

CREDIT OPINION

31 May 2024

Update

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RATINGS

Ecopetrol S.A.

Domicile	Bogota, Distrito Capital, Colombia
Long Term Rating	Ba1
Type	LT Issuer Rating - Dom Curr
Outlook	Stable

Please see the [ratings section](#) at the end of this report for more information. The ratings and outlook shown reflect information as of the publication date.

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Ecopetrol S.A.

Update following ratings downgrade to ba1; stable outlook

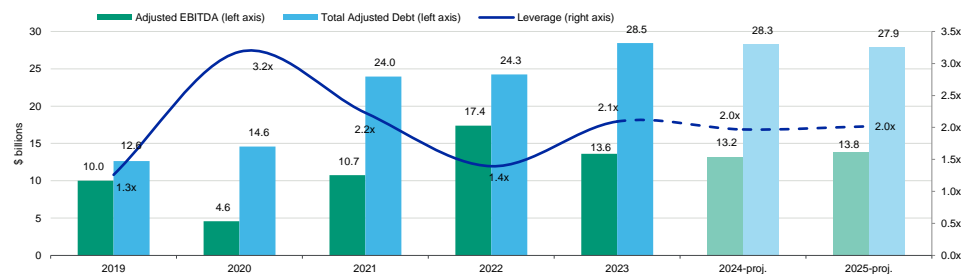
Summary

[Ecopetrol S.A.](#)'s (Ecopetrol, Ba1 stable) credit profile reflects the company's status as Colombia's leading oil and gas producer, accounting for about 60% of the country's production and 100% of oil product supply, as well its large power transmission business in Colombia and other countries in Latin America. We assume a high probability of support from the [Government of Colombia](#) (Baa2 stable) to Ecopetrol and a moderate default correlation between the two issuers. This assessment results in a three-notch uplift to Ecopetrol's senior unsecured rating to Ba1 from its b1 Baseline Credit Assessment (BCA), which reflects the company's intrinsic credit risk without support considerations.

Ecopetrol's b1 BCA also considers the company's increasing leverage, its ambitious investment plan and a more aggressive financial policy as it has distributed dividends above its policy of 40-60%. These factors are partially mitigated by its increasing production and a reduction on receivables related to the fuel subsidies received from the Fondo de Estabilización de Precios de los Combustibles (FEPC).

Exhibit 1

Leverage will continue increasing in the next 2-3 years per Moody's expectations



All figures and ratios are calculated using our estimates and standard adjustments. Projections (proj.) are our opinion and do not represent the views of the issuer. Periods are fiscal year end unless indicated.

Source: Moody's Financial Metrics™ and Moody's Ratings forecasts

Credit strengths

- » Leading oil and gas producer, accounting for about 60% of Colombia's production and the only provider of refined products in the country
- » Sizable production scale
- » More diversified cash flow stream after acquisition of power transmission company [Interconexión Eléctrica S.A. E.S.P.](#) (ISA, Baa2 stable)
- » Portfolio of valuable assets that can be relatively easily monetized, including [Oleoducto Central S.A.](#) (Ocensa, Ba1 stable)
- » High probability of support from the Colombian government

Credit challenges

- » Considerable exploration and production (E&P) operating costs, although in line with regional peers
- » Low production growth rate

Rating outlook

The stable outlook on Ecopetrol's ratings reflects Moody's view that its credit profile will remain mostly unchanged over the next 12-18 months. The stable outlook also reflects the stable outlook on the Government of Colombia's sovereign rating.

Factors that could lead to an upgrade

An upgrade on Ecopetrol's Ba1 ratings is unlikely over the next 12-18 months because Moody's expects the company's credit metrics to remain relatively stable.

However, if the company manages to strengthen its financial policies and simultaneously demonstrates ability to register recurrent positive free cash flow, reduce financial leverage while growing production and keeping proved reserve life at least stable, its ratings could be upgraded.

Specifically, its rating could be upgraded if the company's Leverage Full Cycle Ratio remains at 1.5 times, which would indicate stable finding and development costs, and retained cash flow/net debt would have to be over 40% on a sustained basis.

Factors that could lead to a downgrade

A ratings downgrade could occur if there is a deterioration in Ecopetrol's operating performance, including a significant decline of its reserve life on a sustained basis, or increasing liquidity risk or debt leverage from the current levels; or if retained cash flow/net debt declines to around 20%.

In addition, because Ecopetrol's ratings benefit from implicit support from the Government of Colombia, a negative action on the government's rating or a change in Moody's assumptions about government support could lead to a negative action on Ecopetrol's ratings.

