Content

1. INTRODUCTION 1
2. GENERAL CONSIDERATIONS 2
2.1 SCOPE 2
2.2 OBJECTIVE 2
2.3 ASSOCIATED DOCUMENTS 2
2.4 REGULATORY FRAMEWORK 3
3. BUSINESS CONTEXT 4
3.1 CORPORATE STRATEGY 4
3.2 MATERIALITY ANALYSIS 5
3.3 CLIMATE CHANGE ROADMAP 7
3.4 BUSINESS RISKS 8
4. MITIGATION COMPONENT 8
4.1 MANAGEMENT OF GHG EMISSIONS INFORMATION 9
4.1.1 Organizational Boundary 9
4.1.2 GREENHOUSE GASES (GHG) 9
4.1.3 Emissions estimation methodology 9
4.1.4 Base year 11
4.1.5 Technological tools 11
4.1.6 GHG emissions inventory – Ecopetrol 11
4.1.6.1 Scopes 1 and 2 emissions 11
4.1.6.2 Scope 3 emissions 12
4.1.7 GHG inventory verification 13
4.2 GHG EMISSION REDUCTION 13
4.2.1 GE emissions (base year) 13
4.2.2 Emission Reduction Technological Levers 14
4.2.3 Analysis for the monitoring of the 2030 emission reduction target for the EG 16
4.2.4 Analysis for the monitoring of the 2050 emission reduction target for the EG 18
4.2.5 Progress in GHG emission reduction 20
4.3 STRATEGIC PORTFOLIO MANAGEMENT 20
5. OFFSETTING COMPONENT 22
6. ADAPTATION COMPONENT 24
6.1 CLIMATE RISK INDEX METHODOLOGY (CRI) 27
6.2 CRI RESULTS 29
6.3 ADAPTATION MEASURES PORTFOLIO 30
7. GOVERNANCE COMPONENT 34
7.1 APPROPRIATION OF CLIMATE CHANGE ISSUES 34
7.1.1 Relationship map and identification of needs 35
7.1.2 Global initiatives and commitments 36
7.2 FINANCIAL MEANS FOR THE IMPLEMENTATION OF MITIGATION AND ADAPTATION ACTIONS 37
7.3 DISCLOSURE OF CLIMATE-RELATED ISSUES AND METRICS 38

1. INTRODUCTION

Ecopetrol S.A. (hereinafter Ecopetrol) has defined climate change as a material issue, considering its direct impact on operations, infrastructure, the sustainability of the company and the expectations of the different stakeholders. In this sense, climate change management is developed based on a corporate roadmap that comprehensively incorporates the components of decarbonization (hereinafter, mitigation), compensation and adaptation, in alignment with the long-term strategy to 2040.

The **mitigation component** includes the management of information associated with Greenhouse Gas emissions (hereinafter, GHG), the analysis of scenarios for the fulfillment of corporate decarbonization goals and the identification, evaluation and implementation of emission reduction opportunities, as well as the strategic management of the company's portfolio of assets. This approach makes it possible to guide decision-making and the prioritisation of actions that contribute to avoiding the increase and promoting the progressive reduction of GHG emissions, in line with the strategy and the transition towards a lower carbon intensity energy model. In a complementary manner, and in application of the principle of the mitigation hierarchy, which prioritizes the direct reduction of emissions at the source, the company has developed an **offsetting component** focused on managing residual emissions that it is not technically or economically feasible to reduce in the short and medium term, while generating environmental benefits. additional social and territorial developments, strengthening ecosystem resilience, local development, and the integrity of the environmental strategy.

For its part, the **adaptation component** is aimed at managing the physical risks associated with climate change, considering the potential impacts on operations, infrastructure and territories where the company operates, derived from the increase in global average temperature and variations in climatic conditions, particularly in terms of precipitation and temperature. This component incorporates climate risk analyses at the regional level from the perspective of exposure, sensitivity and adaptive capacity in the face of threatening factors. In addition, transition risks associated with the speed and depth of the decarbonization processes and their possible impact on the company's asset portfolio are identified and assessed.

Climate change management at Ecopetrol is strengthened through cross-cutting axes that promote articulation with the supply chain; the commercialization of carbon offset products or products with lower emission intensities; dissemination, communication and relations with the different stakeholders; participation in regulatory and public policy processes; and the development of science, technology and innovation, which leverage the company's climate ambition and the structuring of alternatives for access to sustainable financing.

In accordance with the guidelines for the formulation of the **Comprehensive Business Climate Change Management Plan (PIGCCe by its Spanish acronym),** issued by the Ministry of Mines and Energy, this document integrates a governance component that defines the means of implementation at the technical, human and financial levels, and responds to the recommendations of the main frameworks, metrics and standards related to climate change management.

The information contained herein reflects the most recent analyses of each of the components of the PIGCCe and is conceived as a dynamic instrument, which can be updated according to changes in the regulatory, strategic or technical environment that affect Ecopetrol's climate management.

2. GENERAL CONSIDERATIONS

2.1 SCOPE

To communicate Ecopetrol's management approach to climate change to stakeholders, in order to maintain a low-carbon operation that is resilient to the effects of climate change.

This plan is intended for Ecopetrol S.A. (hereinafter referred to as *Ecopetrol*). However, given that Ecopetrol is the parent company, holding company, or investor in the entities that make up the Ecopetrol Group (hereinafter referred to as *GE*), the information related to the 2040 Corporate Strategy and the greenhouse gas emissions reduction targets applies at the GE level.

2.2 OBJECTIVE

To establish and communicate objectives, actions, and progress related to mitigation, compensation, and adaptation, based on scenario analysis and the application of climate change management methodologies, in alignment with the GE's 2040 Corporate Strategy.

2.3 ASSOCIATED DOCUMENTS

The documents associated with climate change management at Ecopetrol are listed below.

- HSE-P-038 Procedure for the Quantification and Reporting of Atmospheric Emissions in Ecopetrol S.A.
- HSE-I-108 Instructions for uploading information to the Atmospheric Emissions Management System – SIGEA.
- HSE-F-587 SIGEA Facility Update Form.
- HSE-F-588 SIGEA Data Capture Format.
- HSE-F-589 Atmospheric Emissions Capture and Air Quality Monitoring Format.
- HSE-G-144 Guide for the definition of guidelines for the implementation of the LDAR (Leak Detection and Repair) Program.
- HSE–G-145 Guide for the implementation of the "Zero Routine Flaring by 2030" Initiative.
- HSE-H-017 Curriculum Vitae of the Greenhouse Gas Emissions Reduction Indicator – GHG.
- HSE-H-066 Methane (CH4) Emission Reduction Indicator Resume
- HSE-G-174 Guide for Offsetting Greenhouse Gas Emissions.

