Agreement Date, holding the respective office below set opposite to his name, and the signature below set opposite to his name is his genuine signature, is an Authorized Officer of the Borrower.

Name	Officer	Signature
Felipe Bayón Pardo	Chief Executive Officer	_____

Attached hereto as Annex D-1 is a true and correct copy of the articles of incorporation, *estatutos sociales* or other applicable organizational documents of the Borrower as in effect on the date hereof together with all amendments thereto.

Attached hereto as Annex D-2 is a true and correct copy of a duly authorized secretary's certificate certifying that the Board of Directors of the Borrower duly adopted the resolutions at a meeting on June 23, 2021, at which a quorum was present and acting throughout. The resolutions have not been revoked, modified, amended or rescinded and are in full force and effect. Except as attached hereto as Annex D-2, no resolutions have been adopted by the Board of Directors of the Borrower which deal with the execution, delivery or performance of any of the Loan Documents to which it is a party.

Attached hereto as Annex D-3 is a true and correct copy of the Borrower's *Certificados de Existencia y Representación Legal*.

[Remainder of Page Intentionally Left Blank]

IN WITNESS WHEREOF, each of the undersigned has executed this Certificate this 17th day of August, 2021.

By: _____
Name: Felipe Bayón Pardo
Title: *Chief Executive Officer*

I, the undersigned, *Secretary General* of the Borrower, do hereby certify that I am an Authorized Officer of the Borrower and hereby certify on behalf of the Borrower that:

Felipe Bayón Pardo is the duly appointed and qualified *Chief Executive Officer* of the Borrower and his respective signature above is his genuine signature.

IN WITNESS WHEREOF, I have hereunto set my hand this 17th day of August, 2021.

By: _____
Name: Mónica Jiménez González
Title: *Secretary General*

Annex D-2

**Annex D-1 to Officer's Certificate
Organizational Documents**

**Annex D-2 to Officer's Certificate
Resolutions**

**Annex D-3 to Officer's Certificate
Good Standing Certificate**

ANNEX E
FORM OF ASSIGNMENT AND ASSUMPTION AGREEMENT
ASSIGNMENT AND ASSUMPTION

This Assignment and Assumption (the “Assignment and Assumption”) is dated as of the Effective Date set forth below and is entered into by and between [*Insert name of Assignor*] (the “Assignor”) and [*Insert name of Assignee*] (the “Assignee”). Capitalized terms used but not defined herein shall have the meanings given to them in the Loan Agreement identified below (as amended, the “Loan Agreement”), receipt of a copy of which is hereby acknowledged by the Assignee. The Standard Terms and Conditions set forth in Annex 1 attached hereto are hereby agreed to and incorporated herein by reference and made a part of this Assignment and Assumption as if set forth herein in full.

For an agreed consideration, the Assignor hereby irrevocably sells and assigns to the Assignee, and the Assignee hereby irrevocably purchases and assumes from the Assignor, subject to and in accordance with the Standard Terms and Conditions and the Loan Agreement, as of the Effective Date inserted by the Administrative Agent as contemplated below (i) all of the Assignor’s rights and obligations in its capacity as a Lender under the Loan Agreement and any other documents or instruments delivered pursuant thereto to the extent related to the amount and percentage interest identified below of all of such outstanding rights and obligations of the Assignor under the respective facilities identified below and (ii) to the extent permitted to be assigned under Applicable Law, all claims, suits, causes of action and any other right of the Assignor (in its capacity as a Lender) against any Person, whether known or unknown, arising under or in connection with the Loan Agreement, any other documents or instruments delivered pursuant thereto or the loan transactions governed thereby or in any way based on or related to any of the foregoing, including, but not limited to, contract claims, tort claims, malpractice claims, statutory claims and all other claims at law or in equity related to the rights and obligations sold and assigned pursuant to clause (i) above (the rights and obligations sold and assigned pursuant to clauses (i) and (ii) above being referred to herein collectively as, the “Assigned Interest”). Such sale and assignment is without recourse to the Assignor and, except as expressly provided in this Assignment and Assumption, without representation or warranty by the Assignor.

1. Assignor: _____

2. Assignee: _____
[and is an Affiliate/approved fund of [*identify Lender*]³]

3. Borrower: ECOPETROL S.A.

4. Administrative Agent: THE BANK OF NOVA SCOTIA

³ Select as applicable.

5. Loan Agreement: The Loan Agreement dated as of August 17, 2021 among Ecopetrol S.A., as Borrower, certain Lender parties thereto, and The Bank of Nova Scotia, as Administrative Agent.

6. Assigned Interest:

Facility Assigned	Aggregate Amount of Commitment/Loan for all Lenders ⁴	Amount of Commitment/Loan Assigned ⁵	Percentage Assigned of Commitment/Loan ⁶
Commitment	\$	\$	%
Loan	\$	\$	%
	\$	\$	%

7. Trade Date:⁷

⁴ Amount to be adjusted by the counterparties to take into account any payments or prepayments made between the Trade Date and the Effective Date.

⁵ Amount to be adjusted by the counterparties to take into account any payments or prepayments made between the Trade Date and the Effective Date.

⁶ Set forth, to at least 9 decimals, as a percentage of the Commitment/Loan of all Lenders thereunder.

⁷ To be completed if the Assignor and the Assignee intend that the minimum assignment amount is to be determined as of the Trade Date.

Effective Date: _____, 20____[TO BE INSERTED BY ADMINISTRATIVE AGENT AND WHICH SHALL BE THE EFFECTIVE DATE OF RECORDATION OF TRANSFER IN THE REGISTER THEREFOR.]

The terms set forth in this Assignment and Assumption are hereby agreed to:

ASSIGNOR
[NAME OF ASSIGNOR]

By: _____
Name: _____
Title: _____

ASSIGNEE
[NAME OF ASSIGNEE]

By: _____
Name: _____
Title: _____

Accepted and consented to by:
[•]
as Administrative Agent

By: _____
Name: _____
Title: _____

Consented to by:
ECOPETROL S.A.,
as Borrower

By: _____
Name: _____
Title: _____

Annex 1
Standard Terms and Conditions for Assignment and Assumption

1. Representations and Warranties.

1.1 Assignor. The Assignor (a) represents and warrants that (i) it is the legal and beneficial owner of the Assigned Interest, (ii) the Assigned Interest is free and clear of any lien, encumbrance or other adverse claim and (iii) it has full power and authority, and has taken all action necessary, to execute and deliver this Assignment and Assumption and to consummate the transactions contemplated hereby; and (b) assumes no responsibility with respect to (i) any statements, warranties or representations made in or in connection with the Loan Agreement or any other Loan Document, (ii) the execution, legality, validity, enforceability, genuineness, sufficiency or value of the Loan Documents, (iii) the financial condition of the Borrower, any of its Subsidiaries or Affiliates or any other Person obligated in respect of any Loan Document or the performance or observance by the Borrower, any of its Subsidiaries or Affiliates or any other Person of any of their respective obligations under any Loan Document.

1.2 Assignee. The Assignee (a) represents and warrants that (i) it has full power and authority, and has taken all action necessary, to execute and deliver this Assignment and Assumption and to consummate the transactions contemplated hereby and to become a Lender under the Loan Agreement, (ii) it meets all requirements of an Eligible Transferee under the Loan Agreement (subject to receipt of such consents as may be required under the Loan Agreement), (iii) from and after the Effective Date, it shall be bound by the provisions of the Loan Agreement as a Lender thereunder and, to the extent of the Assigned Interest, shall have the obligations of a Lender thereunder, and (iv) it has received a copy of the Loan Agreement, together with copies of the most recent financial statements delivered pursuant to Section 7.01(b) thereof, as applicable, and such other documents and information as it has deemed appropriate to make its own credit analysis and decision to enter into this Assignment and Assumption and to purchase the Assigned Interest on the basis of which it has made such analysis and decision independently and without reliance on the Administrative Agent or any other Lender; and agrees that (i) it will, independently and without reliance on the Administrative Agent, the Assignor or any other Lender, and based on such documents and information as it shall deem appropriate at the time, continue to make its own credit decisions in taking or not taking action under the Loan Documents, and (ii) it will perform in accordance with their terms all of the obligations which by the terms of the Loan Documents are required to be performed by it as a Lender.

2. Payments. From and after the Effective Date, the Administrative Agent shall make all payments in respect of the Assigned Interest (including payments of principal, interest, fees and other amounts) to the Assignor for amounts which have accrued to but excluding the Effective Date and to the Assignee for amounts which have accrued from and after the Effective Date.

3. General Provisions. This Assignment and Assumption shall be binding upon, and inure to the benefit of, the parties hereto and their respective successors and assigns. This Assignment and Assumption may be executed in any number of counterparts, which together shall constitute one instrument. Delivery of an executed counterpart of a signature page

of this Assignment and Assumption by telecopy shall be effective as delivery of a manually executed counterpart of this Assignment and Assumption. This Assignment and Assumption shall be governed by, and construed in accordance with, the law of the State of New York.

Exhibit 8.1

Subsidiaries of Ecopetrol S.A.

The following table sets forth our subsidiaries, their respective countries of incorporation, our percentage ownership in each (both directly and indirectly through other subsidiaries) as of March 31, 2022.

COMPANY	COUNTRY OF INCORPORATION	OWNERSHIP
ANDEAN CHEMICALS LIMITED	Bermuda	100.00%
BLACK GOLD RE LIMITED	Bermuda	100.00%
CENIT TRANSPORTE Y LOGÍSTICA DE HIDROCARBUROS S.A.S.	Colombia	100.00%
ECOPETROL CAPITAL AG	Switzerland	100.00%
ECOPETROL ENERGÍA SAS ESP *	Colombia	100.00%
ECOPETROL GLOBAL ENERGY S.L.U.	Spain	100.00%
ECOPETROL SINGAPORE PTE. LTD	Singapore	100.00%
EQUION ENERGÍA LIMITED	United Kingdom	51.00%
HOCOL PETROLEUM LIMITED	Bermuda	100.00%
INTERCONEXIÓN ELÉCTRICA S.A E.S.P	Colombia	51.41%
INVERSIONES DE GASES DE COLOMBIA S.A. - Invercolsa S.A.	Colombia	51.88%
REFINERÍA DE CARTAGENA S.A.S *	Colombia	100.00%
ALCANOS DE COLOMBIA S.A. E.S.P.**	Colombia	29.61%
COLOMBIA PIPELINES LIMITED**	United Kingdom	51.00%
COMBUSTIBLES LIQUIDOS DE COLOMBIA S.A. E.S.P.**	Colombia	41.61%
COMPANHIA DE TRANSMISSÃO DE ENERGIA ELÉTRICA PAULISTA**	Brazil	18.41%
CONCESIÓN COSTERA-CARTAGENA-BARRANQUILLA S.A.S	Colombia	51.41%
CONSORCIO TRANSMANTARO**	Peru	30.85%
ECOPETROL AMERICA LLC**	United States	100.00%
ECOPETROL COSTA AFUERA COLOMBIA S.A.S.**	Colombia	100.00%
ECOPETROL DEL PERU S.A.**	Peru	100.00%
ECOPETROL OLEO & GAS DO BRASIL LTDA**	Brazil	100.00%
ECOPETROL PERMIAN LLC **	United States	100.00%
ECOPETROL TRADING ASIA PTE. LTD**	Singapore	100.00%
ECOPETROL USA INC **	United States	100.00%
ECP HIDROCARBUROS DE MÉXICO **	Mexico	100.00%
ESENTTIA MASTERBATCH LTDA**	Colombia	100.00%
ESENTTIA RESINAS DEL PERU SAC**	Peru	100.00%
ESENTTIA S.A. *	Colombia	100.00%
GASODUCTO DE ORIENTE S.A (GASDOR S.A)**	Colombia	31.60%
GASES DEL ORIENTE S.A. E.S.P.**	Colombia	48.50%
HOCOL S.A.**	Cayman Islands	100.00%
INTERCHILE S.A.**	Chile	51.41%
INTERCONEXIÓN ELÉCTRICA ISA BOLIVIA S.A.**	Bolivia	51.41%
INTERCONEXIÓN ELÉCTRICA ISA PERÚ S.A.**	Peru	51.41%
INTERCONEXIONES VIALES SPA**	Chile	33.42%
INTERNEXA BRASIL OPERADORA DE TELECOMUNICAÇÕES S.A. **	Brazil	51.11%
INTERNEXA CHILE S.A.**	Chile	50.31%
INTERNEXA PARTICIPAÇÕES S.A.**	Brazil	51.11%

COMPANY	COUNTRY OF INCORPORATION	OWNERSHIP
INTERNEXA PERÚ S.A.**	Peru	50.82%
INTERNEXA S.A.**	Colombia	51.11%
INTERVIAL CHILE S.A.**	Chile	51.41%
INTERVIAL COLOMBIA S.A.S.**	Colombia	51.41%
ISA CAPITAL DO BRASIL S.A.**	Brazil	51.41%
ISA INTERCOLOMBIA S.A. E.S.P**	Colombia	51.41%
ISA INVERSIONES CHILE SPA.**	Chile	51.41%
ISA INVERSIONES COSTERA CHILE SPA**	Chile	51.41%
ISA INVERSIONES TOLTEN LTDA.**	Chile	51.41%
ISA INVESTIMENTOS E PARTICIPAÇÕES DO BRASIL LTDA**	Brazil	51.41%
KALIXPAN SERVICIOS TÉCNICOS S. DE R.L. DE C.V **	Mexico	100.00%
LINEAR SYSTEMS RE LTD.**	Bermuda	51.41%
METROGAS DE COLOMBIA S.A. E.S.P.**	Colombia	33.49%
OLEODUCTO BICENTENARIO DE COLOMBIA S.A.S.**	Colombia	100.00%
OLEODUCTO CENTRAL S.A. - OCENSA**	Colombia	72.65%
OLEODUCTO DE COLOMBIA S.A. - ODC **	Colombia	73.00%
OLEODUCTO DE LOS LLANOS ORIENTALES S.A. **	Panama	65.00%
PROMOTORA DE GASES DEL SUR S.A. E.S.P.**	Colombia	31.44%
PROYECTOS DE INFRAESTRUCTURA DEL PERÚ S.A.C**	Peru	51.41%
RED DE ENERGÍA DEL PERÚ**	Peru	30.85%
RUTA DE LA ARAUCANÍA SOCIEDAD CONCESIONARIA S.A. **	Chile	51.41%
RUTA DE LOS RÍOS SOCIEDAD CONCESIONARIA S.A. **	Chile	38.56%
RUTA DEL BOSQUE SOCIEDAD CONCESIONARIA S.A. **	Chile	51.41%
RUTA DEL LOA SOCIEDAD CONCESIONARIA S.A. **	Chile	51.41%
RUTA DEL MAIPO SOCIEDAD CONCESIONARIA S.A. **	Chile	51.41%
RUTA DEL MAULE SOCIEDAD CONCESIONARIA S.A. **	Chile	51.41%
SANTIAGO OIL COMPANY**	Cayman Islands	51.00%
SISTEMAS INTELIGENTES DE RED S.A.S**	Colombia	51.18%
TOPILI SERVICIOS ADMINISTRATIVOS** DE R.L. DE C.V	Mexico	100.00%
TRANSAMERICAN TELECOMUNICACIONES S.A.**	Colombia	51.11%
TRANSELCA S.A. E. S. P.	Colombia	51.41%
XM COMPAÑÍA DE EXPERTOS EN MERCADOS S.A. E.S.P	Colombia	51.27%

*Direct and/or indirect participation.

**Solely indirect participation through subsidiaries or affiliates.

Exhibit 12.1

CERTIFICATION

I, Felipe Bayón Pardo, certify that:

1. I have reviewed this annual report on Form 20-F of Ecopetrol S.A.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the company as of, and for, the periods presented in this report;
4. The company's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the company and have:
 - (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the company, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
 - (c) Evaluated the effectiveness of the company's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
 - (d) Disclosed in this report any change in the company's internal control over financial reporting that occurred during the period covered by the annual report that has materially affected, or is reasonably likely to materially affect, the company's internal control over financial reporting; and
5. The company's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the company's auditors and the audit committee of the company's board of directors (or persons performing the equivalent functions):
 - (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the company's ability to record, process, summarize and report financial information; and
 - (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the company's internal control over financial reporting.