This publication does not announce a credit rating action. For any credit ratings referenced in this publication, please see the issuer/deal page on <https://ratings.moody.com> for the most updated credit rating action information and rating history.

Key indicators

Exhibit 2

Ecopetrol S.A

US Millions	Dec-19	Dec-20	Dec-21	Dec-22	Dec-23	2024-proj.	2025-proj.
Average Daily Production (MBOE / Day)	655.7	639.8	623.7	648.9	669.4	678.9	688.6
Total Proved Reserves (MBOE)	1,868.3	1,743.8	1,974.2	1,986.3	1,862.0	1,874.4	1,887.0
Crude Distillation Capacity (mbbls/day)	404.8	404.8	404.8	464.8	464.8	464.8	464.8
Downstream EBIT/Total Throughput Barrels	1.5	-3.5	1.4	10.4	6.7	12.0	11.9
EBIT / Interest Expense	10.5x	2.5x	8.9x	10.0x	5.8x	5.5x	5.0x
RCF / Net Debt	28.4%	7.2%	35.0%	41.9%	38.5%	18.8%	24.2%
Debt / Book Capitalization	41.1%	47.6%	49.1%	47.4%	49.3%	47.2%	44.2%
EBIT / Avg. Book Capitalization	22.5%	6.6%	19.8%	27.0%	18.9%	18.4%	16.7%

Production is net of royalties. All figures and ratios are calculated using Moody's estimates and standard adjustments. Projections (proj.) are our opinion and do not represent the views of the issuer. Periods are Fiscal Year-End unless indicated.

Source: Moody's Financial Metrics™ and Moody's Ratings forecasts

Profile

Ecopetrol is the largest enterprise and the largest oil and gas company in the country, with upstream, midstream and downstream businesses. Its gross oil and gas production averaged close to 658.8 mboed, as calculated by Moody's, and its total assets amounted to \$72.7 billion as of 31 December 2023. Through its subsidiary ISA, Ecopetrol participates in energy transmission, in management of real-time systems (XM), and in a highway concession.

At the international level, Ecopetrol has a stake in strategic basins in the American continent, with drilling and exploration operations in the US (Permian and Delaware basins and the Gulf of Mexico), Brazil and Mexico. Ecopetrol America holds interests in four non-operated producing Assets (K2, Dalmatian, Gunflint & Esox). Through ISA and its subsidiaries, Ecopetrol holds leading positions in the power transmission business in Brazil, Chile, Peru and Bolivia, road concessions in Chile and the telecommunications sector.

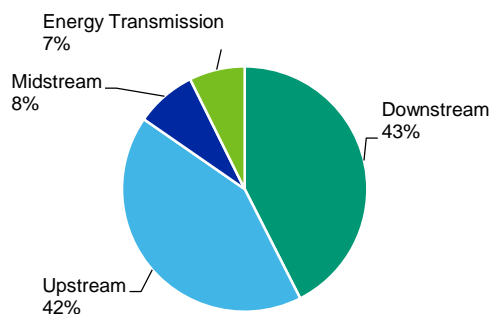
The Colombian government owns 88.5% of Ecopetrol's equity, through shares held by the Ministry of Finance and the balance is traded on the Colombian Securities Exchange since November 2007. Ecopetrol's ADRs are listed on the New York Stock Exchange since 2008. The company's market capitalization as of 31 December 2023 was \$24.5 billion.

Detailed credit considerations

Ecopetrol has leading upstream and downstream positions in Colombia

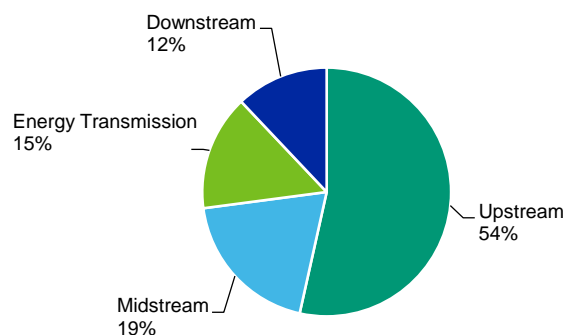
Ecopetrol is the leading oil and gas producer in Colombia, accounting for over 60% of the country's oil and gas reserves. In 2023, Ecopetrol's production reached 736.6 mboe, with Ecopetrol S.A. contributing 627.9 mboed and Ecopetrol subsidiaries contributing 108.7 mboed, according to the 20-F published by the company in April 2024. The company's crude production accounted for around 85% of its total production as of December 2023, with 1.9 billion boe of proven reserves in the same period. The company's average gross production equaled of 669.4 mboed in 2023 and increased to 672.3 as of March 2024 (after royalties).