Other documents:

- ISO 14064-1 Greenhouse gases — Part 1: Specification with guidance, at the organizational level, for the quantification and reporting of greenhouse gas emissions and removals.
- Greenhouse Gas Protocol – Corporate Accounting and Reporting Standard (*World Resource Institute*).
- Assessment Reports of the United Nations Intergovernmental Panel on Climate Change (AR5 – AR6).
- IFRS S2- Reference Framework for Climate Risk Management and Disclosure of the International Sustainability Standards Board (ISSB).

2.4 REGULATORY FRAMEWORK

This document was prepared with reference to the following national and international standards, regulatory frameworks, and policy instruments:

a. International public policy instruments:

- United Nations Framework Convention on Climate Change (UNFCCC) 1992.
- Paris Agreement (2015).

b. National public policy instruments:

- National Plan for Adaptation to Climate Change.
- Colombia's National Climate Change Policy.
- Colombia's Long-Term Climate Strategy to comply with the Paris Agreement (E2050).

c. National regulatory framework:

- Law 164 of 1994, which approves the United Nations Framework Convention on Climate Change.
- Law 1523 of 2012, which adopts the national disaster risk management policy and establishes the National Disaster Risk Management System and dictates other provisions.
- Decree 298 of 2016, which establishes the organization and operation of the National Climate Change System and dictates other provisions.
- Law 1819 of 2016 (Structural Tax Reform), which creates the national carbon tax.
- Decree 926 of 2017, which established the procedure for the non-causation of the national carbon tax.
- Law 1844 of 2017, which approves the "Paris Agreement".
- Resolution 1447 of 2018, which regulates the monitoring, reporting and verification system.
- Law 1931 of 2018, which establishes guidelines for the management of climate change.
- Law 2169 of 2021, which promotes the country's low-carbon development by establishing minimum goals and measures in terms of carbon neutrality and climate resilience and other provisions are issued.
- Resolution 40807 of 2018, which adopts the Comprehensive Climate Change Management Plan for the Mining and Energy Sector – PIGCCme (by its acronym Spanish).
- Resolution 40350 of 2021, which modifies the Comprehensive Plan for the Management of Climate Change of the Mining and Energy sector.
- Resolution 40066 of 2022, which establishes technical requirements for the detection and repair of leaks, the use, flaring and venting of natural gas during hydrocarbon exploration and exploitation activities.
- Resolution 948 of 12 of 2022, which adopts the "Rules for the Delivery of the baseline of natural gas leaks and the Delivery and Report of the Leak Detection and Repair Program by the operators of the hydrocarbons sector of the National Hydrocarbons Agency – ANH (by its acronym Spanish)".
- Resolution 40317 of 2023, amending Resolution 40066 of 2022
- Resolution 0839 of 2023, which issues a new regulation in relation to the Information Subsystem on the Use of Renewable Natural Resources – SIUR and the Single Environmental Registry – RUA and the adoption of the Protocol for the Monitoring and Follow-up of the SIUR for the productive sectors and the Registry of Emissions and Transfer of Pollutants – RETC (by its acronym Spanish).
- Resolution 40537 of 2024, which establishes measures regarding the exploration and production of hydrocarbons (Article 61).

3. BUSINESS CONTEXT

As a leading company in the national energy sector, Ecopetrol has been consolidating a comprehensive approach to climate change management, progressively integrating it into its corporate strategy, business model, and decision-making processes. The company acknowledges its responsibility to mitigate greenhouse gas (GHG) emissions, prioritizing actions aimed at GHG reduction, energy efficiency, and progress toward the transition to a more diversified and low-carbon energy portfolio.

In addition, Ecopetrol recognizes its exposure to the physical and transition risks associated with climate change, as well as the need to strengthen its adaptive capacity in response to climate variability and change. These impacts may affect operational continuity, water security, biodiversity, and the sustainability of the territories in which the company operates.

Within this context, the formulation of the Climate Change Management Plan (PIGCCe, by its acronym Spanish) constitutes a strategic instrument to articulate, prioritize, and ensure coherence among mitigation and adaptation actions. The Plan not only enables proactive management of climate-related risks but also allows the company to leverage opportunities to enhance competitiveness, operational resilience, and value creation in the short, medium, and long term.

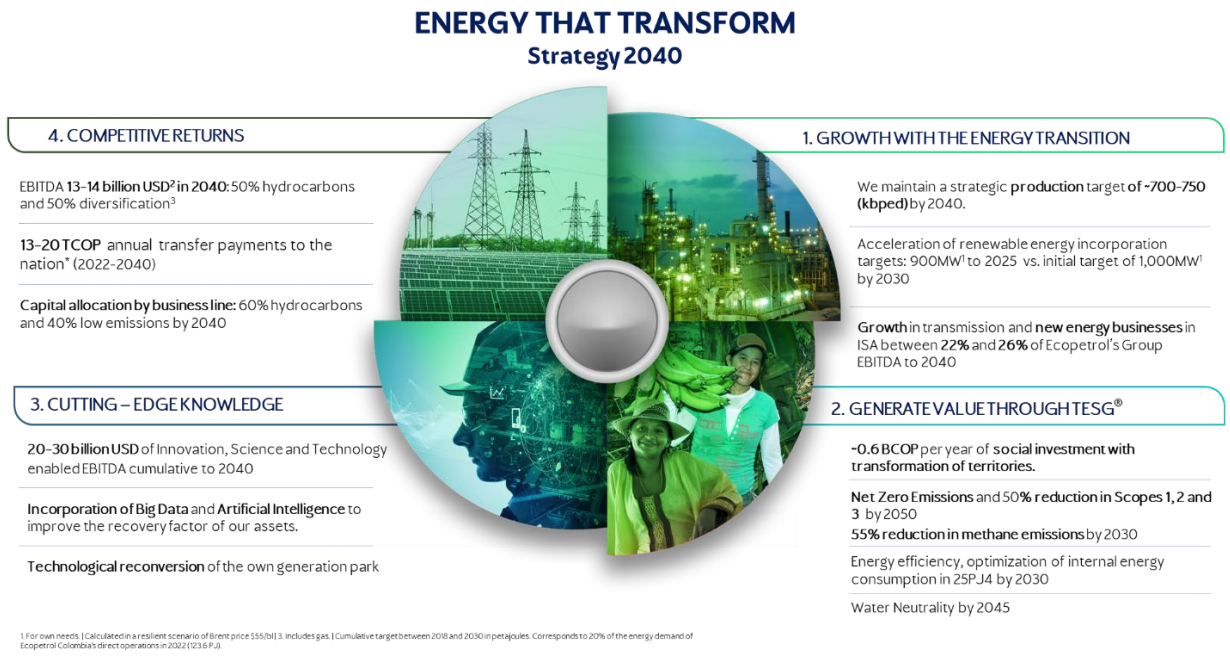
3.1 CORPORATE STRATEGY

The 2040 Strategy: *Energy that Transforms* represents the GE's long-term vision to lead a fair and equitable energy transition, while ensuring sustainability, competitiveness, and long-term resilience. This vision is built on four strategic pillars: (1) Growing with the Energy Transition, by preserving the competitiveness of the hydrocarbons business and diversifying revenue generation toward low-emission businesses; (2) Generating Value with Sustainability®, by promoting decarbonization, biodiversity protection, and integrated water management;; (3) Cutting-edge Knowledge, leveraging science, technology, and innovation as key enablers of transformation; and (4) Competitive Returns, ensuring capital discipline and the creation of economic and social value.