Dated: April 25, 2022

By: /s/ Felipe Bayón Pardo

Name: Felipe Bayón Pardo

Title: Chief Executive Officer

Exhibit 12.2

CERTIFICATION

I, Jaime Caballero Uribe, certify that:

1. I have reviewed this annual report on Form 20-F of Ecopetrol S.A.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the company as of, and for, the periods presented in this report;
4. The company's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the company and have:
 - (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the company, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
 - (c) Evaluated the effectiveness of the company's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
 - (d) Disclosed in this report any change in the company's internal control over financial reporting that occurred during the period covered by the annual report that has materially affected, or is reasonably likely to materially affect, the company's internal control over financial reporting; and
5. The company's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the company's auditors and the audit committee of the company's board of directors (or persons performing the equivalent functions):
 - (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the company's ability to record, process, summarize and report financial information; and
 - (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the company's internal control over financial reporting.

Dated: April 25, 2022

By: /s/ Jaime Caballero Uribe

Name: Jaime Caballero Uribe

Title: Chief Financial Officer

Exhibit 13.1

Certification
Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002
(Subsections (a) and (b) of Section 1350, Chapter 63 of Title 18, United States Code)

Pursuant to section 906 of the Sarbanes-Oxley Act of 2002 (subsections (a) and (b) of section 1350, chapter 63 of title 18, United States Code), each of the undersigned officers of Ecopetrol S.A. (the "Company"), does hereby certify, to such officer's knowledge, that:

The annual report on Form 20-F for the fiscal year ended December 31, 2021 (the "Form 20-F") of the Company fully complies with the requirements of section 13(a) or 15(d) of the Securities Exchange Act of 1934 and information contained in the Form 20-F fairly presents, in all material respects, the financial condition and results of operations of the Company.

Dated: April 25, 2022

By: /s/ Felipe Bayón Pardo

Name: Felipe Bayón Pardo

Title: Chief Executive Officer

Dated: April 25, 2022

By: /s/ Jaime Caballero Uribe

Name: Jaime Caballero Uribe

Title: Chief Financial Officer

Exhibit 23.1

Consent of Independent Registered Public Accounting Firm

We consent to the incorporation by reference in the Registration Statement (Form F-3 No. 333-256623) of Ecopetrol S.A. and in the related Prospectus of our reports dated April 25, 2022, with respect to the consolidated financial statements of Ecopetrol S.A., and the effectiveness of internal control over financial reporting of Ecopetrol S.A., included in this Annual Report (Form 20-F) for the year ended December 31, 2021.

/s/ Ernst & Young Audit S.A.S.

Bogotá, Colombia

April 25, 2022

Exhibit 23.2



RYDER SCOTT COMPANY
PETROLEUM CONSULTANTS

TBPE REGISTERED ENGINEERING FIRM F-1580
1100 LOUISIANA

SUITE 4600

HOUSTON, TEXAS 77002-5294

FAX (713) 651-0849
TELEPHONE (713) 651-9191

CONSENT OF INDEPENDENT PETROLEUM ENGINEERS

Ryder Scott Company, LP. ("Ryder Scott") consents to the references to our firm and our report dated February 23, 2022 (our "Report") included in Ecopetrol S.A.'s annual report on Form 20-F for the year ended December 31, 2021 (the "Annual Report"), the inclusion of our Report as Exhibit 99.1 to the Annual Report and references to and information derived from our Report in the Annual Report, as well as to the incorporation by reference of the consent and our Report into Ecopetrol S.A.'s registration statement on Form F-3 filed with the United States Securities and Exchange Commission on May 28, 2021 (the "Registration Statement"). Ryder Scott further consents to the references to Ryder Scott as set forth in the Registration Statement under the heading "Experts".

/s/ RYDER SCOTT COMPANY, L.P.

RYDER SCOTT COMPANY, L.P.

TBPE Firm Registration No. F-1580

Houston, Texas
April 12, 2022

SUITE 2800, 350 7TH AVENUE, S.W.
633 17TH STREET, SUITE 1700

CALGARY, ALBERTA T2P 3N9
DENVER, COLORADO 80202

TEL (403) 262-2799
TEL (303) 339-8110

Exhibit 23.3



Ref.: 4377.110861

April 12, 2022

Ecopetrol S.A.
Carrera 13 No. 36 - 24
Bogotá, D.C. Colombia

Re: Consent of Independent Petroleum Engineer

Dear Sirs:

We refer to our report, entitled "Evaluation of Certain P&NG Reserves of Hocol S.A. in Colombia (As of December 31, 2021)" dated January 17, 2022 (the "Report").

We hereby consent to the references to Sproule International Limited ("Sproule") and to the inclusion of and information derived from Sproule's Report in Ecopetrol S.A.'s ("the Company") annual report Form 20-F for the year ended December 31, 2021 (the "Annual Report"), the inclusion of our Report as Exhibit 99.2 to the Annual Report, as well as to the incorporation by reference of this consent and our Report into Ecopetrol S.A.'s registration statement on Form F-3 filed with the United States Securities and Exchange Commission on May 28, 2021 ("the Registration Statement"). We further consent to the references to Sproule International Limited as set forth in the Registration Statement under the heading "Experts". Sproule's reserves estimates for Colombia as prepared for Hocol S.A. and contained in the Annual Report have been combined with estimates of reserves prepared by other petroleum consultants and Sproule is therefore unable to verify the accuracy of the reserves estimates contained in the Annual Report other than those contained in the Report.

Sincerely,

SPROULE INTERNATIONAL LIMITED
Alberta Permit to Practice number P06151

A circular professional engineer seal for Gary R. Finnis, P.Eng., with the text "PROFESSIONAL ENGINEER ALBERTA" around the perimeter and "GARY R. FINNIS P.ENG." in the center. A signature is written across the seal.

Apr. 12, 2022
Gary R. Finnis, P.Eng.
Senior Manager, Engineering

140 Fourth Avenue SW, Suite 900
Calgary, AB, Canada T2P 3N3
Sproule.com
T +1 403 294 5500 F +1 403 294 5590 TFX +1 877 777 6135

Exhibit 23.4

DEGOLYER AND MACNAUGHTON
5001 SPRING VALLEY ROAD
SUITE 800 EAST
DALLAS, TEXAS 75244

April 12, 2022

Board of Directors
Ecopetrol S.A.
Carrera 13 No. 36-24
Bogota, D.C. Colombia

Ladies and Gentlemen:

We hereby consent to the references to DeGolyer and MacNaughton and to the inclusion of and information derived from our report of third party dated April 12, 2022, containing our opinions regarding our estimates, as of December 31, 2021, of the proved oil, condensate, natural gas liquids, gas, and oil equivalent reserves of certain selected properties that Ecopetrol S.A. has represented it holds in Colombia and the United States as set forth under the headings "3. Business Overview-3.5 Exploration and Production-3.5.3 Reserves," "8. Financial Statements," and "10. Exhibits" and as Exhibit No. 99.3 in the Annual Report on Form 20-F of Ecopetrol S.A. for the year ended December 31, 2021 (the Annual Report), and to the incorporation by reference of this consent and our report of third party into Ecopetrol S.A.'s registration statement on Form F-3 filed with the United States Securities and Exchange Commission on May 28, 2021 (the Registration Statement). We further consent to the references to DeGolyer and MacNaughton as set forth in the Registration Statement under the heading "Experts," provided, however, that we are necessarily unable to verify the accuracy of the reserves estimates contained in the Annual Report because our estimates of reserves have been combined with estimates of reserves prepared by other petroleum consultants.

Very truly yours,

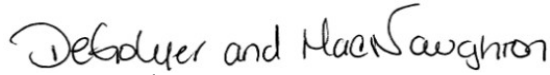

DeGOLYER and MacNAUGHTON
Texas Registered Engineering Firm F-716

Exhibit 23.5



Gaffney, Cline & Associates, Inc.
4425 Westway Park Blvd
Houston, TX 77041

Tel: +1 713 850 9955

April 7, 2022

Board of Directors
Ecopetrol S.A.
Carrera 13 No. 36 – 24
Bogotá, D.C.
Colombia

Dear Sirs,

Consent of Gaffney, Cline & Associates

As independent reserves engineers for Ecopetrol S.A. (Ecopetrol), Gaffney, Cline & Associates (GaffneyCline) hereby confirms that it has granted and not withdrawn its consent to (i) the references to GaffneyCline and to the inclusion of information contained in our third-party letter report entitled “SEC Proved Reserves Statement for Fifty Nine Fields in which Ecopetrol has an Interest, Colombia, as of December 31, 2021”, dated January 24, 2022, prepared for Ecopetrol, and to the annexation of our report as an exhibit in Ecopetrol’s annual report on Form 20-F for the year ended December 31, 2021; and, (ii) incorporation by reference of this consent and our report into Ecopetrol S.A.’s registration statement on Form F-3 filed with the United States Securities and Exchange Commission on May 28, 2021 (the “Registration Statement”). We further consent to the references to GaffneyCline as set forth in the Registration Statement under the heading “Experts”.

Yours sincerely,

/s/ Eduardo Sanchez J
Project Manager
Eduardo Sanchez J, *Principal Advisor*

Exhibit 99.1



TBPELS REGISTERED ENGINEERING FIRM F-

1580

1100 LOUISIANA SUITE 4600

FAX (713) 651-0849

HOUSTON, TEXAS 77002-5294

TELEPHONE (713) 651-9191

February 23, 2022

Ecopetrol
Cra. 13 No. 36-24
Edificio Principal, Piso 7
Bogotá, D.C., Colombia

Ladies and Gentlemen:

At the request of Ecopetrol, Ryder Scott Company, L.P. (Ryder Scott) has prepared an estimate of the proved reserves attributable to certain interests of Ecopetrol, as of December 31, 2021. The subject properties are located in the country of Colombia. The reserves were estimated based on the definitions and disclosure guidelines of the United States Securities and Exchange Commission (SEC) contained in Title 17, Code of Federal Regulations, Modernization of Oil and Gas Reporting, Final Rule released January 14, 2009 in the Federal Register (SEC regulations). Our third party study, completed on January 20, 2022 and presented herein, was prepared for public disclosure by Ecopetrol in filings made with the SEC in accordance with the disclosure requirements set forth in the SEC regulations.

The properties evaluated by Ryder Scott account for a portion of Ecopetrol's total net proved reserves as of December 31, 2021. Based on information provided by Ecopetrol, the third party estimate conducted by Ryder Scott addresses 39 percent of the total proved developed net liquid hydrocarbon reserves and 27 percent of the total proved undeveloped net liquid hydrocarbon reserves of Ecopetrol. Ryder Scott evaluation also addresses 26 percent of the total proved developed net gas reserves and 26 percent of the total proved undeveloped net gas reserves of Ecopetrol.

The estimated reserves amounts presented in this report, as of December 31, 2021, are related to hydrocarbon prices. The hydrocarbon prices used in the preparation of this report are based on the average prices during the 12-month period prior to the "as of date" of this report, determined as the unweighted arithmetic averages of the prices in effect on the first-day-of-the-month for each month within such period, unless prices were defined by contractual arrangements, as required by the SEC regulations. Actual future prices may vary considerably from the prices required by SEC regulations. The recoverable reserves volumes attributable thereto have a direct relationship to the hydrocarbon prices actually received; therefore, volumes of reserves actually recovered may differ significantly from the estimated quantities presented in this report. The results of this study are summarized as follows.

SUITE 2800, 350 7TH AVENUE, S.W.
633 17TH STREET, SUITE 1700

CALGARY, ALBERTA T2P 3N9
DENVER, COLORADO 80202

TEL (403) 262-2799
TEL (303) 339-8110

Ecopetrol
 February 23, 2002
 Page 2

SEC PRICES PARAMETERS
 Estimated Net Reserves
 Attributable to Certain Interests of
Ecopetrol
 As of December 31, 2021

	Developed		Proved	Total Proved
	Producing	Non-Producing	Undeveloped	
Net Reserves				
Oil/Condensate — Barrels	316,996,251	31,225,902	138,055,703	486,277,856
Plant Products — Barrels	949,737	381,960	211,710	1,543,407
Sales Gas — MMcf	584,373	1,933	137,468	723,774
Fuel Oil - Barrels	8,195,944	1,497,912	5,268,806	14,962,662
Fuel Gas - MMcf	69,302	4,883	18,123	92,308

Liquid hydrocarbons are expressed in standard 42 U.S. gallon barrels. The “sales” gas volumes are reported on an “as sold” basis expressed in millions of cubic feet (MMCF) at the official temperature and pressure bases of the areas in which the gas reserves are located. In addition, at Ecopetrol’s request, the Fuel Gas and Fuel Oil volumes presented above are reported, but do not result in any sales or revenues to Ecopetrol’s interest. The net sales gas reserves volumes include certain gas royalty volumes owed to the host government that are treated as taxes to be paid in cash.

Reserves Included in This Report

The proved reserves included herein conform to the definition as set forth in the Securities and Exchange Commission’s Regulations Part 210.4-10(a). An abridged version of the SEC reserves definitions from 210.4-10(a) entitled “PETROLEUM RESERVES DEFINITIONS” is included as an attachment to this report.

The various reserves status categories are defined in the attachment entitled “PETROLEUM RESERVES STATUS DEFINITIONS AND GUIDELINES” in this report. The proved developed nonproducing reserves included herein consist of the shut-in and behind pipe status categories.

No attempt was made to quantify or otherwise account for any accumulated gas production imbalances that may exist.

Reserves are “estimated remaining quantities of oil and gas and related substances anticipated to be economically producible, as of a given date, by application of development projects to known accumulations.” All reserves estimates involve an assessment of the uncertainty relating the likelihood that the actual remaining quantities recovered will be greater or less than the estimated quantities determined as of the date the estimate is made. The uncertainty depends chiefly on the amount of reliable geologic and engineering data available at the time of the estimate and the interpretation of these data. The relative degree of uncertainty may be conveyed by placing reserves into one of two principal classifications, either proved or unproved. Unproved reserves are less certain to be recovered than proved reserves and may be further sub-categorized as probable and possible reserves to denote progressively increasing uncertainty in their recoverability. At Ecopetrol’s request, this report addresses only the proved reserves attributable to the properties evaluated herein.

RYDER SCOTT COMPANY PETROLEUM CONSULTANTS

Ecopetrol
February 23, 2002
Page 3

Proved oil and gas reserves are "those quantities of oil and gas which, by analysis of geoscience and engineering data, can be estimated with reasonable certainty to be economically producible from a given date forward." The proved reserves included herein were estimated using deterministic methods. The SEC has defined reasonable certainty for proved reserves, when based on deterministic methods, as a "high degree of confidence that the quantities will be recovered."

Proved reserves estimates will generally be revised only as additional geologic or engineering data become available or as economic conditions change. For proved reserves, the SEC states that "as changes due to increased availability of geoscience (geological, geophysical, and geochemical), engineering, and economic data are made to the estimated ultimate recovery (EUR) with time, reasonably certain EUR is much more likely to increase or remain constant than to decrease." Moreover, estimates of proved reserves may be revised as a result of future operations, effects of regulation by governmental agencies or geopolitical or economic risks. Therefore, the proved reserves included in this report are estimates only and should not be construed as being exact quantities, and if recovered, the revenues therefrom, and the actual costs related thereto, could be more or less than the estimated amounts.

The proved reserves reported herein are limited to the period prior to expiration of current contracts providing the legal rights to produce or a revenue interest in such production unless evidence indicates that contract renewal is reasonably certain. Furthermore, properties in Colombia may be subjected to substantially varying contractual fiscal terms that affect the net revenue to Ecopetrol for the production of these volumes. The prices and economic return received for these net volumes can vary materially based on the terms of these contracts. Therefore, when applicable, Ryder Scott reviewed the fiscal terms of such contracts and discussed with Ecopetrol the net economic benefit attributed to such operations for the determination of the net hydrocarbon volumes and income thereof. Ryder Scott has not conducted an exhaustive audit or verification of such contractual information. Neither our review of such contractual information nor our acceptance of Ecopetrol's representations regarding such contractual information should be construed as a legal opinion on this matter.

This report includes certain volumes of proved reserves attributable to royalties owed to the host government that are treated as taxes to be paid in cash.