Exhibit 3
Revenue by business segment
As of 31 December 2023



Source: Company filings

Exhibit 4
EBITDA breakdown by business segment
As of 31 December 2023



Source: Company filings

In addition to selling its own production, Ecopetrol purchases and trades the government's royalty crude, its own natural gas royalties and a portion of third-party production in Colombia. Ecopetrol is a medium-sized integrated oil company compared with its larger government-owned peers in Latin America.

In downstream, Ecopetrol owns all of the country's 464,800 barrels per day (bpd) of crude refining capacity through its four refineries (Barrancabermeja, Cartagena, Apiay and Orito). About 99% of the company's production comes from two refineries: the Barrancabermeja refinery, which accounts for 250,000 bpd and Reficar at Cartagena, which has a 210,000 bpd capacity. Ecopetrol is also the largest wholesale marketer in Colombia, with a virtually 100% market share, but does not engage in retail product marketing. In addition, the company is Colombia's largest petrochemical producer, with 480,000 tons of annual polypropylene capacity.

Ecopetrol indirectly owns and operates directly or in joint ventures around 9,000 kilometers of crude oil and refined product pipelines, equivalent to 82% of the Colombian pipeline network. This includes 100% or majority stakes in four of the largest crude pipelines, which connect field production to the refineries and to wholesale product and export terminals. Ocesa is a stable source of cash flow for Ecopetrol and provides a liquidity buffer as tariffs are for the most part set in US dollars.

We expect Ecopetrol's reserves and production to remain relatively stable

Ecopetrol's production growth has been relatively stable since 2016 but was hurt in 2020-21 because of the pandemic and social unrest in Colombia as well as other law and order situations. In 2021, Ecopetrol reported average gross production of 679 mboed, 2.6% lower than the 697 mboed reported in 2020 and 7% below the average of 725 mboed in 2019. This also affected the company's proved reserve, which fell to 1.8 billion mboe in 2020, 6% less than a year earlier. However, in 2021, following a recovery, Ecopetrol's reserves grew to 2.0 billion mboe as a result of development fields in Colombia and Permian operations in the US, reserve level that was maintained during 2022. During 2023, Ecopetrol completed the drilling of 23 wells, with an exploratory successful rate of 50%, resulting in 11 successful wells, which represented a year-on-year increase of 27.1 mboed, amid the entry into operations of the first fluid treatment train in the Caño Sur field, incremental production in the Permian and greater water management capacity in the Rubiales field.

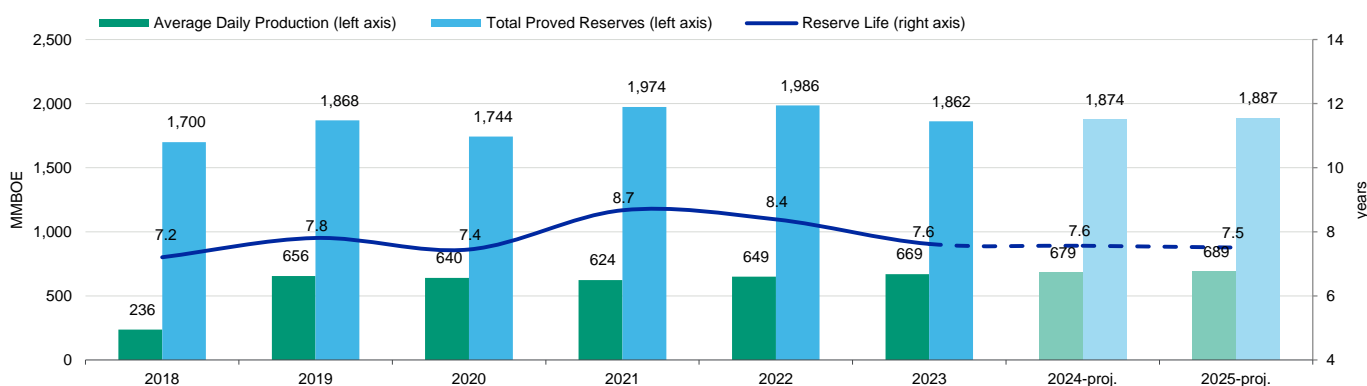
Last twelve months as of January 2024, Ecopetrol reported average production of 672.3 mboed after royalties, 3.6% and 0.5% higher than year end 2022 and 2023, respectively. We expect the company to maintain at least 2022 levels in 2024-25, with an increase rate in production similar to that seen in 2023. Ecopetrol's production is spread across various regions within Colombia, which helps protect the business against guerrilla attacks, common in the country. Certain geographic diversification in Colombia helps Ecopetrol adjust production in its portfolio of assets in the event of disruptions.