This Strategy seeks to position GE as a multi-energy conglomerate and a leader in the energy transition in the Americas, with a presence across the hydrocarbons, transmission, and new energy solutions businesses. This transformation aims to diversify the electron and low-emission molecule businesses, while reaffirming the commitment to decarbonization and value creation in the territories where it operates.

Designed to respond to market dynamics and adapt to an ever-changing environment, GE's Strategy seeks to meet the expectations of IGs, manage current and future challenges, and leverage emerging opportunities to ensure sustainable, economically viable, and responsible growth. Figure 1 presents a summary of the Long-Term Strategy and the corporate scope goals of each of its pillars.

Figure 1. GE Long-Term Strategy [1]



Source: Ecopetrol internal information, 2023

The Group has incorporated analyses related to the achievement of decarbonization goals into its strategic planning, anticipating regulatory scenarios and the gradual transformation of the business through portfolio diversification toward renewable energy, hydrogen, and biofuels. These initiatives not only contribute to emissions reduction but also generate value, strengthen operational resilience, and promote socioeconomic development in the regions where the company operates.

The 2040 Strategy not only defines the pillars for business transformation but also recognizes the importance of integrating stakeholder expectations and identifying risks and opportunities in corporate decision-making derived from materiality analysis and the perception of different actors.

3.2 MATERIALITY ANALYSIS

The Generating Value with TESG pillar of the 2040 Strategy leads GE's sustainability agenda, supporting the achievement of the Sustainable Development Goals (SDGs) and driving value creation across its business lines. Through a materiality approach, this pillar strengthens strategic objectives and performance metrics by prioritizing Environmental, Social, and Governance (ESG) issues that are most relevant to the Company.

The materiality analysis is based on the adoption of a double (dual) materiality approach, which enables a comprehensive perspective on sustainability management. This approach assesses both the impact of ESG matters on Ecopetrol's financial performance, strategic objectives, and corporate reputation, as well as the Company's impact on society and the environment. In doing so, it promotes responsibility, transparency, and accountability in engagement with stakeholders. As a result of this analysis, climate change was identified as a material issue for the Company. Figure 2 presents the results of the double materiality assessment.

[1] For further information, please see the following link. https://www.ecopetrol.com.co/wps/portal/Home/strategy2040/

Figure 2. Results of the 2023 Double Materiality Analysis

Source: Ecopetrol internal information, 2024

Likewise, four (4) issues were identified which, due to their transversal nature within Ecopetrol's strategy, were not classified as material topics. Instead, they are recognized as strategic and enabling elements that support the effective management of material matters. These issues are Just Energy Transition, CCRIular Economy, Human Rights, and Corporate Governance.

As a complementary exercise, an analysis was conducted to examine the relationships among ESG issues—classified as very strong, strong, or medium—in relation to their nature and the actions associated with each. This analysis underscores the importance of managing these issues in an integrated manner, recognizing that actions undertaken in one area may generate impacts on others. Such interconnections create opportunities to maximize outcomes and optimize efforts. In the case of climate change, a very strong relationship was identified with material environmental issues—including water, biodiversity, air quality, and materials and waste—as well as strong and medium relationships with other ESG topics. Figure 3 presents the results of the analysis of interrelationships among material matters.

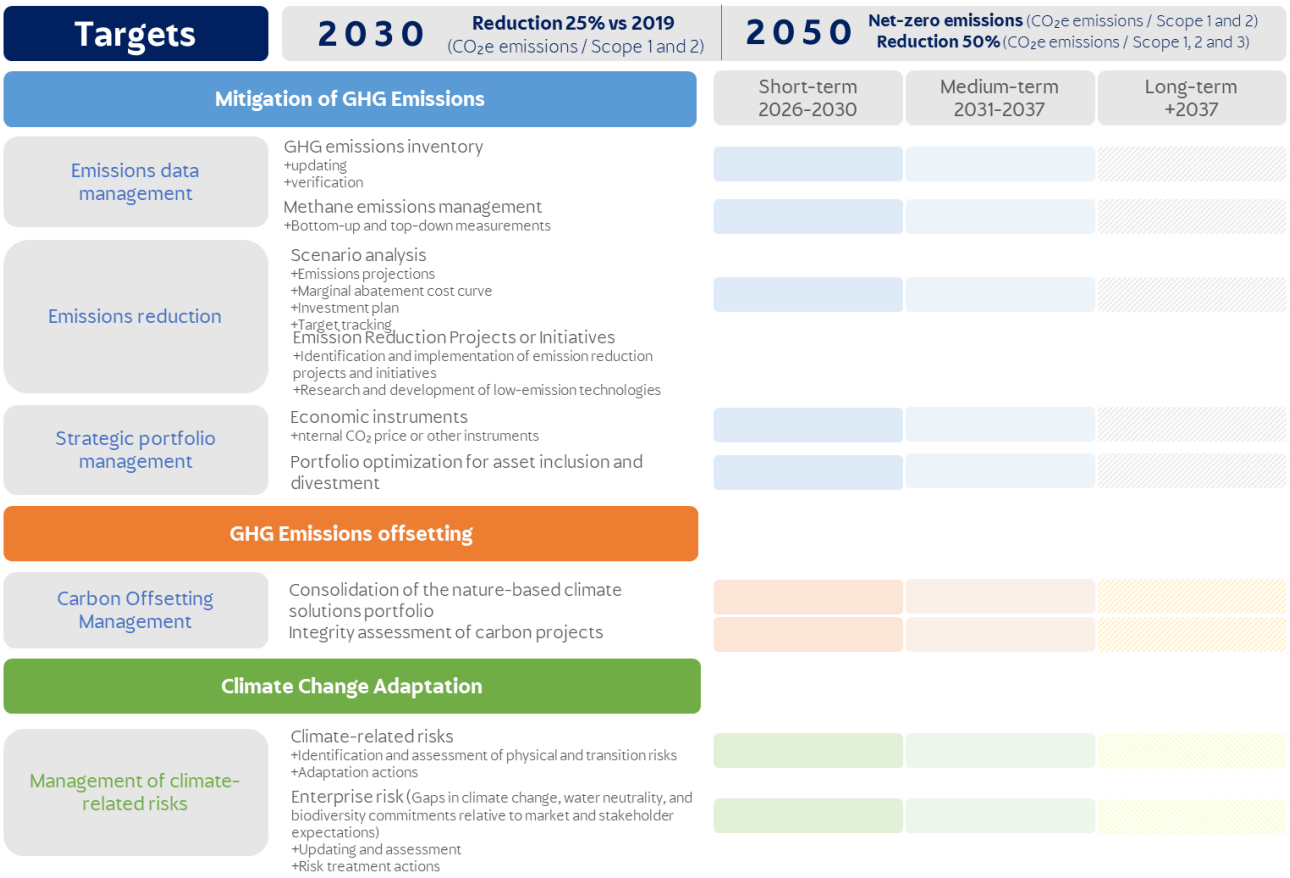
Figure 3. Relationships among ESG Matters