Ryder Scott did not evaluate the country and geopolitical risks in the countries where Ecopetrol operates or has interests. Ecopetrol's operations may be subject to various levels of governmental controls and regulations. These controls and regulations may include, but may not be limited to, matters relating to land tenure and contract terms, the legal rights to produce hydrocarbons, drilling and production practices, environmental protection, marketing and pricing policies, royalties, various taxes and levies including income tax, and are subject to change from time to time. Such changes in governmental regulations and policies may cause volumes of proved reserves actually recovered and amounts of proved income actually received to differ significantly from the estimated quantities.

The estimates of proved reserves presented herein were based upon a detailed study of the properties in which Ecopetrol owns an interest; however, we have not made any field examination of the properties. No consideration was given in this report to potential environmental liabilities that may exist nor were any costs included for potential liabilities to restore and clean up damages, if any, caused by past operating practices.

RYDER SCOTT COMPANY PETROLEUM CONSULTANTS

Ecopetrol
February 23, 2002
Page 4

Estimates of Reserves

The estimation of reserves involves two distinct determinations. The first determination results in the estimation of the quantities of recoverable oil and gas and the second determination results in the estimation of the uncertainty associated with those estimated quantities in accordance with the definitions set forth by the Securities and Exchange Commission's Regulations Part 210.4-10(a). The process of estimating the quantities of recoverable oil and gas reserves relies on the use of certain generally accepted analytical procedures. These analytical procedures fall into three broad categories or methods: (1) performance-based methods, (2) volumetric-based methods and (3) analogy. These methods may be used individually or in combination by the reserves evaluator in the process of estimating the quantities of reserves. Reserves evaluators must select the method or combination of methods which in their professional judgment is most appropriate given the nature and amount of reliable geoscience and engineering data available at the time of the estimate, the established or anticipated performance characteristics of the reservoir being evaluated, and the stage of development or producing maturity of the property.

In many cases, the analysis of the available geoscience and engineering data and the subsequent interpretation of this data may indicate a range of possible outcomes in an estimate, irrespective of the method selected by the evaluator. When a range in the quantity of reserves is identified, the evaluator must determine the uncertainty associated with the incremental quantities of the reserves. If the reserves quantities are estimated using the deterministic incremental approach, the uncertainty for each discrete incremental quantity of the reserves is addressed by the reserves category assigned by the evaluator. Therefore, it is the categorization of reserves quantities as proved, probable and/or possible that addresses the inherent uncertainty in the estimated quantities reported. For proved reserves, uncertainty is defined by the SEC as reasonable certainty wherein the "quantities actually recovered are much more likely to be achieved than not." The SEC states that "probable reserves are those additional reserves that are less certain to be recovered than proved reserves but which, together with proved reserves, are as likely as not to be recovered." The SEC states that "possible reserves are those additional reserves that are less certain to be recovered than probable reserves and the total quantities ultimately recovered from a project have a low probability of exceeding proved plus probable plus possible reserves." All quantities of reserves within the same reserves category must meet the SEC definitions as noted above.

Estimates of reserves quantities and their associated reserves categories may be revised in the future as additional geoscience or engineering data become available. Furthermore, estimates of reserves quantities and their associated reserves categories may also be revised due to other factors such as changes in economic conditions, results of future operations, effects of regulation by governmental agencies or geopolitical or economic risks as previously noted herein.

The proved reserves for the properties included herein were estimated by performance methods, the volumetric method, analogy, or a combination of methods. Approximately 99 percent of the proved producing reserves attributable to producing wells and/or reservoirs were estimated by performance methods. These performance methods include, but may not be limited to, decline curve analysis, material balance and/or reservoir simulation which utilized extrapolations of historical production and pressure data available through December 31, 2021 in those cases where such data were considered to be definitive. The data utilized in this analysis were furnished to Ryder Scott by Ecopetrol and were considered sufficient for the purpose thereof. The remaining 1 percent of the proved producing reserves were estimated by the volumetric method, analogy, or a combination of methods. These methods were used where there were inadequate historical performance data to establish a definitive trend and where the use of production performance data as a basis for the reserves estimates was considered to be inappropriate.

RYDER SCOTT COMPANY PETROLEUM CONSULTANTS

Ecopetrol
February 23, 2002
Page 5

Approximately 100 percent of the proved developed non-producing and undeveloped reserves included herein were estimated by the volumetric method, analogy, or a combination of methods. The volumetric analysis utilized pertinent well and seismic data furnished to Ryder Scott by Ecopetrol that were available through December 31, 2021. The data utilized from the analogues as well as well and seismic data incorporated into our volumetric analysis were considered sufficient for the purpose thereof.

To estimate economically recoverable proved oil and gas reserves and related future net cash flows, we consider many factors and assumptions including, but not limited to, the use of reservoir parameters derived from geological, geophysical and engineering data which cannot be measured directly, economic criteria based on current costs and SEC pricing requirements, and forecasts of future production rates. Under the SEC regulations 210.4-10(a)(22)(v) and (26), proved reserves must be anticipated to be economically producible from a given date forward based on existing economic conditions including the prices and costs at which economic producibility from a reservoir is to be determined. While it may reasonably be anticipated that the future prices received for the sale of production and the operating costs and other costs relating to such production may increase or decrease from those under existing economic conditions, such changes were, in accordance with rules adopted by the SEC, omitted from consideration in making this evaluation.

Ecopetrol has informed us that they have furnished us all of the material accounts, records, geological and engineering data, and reports and other data required for this investigation. In preparing our forecast of future proved production and income, we have relied upon data furnished by Ecopetrol with respect to property interests, production and well tests from examined wells, normal direct costs of operating the wells or contract areas, other costs such as transportation and/or processing fees, recompletion and development costs, development plans, abandonment costs after salvage, product prices based on the SEC regulations, adjustments or differentials to product prices, geological structural and isochore maps, well logs, core analyses, and pressure measurements. Ryder Scott reviewed such factual data for its reasonableness; however, we have not conducted an independent verification of the data furnished by Ecopetrol. We consider the factual data used in this report appropriate and sufficient for the purpose of preparing the estimates of reserves and future net revenues herein.

In summary, we consider the assumptions, data, methods and analytical procedures used in this report appropriate for the purpose hereof, and we have used all such methods and procedures that we consider necessary and appropriate to prepare the estimates of reserves herein. The proved reserves included herein were determined in conformance with the United States Securities and Exchange Commission (SEC) Modernization of Oil and Gas Reporting; Final Rule, including all references to Regulation S-X and Regulation S-K, referred to herein collectively as the "SEC Regulations." In our opinion, the proved reserves presented in this report comply with the definitions, guidelines and disclosure requirements as required by the SEC regulations.

Future Production Rates

For wells currently on production, our forecasts of future production rates are based on historical performance data. If no production decline trend has been established, future production rates were held constant, or adjusted for the effects of curtailment where appropriate, until a decline in ability to produce was anticipated. An estimated rate of decline was then applied until depletion of the reserves. If a decline trend has been established, this trend was used as the basis for estimating future production rates.

Test data and other related information were used to estimate the anticipated initial production rates for those wells or locations that are not currently producing. For reserves not yet on production, sales were estimated to commence at an anticipated date furnished by Ecopetrol. Wells or locations that

RYDER SCOTT COMPANY PETROLEUM CONSULTANTS

Ecopetrol
February 23, 2002
Page 6

are not currently producing may start producing earlier or later than anticipated in our estimates due to unforeseen factors causing a change in the timing to initiate production. Such factors may include delays due to weather, the availability of rigs, the sequence of drilling, completing and/or recompleting wells and/or constraints set by regulatory bodies.

The future production rates from wells currently on production or wells or locations that are not currently producing may be more or less than estimated because of changes including, but not limited to, reservoir performance, operating conditions related to surface facilities, compression and artificial lift, pipeline capacity and/or operating conditions, producing market demand and/or allowables or other constraints set by regulatory bodies.

Hydrocarbon Prices

The hydrocarbon prices used herein are based on SEC price parameters using the average prices during the 12-month period prior to the “as of date” of this report, determined as the unweighted arithmetic averages of the prices in effect on the first-day-of-the-month for each month within such period, unless prices were defined by contractual arrangements. For hydrocarbon products sold under contract, the contract prices, including fixed and determinable escalations, exclusive of inflation adjustments, were used until expiration of the contract. Upon contract expiration, the prices were adjusted to the 12-month unweighted arithmetic average as previously described.

Ecopetrol furnished us with the above mentioned average prices in effect on December 31, 2021. These initial SEC hydrocarbon prices were determined using the 12-month average first-day-of-the-month benchmark prices appropriate to the geographic area where the hydrocarbons are sold. These benchmark prices are prior to the adjustments for differentials as described herein. The table below summarizes the “benchmark prices” and “price reference” used for the geographic area(s) included in the report. In certain geographic areas, the price reference and benchmark prices may be defined by contractual arrangements. In cases where there are numerous contracts or price references within the same geographic area, the benchmark price is represented by the unweighted arithmetic average of the initial 12-month average first-day-of-the-month benchmark prices used.

The product prices which were actually used to determine the future gross revenue for each property reflect adjustments to the benchmark prices for gravity, quality, local conditions, gathering and transportation fees and/or distance from market, referred to herein as “differentials.” The differentials used in the preparation of this report were furnished to us by Ecopetrol. The differentials furnished to us were accepted as factual data and reviewed by us for their reasonableness; however, we have not conducted an independent verification of the data used by Ecopetrol to determine these differentials.

In addition, the table below summarizes the net volume weighted benchmark prices adjusted for differentials and referred to herein as the “average realized prices.” The average realized prices shown in the table below were determined from the total future gross revenue before production taxes and the total net reserves for the geographic areas and presented in accordance with SEC disclosure requirements for each of the geographic areas included in this report.

RYDER SCOTT COMPANY PETROLEUM CONSULTANTS

Ecopetrol
 February 23, 2002
 Page 7

Geographic Area	Product	Price Reference	Average Benchmark Price	Average Proved Realized Price
Colombia	Oil/Condensate	Brent	\$69.24/bbl	\$65.81/bbl
	NGLs	Brent	\$69.24/bbl	\$32.63/bbl
	Gas	Gas Sales Agreement		\$4.69/Mcf

The liquid price above, as provided by Ecopetrol, used the ICE Brent published by Bloomberg as reference. The effects of derivative instruments designated as price hedges of oil and gas quantities are not reflected in our individual property evaluations. Liquid hydrocarbon reserves account for approximately 90 percent and gas reserves account for the remaining 10 percent of total future gross revenue from proved reserves.

Costs

Operating costs for the contract areas and wells in this report were furnished by Ecopetrol and are based on the operating expense reports of Ecopetrol and include only those costs directly applicable to the contract areas or wells. The operating costs include a portion of general and administrative costs allocated directly to the contract areas and wells. For operated properties, the operating costs include an appropriate level of corporate general administrative and overhead costs. The operating costs furnished to us were accepted as factual data and reviewed by us for their reasonableness; however, we have not conducted an independent verification of the operating cost data used by Ecopetrol. No deduction was made for loan repayments, interest expenses, or exploration and development prepayments that were not charged directly to the contract areas or wells.

Development costs were furnished to us by Ecopetrol and are based on authorizations for expenditure for the proposed work or actual costs for similar projects. The development costs furnished to us were accepted as factual data and reviewed by us for their reasonableness; however, we have not conducted an independent verification of these costs. The estimated net cost of abandonment after salvage was included for properties where abandonment costs net of salvage were material. The estimates of the net abandonment costs furnished by Ecopetrol were accepted without independent verification.

The proved developed non-producing and undeveloped reserves in this report have been incorporated herein in accordance with Ecopetrol's plans to develop these reserves as of December 31, 2020. The implementation of Ecopetrol's development plans as presented to us and incorporated herein is subject to the approval process adopted by Ecopetrol's management. As the result of our inquiries during the course of preparing this report, Ecopetrol has informed us that the development activities included herein have been subjected to and received the internal approvals required by Ecopetrol's management at the appropriate local, regional and/or corporate level. In addition to the internal approvals as noted, certain development activities may still be subject to specific partner AFE processes, Joint Operating Agreement (JOA) requirements or other administrative approvals external to Ecopetrol. Ecopetrol has provided written documentation supporting their commitment to proceed with the development activities as presented to us. Additionally, Ecopetrol has informed us that they are not aware of any legal, regulatory, or political obstacles that would significantly alter their plans. While these plans could change from those under existing economic conditions as of December 31, 2021, such

RYDER SCOTT COMPANY PETROLEUM CONSULTANTS

Ecopetrol
February 23, 2002
Page 8

changes were, in accordance with rules adopted by the SEC, omitted from consideration in making this evaluation.

According to Item 1203 (d) of the SEC Regulations, an explanation should be included for the reasons "...why material amounts of proved undeveloped reserves remain undeveloped for five years or more after disclosure as proved undeveloped reserves." A material amount of proved undeveloped reserves in this report is forecast to be developed beyond the five-year time frame. A five-year time frame for converting undeveloped reserves to developed reserves was adopted by the SEC, "unless specific circumstances justify a longer time frame." In this report, Ryder Scott notes that there is an exception to the 5-year rule for the proved category in Rubiales field where proved undeveloped reserves were assigned beyond the 5-year limit. In the case of Rubiales, the field has facilities constraints in water handling capacity which require the scheduling of the entry of the new wells based on spare capacity of the plant. In our opinion, these facilities issues are considered a reasonable justification for an exception to the 5-year rule.

Current costs used by Ecopetrol were held constant throughout the life of the properties.

Standards of Independence and Professional Qualification

Ryder Scott is an independent petroleum engineering consulting firm that has been providing petroleum consulting services throughout the world since 1937. Ryder Scott is employee-owned and maintains offices in Houston, Texas; Denver, Colorado; and Calgary, Alberta, Canada. We have approximately eighty engineers and geoscientists on our permanent staff. By virtue of the size of our firm and the large number of clients for which we provide services, no single client or job represents a material portion of our annual revenue. We do not serve as officers or directors of any privately-owned or publicly-traded oil and gas company and are separate and independent from the operating and investment decision-making process of our clients. This allows us to bring the highest level of independence and objectivity to each engagement for our services.

Ryder Scott actively participates in industry-related professional societies and organizes an annual public forum focused on the subject of reserves evaluations and SEC regulations. Many of our staff have authored or co-authored technical papers on the subject of reserves related topics. We encourage our staff to maintain and enhance their professional skills by actively participating in ongoing continuing education.

Prior to becoming an officer of the Company, Ryder Scott requires that staff engineers and geoscientists have received professional accreditation in the form of a registered or certified professional engineer's license or a registered or certified professional geoscientist's license, or the equivalent thereof, from an appropriate governmental authority or a recognized self-regulating professional organization. Regulating agencies require that, in order to maintain active status, a certain amount of continuing education hours be completed annually, including an hour of ethics training. Ryder Scott fully supports this technical and ethics training with our internal requirement mentioned above.

We are independent petroleum engineers with respect to Ecopetrol. Neither we nor any of our employees have any financial interest in the subject properties and neither the employment to do this work nor the compensation is contingent on our estimates of reserves for the properties which were reviewed.

The results of this study, presented herein, are based on technical analysis conducted by teams of geoscientists and engineers from Ryder Scott. The professional qualifications of the undersigned, the

RYDER SCOTT COMPANY PETROLEUM CONSULTANTS

Ecopetrol
February 23, 2002
Page 9

technical person primarily responsible for overseeing, reviewing and approving the evaluation of the reserves information discussed in this report, are included as an attachment to this letter.

Terms of Usage

The results of our third party study, presented in report form herein, were prepared in accordance with the disclosure requirements set forth in the SEC regulations and intended for public disclosure as an exhibit in filings made with the SEC by Ecopetrol.

Ecopetrol makes periodic filings on Form 20-F with the SEC under the 1934 Exchange Act. Furthermore, Ecopetrol has certain registration statements filed with the SEC under the 1933 Securities Act into which any subsequently filed Form 20-F is incorporated by reference. We have consented to the incorporation by reference in the registration statements on Form F-3 of Ecopetrol, of the references to our name, as well as to the references to our third party report for Ecopetrol, which appears in the December 31, 2021 annual report on Form 20-F of Ecopetrol. Our written consent for such use is included as a separate exhibit to the filings made with the SEC by Ecopetrol.