Ecopetrol's reserves are located 11% in the USA (Permian Basin) and 89% in Colombia. Proved reserves as of December 2023 decreased to around 1.9 billion mboe, from 2 billion in 2022. The company registered a 48% reserve replacement ratio for 2023, when in

comparison it has registered around 115% average reserve replacement ratio during the last 5 years. We anticipate that Ecopetrol will sustain its current reserve life at approximately 7.6 years (previously 8.3) through a robust reserve replacement strategy, and that its credit metrics will remain relatively stable in the foreseeable future. The company intends to persist in forging partnerships with large, technically proficient firms, facilitating the optimization of its enhanced recovery processes and cost reduction.

Exhibit 5

Ecopetrol's reserve life will remain adequate, above the average for the last seven years
Production and reserve life trend



Conversion rate of 6,000 cubic feet = 1 barrel of oil equivalent. Production is net of royalties. Projections (proj.) are our opinion and do not represent the views of the issuer. Periods are fiscal year end unless indicated.

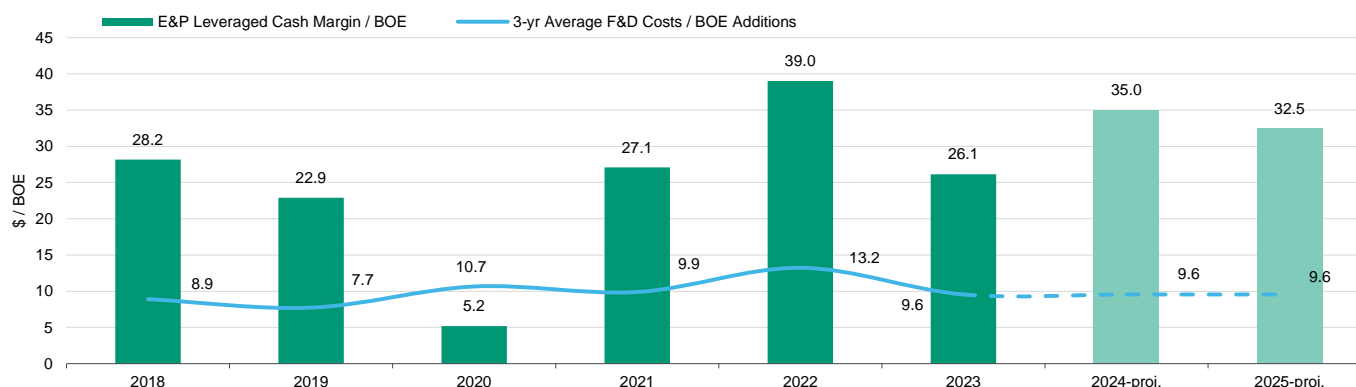
Sources: Moody's Financial Metrics™ and Moody's Ratings forecasts

The Colombian government is actively pursuing measures to diminish the nation's economic reliance on oil, a crucial industry for Colombia imposing certain constraints on oil exploration via fracking or new exploration and production concessions. Nevertheless, we anticipate that Ecopetrol's current concessions, along with its drilling and environmental permits, should ensure the stability of its oil production for a minimum of the next seven to eight years. Moreover, the government envisions natural gas as a transitional fuel in the progression towards more sustainable and renewable energy sources. Consequently, we foresee Ecopetrol persisting in the development of this business division.

Colombia has set a net-zero target for 2050 and is dedicated to achieving a 25% reduction in emissions by 2030. This aligns closely with Ecopetrol's commitment to net-zero emissions by 2050 (scopes 1 & 2) and its objectives to i. decrease CO2 emissions by 25% (Scope 1 and 2) by 2030 and ii. reduce Scope 1, 2, and 3 emissions by 50% by 2050, both relative to 2019 levels. To fulfill these targets, around 40% of Ecopetrol's capital expenditure is allocated towards initiatives that contribute to these goals, encompassing additional transmission lines, natural gas-related projects, and the exportation of heavy oil.

Exhibit 6

Ecopetrol's credit metrics are vulnerable to volatility in oil prices Leveraged cash margin, and finding and development cost evolution



Projections (proj.) are our opinion and do not represent the views of the issuer. Periods are fiscal year end unless indicated.
Sources: Moody's Financial Metrics™ and Moody's Ratings forecasts

Manageable debt refinancing despite more aggressive financial policies

During 2023 and 2024, Ecopetrol took longer than anticipated to refinance close to \$3.6 billion in debt maturing. This elevated refinancing risk reflects the company's more aggressive financial policy in the context of high global geopolitical risks and interest rates. However, we acknowledge that the company has the resources and approval from the Ministerio de Hacienda to refinance \$1.2 billion in bank loan maturities for 2024 and that the \$1.2 billion bonds maturing in 2025 have already been refinanced. Moody's-adjusted leverage equalled 2.1x in 2023 and we expect it to decrease to roughly 2.0x in 2024, given the refinancing strategy of the company and an expected higher EBITDA.