Source: Ecopetrol internal information, 2023

3.3 CLIMATE CHANGE ROADMAP

Based on the results of the materiality assessment and the analysis of interrelationships among ESG issues, long-term roadmaps were developed for each material matter, incorporating the full range of interconnections between ESG elements. These roadmaps define the actions, timelines, and resources required for effective management at the strategic, tactical, and operational levels. Figure 4 presents the climate change roadmap, which integrates mitigation, offsetting, and adaptation components.

Figure 1. Ecopetrol Climate Change Roadmap



Source: Ecopetrol internal information, 2025

The actions identified for the medium and long term are indicative in nature, as their development depends on a range of internal factors related to strategic, operational, and financial planning that are not fully controllable at present, as well as external factors associated with regulatory frameworks, technological advances, and market evolution. Nevertheless, these actions will be periodically reviewed and adjusted to ensure their technical coherence, alignment, and feasibility, in accordance with changing contextual conditions and cCRIumstances.

3.4 BUSINESS RISKS

The GE has an Integrated Risk Management System (IRS), designed to anticipate and manage uncertainty that may affect the fulfillment of its strategic, operational, and financial objectives. This system enables risk mitigation, the leveraging of opportunities, and informed decision-making, in accordance with international standards such as ISO 31000:2018, ensuring consistency across all levels of management: strategic, tactical, and operational. The IRS establishes a common framework for identifying, assessing, prioritizing, and monitoring risks that impact the business and the value chain, including climate-related risks.

Under the IRS, depending on the level at which risks are managed, risks are classified as strategic, tactical, and operational, taking into account the specific regulations and standards adopted. Climate-related risk management is fully integrated into this system through a cycle that encompasses planning, identification, evaluation, treatment, communication, monitoring, and recording. This process ensures periodic reviews, consistent metrics, and controls aligned with the tolerance levels defined by the Company, applying specific methodologies for physical and transition risks. The evaluation combines qualitative and quantitative approaches, supported by Risk Assessment Matrices (RAM) approved by the Board of Directors, which consider probability and impact across dimensions such as people, the environment, economic resources, reputation, and customers.

In 2025, the Business Risk Map prioritized the risk associated with delays in the implementation of commitments in response to market expectations and stakeholder demands, linked to the promise of Generating Value with Sustainability® in relation to climate change, water, and biodiversity. This risk considers factors such as energy transition, regulatory requirements, changing environmental conditions, and pressures to achieve financial goals. For its management, causes, consequences, and specific action plans were defined in the areas of decarbonization, water neutrality, and biodiversity and ecosystem services, with the objective of increasing the resilience of operations and infrastructure.

Further information: https://www.ecopetrol.com.co/wps/portal/Home/en/Ourcompany/about-us/risk-management

4. MITIGATION COMPONENT

GHG emissions in Colombia represent a small fraction of the global total (<1%); however, their internal dynamics constitute a critical element of national environmental and climate policy, given the country's high vulnerability to the impacts of climate change. According to the National Inventory of Atmospheric Emissions and Removals (2021) [2], Colombia's total emissions reached 303 $MtCO_2e$, distributed across the following sectors: LULUCF (Forestry, Land Use and Land-Use Change) 39.5%, Energy 30.2%, Agriculture 19.1%, Waste 7.3%, and IPPU (Industrial Processes and Product Use) 3.9%. Within the energy sector, the transportation subcategory accounts for 46.0%, energy industries for 21.4%, and oil and natural gas and other energy-related emissions for 5.4%. The remaining percentage corresponds to other activities.

In this context, Colombia has progressively increased its climate ambition. In its most recent Nationally Determined Contribution (NDC 3.0), the country committed to limiting its emissions to a maximum range of 155–161 $MtCO_2e$ by 2035. For the energy sector, this commitment is framed within a transition toward a fair, gradual, and equitable energy transition, promoting low-emission energy sources, optimizing electricity demand, and decarbonizing the oil and gas sector.

[2] BTR1_Colombia_Annex1_NIR.pdf

In response to this ambition, the GE committed to achieving net-zero carbon emissions by 2050 and to reducing its Scope 1 and 2 emissions by 25% by 2030, compared to 2019 levels. In addition, the GE committed to reducing its combined Scope 1, 2, and 3 emissions by 50% by 2050.

4.1 MANAGEMENT OF GHG EMISSIONS INFORMATION

Ecopetrol estimates the GHG emissions inventory in accordance with the guidelines established in the Greenhouse Gas Protocol for Corporate Inventories (GHG Protocol) and in the Colombian Technical Standard NTC ISO 14064-1, relating to the quantification and reporting of emissions at the organizational level. Likewise, the company is making progress in the methodological strengthening of its quantification system, to incorporate the additional requirements established in the 2020 version of the ISO 14064-1 standard, aimed at improving data traceability, transparency of quantification assumptions, robustness in the identification of uncertainties and consistency of the corporate reporting system.

4.1.1 Organizational Boundary

Ecopetrol adopts the "Operational Control" consolidation criterion, which accounts for 100% of the emissions generated in all facilities where the companyexercises authority to establish and applyoperational, safety and environmental policies, regardless of whether or not it owns the asset, with a bottom-up approach. This approach offers several key benefits: (i) full traceability from each reported issueto its primary data source; (ii) greater accuracyin capturing actual operating conditions, such as fuel profiles, maintenance practices, and process variations; (iii) greater robustness of the inventory, by having measurable and verifiable records and evidence per point of issuance; (iv) more effective management of uncertainty, by allowing the identification and prioritization of the sources that contribute most to the error rate; and (v) strengthening continuous improvement, by enabling year-on-year comparisons by team or unit that guide the design of specific action plans. In line with the above, Ecopetrol S.A.'s inventory considers the emissions associated with the Barrancabermeja and Cartagena refineries in the downstream segment and the operated assets in the upstream segment.