We have provided Ecopetrol with a digital version of the original signed copy of this report letter. In the event there are any differences between the digital version included in filings made by Ecopetrol and the original signed report letter, the original signed report letter shall control and supersede the digital version.

The data and work papers used in the preparation of this report are available for examination by authorized parties in our offices. Please contact us if we can be of further service.

Very truly yours,

RYDER SCOTT COMPANY, L.P.
TBPELS Firm Registration No. F-1580



Mario A. Ballesteros, P.E.
TBPELS License No. 107132
Managing Senior Vice President

MAB (HGA)/pl

RYDER SCOTT COMPANY PETROLEUM CONSULTANTS

Professional Qualifications of Primary Technical Person

The conclusions presented in this report are the result of technical analysis conducted by teams of geoscientists and engineers from Ryder Scott Company, L.P. Mario A. Ballesteros was the primary technical person responsible for overseeing the independent estimation of reserves, future production and income to render the audit conclusions of the report presented herein.

Mr. Ballesteros, an employee of Ryder Scott Company, L.P. (Ryder Scott) since 2006, is a Managing Senior Vice President and also serves as an Engineering Group Leader responsible for coordinating and supervising staff and consulting engineers of the company in ongoing reservoir evaluation studies worldwide. Before joining Ryder Scott, Mr. Ballesteros served in a number of engineering positions with Chevron. For more information regarding Mr. Ballesteros geographic and job specific experience, please refer to the Ryder Scott Company website at www.ryderscott.com/Company/Employees.

Mr. Ballesteros earned a Bachelor of Science degree in Mechanical Engineering in 1991 and a Masters of Petroleum Engineering degree in 1993 from the University of Tulsa. He also earned a Masters in Finance in 2000 from the Meta University in Colombia. He is a registered Professional Engineer in the State of Texas.

In addition to gaining experience and competency through prior work experience, the Texas Board of Professional Engineers requires a minimum of fifteen hours of continuing education annually, including at least one hour in the area of professional ethics, which Mr. Ballesteros fulfills. Mr. Ballesteros has attended formalized training and conferences including dedicated to the subject of the definitions and disclosure guidelines contained in the United States Securities and Exchange Commission Title 17, Code of Federal Regulations, Modernization of Oil and Gas Reporting, Final Rule released January 14, 2009 in the Federal Register.

Based on his educational background, professional training and more than 22 years of practical experience in the estimation and evaluation of petroleum reserves, Mr. Ballesteros has attained the professional qualifications as a Reserves Estimator and Reserves Auditor set forth in Article III of the "Standards Pertaining to the Estimating and Auditing of Oil and Gas Reserves Information" promulgated by the Society of Petroleum Engineers as of June 2019.

RYDER SCOTT COMPANY PETROLEUM CONSULTANTS

PETROLEUM RESERVES DEFINITIONS

As Adapted From:

**RULE 4-10(a) of REGULATION S-X PART 210
UNITED STATES SECURITIES AND EXCHANGE COMMISSION (SEC)**

PREAMBLE

On January 14, 2009, the United States Securities and Exchange Commission (SEC) published the “Modernization of Oil and Gas Reporting; Final Rule” in the Federal Register of National Archives and Records Administration (NARA). The “Modernization of Oil and Gas Reporting; Final Rule” includes revisions and additions to the definition section in Rule 4-10 of Regulation S-X, revisions and additions to the oil and gas reporting requirements in Regulation S-K, and amends and codifies Industry Guide 2 in Regulation S-K. The “Modernization of Oil and Gas Reporting; Final Rule”, including all references to Regulation S-X and Regulation S-K, shall be referred to herein collectively as the “SEC regulations”. The SEC regulations take effect for all filings made with the United States Securities and Exchange Commission as of December 31, 2009, or after January 1, 2010. Reference should be made to the full text under Title 17, Code of Federal Regulations, Regulation S-X Part 210, Rule 4-10(a) for the complete definitions (direct passages excerpted in part or wholly from the aforementioned SEC document are denoted in *italics* herein).

Reserves are estimated remaining quantities of oil and gas and related substances anticipated to be economically producible, as of a given date, by application of development projects to known accumulations. All reserve estimates involve an assessment of the uncertainty relating the likelihood that the actual remaining quantities recovered will be greater or less than the estimated quantities determined as of the date the estimate is made. The uncertainty depends chiefly on the amount of reliable geologic and engineering data available at the time of the estimate and the interpretation of these data. The relative degree of uncertainty may be conveyed by placing reserves into one of two principal classifications, either proved or unproved. Unproved reserves are less certain to be recovered than proved reserves and may be further sub-classified as probable and possible reserves to denote progressively increasing uncertainty in their recoverability. Under the SEC regulations as of December 31, 2009, or after January 1, 2010, a company may optionally disclose estimated quantities of probable or possible oil and gas reserves in documents publicly filed with the SEC. The SEC regulations continue to prohibit disclosure of estimates of oil and gas resources other than reserves and any estimated values of such resources in any document publicly filed with the SEC unless such information is required to be disclosed in the document by foreign or state law as noted in §229.1202 Instruction to Item 1202.

Reserves estimates will generally be revised only as additional geologic or engineering data become available or as economic conditions change.

Reserves may be attributed to either natural energy or improved recovery methods. Improved recovery methods include all methods for supplementing natural energy or altering natural forces in the reservoir to increase ultimate recovery. Examples of such methods are pressure maintenance, natural gas cycling, waterflooding, thermal methods, chemical flooding, and the use of miscible and immiscible displacement fluids. Other improved recovery methods may be developed in the future as petroleum technology continues to evolve.

Reserves may be attributed to either conventional or unconventional petroleum accumulations. Petroleum accumulations are considered as either conventional or unconventional based on the nature of their in-place characteristics, extraction method applied, or degree of processing prior to sale.

RYDER SCOTT COMPANY PETROLEUM CONSULTANTS

PETROLEUM RESERVES DEFINITIONS

Page 3

Examples of unconventional petroleum accumulations include coalbed or coalseam methane (CBM/CSM), basin-centered gas, shale gas, gas hydrates, natural bitumen and oil shale deposits. These unconventional accumulations may require specialized extraction technology and/or significant processing prior to sale.

Reserves do not include quantities of petroleum being held in inventory.

Because of the differences in uncertainty, caution should be exercised when aggregating quantities of petroleum from different reserves categories.

RESERVES (SEC DEFINITIONS)

Securities and Exchange Commission Regulation S-X §210.4-10(a)(26) defines reserves as follows:

Reserves. *Reserves are estimated remaining quantities of oil and gas and related substances anticipated to be economically producible, as of a given date, by application of development projects to known accumulations. In addition, there must exist, or there must be a reasonable expectation that there will exist, the legal right to produce or a revenue interest in the production, installed means of delivering oil and gas or related substances to market, and all permits and financing required to implement the project.*

Note to paragraph (a)(26): *Reserves should not be assigned to adjacent reservoirs isolated by major, potentially sealing, faults until those reservoirs are penetrated and evaluated as economically producible. Reserves should not be assigned to areas that are clearly separated from a known accumulation by a non-productive reservoir (i.e., absence of reservoir; structurally low reservoir; or negative test results). Such areas may contain prospective resources (i.e., potentially recoverable resources from undiscovered accumulations).*

PROVED RESERVES (SEC DEFINITIONS)

Securities and Exchange Commission Regulation S-X §210.4-10(a)(22) defines proved oil and gas reserves as follows:

Proved oil and gas reserves. *Proved oil and gas reserves are those quantities of oil and gas, which, by analysis of geoscience and engineering data, can be estimated with reasonable certainty to be economically producible—from a given date forward, from known reservoirs, and under existing economic conditions, operating methods, and government regulations—prior to the time at which contracts providing the right to operate expire, unless evidence indicates that renewal is reasonably certain, regardless of whether deterministic or probabilistic methods are used for the estimation. The project to extract the hydrocarbons must have commenced or the operator must be reasonably certain that it will commence the project within a reasonable time.*

(i) *The area of the reservoir considered as proved includes:*

(A) *The area identified by drilling and limited by fluid contacts, if any, and*

(B) *Adjacent undrilled portions of the reservoir that can, with reasonable certainty, be judged to be continuous with it and to contain economically producible oil or gas on the basis of available geoscience and engineering data.*

RYDER SCOTT COMPANY PETROLEUM CONSULTANTS

PETROLEUM RESERVES DEFINITIONS

Page 3

(ii) *In the absence of data on fluid contacts, proved quantities in a reservoir are limited by the lowest known hydrocarbons (LKH) as seen in a well penetration unless geoscience, engineering, or performance data and reliable technology establishes a lower contact with reasonable certainty.*

(iii) *Where direct observation from well penetrations has defined a highest known oil (HKO) elevation and the potential exists for an associated gas cap, proved oil reserves may be assigned in the structurally higher portions of the reservoir only if geoscience, engineering, or performance data and reliable technology establish the higher contact with reasonable certainty.*

(iv) *Reserves which can be produced economically through application of improved recovery techniques (including, but not limited to, fluid injection) are included in the proved classification when:*

(A) Successful testing by a pilot project in an area of the reservoir with properties no more favorable than in the reservoir as a whole, the operation of an installed program in the reservoir or an analogous reservoir, or other evidence using reliable technology establishes the reasonable certainty of the engineering analysis on which the project or program was based; and

(B) The project has been approved for development by all necessary parties and entities, including governmental entities.

(v) *Existing economic conditions include prices and costs at which economic producibility from a reservoir is to be determined. The price shall be the average price during the 12-month period prior to the ending date of the period covered by the report, determined as an unweighted arithmetic average of the first-day-of-the-month price for each month within such period, unless prices are defined by contractual arrangements, excluding escalations based upon future conditions.*

RYDER SCOTT COMPANY PETROLEUM CONSULTANTS

PETROLEUM RESERVES STATUS DEFINITIONS AND GUIDELINES

As Adapted From:
RULE 4-10(a) of REGULATION S-X PART 210
UNITED STATES SECURITIES AND EXCHANGE COMMISSION (SEC)

and

2018 PETROLEUM RESOURCES MANAGEMENT SYSTEM (SPE-PRMS)
Sponsored and Approved by: SOCIETY OF PETROLEUM ENGINEERS (SPE)
WORLD PETROLEUM COUNCIL (WPC)
AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS (AAPG)
SOCIETY OF PETROLEUM EVALUATION ENGINEERS (SPEE)
SOCIETY OF EXPLORATION GEOPHYSICISTS (SEG)
SOCIETY OF PETROPHYSICISTS AND WELL LOG ANALYSTS (SPWLA)
EUROPEAN ASSOCIATION OF GEOSCIENTISTS & ENGINEERS (EAGE)

Reserves status categories define the development and producing status of wells and reservoirs. Reference should be made to Title 17, Code of Federal Regulations, Regulation S-X Part 210, Rule 4- 10(a) and the SPE-PRMS as the following reserves status definitions are based on excerpts from the original documents (direct passages excerpted from the aforementioned SEC and SPE-PRMS documents are denoted in *italics* herein).

DEVELOPED RESERVES (SEC DEFINITIONS)

Securities and Exchange Commission Regulation S-X §210.4-10(a)(6) defines developed oil and gas reserves as follows:

Developed oil and gas reserves are reserves of any category that can be expected to be recovered:

- (i) Through existing wells with existing equipment and operating methods or in which the cost of the required equipment is relatively minor compared to the cost of a new well; and*
- (ii) Through installed extraction equipment and infrastructure operational at the time of the reserves estimate if the extraction is by means not involving a well.*

Developed Producing (SPE-PRMS Definitions)

While not a requirement for disclosure under the SEC regulations, developed oil and gas reserves may be further sub-classified according to the guidance contained in the SPE-PRMS as Producing or Non-Producing.

Developed Producing Reserves

Developed Producing Reserves are expected quantities to be recovered from completion intervals that are open and producing at the effective date of the estimate.

RYDER SCOTT COMPANY PETROLEUM CONSULTANTS

PETROLEUM RESERVES STATUS DEFINITIONS AND GUIDELINES

Page 2

Improved recovery reserves are considered producing only after the improved recovery project is in operation.

Developed Non-Producing

Developed Non-Producing Reserves include shut-in and behind-pipe Reserves.

Shut-In

Shut-in Reserves are expected to be recovered from:

- (1) completion intervals that are open at the time of the estimate but which have not yet started producing;*
- (2) wells which were shut-in for market conditions or pipeline connections; or*
- (3) wells not capable of production for mechanical reasons.*

Behind-Pipe

Behind-pipe Reserves are expected to be recovered from zones in existing wells that will require additional completion work or future re-completion before start of production with minor cost to access these reserves.

In all cases, production can be initiated or restored with relatively low expenditure compared to the cost of drilling a new well.

UNDEVELOPED RESERVES (SEC DEFINITIONS)

Securities and Exchange Commission Regulation S-X §210.4-10(a)(31) defines undeveloped oil and gas reserves as follows:

Undeveloped oil and gas reserves are reserves of any category that are expected to be recovered from new wells on undrilled acreage, or from existing wells where a relatively major expenditure is required for recompletion.

- (i) Reserves on undrilled acreage shall be limited to those directly offsetting development spacing areas that are reasonably certain of production when drilled, unless evidence using reliable technology exists that establishes reasonable certainty of economic producibility at greater distances.*
- (ii) Undrilled locations can be classified as having undeveloped reserves only if a development plan has been adopted indicating that they are scheduled to be drilled within five years, unless the specific circumstances, justify a longer time.*
- (iii) Under no circumstances shall estimates for undeveloped reserves be attributable to any acreage for which an application of fluid injection or other improved recovery technique is contemplated, unless such techniques have been proved effective by actual projects in the same reservoir or an analogous reservoir, as defined in paragraph (a)(2) of this section, or by other evidence using reliable technology establishing reasonable certainty.*

RYDER SCOTT COMPANY PETROLEUM CONSULTANTS



Ref.: 4377.110861

April 12, 2022

Ecopetrol S.A.
Cra. 13 No. 36-24
Edificio Principal, Piso 7
Bogotá, D.C., Colombia

Dear Sirs:

Sproule International Limited ("Sproule") has been engaged by Hocol S.A ("Hocol" or the "Company") to evaluate the proved, probable, and possible reserves in 9 blocks (14 fields) in Colombia, as of December 31, 2021, and to prepare a report as to its findings (the "Report"). The Report is compliant with the United States Securities Exchange Commission (SEC) definitions and disclosure guidelines. Hocol S.A. is a wholly owned subsidiary of Ecopetrol S.A. The Report, completed on January 17, 2022 and presented herein, was prepared for public disclosure by Ecopetrol S.A. in filings made with the SEC in accordance with the disclosure requirements set forth in the SEC regulations.

Ecopetrol S.A. has represented that the properties evaluated by Sproule for Hocol account for one (1) percent of Ecopetrol's net total Barrel of Oil Equivalent ("BOE") proved reserves as of December 31, 2021.

Estimates of Reserves

Reserves estimates included in this report are expressed as net oil reserves. Net oil reserves are defined as the portion of the gross reserves to be produced from the 9 blocks (14 fields) evaluated by Sproule after December 31, 2021 attributable to the interests owned by Ecopetrol after deducting all interests owned by others, including royalties in kind. As regulated by the ANH, all royalties associated to the properties reported herein were considered as a cash payment and not deducted from the net gas reserves.

140 Fourth Avenue SW, Suite 900
Calgary, AB, Canada T2P 3N3
Sproule.com
T +1 403 294 5500 F +1 403 294 5590 TF +1 877 777 6135

Sproule International Limited

-2-

April 12, 2022

The reserves estimates for the properties contained herein were obtained using a variety of estimation methods: volumetric, performance, analogy or a combination of performance and volumetric methods. The following table summarizes the approximate percentage of the net reserves estimated by each of these methods.