Ecopetrol's cash generation for 2024–2025, based on an estimated average Brent price of \$75 dollars per barrel, will decline from 2023 levels but its gross debt leverage should remain stable given lower working capital needs related to fuel subsidies. Since late 2022, local regulated gasoline prices have been gradually escalating to narrow the gap with the export parity price. Consequently, the monthly accumulation of accounts receivable from the Fuel Price Stabilization Fund (FEPC) has declined, from COP 37 billion in December 2022 to COP 20.5 billion as of December 2023.

The FEPC mechanism has had a negative impact on Ecopetrol's operational cash flow, diminishing its cash position, which, however, has remained strong enough to sustain the company's regular operations. Nevertheless, given the government's payment mechanisms, which encompass offsetting FEPC's accounts payable with accrued dividends, FEPC recovery has influenced decisions regarding payouts and reinvestment. The ongoing adjustment of local gasoline prices is a credit positive for Ecopetrol, enhancing its liquid resources available.

Moreover, after ISA's acquisition, Ecopetrol generates more stable EBITDA than that of Ecopetrol's oil and gas commodity business, which increases cash flow visibility for Ecopetrol. ISA's operations in Colombia, Brazil, Peru, Chile and Bolivia also reduce Ecopetrol's geographic concentration risk.

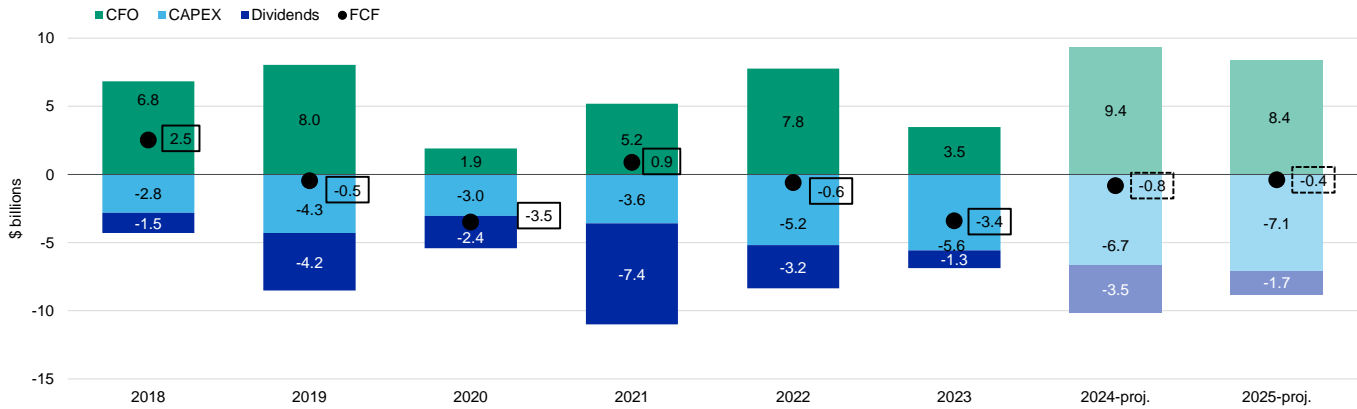
Free cash flow (FCF) will be negative in 2024 as a result of higher dividends and capital spending, but should recover somewhat in 2024-25

In 2020, Ecopetrol's FCF was negative by around \$3.5 billion as a result of lower prices and volumes, a consequence of the supply shock arising from geopolitical issues among global oil and gas producers and the demand shock caused by the pandemic. In 2021, higher oil prices boosted funds from operations close to pre-pandemic levels. In 2022, Ecopetrol's FCF was a result of the negative working capital, driven by account receivables related to government fuel subsidies, and the \$3.7 billion acquisition of ISA. For 2023, Ecopetrol had negative FCF again due the same negative working capital experienced in 2022 and an increase in capital expenditures for exploration, costs reduction, energy transition and reduction of emissions.

While robust oil and gas prices have helped Ecopetrol's cash generation in 2022 and 2023, we still expect the company's FCF to be negative by \$800 million in 2024, with dividend distributions of \$3 billion and capital spending of \$6.7 billion, according to our estimates. For 2024, we believe that, based on an estimated average Brent price of \$75/bbl, the company's cash flow will increase from 2023 levels. Additionally, in 2024, the company may face lower taxes, consequence of the tax reform adopted by Congress, applicable from 29th February 2024, and the reduction in fuel subsidy will improve the company's cash position.