4.1.2 GREENHOUSE GASES (GHG)

The corporate GHG inventory includes emissions of carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O), considered the gases of greatest relevance and incidence in the operations of the oil and gas sector, as indicated by the *American Petroleum Institute* (API) in Chapter 2 of its methodological compendium (2021). Emissions are expressed in terms of CO_2 equivalent, using the global warming potentials (GWPs) set out in the IPCC's Fifth Assessment Report (AR5) for a 100-year horizon, ensuring consistency with internationally accepted standards.

In addition, within the framework of continuous improvement and with the aim of strengthening the comprehensiveness and transparency of the report, Ecopetrol is making progress in consolidating information for the progressive incorporation of other GHGs that, although not material for the operational core of the sector, are relevant for regulatory compliance. In particular, hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6) are considered, mainly associated with refrigeration systems, air conditioning, and electrical equipment. This inclusion will be made in accordance with the requirements of Resolution 0839 of August 28, 2023 on the Pollutant Emissions and Transfers Registry (RETC, for its Spanish acronym), expanding the scope of the inventory and strengthening the corporate emissions management and reporting system.

4.1.3 Emissions estimation methodology

The methodology used for the estimation of GHG emissions for scopes 1 and 2 integrates different approaches, including mass balance, emission factors, simulation models and direct measurements. The

selection of the method applicable to each source of the inventory is defined based on the availability, quality and representativeness of the associated activity data, in order to ensure the consistency, traceability and reliability of the results.

The mass balance approach is based on the application of the principle of conservation of mass in processes, according to which all carbon entering a system must exit. Emission factors, on the other hand, are based on data sets measured or calculated as average values, which allow estimating a representative rate of emissions associated with a given level of activity. Simulation models are used in specific cases where the generation of emissions depends on multiple variables, which are represented by a model that reproduces the behavior of the process. Finally, direct measurements have been implemented mainly in the fugitive emissions and vents categories of the upstream segment with a specific focus on methane emissions.

The direct measurements of methane emissions have been developed in accordance with the reference framework and technical guidelines proposed by the Oil and Gas Methane Alliance (*OGMP* 2.0) and as defined by national regulation issued in 2022 by the Ministry of Mines and Energy, through the implementation of systematic monitoring campaigns with *bottom-up* and *top-down* technologies (at the site level), the reconciliation of measurements with data and operational conditions and the quantification of emission rates for integration into the company's GHG emissions inventory. This has made it possible to move from an inventory based on counts of accessories and generic emission factors, to an inventory based on direct measurements.

For scope 3 emissions, a variety of estimation methods are used, including: (i) the application of expenditure-based emission factors; (ii) the use of emissions information reported directly by suppliers; and (iii) estimates developed from the management and analysis of the available information.

To ensure the quality and reliability of GHG inventories, it is important to use public, recognized and technically validated emission factors that have acceptable levels of uncertainty according to international standards. The use of high-quality emission factors reduces variability in results, improves data traceability, and strengthens inventory credibility in the face of audits, regulatory reports, and climate commitments. Taking into account that one of the most widely used methodologies for estimating emissions is emission factors, **¡Error! No se encuentra el origen de la referencia.** presents the most important sources of emission factors by scope.

Table 1. Emission Factors Used in Ecopetrol's GHG Inventory

Scope	Source of information
Scope 1	* Compendium AP 42, de la Agencia Ambiental de los Estados Unidos (EPA, por sus siglas en inglés) * Instituto Americano del Petróleo (API, por sus siglas en inglés) * Unidad de Planeación Minero-Energética – UPME * Guideline for fugitive emissions calculations, June 2003, South Coast Air Quality Management District * Conferencia de Petróleo y Gas América Latina y el Caribe – ARPEL. Atmospheric emissions inventories methodologies in the petroleum industry * The Climate Registry: General Reporting Protocol * Guideline for fugitive emissions Terminal Depots (Form T1) * Factores de emisión de los combustibles colombianos – FECOC
Scope 2	* Unidad de Planeación Minero-Energética (UPME) * Factor de emisión propio – Centros de generación.
Scope 3	* Factores de emisión de los combustibles colombianos – FECOC * IPCC Tratamiento de residuos

Scope	Source of information
	* DEFRA-Department for Energy Security and Net Zero * EPA-Supply Chain GHG Emission Factors based on USEEIO * ICAO Carbon Emissions Calculator (ICEC) y Hotel footprints.

4.1.4 Base year

Ecopetrol defined 2019 as the base year for its corporate GHG inventory, considering its representativeness with respect to the operation, as well as the availability and traceability of information in all its business segments and the methodological consistency of the inventory, in line with the emission reduction goals established for the medium and long term.

In addition, the Company recalculates base-year emissions when materially significant events occur, such as: (i) structural changes in the organization (acquisitions, divestitures, and mergers); (ii) modifications to the calculation methodology arising from improvements in data availability or quality, including updates to the emission factors used—whether through the adoption of more recent, specific, or operationally representative values—that result in significant changes in emissions estimates; and (iii) the identification of errors in the original data or calculations, whether individual or cumulative. Ecopetrol performs these recalculations not only for the base year but also across the historical time series, in order to maintain consistency, integrity, transparency, and comparability of emissions data and the associated performance indicators.

4.1.5 Technological tools

Within the Atmospheric Emissions Management System, Ecopetrol uses the SAP Environmental Compliance (SAP EC) calculation engine to estimate Scope 1 and Scope 2 emissions. This tool is parameterized under a bottom-up approach, which allows each emission source to be individually identified and linked to the necessary information—such as activity data, operational characteristics, and emission factors, among others—to estimate emissions at the defined reporting frequency. Owing to this structure, the system enables the generation of detailed reports by emission source and by GHG, facilitating traceability, results analysis, and comprehensive management of the GHG inventory.

For the estimation of Scope 3 emissions, the processes of data collection, emissions estimation, and results consolidation are carried out manually using an Excel-based model designed to calculate emissions associated with the 14 categories of the GHG Protocol applicable to the Company. This model uses activity data from different business units and integrates the various estimation methods described above, as well as emission factors and other required parameters.

Microsoft's "Microsoft Sustainability Manager" tool is currently being implemented to automate the process and reduce the possibility of errors. Additionally, the tool will allow the capture of GHG activity or emissions data directly from actors in Ecopetrol's value chain, which will help in the management of scope 3 emissions.