Approximate Percent of Net Proved Reserves Estimated by Method				
	Gas		Liquid Hydrocarbons	
Method	Developed	Undeveloped	Developed	Undeveloped
Volumetric	0	0	0	0
Performance	100	0	100	0
Analogy	0	0	0	0
Combination	0	100	0	100

Sproule's estimates of Ecopetrol S.A.'s net proved reserves, attributable to the properties contained in this report, were based on the definitions of proved reserves as promulgated by the SEC and are summarized as follows, expressed in millions of barrels (MMbbl) and millions of cubic feet (MMcf):

Estimates of Ecopetrol S.A.'s Net Reserves by Sproule As of December 31, 2021			
Net Remaining Reserves	Proved		
	Developed	Undeveloped	Total Proved
Light and Medium Crude Oil (Mbbl)	9,447	5,968	15,415
Conventional Natural Gas (Solution Gas) (MMcf)	3,286	0	3,286
Gas Consumed in Operations (MMcf)	8,423	9,796	18,219
Total Gas (MMcf)	11,709	9,796	21,205

Accuracy and Reliance on Data

All historical production, revenue and expense data, product prices, and other data that were obtained from the Company were accepted as represented, without further investigation by Sproule. According to the contract, the Company provided all the information required, such as the needed information and documents to ensure that Sproule would be able to complete the consulting services. Sproule is not responsible for the veracity and integrity of the information provided by the Company to execute the consultancy, which has been used in the generation of the evaluation results.

The accuracy of reserves estimates and associated economic analysis is, in part, a function of the quality and quantity of available data and of engineering and geological interpretation and judgment. Given the data provided at the time this letter was prepared, the estimates presented herein are considered reasonable. However, they should be accepted with the understanding that reservoir and

Sproule International Limited

-3-

April 12, 2022

financial performance subsequent to the date of the estimates may necessitate revision. These revisions may be material.

Maintenance, capital, abandonment, decommissioning and reclamation ("ADR") cost estimates, as supplied by the Company, were accepted by Sproule as represented. No further investigation was undertaken by Sproule.

Evaluation Standards

This report has been prepared by Sproule using current geological and engineering knowledge, techniques and computer software. It has been prepared within the Code of Ethics of the Association of Professional Engineers and Geoscientists of Alberta ("APEGA"). This report was prepared in accordance with the guidelines and standards of the PRMS and the SEC regulations.

Hydrocarbon Prices

Constant prices were used in the economic evaluation and are based on the unweighted arithmetic average of the first day-of-the month price for each of the 12 months preceding the effective date, as per SEC price parameters guidance. Hocol provided to Sproule the prices to be used in the evaluation. The benchmark prices used in this evaluation are as follows:

Oil:		
	Brent	69.24 USD/bbl
Gas:		
	Henry Hub	2.87 USD/MMBtu

Appropriate adjustments have been made to the constant oil prices to account for quality and transportation. These adjustments have been made and are presented at the field level.

Gas prices are based on gas sales contracts, and only applies to the sales gas volumes. A summary of the realized prices used in the evaluation was provided in the detailed final report.

Forward-Looking Statements

The evaluation process involves modeling to reasonably predict future outcomes. Inherent in the modeling process however are limitations which may indirectly affect the forecast of future events.

This report contains forward-looking statements including expectations of future production revenues and capital expenditures. Information concerning reserves may also be deemed to be forward- looking as estimates involve the implied assessment that the reserves described can be profitably produced in the future. These statements are based on current expectations that involve a number of risks and uncertainties, which could cause actual results to differ from those anticipated. These

Sproule International Limited

-4-

April 12, 2022

risks include, but are not limited to: the underlying risks of the oil and gas industry (i.e., corporate commitment, regulatory approval, operational risks in development, exploration and production); potential delays or changes in plans with respect to exploration or development projects or capital expenditures; the uncertainty of reserves estimations; the uncertainty of estimates and projections relating to production; costs and expenses; health, safety and environmental factors; commodity prices; and exchange rate fluctuation.

Standards of Independence and Professional Qualifications

Sproule is an independent petroleum engineering consulting firm that has been providing petroleum engineering consulting services in Canada and throughout the world since 1950. Our head office is located in Calgary, Alberta, Canada. In addition to having technical offices in Mexico City, Mexico, and The Hague, Netherlands, we also have commercial representation offices in Rio de Janeiro, Brazil.

Sproule does not have any financial interest, including stock ownership, in Ecopetrol S.A. The fees paid by the Company to Sproule, nor the award of the contract to complete this work, were not contingent on the results of the evaluation.

The professional qualifications of the technical person primarily responsible for reviewing and approving the reserves evaluation of the properties contained herein, are included as an attachment to this letter.

Sincerely,

SPROULE INTERNATIONAL LIMITED

Alberta Permit to Practice number P06151



Apr. 12, 2022
Gary R. Finnis, P.Eng.
Senior Manager, Engineering

Exhibit 99.3

DeGolyer and MacNaughton

5001 Spring Valley Road
Suite 800 East
Dallas, Texas 75244

This is a digital representation of a DeGolyer and MacNaughton report.

This file is intended to be a manifestation of certain data in the subject report and as such is subject to the same conditions thereof. The information and data contained in this file may be subject to misinterpretation; therefore, the signed and bound copy of this report should be considered the only authoritative source of such information.



DeGolyer and Mac Naughton

5001 Spring Valley Road
Suite 800 East
Dallas, Texas 75244

April 12, 2022

Board of Directors
Ecopetrol S.A.
Carrera 13 No. 36-24
Bogota, D.C.
Colombia

Ladies and Gentlemen:

Pursuant to your request, this report of third party presents an independent evaluation, as of December 31, 2021, of the extent of the estimated net proved hydrocarbon reserves of certain properties in Colombia and the United States in which Ecopetrol S.A. has represented it holds an interest. These interests are held by Ecopetrol S.A. and through its wholly owned subsidiaries Ecopetrol America LLC and Ecopetrol Permian LLC (collectively, "ECOPETROL"). This evaluation was completed on April 12, 2022. ECOPETROL has represented that these properties account for 38 percent on a net equivalent barrel basis of ECOPETROL's net proved reserves as of December 31, 2021. ECOPETROL has also represented that these properties account for 41 percent of ECOPETROL's total proved developed net liquid hydrocarbon (oil, condensate, and natural gas liquids (NGL)) reserves, 2 percent of its total proved developed net gas reserves, 65 percent of its total proved undeveloped net liquid reserves, and 25 percent of its total proved undeveloped net gas reserves. The net proved reserves estimates have been prepared in accordance with the reserves definitions of Rules 4-10(a) (1)-(32) of Regulation S-X of the United States Securities and Exchange Commission (SEC). This report was prepared in accordance with guidelines specified in Item 1202 (a) (8) of Regulation S-K and is to be used for inclusion in certain SEC filings by ECOPETROL.

Reserves estimates included herein are expressed as net reserves. Gross reserves are defined as the total estimated petroleum remaining to be produced from these properties after December 31, 2021. Net reserves are defined as that portion of the gross reserves attributable to the interests held by ECOPETROL after deducting

DeGolyer and Mac Naughton

all interests held by others, including royalties paid in kind. ECOPETROL has advised that in September 2013, Resolución n° 877 was enacted by the government of Colombia, requiring that oil and condensate royalties be paid in kind and gas and NGL royalties be paid in cash. Based on this legislation, and at the request of ECOPETROL, royalties associated with gas and NGL reserves for the properties in Colombia have been considered as a cash payment and are therefore included in the net gas and NGL reserves estimated herein.

Estimates of reserves should be regarded only as estimates that may change as further production history and additional information become available. Not only are such estimates based on that information which is currently available, but such estimates are also subject to the uncertainties inherent in the application of judgmental factors in interpreting such information.

Information used in the preparation of this report was obtained from ECOPETROL. In the preparation of this report we have relied, without independent verification, upon information furnished by ECOPETROL with respect to the property interests being evaluated, production from such properties, current costs of operation and development, current prices for production, agreements relating to current and future operations and sale of production, and various other information and data that were accepted as represented. A field examination was not considered necessary for the purposes of this report.

Definition of Reserves

Petroleum reserves estimated in this report are classified as proved. Only proved reserves have been evaluated for this report. Reserves classifications used by us in this report are in accordance with the reserves definitions of Rules 4–10(a) (1)–(32) of Regulation S–X of the SEC. Reserves are judged to be economically producible in future years from known reservoirs under existing economic and operating conditions and assuming continuation of current regulatory practices using conventional production methods and equipment. In the analyses of production- decline curves, reserves were estimated only to the limit of economic rates of production under existing economic and operating conditions using prices and costs consistent with the effective date of this report, including consideration of changes in existing prices provided only by contractual arrangements but not including escalations based upon future conditions. The petroleum reserves are classified as follows:

DeGolyer and Mac Naughton

Proved oil and gas reserves – Proved oil and gas reserves are those quantities of oil and gas, which, by analysis of geoscience and engineering data, can be estimated with reasonable certainty to be economically producible—from a given date forward, from known reservoirs, and under existing economic conditions, operating methods, and government regulations—prior to the time at which contracts providing the right to operate expire, unless evidence indicates that renewal is reasonably certain, regardless of whether deterministic or probabilistic methods are used for the estimation. The project to extract the hydrocarbons must have commenced or the operator must be reasonably certain that it will commence the project within a reasonable time.

(i) The area of the reservoir considered as proved includes:

(A) The area identified by drilling and limited by fluid contacts, if any, and (B) Adjacent undrilled portions of the reservoir that can, with reasonable certainty, be judged to be continuous with it and to contain economically producible oil or gas on the basis of available geoscience and engineering data.

(ii) In the absence of data on fluid contacts, proved quantities in a reservoir are limited by the lowest known hydrocarbons (LKH) as seen in a well penetration unless geoscience, engineering, or performance data and reliable technology establishes a lower contact with reasonable certainty.

(iii) Where direct observation from well penetrations has defined a highest known oil (HKO) elevation and the potential exists for an associated gas cap, proved oil reserves may be assigned in the structurally higher portions of the reservoir only if geoscience, engineering, or performance data and reliable technology establish the higher contact with reasonable certainty.

(iv) Reserves which can be produced economically through application of improved recovery techniques (including, but not limited to, fluid injection) are included in the proved classification when:

(A) Successful testing by a pilot project in an area of the reservoir with properties no more favorable than in the reservoir as a

DeGolyer and Mac Naughton

whole, the operation of an installed program in the reservoir or an analogous reservoir, or other evidence using reliable technology establishes the reasonable certainty of the engineering analysis on which the project or program was based; and (B) The project has been approved for development by all necessary parties and entities, including governmental entities.(v) Existing economic conditions include prices and costs at which economic producibility from a reservoir is to be determined. The price shall be the average price during the 12-month period prior to the ending date of the period covered by the report, determined as an unweighted arithmetic average of the first-day-of-the-month price for each month within such period, unless prices are defined by contractual arrangements, excluding escalations based upon future conditions.

Developed oil and gas reserves – Developed oil and gas reserves are reserves of any category that can be expected to be recovered:

- (i) Through existing wells with existing equipment and operating methods or in which the cost of the required equipment is relatively minor compared to the cost of a new well; and
- (ii) Through installed extraction equipment and infrastructure operational at the time of the reserves estimate if the extraction is by means not involving a well.

Undeveloped oil and gas reserves – Undeveloped oil and gas reserves are reserves of any category that are expected to be recovered from new wells on undrilled acreage, or from existing wells where a relatively major expenditure is required for recompletion.

- (i) Reserves on undrilled acreage shall be limited to those directly offsetting development spacing areas that are reasonably certain of production when drilled, unless evidence using reliable technology exists that establishes reasonable certainty of economic producibility at greater distances.
 - (ii) Undrilled locations can be classified as having undeveloped reserves only if a development plan has been adopted indicating
-

DeGolyer and Mac Naughton

that they are scheduled to be drilled within five years, unless the specific circumstances justify a longer time.

(iii) Under no circumstances shall estimates for undeveloped reserves be attributable to any acreage for which an application of fluid injection or other improved recovery technique is contemplated, unless such techniques have been proved effective by actual projects in the same reservoir or an analogous reservoir, as defined in [section 210.4–10 (a) Definitions], or by other evidence using reliable technology establishing reasonable certainty.

Methodology and Procedures

Estimates of reserves were prepared by the use of appropriate geologic, petroleum engineering, and evaluation principles and techniques that are in accordance with the reserves definitions of Rules 4–10(a) (1)–(32) of Regulation S–X of the SEC and with practices generally recognized by the petroleum industry as presented in the publication of the Society of Petroleum Engineers entitled “Standards Pertaining to the Estimating and Auditing of Oil and Gas Reserves Information (revised June 2019) Approved by the SPE Board on 25 June 2019” and in Monograph 3 and Monograph 4 published by the Society of Petroleum Evaluation Engineers. The method or combination of methods used in the analysis of each reservoir was tempered by experience with similar reservoirs, stage of development, quality and completeness of basic data, and production history.

Based on the current stage of field development, production performance, the development plans provided by ECOPETROL, and analyses of areas offsetting existing wells with test or production data, reserves were classified as proved. The undeveloped reserves estimated herein were based on opportunities identified in the plan of development provided by ECOPETROL.

ECOPETROL has represented that its senior management is committed to the development plan provided by ECOPETROL and that ECOPETROL has the financial capability to execute the development plan, including the drilling and completion of wells and the installation of equipment and facilities.

When applicable, the volumetric method was used to estimate the original oil in place (OOIP) and original gas in place (OGIP). Structure maps were prepared to

DeGolyer and Mac Naughton

delineate each reservoir, and isopach maps were constructed to estimate reservoir volume. Electrical logs, radioactivity logs, core analyses, and other available data were used to prepare these maps as well as to estimate representative values for porosity and water saturation. When adequate data were available and when circumstances justified, material-balance methods were used to estimate OOIP and OGIP.

Estimates of ultimate recovery were obtained after applying recovery factors to OOIP and OGIP. These recovery factors were based on consideration of the type of energy inherent in the reservoirs, analyses of the petroleum, the structural positions of the properties, and the production histories. When applicable, material balance and other engineering methods were used to estimate recovery factors based on an analysis of reservoir performance, including production rate, reservoir pressure, and reservoir fluid properties.

For depletion-type reservoirs or those whose performance disclosed a reliable decline in producing-rate trends or other diagnostic characteristics, reserves were estimated by the application of appropriate decline curves or other performance relationships. In the analyses of production-decline curves, reserves were estimated only to the limits of economic production as defined under the Definition of Reserves heading of this report or the expiration date of the fiscal agreement, whichever occurs first.

For the evaluation of unconventional reservoirs, a performance-based methodology integrating the appropriate geology and petroleum engineering data was utilized for this report. Performance-based methodology primarily includes (1) production diagnostics, (2) decline-curve analysis, and (3) model-based analysis (if necessary, based on availability of data). Production diagnostics include data quality control, identification of flow regimes, and characteristic well performance behavior. These analyses were performed for all well groupings (or type-curve areas).

Characteristic rate-decline profiles from diagnostic interpretation were translated to modified hyperbolic rate profiles, including one or multiple b-exponent values followed by an exponential decline. Based on the availability of data, model-based analysis may be integrated to evaluate long-term decline behavior, the effect of dynamic reservoir and fracture parameters on well performance, and complex situations sourced by the nature of unconventional reservoirs.

DeGolyer and Mac Naughton

In certain cases, reserves were estimated by incorporating elements of analogy with similar wells or reservoirs for which more complete data were available.

In the evaluation of undeveloped reserves, type-well analysis was performed using well data from analogous reservoirs for which more complete historical performance data were available.

Data provided by ECOPETROL from wells drilled through December 31, 2021, and made available for this evaluation were used to prepare the reserves estimates herein. These reserves estimates were based on consideration of monthly production data available for certain properties only through August, September, October, or November 2021. Estimated cumulative production, as of December 31, 2021, was deducted from the estimated gross ultimate recovery to estimate gross reserves. This required that production be estimated for up to 4 months.

Oil and condensate reserves estimated herein are to be recovered by normal field separation. Oil is reported herein as oil and fuel oil. Fuel oil is defined as that portion of the oil consumed in field operations. Oil includes fuel oil. NGL reserves estimated herein include pentanes and heavier fractions (C5+) and liquefied petroleum gas (LPG), which consists primarily of propane and butane fractions, and are the result of low-temperature plant processing. Oil, condensate, and NGL reserves included in this report are expressed in millions of barrels (10⁶bbl). In these estimates, 1 barrel equals 42 United States gallons. For reporting purposes, oil and condensate reserves have been estimated separately and are presented herein as a summed quantity.