Exhibit 7

Cash flow evolution



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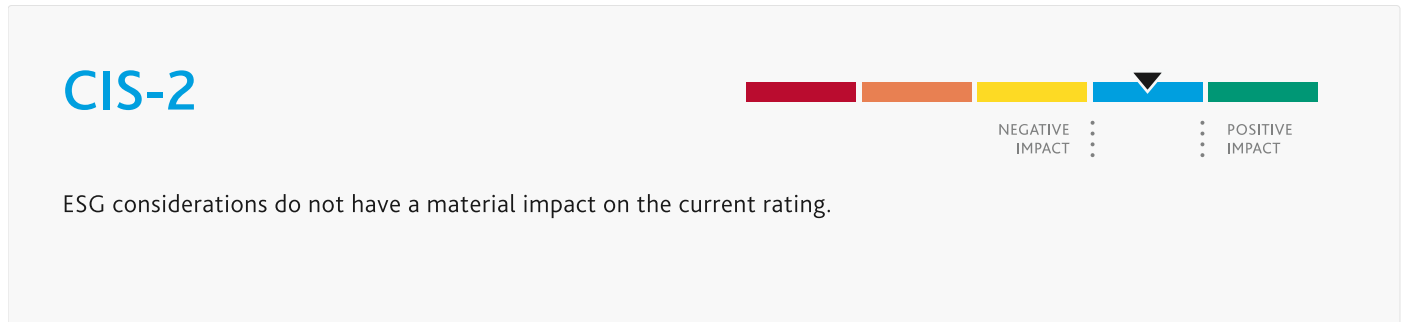
Sources: Moody's Financial Metrics™ and Moody's Ratings forecasts

ESG considerations

Ecopetrol S.A.'s ESG credit impact score is CIS-2

Exhibit 8

ESG credit impact score

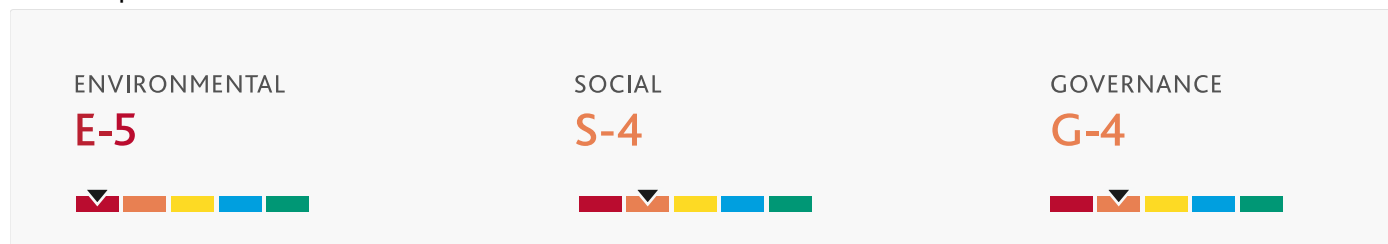


Source: Moody's Ratings

Ecopetrol's **CIS-2** indicates that ESG considerations have a limited impact on the current rating with potential for a greater negative impact over time. Ecopetrol is exposed to a very high carbon transition risk as integrated companies with high exposure to upstream business will face increasing pressure over time, particularly oil producers, as decarbonization efforts and the transition towards cleaner energy continues. The company is exposed to social risks mainly related to demographic and societal trends per societal and regulatory pressure to transition away from fossil fuels and toward cleaner energy sources.

Exhibit 9

ESG issuer profile scores



Source: Moody's Ratings

Environmental

Ecopetrol is exposed to environmental risks mainly driven by very high carbon transition risk, high natural capital risk, and high water management risks. Integrated companies with high exposure to upstream business will face increasing pressure over time, particularly oil producers, as decarbonization efforts and the transition towards cleaner energy continues. Ecopetrol has committed to become a zero net carbon emission company by 2050, to produce at least 1 million tons of low carbon hydrogen by 2040 and generate 900 MW of renewable energy by 2025. In 2023, Ecopetrol announced a methane emissions reduction target of 45% by 2025 and 55% by 2030, with respect to a 2019 baseline. This target applies to direct operations in the upstream. The company will invest around \$3 billion in 2024 to diversify the business into low emission activities - including investments in hydrogen production, renewable energy, carbon capture, and electrical transmission; to decarbonization; comprehensive water management; and fuel quality projects.