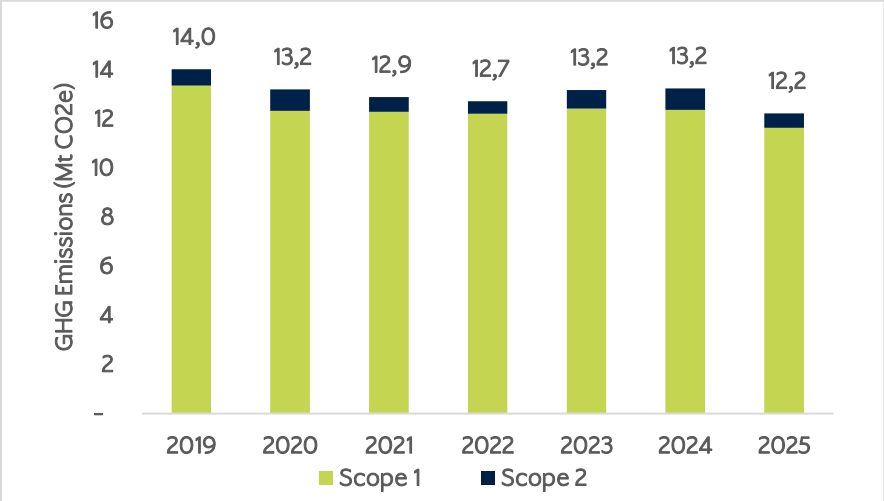
4.1.6 GHG emissions inventory – Ecopetrol

4.1.6.1 Scopes 1 and 2 emissions

Graph 1 presents Ecopetrol's GHG emissions inventory for scopes 1 and 2 consolidated for the period 2019 - 2025, which, in line with the defined organizational limit, includes the emissions associated with the Barrancabermeja and Cartagena refineries in the downstream segment and the operated assets in the upstream segment. In Scope 1, emissions from combustion, flaring, venting, fugitive, and mobile are

reported, and in Scope 2, the purchase of electricity is reported. Of the total scope 1 and 2 emissions, 55% corresponds to the upstream segment and 45% to the downstream segment.

Graph 1. Ecopetrol GHG emissions inventory (Scopes 1 and 2) 2019 – 2025 period



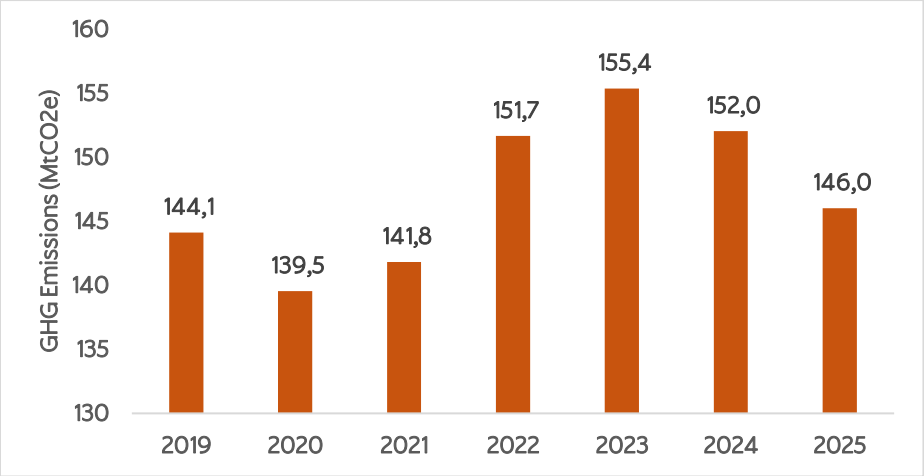
Source: Atmospheric Emissions Management System (SIGEA) Report, 2026

4.1.6.2 Scope 3 emissions

Ecopetrol estimates Scope 3 emissions applying the same operational control criteria, i.e., the Barrancabermeja and Cartagena refineries in the downsteam segment and the operated assets in the upstream segment. Under this guideline, 14[3] of the 15 categories established by the GHG Protocol that are applicable to its production process are estimated. The most relevant categories for Ecopetrol's operations are Category 11 (Use of sold products) and Categories 1 and 2 (Purchased goods and services). By 2025, estimated emissions under this scope reached approximately 146 $MtCO_2e$, of which 94% corresponds to the use of sold products, 5% to the acquisition of goods and services, and the remaining 1% to investments and other categories. Graph 2 presents the estimated Scope 3 GHG emissions for the 2019–2025 period.

Graph 2. Ecopetrol GHG Emissions Inventory (Scope 3) 2019–2025 period

[3] The category corresponding to Franchises was not estimated, considering that Ecopetrol S.A. does not have this figure.



Source: Ecopetrol internal information, 2026

The updated information on Ecopetrol's GHG emissions inventory (scopes 1, 2 and 3) can be consulted on Ecopetrol's website in the Climate Action section.

4.1.7 GHG inventory verification

Ecopetrol verifies its GHG emissions inventory every two years, in order to ensure that the GHG inventory complies with the principles defined in ISO 14061 – 1 and the GHG Protocol: i) Relevance (selection of an appropriate inventory limit that reflects the company's reality); (ii) Completeness (inclusion of all significant GHG emissions within the selected limits); iii) Consistency (allows tracking and comparing GHG emissions information over time, identifying trends and assessing performance); iv) Accuracy (reporting accurate data and reducing uncertainty whenever possible); and v) Transparency (the extent to which information on the processes, procedures, assumptions, and limitations of the GHG inventory is presented).

4.2 GHG EMISSION REDUCTION

The GE maintains its climate ambition to reach net zero carbon emissions by 2050 and reduce 25% of its emissions by 2030 compared to 2019 for scopes 1 and 2, as well as reduce 50% of its scope 1, 2 and 3 emissions by 2050. These goals were defined taking into account the aggregation of the companies that make up the Group, based on the following considerations:

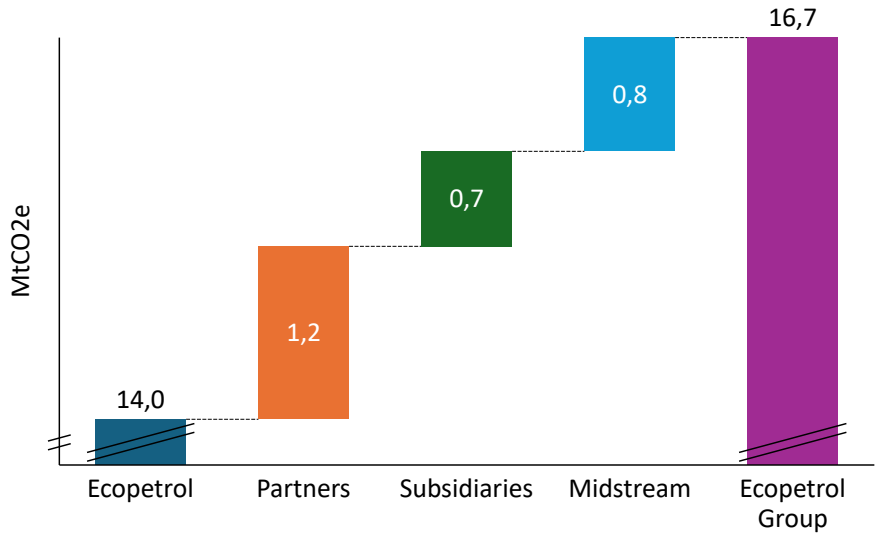
- Identify each company's emissions reduction capacity by analyzing emissions inventories, emissions intensity, portfolios of initiatives, and mitigation potential.
- Optimize investments in assets where mitigation measures are technically and economically feasible, prioritizing those with the lowest abatement costs.
- Recognize that certain mitigation measures may result in aggregated emissions reductions that cannot be attributed exclusively to a single asset or project, thereby helping to avoid double-counting risks when a single action affects multiple projects.