Gas quantities estimated herein are expressed as marketable gas, fuel gas, and sales gas. Marketable gas is defined as the total gas produced from the reservoir after reduction for shrinkage resulting from field separation; processing, including removal of the nonhydrocarbon gas to meet pipeline specifications; and flare and other losses but not from fuel usage. Fuel gas is defined as that portion of the gas consumed in field operations. Sales gas is defined as the total gas to be produced from the reservoirs, measured at the point of delivery, after reduction for fuel usage, flare, and shrinkage resulting from field separation and processing. Gas quantities are expressed at a temperature base of 60 degrees Fahrenheit (°F) and at a pressure base of 14.7 pounds per square inch absolute (psia). Gas quantities included in this report are expressed in millions of cubic feet (10⁶ft³).

DeGolyer and Mac Naughton

Gas quantities are identified by the type of reservoir from which the gas will be produced. Nonassociated gas is gas at initial reservoir conditions with no oil present in the reservoir. Associated gas is both gas-cap gas and solution gas. Gas-cap gas is gas at initial reservoir conditions and is in communication with an underlying oil zone. Solution gas is gas dissolved in oil at initial reservoir conditions. Gas quantities estimated herein include both associated and nonassociated gas.

At the request of ECOPETROL, marketable gas reserves estimated herein were converted to oil equivalent using an energy equivalent factor of 5,700 cubic feet of gas per 1 barrel of oil equivalent.

Primary Economic Assumptions

This report has been prepared using initial prices, expenses, and costs provided by ECOPETROL in United States dollars (U.S.\$). Future prices were estimated using guidelines established by the SEC and the Financial Accounting Standards Board (FASB). The following economic assumptions were used for estimating the reserves reported herein:

Oil, Condensate, and NGL Prices

ECOPETROL has represented that the oil, condensate, and NGL prices were based on a reference price, calculated as the unweighted average of the first-day-of-the-month price for each month within the 12-month period prior to the end of the reporting period, unless prices are defined by contractual agreements. The volume-weighted average adjusted product prices attributable to the estimated proved reserves for the properties in Colombia evaluated herein were U.S.\$60.83 per barrel of oil and condensate and U.S.\$58.37 per barrel of NGL, based on a 12-month average Brent reference price of U.S.\$69.24 per barrel. The volume-weighted average adjusted product prices attributable to the estimated proved reserves for the properties in the United States evaluated herein were U.S.\$66.01 per barrel of oil and condensate and U.S.\$19.60 per barrel of NGL, based on a 12-month average West Texas Intermediate reference price of U.S.\$66.56 per barrel. ECOPETROL supplied differentials by field to the reference

DeGolyer and Mac Naughton

9

prices. Prices were held constant for the lives of the properties unless defined by contractual agreements.

Sales Gas Prices

ECOPETROL has represented that the sales gas prices for the properties in the United States evaluated herein were based on a reference price, calculated as the unweighted arithmetic average of the first-day-of-the-month price for each month within the 12-month period prior to the end of the reporting period, unless prices are defined by contractual agreements. The sales gas prices were calculated for each property using differentials furnished by ECOPETROL to the Henry Hub reference price of U.S.\$3.67 per million Btu and held constant thereafter. Btu factors provided by ECOPETROL were used to convert prices from dollars per million Btu to dollars per thousand cubic feet. The volume-weighted average price attributable to the estimated proved reserves for the properties in the United States evaluated herein was U.S.\$1.90 per thousand cubic feet of gas. These prices were held constant for the lives of the properties.

Operating Expenses, Capital Costs, and Abandonment Costs

Estimates of operating expenses, provided by ECOPETROL and based on current expenses, were held constant for the lives of the properties. Future capital expenditures were estimated using 2021 values, provided by ECOPETROL, and were not adjusted for inflation. In certain cases, future expenditures, either higher or lower than current expenditures, may have been used because of anticipated changes in operating conditions, but no general escalation that might result from inflation was applied. Abandonment costs, which are those costs associated with the removal of equipment, plugging of the wells, and reclamation and restoration associated with the abandonment, were provided by ECOPETROL for all properties. Estimates of operating expenses, capital costs, and abandonment costs were considered, as appropriate, in determining the economic viability of the undeveloped reserves estimated herein.

DeGolyer and Mac Naughton

In our opinion, the information relating to estimated proved reserves of oil, condensate, NGL, and gas contained in this report has been prepared in accordance with Paragraphs 932-235-50-4, 932-235-50-6, 932-235-50-7, and 932-235-50-9 of the Accounting Standards Update 932-235-50, *Extractive Industries – Oil and Gas (Topic 932): Oil and Gas Reserve Estimation and Disclosures* (January 2010) of the FASB and Rules 4–10(a) (1)–(32) of Regulation S–X and Rules 302(b), 1201, 1202(a) (1), (2), (3), (4), (8), and 1203(a) of Regulation S–K of the SEC; provided, however, that (i) estimates of proved developed and proved undeveloped reserves are not presented at the beginning of the year and (ii) certain proved undeveloped reserves are scheduled for development more than 5 years after initial disclosure. The development plans provided by ECOPETROL for the properties evaluated herein include all development to be executed within 5 years of initial disclosure except for one well offshore in the United States Gulf of Mexico. In addition, the proved undeveloped reserves estimated for the Cajúa, Caño Sur Este, and Quifa fields include locations with production start dates that extend beyond the 5-year initial disclosure period and are associated with the current water-handling capacities in these fields. ECOPETROL has represented that these wells are part of ongoing development projects and that all remaining development investments for these wells will be completed within 7 years from their initial disclosure. Based on these representations, reserves associated with these wells were classified as proved.

To the extent the above-enumerated rules, regulations, and statements require determinations of an accounting or legal nature, we, as engineers, are necessarily unable to express an opinion as to whether the above-described information is in accordance therewith or sufficient therefor.

DeGolyer and Mac Naughton

Summary of Conclusions

The estimated net proved reserves, as of December 31, 2021, of the properties evaluated herein were based on the definition of proved reserves of the SEC and are summarized as follows, expressed in millions of barrels (10⁶bbl), millions of cubic feet (10⁶ft³), and millions of barrels of oil equivalent (10⁶boe):

Estimated by DeGolyer and MacNaughton Net Proved Reserves as of December 31, 2021						
	Oil and Condensate (10 ⁶ bbl)	NGL (10 ⁶ bbl)	Marketable Gas (10 ⁶ ft ³)	Fuel Gas (10 ⁶ ft ³)	Sales Gas (10 ⁶ ft ³)	Oil Equivalent (10 ⁶ boe)
Colombia						
Proved Developed	338.424	0.118	6,683.624	6,683.624	0.000	339.715
Proved Undeveloped	191.843	0.003	179.343	179.343	0.000	191.877
Colombia Total Proved	530.268	0.121	6,862.967	6,862.967	0.000	531.592
United States						
Proved Developed	32.721	6.152	43,946.031	0.000	43,946.031	46.583
Proved Undeveloped	120.482	33.635	146,629.900	0.000	146,629.900	179.841
United States Total Proved	153.202	39.787	190,575.931	0.000	190,575.931	226.424
Total Proved	683.470	39.908	197,438.898	6,862.967	190,575.931	758.016

Notes:

1. Totals may vary due to rounding.
2. Marketable gas reserves estimated herein were converted to oil equivalent using an energy equivalent factor of 5,700 cubic feet of gas per 1 barrel of oil equivalent, as provided by ECOPETROL.
3. Oil reserves estimated herein for the properties in Colombia include fuel oil. The estimated fuel oil contained in the oil reserves is 0.343 10⁶bbl for proved developed reserves, 1.477 10⁶bbl for proved undeveloped reserves, and 1.820 10⁶bbl for total proved reserves.

While the oil and gas industry may be subject to regulatory changes from time to time that could affect an industry participant's ability to recover its reserves, we are not aware of any such governmental actions which would restrict the recovery of the December 31, 2021, estimated reserves.

DeGolyer and Mac Naughton

DeGolyer and MacNaughton is an independent petroleum engineering consulting firm that has been providing petroleum consulting services throughout the world since 1936. DeGolyer and MacNaughton does not have any financial interest, including stock ownership, in ECOPETROL. Our fees were not contingent on the results of our evaluation. This report has been prepared at the request of ECOPETROL. DeGolyer and MacNaughton has used all assumptions, data, procedures, and methods that it considers necessary and appropriate to prepare this report.

Submitted,

/s/ DeGOLYER and MacNAUGHTON

DeGOLYER and MacNAUGHTON

Texas Registered Engineering Firm F-716



/s/ Federico Dordoni, P.E.

Federico Dordoni, P.E.

Senior Vice President

DeGolyer and MacNaught

DeGolyer and Mac Naughton

13

CERTIFICATE of QUALIFICATION

I, Federico Dordoni, Petroleum Engineer with DeGolyer and MacNaughton, 5001 Spring Valley Road, Suite 800 East, Dallas, Texas, 75244 U.S.A., hereby certify:

1. That I am a Senior Vice President with DeGolyer and MacNaughton, which firm did prepare the report of third party addressed to ECOPETROL dated April 12, 2022, and that I, as Senior Vice President, was responsible for the preparation of this report of third party.
2. That I attended Buenos Aires Institute of Technology (ITBA) University, and that I graduated with a degree in Petroleum Engineering in the year 2004; that I am a Registered Professional Engineer in the State of Texas; that I am a member of the Society of Petroleum Engineers and the Society of Petroleum Evaluation Engineers; and that I have in excess of 17 years of experience in oil and gas reservoir studies and reserves evaluations.



/s/ Federico Dordoni, P.E.
Federico Dordoni, P.E.
Senior Vice President
DeGolyer and MacNaught

Gaffney
Cline

Reserves Statement of Certain Fields,
Colombia
as of December 31, 2021

Prepared for
Ecopetrol S.A.
February 24, 2022



GaffneyCline
4425 Westway Park Blvd
Houston, TX 77041

Tel: +1 713 850 9955
www.gaffneycline.com

February 24, 2022

Fidel Delgado Doria
Gerente de Reservas
Ecopetrol S.A.
Calle 13 No. 36 -34
Bogotá, D.C.
Colombia

fidel.delgado@ecopetrol.com.com

Dear Fidel,

**SEC Proved Reserves Statement
for Fifty Nine Fields in which Ecopetrol has an Interest, Colombia
as of December 31, 2021**

Introduction

This Proved reserves statement has been prepared by Gaffney, Cline & Associates (GaffneyCline) and issued on February 24, 2022 at the request of Ecopetrol S.A. (Ecopetrol, or “the Client”), operator, participant operator, and interest participant in 59 fields in the Lower, Middle and Upper Magdalena Valley, Catatumbo, Piedemonte and Llanos Orientales Basins, Colombia.

This report is intended for use in conjunction with Ecopetrol’s December 31, 2021 filing obligations with the US Securities and Exchange Commission (SEC).

This report relates specifically and solely to the subject matter as defined in the scope of work in the Proposal for Services and is conditional upon the assumptions described herein. The report must be considered in its entirety and must only be used for the purpose for which it was intended.

GaffneyCline has prepared a reserves estimation, as of December 31, 2021, of the hydrocarbon liquids and natural gas reserves of fifty nine fields in which Ecopetrol has an interest in Colombia.

A handwritten signature in blue ink, appearing to read 'Fidel Delgado Doria', written over a set of horizontal lines.

Ecopetrol S.A.

www.gaffneycline.com



Summary and Conclusions

On the basis of technical and other information made available to GaffneyCline concerning these property units, GaffneyCline hereby provides the reserves statement in the following Table 1.

**Table 1: Statement of Hydrocarbon Reserves Volumes
Fifty-Nine Fields, Colombia
as of December 31, 2021**

Reserves	Reserves Net to Ecopetrol's Interest			
	Oil/Cond. (MBbl)	NGL (MBbl)	Sales Gas (BCF)	Fuel Gas (BCF)
Developed				
Producing	96,490	47,427	1,274	250
Non-Producing	10,711	9,907	288	24
Undeveloped	23,002	9,731	258	20
Total Proved	130,202	67,065	1,820	293

Notes:

- Oil and condensate reserves net to Ecopetrol's interest represent volumes after the deduction of royalties, under the concessions that govern the assets, based on Ecopetrol's working interest.
- Gas and NGL reserves net to Ecopetrol's working interest include gas and NGL royalty volumes that are required to be paid in cash according to Resolutions 877 and 351 from Agencia Nacional de Hidrocarburos (ANH) and the corresponding clarification note from ANH #20146240188522.
- Net sales gas reserves exclude volumes consumed in operations (fuel gas), which are reported separately.
- Fuel gas represents working interest volumes consumed in operations.
- The above Reserves include production:
 - Until the economic limit when contracts are solely operated by Ecopetrol.
 - Beyond the end of the current license period in concession contracts that include an expiry date which are assumed to revert to Ecopetrol as the sole license holder at the expiry of the contract and, based on information provided by Ecopetrol, normally include a 12% increase in the royalty rate at contract expiry.
- Totals may not exactly equal the sum of the individual entries because of rounding.

Hydrocarbon liquid volumes represent crude oil and condensate, natural gasoline, and NGL estimated to be recovered during field separation and plant processing and are reported in thousands (10³) of stock tank barrels (MBbl). The volumes reported as gas represent expected





gas sales and are reported in billions (10⁹) of standard cubic feet at standard conditions (BCF). Standard conditions are defined as 14.7 psia and 60°F. There is no oil consumed as fuel in operations, so it is not reported. The sales gas volumes have been reduced for fuel usage consumed in operations (CiO) and shrinkage because of processing. Royalties due on oil production payable to the State have been deducted from reported net interest volumes. Royalties due on NGL products, including sales gas, are not deducted; because they are paid in cash.

Gas reserves sales volumes are based on firm and existing gas contracts, or on the reasonable expectation of a contract or on the reasonable expectation that any such existing gas sales contracts will be renewed on similar terms in the future.

Ecopetrol has advised GaffneyCline that the Proved volumes included in this report represent 28% of Ecopetrol's total Proved reserves on an oil-equivalent basis, 14% on oil basis and 67% on gas basis. The volume Proved Undeveloped included in this report represent 13% of Ecpetrol's total Proved Undeveloped reserves on an oil equivalent basis, 6% on oil basis and 47% on gas basis. Considering the Proved Developed reserves, the volumes include in this report represent 36% on an oil-equivalent basis, 18% on oil basis and 72% on gas basis. GaffneyCline is not in a position to verify this statement as it was not requested to review Ecopetrol's other oil and gas assets.

Descriptions of the fields are included in the technical reports, which have been issued separately.





Reserves Assessment

GaffneyCline's estimate of reserves was based on data provided by Ecopetrol to GaffneyCline from September 2021 to December 2021. During this audit GaffneyCline used one or more of the following methods to assess the reserves: volumetric, performance or analogy, depending on the information available and the stage of development of the reservoir. Reserves volumes for existing wells were based on performance analysis (decline of production and behavior of appropriate fluid ratios). Reserves volumes for undrilled wells were based on established performance of analogous wells. Where appropriate, checks were made using estimates of hydrocarbons in place derived from a volumetric analysis. Production forecasts were first prepared to reasonable technical limits and then truncated by the economic limit.

GaffneyCline performed procedures necessary to enable it to render an opinion on the appropriateness of the methodologies employed, adequacy and quality of the data relied on, depth and thoroughness of the reserves estimation process, classification and categorization of reserves appropriate to the relevant definitions used, and reasonableness of the estimates.

The economic tests for the December 31, 2021 reserves volumes were based on prior twelve-month first-day-of-the-month average reference price for the Brent crude of US\$ 69.24/Bbl, corrected for location and quality. Sales gas and plant product prices were advised by Ecopetrol according to existing contracts and/or regulations. No price escalation has been included, other than as provided for in existing contracts.

Future capital costs for operated and non-operated fields were provided by Ecopetrol.

Recent historical operating expense data were used as the basis for operating cost projections. Neither capital nor operating costs were escalated for inflation. GaffneyCline has found that sufficient capital investments and operating expenses have been projected to produce the estimated volumes.

It is GaffneyCline's opinion that the estimates of total remaining recoverable hydrocarbon liquid and gas volumes as of December 31, 2021 are, in the aggregate, reasonable and the reserves classification and categorization is appropriate and consistent with the definitions for reserves in Part 210 Rule 4-10(a) of Regulation S-X of the US Securities and Exchange Commission, which are provided in Appendix I. A glossary of terms is presented in Appendix III.