Social

Ecopetrol exposure to social risks mainly reflect demographic & societal pressures and responsible production. Factors somewhat mitigating these risks are its strong customer relations and human capital. Growing social awareness, rising political pressure over climate change, and technological progress could accelerate the energy transition, though the pace is currently limited by the lack of widespread availability of alternative clean fuels. In addition, investor pressure could lead to higher capital costs and restricted capital access over time.

Governance

Ecopetrol's governance risks are high and linked primarily to board structure, policies, and procedures, with some risk related to financial strategy and risk management as well. The Government of Colombia has roughly 88% ownership of Ecopetrol. Ecopetrol has distributed dividends above its distribution policy of 40-60% during the last three years.

ESG Issuer Profile Scores and Credit Impact Scores for the rated entity/transaction are available on Moodys.com. In order to view the latest scores, please click [here](#) to go to the landing page for the entity/transaction on MDC and view the ESG Scores section.

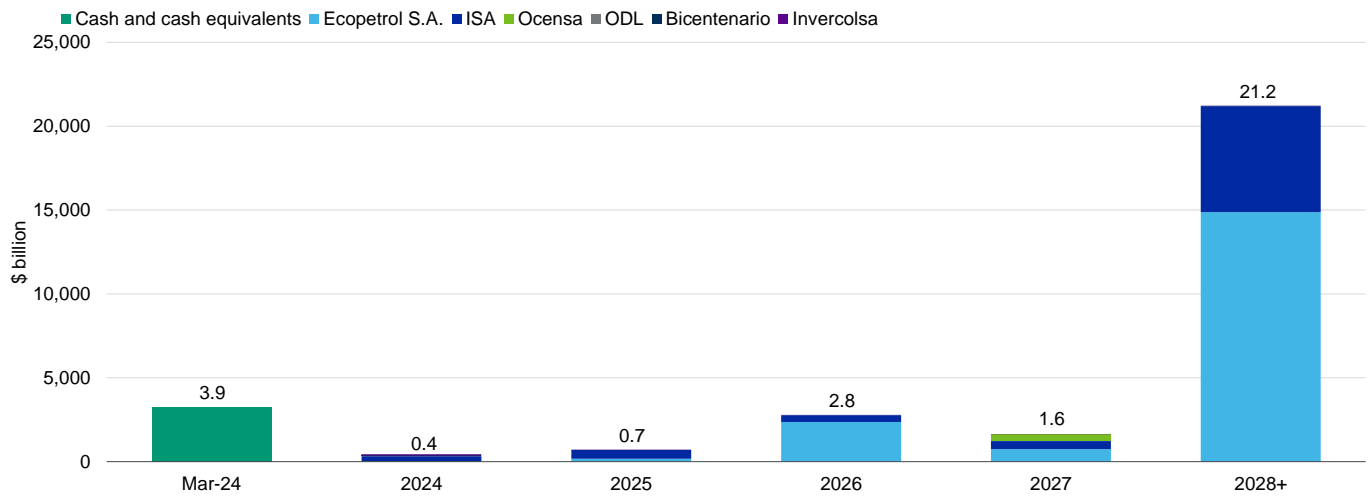
Liquidity analysis

Ecopetrol's liquidity position is adequate. The company had cash and equivalents of \$3.9 billion as of March 2024. We estimate cash flow from operations of close to \$9 billion in 2024, which contrasts with around \$2 billion in interest expenses, \$6.7 billion in capital spending, and \$3 billion in dividends distribution. For 2024 and 2025, Ecopetrol has refinanced all maturities, and is expected to start managing 2026 maturities for up to \$2.8 billion.

We believe that the company will be able meet its financial obligations in less than one year due to i. its access to global and Colombian capital markets and ii. government support. In addition, despite the exposure to volatile commodities prices, Ecopetrol counts on solid and relatively stable cash flow from its power transmission company, ISA and from its midstream subsidiary, Cenit SAS, which includes Ocesa.

Our analysis of Ecopetrol's liquidity also takes into consideration its flexible capital spending (which could be cut by 50% in a period of 12 months) and payment to shareholders. While Ecopetrol's dividend policy is to distribute cash to shareholders 40%-60% of net profit, we acknowledge the company has distributed a higher share in the last 3 years. For the last twelve months ending December 2023, the company paid \$5.6 billion and we expect a \$3 billion dividend to be paid during 2024.

Exhibit 10
Debt maturity profile
 As of March 2024



Source: Ecopetrol S.A.

Methodology and scorecard

The forward-looking scorecard-indicated outcome for factors 1-5 is Baa3, compared with Ecopetrol's b1 BCA. The Government Policy Factor — which is an indicator of the financial risk associated with government taxation and financial dependence on the company — adds three notches to the scorecard-indicated outcome and changes the outcome for the 12-18-month forward view to Ba3. The b1 BCA mainly considers the company's more aggressive financial policy.