Notwithstanding the foregoing, GE conducts a periodic assessment of compliance with the established targets, which seeks to: (i) keep the emissions baseline for the 2019 base year updated, against which progress toward the achievement of the decarbonization goals is measured; (ii) estimate emissions projections under different analytical scenarios in order to determine the gap to achieving those goals; and (iii) identify the portfolio of emissions reduction opportunities and their associated costs, in order to prioritize investments in decarbonization.

4.2.1 GE emissions (base year)

The group's emissions for the 2019 base year were 16.7 MtCO2e (scopes 1 and 2). This estimate includes the emissions of Ecopetrol[4], Esenttia, Hocol, ISA, subsidiaries in the transport segment and assets with partners (corresponding to Ecopetrol's equity percentage). Graph 3 shows the GE's emissions for 2019.

Graph 3. EG GHG Emissions inventory (Scopes 1 and 2) in MtCO2e – Base year 2019 [5]



Source: Ecopetrol internal information, 2026

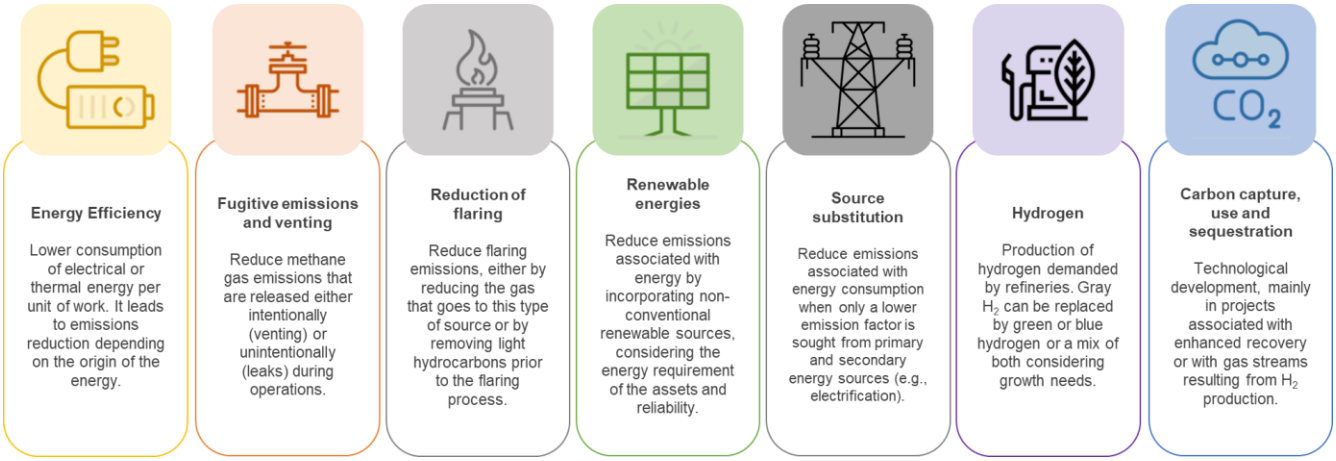
4.2.2 Emission Reduction Technological Levers

The portfolio of emissions reduction initiatives is organized into seven technological levers: fugitive emissions and venting, flaring reduction, energy efficiency, renewable energy source, source substitution, hydrogen, and, carbon capture, utilization, and storage (CCUS) (see Figure 5). Ecopetrol is increasing its level of ambition related to energy diversification, emissions reductions, and the development of carbon capture pilot projects.

Figure 5. Emissions Reduction Levers

[4] In line with the defined organizational limit, it includes the emissions associated with the Barrancabermeja and Cartagena refineries in the refining segment and the operated assets in the production segment.

[5] Dado que los activos internacionales iniciaron operaciones en 2020, no se reflejan en el año base (Permian, Ecopetrol América y Ecopetrol Brasil). Las emisiones de exploración se contabilizan mayoritariamente en alcance 3. Las emisiones de asociadas corresponden al porcentaje de equity de Ecopetrol.



Source: Ecopetrol internal information, 2026

- **Energy efficiency for optimizing energy consumption**

The GE has an energy efficiency strategy, which follows the guidelines of the international standard ISO 50001 – Energy Management Systems. This strategy ensures optimal energy performance in GE's non-industrial operations and facilities, through initiatives aimed at optimizing thermal and electrical energy consumption. The actions focus on strengthening operational control, efficient use of gas, technological modernization and other continuous improvement measures.

The Energy Efficiency Program was launched in 2018 as a structured corporate initiative of GE, aimed at improving the energy performance of operations across the upstream, midstream, and downstream segments. Its scope includes objectives focused on optimizing electricity consumption, reducing GHG emissions, and generating energy cost savings, thereby laying the technical, operational, and methodological foundations for its implementation.

Energy efficiency initiatives have been consolidated as a strategic lever for optimizing primary energy consumption in operational processes. Their implementation contributes directly to emissions reductions in support of the fulfillment of corporate sustainability commitments.

In 2023, the energy efficiency target was updated within the framework of the 2040 Strategy, establishing the objective of optimizing cumulative internal energy consumption by 25 PJ over the 2018–2030 period. This target is equivalent to approximately 20% of the energy demand recorded in Ecopetrol Colombia's direct operations in 2022. Between 2018 and 2025, GE achieved a cumulative optimization of internal energy consumption of 24.8 PJ, representing 99% of the corporate target.

- **Fugitive and venting emissions**

Ecopetrol has implemented a methane emissions management plan that includes actions aimed at detecting, measuring, quantifying, analyzing, and reporting this type of emissions, in order to obtain more accurate information and reduce uncertainty to support decision-making related to compliance with emissions reduction targets. These actions have been developed in accordance with the provisions of the Oil and Gas Methane Alliance (OGMP 2.0) and the national regulation issued in 2022 by the Ministry of Mines and Energy.

In compliance with this regulation, in February 2024 Ecopetrol submitted to the National Hydrocarbons Agency (ANH) the fugitive emissions baseline and the Leak Detection and Repair (LDAR) program.

Additionally, the company submitted the vent closure program for each asset, for which the ANH established a deadline to present the corresponding closure reports during 2026. By the end of 2024, the calculation of flare combustion efficiency was submitted, and in October 2025 the results of methane combustion and destruction efficiency in flares, derived from direct measurements, were presented.