GaffneyCline is not aware of any potential changes in regulations applicable to these fields that could affect the ability of Ecopetrol to produce the estimated reserves.

A decorative graphic consisting of several thin, wavy, horizontal lines in a light brown or tan color, spanning across the width of the page.



Basis of Opinion

This document reflects GaffneyCline's informed professional judgment based on accepted standards of professional investigation and, as applicable, the data and information provided by the Client, the limited scope of engagement, and the time permitted to conduct the evaluation.

In line with those accepted standards, this document does not in any way constitute or make a guarantee or prediction of results, and no warranty is implied or expressed that actual outcome will conform to the outcomes presented herein. GaffneyCline has not independently verified any information provided by, or at the direction of, the Client, and has accepted the accuracy and completeness of this data. GaffneyCline has no reason to believe that any material facts have been withheld, but does not warrant that its inquiries have revealed all of the matters that a more extensive examination might otherwise disclose.

The opinions expressed herein are subject to and fully qualified by the generally accepted uncertainties associated with the interpretation of geoscience and engineering data and do not reflect the totality of circumstances, scenarios and information that could potentially affect decisions made by the report's recipients and/or actual results. The opinions and statements contained in this report are made in good faith and in the belief that such opinions and statements are representative of prevailing physical and economic circumstances.

There are numerous uncertainties inherent in estimating reserves, and in projecting future production, development expenditures, operating expenses and cash flows. Oil and gas reserves assessments must be recognized as a subjective process of estimating subsurface accumulations of oil and gas that cannot be measured in an exact way. Estimates of oil and gas reserves prepared by other parties may differ, perhaps materially, from those contained within this report.

The accuracy of any reserves estimate is a function of the quality of the available data and of engineering and geological interpretation. Results of drilling, testing and production that post-date the preparation of the estimates may justify revisions, some or all of which may be material. Accordingly, reserve estimates are often different from the quantities of oil and gas that are ultimately recovered, and the timing and cost of those volumes that are recovered may vary from that assumed.

GaffneyCline has not undertaken a site visit and inspection because it was not included in the scope of work. As such, GaffneyCline is not in a position to comment on the operations or facilities in place, their appropriateness and condition, or whether they are in compliance with the regulations pertaining to such operations. Further, GaffneyCline is not in a position to comment on any aspect of health, safety, or environment of such operation.

This report has been prepared based on GaffneyCline's understanding of the effects of petroleum legislation and other regulations that currently apply to these properties. However, GaffneyCline is not in a position to attest to property title or rights, conditions of these rights (including environmental and abandonment obligations), or any necessary licenses and consents (including planning permission, financial interest relationships, or encumbrances thereon for any part of the appraised properties).





Definition of Reserves

Reserves are estimated remaining quantities of oil and gas and related substances anticipated to be economically producible, as of a given date, by application of development projects to known accumulations. In addition, there must exist, or there must be a reasonable expectation that there will exist, the legal right to produce, or a revenue interest in, the production, installed means of delivering oil and gas or related substances to market, and all permits and financing required to implement the project.

Reserves are further categorized in accordance with the level of certainty associated with the estimates and may be sub-classified based on project maturity and/or characterized by development and production status. All categories of reserves volumes quoted herein have been derived within the context of an economic limit test (ELT) assessment (pre-tax and exclusive of accumulated depreciation amounts) prior to any net present value (NPV) analysis.

This report has been prepared based on GaffneyCline's understanding of the effects of petroleum legislation and other regulations that currently apply to these properties.

GaffneyCline is not aware of any carbon pricing impost or GHG emissions related to regulations that are applicable to the evaluation of the assets that are the subject of this report. GaffneyCline has also not included the impact of any potential carbon pricing scheme or regulatory compliance costs for GHG emissions that may be implemented in the future.

Qualifications

In performing this study, GaffneyCline is not aware that any conflict of interest has existed. As an independent consultancy, GaffneyCline is providing impartial technical, commercial, and strategic advice within the energy sector. GaffneyCline's remuneration was not in any way contingent on the contents of this report.

In the preparation of this document, GaffneyCline has maintained, and continues to maintain, a strict independent consultant-client relationship with Ecopetrol. Furthermore, the management and employees of GaffneyCline have no interest in any of the assets evaluated or related with the analysis performed as part of this report. The qualifications of the technical person primarily responsible for overseeing this estimate are provided in Appendix II.

Staff members who prepared this report hold appropriate professional and educational qualifications and have the necessary levels of experience and expertise to perform the work.





Notice

This report was prepared for public disclosure in its entirety by Ecopetrol in filings made with the SEC in accordance with the disclosure requirements set forth in the SEC regulations. Ecopetrol will obtain GaffneyCline's prior written approval for any other use of any results, statements or opinions expressed to Ecopetrol in this report that are attributed to GaffneyCline.

Yours sincerely,

Gaffney, Cline & Associates

A handwritten signature in black ink, appearing to read "Eduardo Sanchez".

Project Manager
Eduardo Sanchez, Principal Advisor

A handwritten signature in black ink, appearing to read "Rawdon J.H. Seager".

Reviewer
Rawdon J.H. Seager, Technical Director

Appendices

Appendix I	SEC Reserves Definitions
Appendix II	Technical Qualifications of Person Responsible for the Reserves Certification
Appendix III	Glossary





Appendix I

SEC Reserves Definitions



Ecopetrol S.A.
February 24, 2022



**U.S. SECURITIES AND EXCHANGE COMMISSION (SEC) MODERNIZATION OF OIL AND GAS
REPORTING¹**

Oil and Gas Reserves Definitions and Reporting

(a) Definitions

(1) Acquisition of properties. Costs incurred to purchase, lease or otherwise acquire a property, including costs of lease bonuses and options to purchase or lease properties, the portion of costs applicable to minerals when land including mineral rights is purchased in fee, brokers' fees, recording fees, legal costs, and other costs incurred in acquiring properties.

(2) Analogous reservoir. Analogous reservoirs, as used in resources assessments, have similar rock and fluid properties, reservoir conditions (depth, temperature, and pressure) and drive mechanisms, but are typically at a more advanced stage of development than the reservoir of interest and thus may provide concepts to assist in the interpretation of more limited data and estimation of recovery. When used to support proved reserves, an "analogous reservoir" refers to a reservoir that shares the following characteristics with the reservoir of interest:

- (i) Same geological formation (but not necessarily in pressure communication with the reservoir of interest);
- (ii) Same environment of deposition;
- (iii) Similar geological structure; and
- (iv) Same drive mechanism.

Instruction to paragraph (a)(2): Reservoir properties must, in the aggregate, be no more favorable in the analog than in the reservoir of interest.

(3) Bitumen. Bitumen, sometimes referred to as natural bitumen, is petroleum in a solid or semi- solid state in natural deposits with a viscosity greater than 10,000 centipoise measured at original temperature in the deposit and atmospheric pressure, on a gas free basis. In its natural state it usually contains sulfur, metals, and other non-hydrocarbons.

(4) Condensate. Condensate is a mixture of hydrocarbons that exists in the gaseous phase at original reservoir temperature and pressure, but that, when produced, is in the liquid phase at surface pressure and temperature.

(5) Deterministic estimate. The method of estimating reserves or resources is called deterministic when a single value for each parameter (from the geoscience, engineering, or economic data) in the reserves calculation is used in the reserves estimation procedure.

¹ Extracted from 17 CFR Parts 210, 211, 229, and 249 [Release Nos. 33-8995; 34-59192; FR-78; File No. S7-15-08] RIN 3235-AK00].



(6) Developed oil and gas reserves. Developed oil and gas reserves are reserves of any category that can be expected to be recovered:

- (i) Through existing wells with existing equipment and operating methods or in which the cost of the required equipment is relatively minor compared to the cost of a new well; and
- (ii) Through installed extraction equipment and infrastructure operational at the time of the reserves estimate if the extraction is by means not involving a well.

(7) Development costs. Costs incurred to obtain access to proved reserves and to provide facilities for extracting, treating, gathering and storing the oil and gas. More specifically, development costs, including depreciation and applicable operating costs of support equipment and facilities and other costs of development activities, are costs incurred to:

- (i) Gain access to and prepare well locations for drilling, including surveying well locations for the purpose of determining specific development drilling sites, clearing ground, draining, road building, and relocating public roads, gas lines, and power lines, to the extent necessary in developing the proved reserves.
- (ii) Drill and equip development wells, development-type stratigraphic test wells, and service wells, including the costs of platforms and of well equipment such as casing, tubing, pumping equipment, and the wellhead assembly.
- (iii) Acquire, construct, and install production facilities such as lease flow lines, separators, treaters, heaters, manifolds, measuring devices, and production storage tanks, natural gas cycling and processing plants, and central utility and waste disposal systems.
- (iv) Provide improved recovery systems.

(8) Development project. A development project is the means by which petroleum resources are brought to the status of economically producible. As examples, the development of a single reservoir or field, an incremental development in a producing field, or the integrated development of a group of several fields and associated facilities with a common ownership may constitute a development project.

(9) Development well. A well drilled within the proved area of an oil or gas reservoir to the depth of a stratigraphic horizon known to be productive.

(10) Economically producible. The term economically producible, as it relates to a resource, means a resource which generates revenue that exceeds, or is reasonably expected to exceed, the costs of the operation. The value of the products that generate revenue shall be determined at the terminal point of oil and gas producing activities as defined in paragraph (a)(16) of this section.

(11) Estimated ultimate recovery (EUR). Estimated ultimate recovery is the sum of reserves remaining as of a given date and cumulative production as of that date.





(12) Exploration costs. Costs incurred in identifying areas that may warrant examination and in examining specific areas that are considered to have prospects of containing oil and gas reserves, including costs of drilling exploratory wells and exploratory-type stratigraphic test wells. Exploration costs may be incurred both before acquiring the related property (sometimes referred to in pail as prospecting costs) and after acquiring the property. Principal types of exploration costs, which include depreciation and applicable operating costs of support equipment and facilities and other costs of exploration activities, are:

- (i) Costs of topographical, geographical and geophysical studies, rights of access to properties to conduct those studies, and salaries and other expenses of geologists, geophysical crews, and others conducting those studies. Collectively, these are sometimes referred to as geological and geophysical or "G&G" costs.
- (ii) Costs of carrying and retaining undeveloped properties, such as delay rentals, ad valorem taxes on properties, legal costs for title defense, and the maintenance of land and lease records.
- (iii) Dry hole contributions and bottom hole contributions.
- (iv) Costs of drilling and equipping exploratory wells.
- (v) Costs of drilling exploratory-type stratigraphic test wells.

(13) Exploratory well. An exploratory well is a well drilled to find a new field or to find a new reservoir in a field previously found to be productive of oil or gas in another reservoir. Generally, an exploratory well is any well that is not a development well, an extension well, a service well, or a stratigraphic test well as those items are defined in this section.

(14) Extension well. An extension well is a well drilled to extend the limits of a known reservoir.

(15) Field. An area consisting of a single reservoir or multiple reservoirs all grouped on or related to the same individual geological structural feature and/or stratigraphic condition. There may be two or more reservoirs in a field which are separated vertically by intervening impervious strata, or laterally by local geologic barriers, or by both. Reservoirs that are associated by being in overlapping or adjacent fields may be treated as a single or common operational field. The geological terms "structural feature" and "stratigraphic condition" are intended to identify localized geological features as opposed to the broader terms of basins, trends, provinces, plays, areas- of-interest, etc.

(16) Oil and gas producing activities.

- (i) Oil and gas producing activities include:
 - (A) The search for crude oil, including condensate and natural gas liquids, or natural gas ("oil and gas") in their natural states and original locations;
 - (B) The acquisition of property rights or properties for the purpose of further exploration or for the purpose of removing the oil or gas from such properties;





- (C) The construction, drilling, and production activities necessary to retrieve oil and gas from their natural reservoirs, including the acquisition, construction, installation, and maintenance of field gathering and storage systems, such as:
 - (1) Lifting the oil and gas to the surface; and
 - (2) Gathering, treating, and field processing (as in the case of processing gas to extract liquid hydrocarbons); and
- (D) Extraction of saleable hydrocarbons, in the solid, liquid, or gaseous state, from oil sands, shale, coalbeds, or other nonrenewable natural resources which are intended to be upgraded into synthetic oil or gas, and activities undertaken with a view to such extraction.

Instruction 1 to paragraph (a)(16)(i): The oil and gas production function shall be regarded as ending at a “terminal point”, which is the outlet valve on the lease or field storage tank. If unusual physical or operational circumstances exist, it may be appropriate to regard the terminal point for the production function as:

- a. The first point at which oil, gas, or gas liquids, natural or synthetic, are delivered to a main pipeline, a common carrier, a refinery, or a marine terminal; and
- b. In the case of natural resources that are intended to be upgraded into synthetic oil or gas, if those natural resources are delivered to a purchaser prior to upgrading, the first point at which the natural resources are delivered to a main pipeline, a common carrier, a refinery, a marine terminal, or a facility which upgrades such natural resources into synthetic oil or gas.

Instruction 2 to paragraph (a)(16)(i): For purposes of this paragraph (a)(16), the term saleable hydrocarbons means hydrocarbons that are saleable in the state in which the hydrocarbons are delivered.

- (ii) Oil and gas producing activities do not include:
 - (A) Transporting, refining, or marketing oil and gas;
 - (B) Processing of produced oil, gas or natural resources that can be upgraded into synthetic oil or gas by a registrant that does not have the legal right to produce or a revenue interest in such production;
 - (C) Activities relating to the production of natural resources other than oil, gas, or natural resources from which synthetic oil and gas can be extracted; or
 - (D) Production of geothermal steam.

(17) Possible reserves. Possible reserves are those additional reserves that are less certain to be recovered than probable reserves.

- (i) When deterministic methods are used, the total quantities ultimately recovered from a project have a low probability of exceeding proved plus probable plus possible reserves. When probabilistic methods are used, there should be at least a 10%





probability that the total quantities ultimately recovered will equal or exceed the proved plus probable plus possible reserves estimates.

- (ii) Possible reserves may be assigned to areas of a reservoir adjacent to probable reserves where data control and interpretations of available data are progressively less certain. Frequently, this will be in areas where geoscience and engineering data are unable to define clearly the area and vertical limits of commercial production from the reservoir by a defined project.
- (iii) Possible reserves also include incremental quantities associated with a greater percentage recovery of the hydrocarbons in place than the recovery quantities assumed for probable reserves.
- (iv) The proved plus probable and proved plus probable plus possible reserves estimates must be based on reasonable alternative technical and commercial interpretations within the reservoir or subject project that are clearly documented, including comparisons to results in successful similar projects.
- (v) Possible reserves may be assigned where geoscience and engineering data identify directly adjacent portions of a reservoir within the same accumulation that may be separated from proved areas by faults with displacement less than formation thickness or other geological discontinuities and that have not been penetrated by a wellbore, and the registrant believes that such adjacent portions are in communication with the known (proved) reservoir. Possible reserves may be assigned to areas that are structurally higher or lower than the proved area if these areas are in communication with the proved reservoir.
- (vi) Pursuant to paragraph (a)(22)(iii) of this section, where direct observation has defined a highest known oil (HKO) elevation and the potential exists for an associated gas cap, proved oil reserves should be assigned in the structurally higher portions of the reservoir above the HKO only if the higher contact can be established with reasonable certainty through reliable technology. Portions of the reservoir that do not meet this reasonable certainty criterion may be assigned as probable and possible oil or gas based on reservoir fluid properties and pressure gradient interpretations.

(18) Probable reserves. Probable reserves are those additional reserves that are less certain to be recovered than proved reserves but which, together with proved reserves, are as likely as not to be recovered.

- (i) When deterministic methods are used, it is as likely as not that actual remaining quantities recovered will exceed the sum of estimated proved plus probable reserves. When probabilistic methods are used, there should be at least a 50% probability that the actual quantities recovered will equal or exceed the proved plus probable reserves estimates.
- (ii) Probable reserves may be assigned to areas of a reservoir adjacent to proved reserves where data control or interpretations of available data are less certain, even if the interpreted reservoir continuity of structure or productivity does not meet the





reasonable certainty criterion. Probable reserves may be assigned to areas that are structurally higher than the proved area if these areas are in communication with the proved reservoir.