Exhibit 11

Rating factors

Ecopetrol S.A.

Integrated Oil and Gas Industry [1][2]	Current LTM 03/31/2024		Moody's 12-18 Month Forward View As of 4/5/2024 [3]	
	Measure	Score	Measure	Score
Factor 1 : Scale (20%)				
a) Average Daily Production (Mboe / d)	672	A	679	A
b) Proved Reserves (MMboe)	1,862	Baa	1,874	Baa
c) Crude Distillation Capacity (Mbbls / d)				
Factor 2 : Business Profile (25%)				
a) Business Profile	Baa	Baa	Baa	Baa
Factor 3 : Profitability and Efficiency (10%)				
a) EBIT / Average Book Capitalization	17.8%	A	18.4%	A
b) Downstream EBIT / Total Throughput Barrels (\$ / bbl)	\$3.6	Ba	\$12.0	Aa
Factor 4 : Leverage and Coverage (25%)				
a) EBIT / Interest Expense	5.1x	Baa	5.5x	Baa
b) RCF / Net Debt	35.8%	A	18.8%	Ba
c) Total Debt / Book Capitalization	51.7%	Baa	47.2%	Baa
Factor 5 : Financial Policy (20%)				
a) Financial Policy	B	B		B
Rating:				
Scorecard-Indicated Outcome from Factors 1-5		Baa3		Baa3
Notching Factor: Government Policy Framework		3		3
a) Scorecard-Indicated Outcome After Notching Factor		Ba3		Ba3
b) Rating Assigned for non-GRIs or BCA Assigned for GRIs		b1		b1
Government-Related Issuer				Factor
a) Baseline Credit Assessment				b1
b) Government Local Currency Rating				Baa2
c) Default Dependence				Moderate
e) Actual Rating Assigned				Ba1

[1] All ratios are based on 'Adjusted' financial data and incorporate Moody's Global Standard Adjustments for Non-Financial Corporations.

[2] As of 12/31/2023.

[3] This represents Moody's forward view; not the view of the issuer; and unless noted in the text, does not incorporate significant acquisitions and divestitures.

Source: Moody's Financial Metrics™ and Moody's Ratings forecasts

Appendix

Exhibit 12

Moody's-Adjusted Debt Breakdown Ecopetrol S.A.

(in US Millions)	FYE Dec-18	FYE Dec-19	FYE Dec-20	FYE Dec-21	FYE Dec-22	FYE Dec-23	LTM Mar-24
As Reported Debt	11,720.6	11,652.9	13,662.3	23,356.5	23,744.6	27,314.3	28,126.2
Pensions	549.2	977.2	924.6	609.4	509.9	1,145.5	1,148.1
Operating Leases	105.1	0.0	0.0	0.0	0.0	0.0	0.0
Moody's-Adjusted Debt	12,374.9	12,630.1	14,586.9	23,965.9	24,254.5	28,459.8	29,274.3

All figures & ratios are calculated using our estimates & standard adjustments. FYE = Fiscal Year-End.

Source: Moody's Financial Metrics™

Exhibit 13

Moody's-Adjusted EBITDA Breakdown Ecopetrol S.A.

(in US Millions)	FYE Dec-18	FYE Dec-19	FYE Dec-20	FYE Dec-21	FYE Dec-22	FYE Dec-23	LTM Mar-24
As Reported EBITDA	10,639.6	9,659.8	4,632.5	10,602.6	17,037.4	13,752.3	13,479.9
Pensions	208.2	190.7	201.1	243.9	210.5	317.2	314.1
Unusual	-258.8	-266.9	-309.2	0.0	0.0	-558.9	-553.6
Non-Standard Adjustments	226.8	440.7	59.1	-97.4	147.5	0.0	0.0
Moody's-Adjusted EBITDA	10,815.9	10,024.2	4,583.6	10,749.1	17,395.4	13,510.5	13,240.5

All figures & ratios are calculated using our estimates & standard adjustments. FYE = Fiscal Year-End.

Source: Moody's Financial Metrics™

Ratings

Exhibit 14

Category	Moody's Rating
ECOPETROL S.A.	
Outlook	Stable
Issuer Rating -Dom Curr	Ba1
ATP TOWER HOLDINGS, LLC	
Outlook	Stable
Corporate Family Rating	Ba3
Bkd Senior Secured	Ba3
INTERCONEXION ELECTRICA S.A. E.S.P.	
Outlook	Stable
Issuer Rating	Baa2
Senior Unsecured	Baa2
OLEODUCTO CENTRAL S.A.	
Outlook	Negative
Senior Unsecured	Baa3

Source: Moody's Ratings

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