- (iii) Probable reserves estimates also include potential incremental quantities associated with a greater percentage recovery of the hydrocarbons in place than assumed for proved reserves.
- (iv) See also guidelines in paragraphs (a)(17)(iv) and (a)(17)(vi) of this section.

(19) Probabilistic estimate. The method of estimation of reserves or resources is called probabilistic when the full range of values that could reasonably occur for each unknown parameter (from the geoscience and engineering data) is used to generate a full range of possible outcomes and their associated probabilities of occurrence.

(20) Production costs.

- (i) Costs incurred to operate and maintain wells and related equipment and facilities, including depreciation and applicable operating costs of support equipment and facilities and other costs of operating and maintaining those wells and related equipment and facilities, they become part of the cost of oil and gas produced. Examples of production costs (sometimes called lifting costs) are:
 - (A) Costs of labor to operate the wells and related equipment and facilities.
 - (B) Repairs and maintenance.
 - (C) Materials, supplies, and fuel consumed and supplies utilized in operating the wells and related equipment and facilities.
 - (D) Property taxes and insurance applicable to proved properties and wells and related equipment and facilities.
 - (E) Severance taxes.
- (ii) Some support equipment or facilities may serve two or more oil and gas producing activities and may also serve transportation, refining, and marketing activities. To the extent that the support equipment and facilities are used in oil and gas producing activities, their depreciation and applicable operating costs become exploration, development or production costs, as appropriate. Depreciation, depletion, and amortization of capitalized acquisition, exploration, and development costs are not production costs but also become part of the cost of oil and gas produced along with production (lifting) costs identified above.

(21) Proved area. The part of a property to which proved reserves have been specifically attributed.

(22) Proved oil and gas reserves. Proved oil and gas reserves are those quantities of oil and gas, which, by analysis of geoscience and engineering data, can be estimated with reasonable certainty to be economically producible—from a given date forward, from known reservoirs, and





under existing economic conditions, operating methods, and government regulations—prior to the time at which contracts providing the right to operate expire, unless evidence indicates that renewal is reasonably certain, regardless of whether deterministic or probabilistic methods are used for the estimation. The project to extract the hydrocarbons must have commenced or the operator must be reasonably certain that it will commence the project within a reasonable time.

- (i) The area of the reservoir considered as proved includes:
 - (A) The area identified by drilling and limited by fluid contacts, if any, and
 - (B) Adjacent undrilled portions of the reservoir that can, with reasonable certainty, be judged to be continuous with it and to contain economically producible oil or gas on the basis of available geoscience and engineering data.
- (ii) In the absence of data on fluid contacts, proved quantities in a reservoir are limited by the lowest known hydrocarbons (LKH) as seen in a well penetration unless geoscience, engineering, or performance data and reliable technology establishes a lower contact with reasonable certainty.
- (iii) Where direct observation from well penetrations has defined a highest known oil (HKO) elevation and the potential exists for an associated gas cap, proved oil reserves may be assigned in the structurally higher portions of the reservoir only if geoscience, engineering, or performance data and reliable technology establish the higher contact with reasonable certainty.
- (iv) Reserves which can be produced economically through application of improved recovery techniques (including, but not limited to, fluid injection) are included in the proved classification when:
 - (A) Successful testing by a pilot project in an area of the reservoir with properties no more favorable than in the reservoir as a whole, the operation of an installed program in the reservoir or an analogous reservoir, or other evidence using reliable technology establishes the reasonable certainty of the engineering analysis on which the project or program was based; and
 - (B) The project has been approved for development by all necessary parties and entities, including governmental entities.
- (v) Existing economic conditions include prices and costs at which economic producibility from a reservoir is to be determined. The price shall be the average price during the 12-month period prior to the ending date of the period covered by the report, determined as an unweighted arithmetic average of the first-day-of-the-month price for each month within such period, unless prices are defined by contractual arrangements, excluding escalations based upon future conditions.

(23) Proved properties. Properties with proved reserves.

(24) Reasonable certainty. If deterministic methods are used, reasonable certainty means a high degree of confidence that the quantities will be recovered. If probabilistic methods are used, there





should be at least a 90% probability that the quantities actually recovered will equal or exceed the estimate. A high degree of confidence exists if the quantity is much more likely to be achieved than not, and, as changes due to increased availability of geoscience (geological, geophysical, and geochemical), engineering, and economic data are made to estimated ultimate recovery (EUR) with time, reasonably certain EUR is much more likely to increase or remain constant than to decrease.

(25) Reliable technology. Reliable technology is a grouping of one or more technologies (including computational methods) that has been field tested and has been demonstrated to provide reasonably certain results with consistency and repeatability in the formation being evaluated or in an analogous formation.

(26) Reserves. Reserves are estimated remaining quantities of oil and gas and related substances anticipated to be economically producible, as of a given date, by application of development projects to known accumulations. In addition, there must exist, or there must be a reasonable expectation that there will exist, the legal right to produce or a revenue interest in the production, installed means of delivering oil and gas or related substances to market, and all permits and financing required to implement the project.

Note to paragraph (a)(26): Reserves should not be assigned to adjacent reservoirs isolated by major, potentially sealing, faults until those reservoirs are penetrated and evaluated as economically producible. Reserves should not be assigned to areas that are clearly separated from a known accumulation by a non-productive reservoir (i.e., absence of reservoir, structurally low reservoir, or negative test results). Such areas may contain prospective resources (i.e., potentially recoverable resources from undiscovered accumulations).

(27) Reservoir. A porous and permeable underground formation containing a natural accumulation of producible oil and/or gas that is confined by impermeable rock or water barriers and is individual and separate from other reservoirs.

(28) Resources. Resources are quantities of oil and gas estimated to exist in naturally occurring accumulations. A portion of the resources may be estimated to be recoverable, and another portion may be considered to be unrecoverable. Resources include both discovered and undiscovered accumulations.

(29) Service well. A well drilled or completed for the purpose of supporting production in an existing field. Specific purposes of service wells include gas injection, water injection, steam injection, air injection, salt-water disposal, water supply for injection, observation, or injection for in-situ combustion.

(30) Stratigraphic test well. A stratigraphic test well is a drilling effort, geologically directed, to obtain information pertaining to a specific geologic condition. Such wells customarily are drilled without the intent of being completed for hydrocarbon production. The classification also includes tests identified as core tests and all types of expendable holes related to hydrocarbon exploration.



Ecopetrol S.A.
February 24, 2022



Stratigraphic tests are classified as “exploratory type” if not drilled in a known area or “development type” if drilled in a known area.

(31) Undeveloped oil and gas reserves. Undeveloped oil and gas reserves are reserves of any category that are expected to be recovered from new wells on undrilled acreage, or from existing wells where a relatively major expenditure is required for recompletion.

- (i) Reserves on undrilled acreage shall be limited to those directly offsetting development spacing areas that are reasonably certain of production when drilled, unless evidence using reliable technology exists that establishes reasonable certainty of economic producibility at greater distances.
- (ii) Undrilled locations can be classified as having undeveloped reserves only if a development plan has been adopted indicating that they are scheduled to be drilled within five years, unless the specific circumstances, justify a longer time.
- (iii) Under no circumstances shall estimates for undeveloped reserves be attributable to any acreage for which an application of fluid injection or other improved recovery technique is contemplated, unless such techniques have been proved effective by actual projects in the same reservoir or an analogous reservoir, as defined in paragraph (a)(2) of this section, or by other evidence using reliable technology establishing reasonable certainty.

(32) Unproved properties. Properties with no proved reserves.





Appendix II

Technical Qualifications of Person Responsible for the Reserves Statement



Ecopetrol S.A.
February 24, 2022





The reserves estimate of certain of Ecopetrol's interests prepared by Gaffney, Cline & Associates (GaffneyCline), the results of which are presented in this report, was carried out by engineers and geoscientists under the direction of Mr. Eduardo Sanchez Josseaume.

Eduardo Sanchez J. is a Principal Advisor with GaffneyCline in Argentina and is responsible for preparing reserves audits, certifications and field evaluations. He was responsible for overseeing the preparation of the reserves estimate of certain Ecopetrol interests.

Mr. Sanchez has over 35 years of experience in the international oil and gas industry, with extensive experience in exploration, production and reservoir geosciences. He is qualified as a Reserves Auditor through having more than 30 years' experience in petroleum geology with estimation and evaluation of Reserves Information. He holds a Master of Science degree in Geological Sciences from Universidad Nacional de Buenos Aires, Argentina, and a Postgrad in Business Administration from International Business School, Neuquén Argentina.

Mr. Sanchez is a member in good standing of the American Association of Petroleum Geologists (AAPG).

A series of three horizontal, wavy lines in a light orange or tan color, spanning across the page.

Ecopetrol S.A.
February 24, 2022



Appendix III Glossary



Ecopetrol S.A.
February 24, 2022





%	Percentage
1H05	First half (6 months) of 2005 (example)
2Q06	Second quarter (3 months) of 2006 (example)
2D	Two dimensional
3D	Three dimensional
4D	Four dimensional
1P	Proved Reserves
2P	Proved plus Probable Reserves
3P	Proved plus Probable plus Possible Reserves
ABEX	Abandonment Expenditure
ACQ	Annual Contract Quantity
oAPI	Degrees API (American Petroleum Institute)
AAPG	American Association of Petroleum Geologists
AVO	Amplitude versus Offset
A\$	Australian Dollars
B	Billion (109)
Bbl	Barrels
/Bbl	per barrel
BBbl	Billion Barrels
BHA	Bottom Hole Assembly
BHC	Bottom Hole Compensated
Bscf or Bcf	Billion standard cubic feet
Bscfd or Bcfd	Billion standard cubic feet per day
Bm3	Billion cubic metres
bcpd	Barrels of condensate per day
BHP	Bottom Hole Pressure
blpd	Barrels of liquid per day
bpd	Barrels per day
boe	Barrels of oil equivalent @ xxx mcf/Bbl
boepd	Barrels of oil equivalent per day @ xxx mcf/Bbl
BOP	Blow Out Preventer
bopd	Barrels oil per day
bwpd	Barrels of water per day
BS&W	Bottom sediment and water

BTU	British Thermal Units
bwpd	Barrels water per day
CBM	Coal Bed Methane
CiO	Consumed in Operations
CO2	Carbon Dioxide
CAPEX	Capital Expenditure
CCGT	Combined Cycle Gas Turbine
cm	centimetres
CMM	Coal Mine Methane
CNG	Compressed Natural Gas
Cp	Centipoise (a measure of viscosity)
CSG	Coal Seam Gas
CT	Corporation Tax
D1BM	Design 1 Build Many
DCQ	Daily Contract Quantity
Deg C	Degrees Celsius
Deg F	Degrees Fahrenheit
DHI	Direct Hydrocarbon Indicator
DLIS	Digital Log Interchange Standard
DST	Drill Stem Test
DWT	Dead-weight ton
E&A	Exploration & Appraisal
E&P	Exploration and Production
EBIT	Earnings before Interest and Tax
EBITDA	Earnings before interest, tax, depreciation and
ECS	Elemental Capture Spectroscopy
EI	Entitlement Interest
EIA	Environmental Impact Assessment
ELT	Economic Limit Test
EMV	Expected Monetary Value
EOR	Enhanced Oil Recovery
EUR	Estimated Ultimate Recovery
FDP	Field Development Plan
FEED	Front End Engineering and Design
FPSO	Floating Production Storage and Offloading
FSO	Floating Storage and Offloading



FWL	Free Water Level
ft	Foot/feet
Fx	Foreign Exchange Rate
g	gram
g/cc	grams per cubic centimetre
gal	gallon
gal/d	gallons per day
G&A	General and Administrative costs
GBP	Pounds Sterling
GCoS	Geological Chance of Success
GDT	Gas Down to
GIIP	Gas Initially In Place
GJ	Gigajoules (one billion Joules)
GOC	Gas Oil Contact
GOR	Gas Oil Ratio
GRV	Gross Rock Volumes
GTL	Gas to Liquids
GWC	Gas water contact
HDT	Hydrocarbons Down to
HSE	Health, Safety and Environment
HSFO	High Sulphur Fuel Oil
HUT	Hydrocarbons up to
H2S	Hydrogen Sulphide
IOR	Improved Oil Recovery
IPP	Independent Power Producer
IRR	Internal Rate of Return
J	Joule (Metric measurement of energy) 1 kilojoule = 0.9478 BTU)
k	Permeability
KB	Kelly Bushing
KJ	Kilojoules (one Thousand Joules)
kl	Kilolitres
km	Kilometres
km2	Square kilometres
kPa	Thousands of Pascals (measurement of pressure)
KW	Kilowatt
KWh	Kilowatt hour
LAS	Log ASCII Standard
LKG	Lowest Known Gas

LKH	Lowest Known Hydrocarbons
LKO	Lowest Known Oil
LNG	Liquefied Natural Gas
LoF	Life of Field
LPG	Liquefied Petroleum Gas
LTi	Lost Time Injury
LWD	Logging while drilling
m	Metres
M	Thousand
m3	Cubic metres
Mcf or Mscf	Thousand standard cubic feet
MCM	Management Committee Meeting
MMcf or MMscf	Million standard cubic feet
m3/d	Cubic metres per day
mD	Measure of Permeability in millidarcies
MD	Measured Depth
MDT	Modular Dynamic Tester
Mean	Arithmetic average of a set of numbers
Median	Middle value in a set of values
MFT	Multi Formation Tester
mg/l	milligrams per litre
MJ	Megajoules (One Million Joules)
Mm3	Thousand Cubic metres
Mm3/d	Thousand Cubic metres per day
MM	Million
MMm3	Million Cubic metres
MMm3/d	Million Cubic metres per day
MMBbl	Millions of barrels
MMBTU	Millions of British Thermal Units
Mode	Value that exists most frequently in a set of values = most
Mscfd	Thousand standard cubic feet per day
MMscfd	Million standard cubic feet per day
MW	Megawatt
MWD	Measuring While Drilling
MWh	Megawatt hour
mya	Million years ago
NGL	Natural Gas Liquids
N2	Nitrogen



NTG	Net/Gross Ratio
NPV	Net Present Value
OBM	Oil Based Mud
OCM	Operating Committee Meeting
ODT	Oil-Down-To
OGIP	Original Gas in Place
OIIP	Oil Initially In Place
OOIP	Original Oil in Place
OPEX	Operating Expenditure
OWC	Oil Water Contact
p.a.	Per annum
Pa	Pascals (metric measurement of pressure)
P&A	Plugged and Abandoned
PDP	Proved Developed Producing
Phie	effective porosity
PI	Productivity Index
PIIP	Petroleum Initially In Place
PJ	Petajoules (1015 Joules)
PSDM	Post Stack Depth Migration
psi	Pounds per square inch
psia	Pounds per square inch absolute
psig	Pounds per square inch gauge
PUD	Proved Undeveloped
PVT	Pressure, Volume and Temperature
P10	10% Probability
P50	50% Probability
P90	90% Probability
RF	Recovery factor
RFT	Repeat Formation Tester
RT	Rotary Table
R/P	Reserve to Production
Rw	Resistivity of water
SCAL	Special core analysis
cf or scf	Standard Cubic Feet
cf/d or scf/d	Standard Cubic Feet per day
scf/ton	Standard cubic foot per ton
SL	Straight line (for depreciation)
so	Oil Saturation
SPM	Single Point Mooring

SPE	Society of Petroleum Engineers
SPEE	Society of Petroleum Evaluation
SPS	Subsea Production System
SS	Subsea
stb	Stock tank barrel
STOIIP	Stock tank oil initially in place
Swi	irreducible water saturation
sw	Water Saturation
T	Tonnes
TD	Total Depth
Te	Tonnes equivalent
THP	Tubing Head Pressure
TJ	Terajoules (1012 Joules)
Tscf or Tcf	Trillion standard cubic feet
TCM	Technical Committee Meeting
TOC	Total Organic Carbon
TOP	Take or Pay
Tpd	Tonnes per day
TVD	True Vertical Depth
TVDss	True Vertical Depth Subsea
UFR	Umbilical Flow Lines and Risers
USGS	United States Geological Survey
US\$	United States dollar
VLCC	Very Large Crude Carrier
Vsh	shale volume
VSP	Vertical Seismic Profiling
WC	Water Cut
WI	Working Interest
WPC	World Petroleum Council
WTI	West Texas Intermediate
wt%	Weight percent