In March 2023, Ecopetrol committed to reducing its methane emissions by 45% by 2025 and by 55% by 2030, compared to the 2019 baseline, in direct operations within the upstream segment.

- **Flaring**

Ecopetrol undertakes actions to reduce gas flaring in accordance with the requirements of Resolution 40066 of 2022, which seeks to promote the utilization of natural gas in order to avoid flaring as much as reasonably possible during hydrocarbon exploration and production activities, as well as with the World Bank's Zero Routine Flaring by 2030 initiative, of which Ecopetrol has been a member since 2020. This initiative promotes actions aimed at eliminating routine flaring in existing fields by 2030, avoiding routine flaring in new oil field developments, and annually reporting the volume of gas flared.

- **Renewable energy**

Ecopetrol maintains its commitment to diversifying the energy mix through the formulation and execution of projects in renewable sources such as solar, wind, biomass, geothermal, and other emerging technologies, thereby contributing significantly to the development of a sustainable energy matrix for Colombia. In 2022, the company announced its goal of incorporating 1,000 MW of renewable energy by 2030; this target was subsequently accelerated to achieve 900 MW of projects in operation, execution, and construction by 2025.

- **Studies and pilots of carbon capture, use and sequestration**

Carbon Capture, Utilization and Storage (CCUS) is a key enabler for achieving net-zero emissions and advancing low-emission energy solutions, which are core pillars of Ecopetrol's Energy Transition strategy.

This technology is positioned as a facilitator of strategic carbon-neutral projects, supporting the growth and sustainability of both the traditional business and emerging lines, such as low-emission hydrogen. The process of adopting this technology begins with subsurface characterization, using a methodology that assesses storage potential, reservoir injectivity, CO_2 containment risks, and reporting, monitoring, and verification (MRV) requirements.

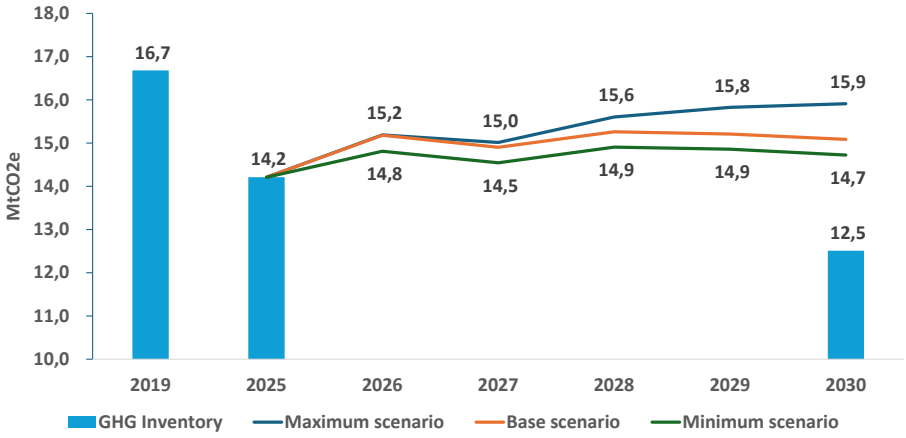
Pre-feasibility studies have identified potential for both CO_2-enhanced recovery and geological storage, estimating a capacity of up to 280 $MtCO_2$ in dedicated formations and depleted fields. This capacity could be leveraged across different projects expected to achieve carbon neutrality.

Progress in CCUS includes studies of capture technologies with lower operating costs, as well as the design and execution of pilot projects to evaluate actual storage capacity and reduce technical risks associated with future CO_2 injection scale-up. Among the alternative projects that require carbon capture, Bioenergy with Carbon Capture and Storage (BECCS) is being assessed, as it offers the potential for net-negative emissions that contribute to the company's goals. In addition, it is necessary to address complementary risks related to social acceptance, the fiscal framework, and the regulatory environment required for comprehensive implementation.

4.2.3 Analysis for the monitoring of the 2030 emission reduction target for the EG

Graph 4 illustratively presents the emissions projection through 2030 under three scenarios (maximum, base, and minimum). The emissions projections are based on activity profiles and carbon intensities calculated using the most recent available inventory information. Under these assumptions, the emissions reductions required to meet the target range between 2.2 and 3.4 $MtCO_2e$, ensuring that GE's GHG inventory does not exceed 12.5 $MtCO_2e$ by 2030. Achieving the target includes the use of up to 30% offsets (equivalent to approximately 1.2 $MtCO_2e$); therefore, the required operational emissions reductions across the three scenarios range from 1.0 to 2.2 $MtCO_2e$.

Graph 4. GHG Emissions Projection to 2030 (Scope 1 and 2)

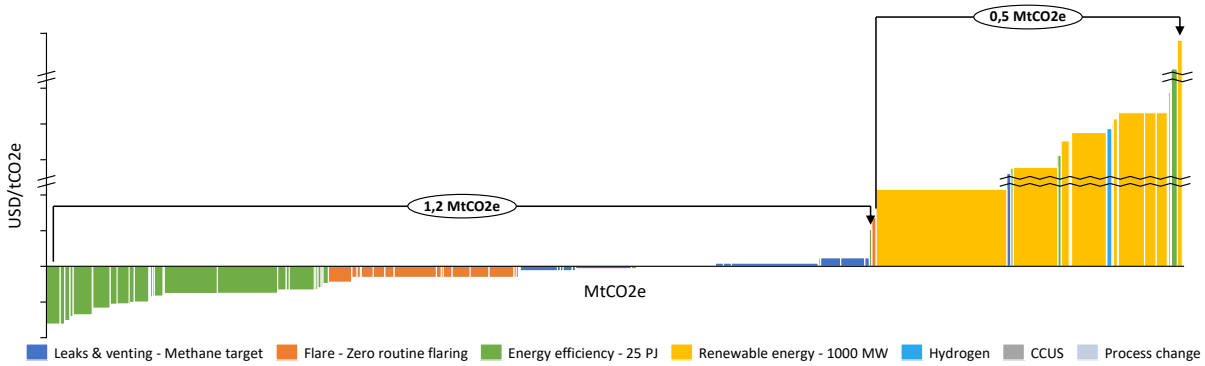


Source: Ecopetrol internal information, 2026

In order to prioritize emission reduction initiatives and optimize capital allocation, the marginal cost of abatement (MACC) curve is developed. This curve represents the volume of CO_2 that can be lowered by the different technological levers ($MtCO_2e$) and the cost in dollars per reduced ton of CO_2e of each of them.

Based on the portfolio of initiatives, the potential for reducing emissions and the financial variables, the abatement cost of each opportunity is calculated to build the curve with the portfolio of initiatives for 2030 (MACC - Graph 5).

Graph 5. Abatement Cost Curve for the Minimum Scenario



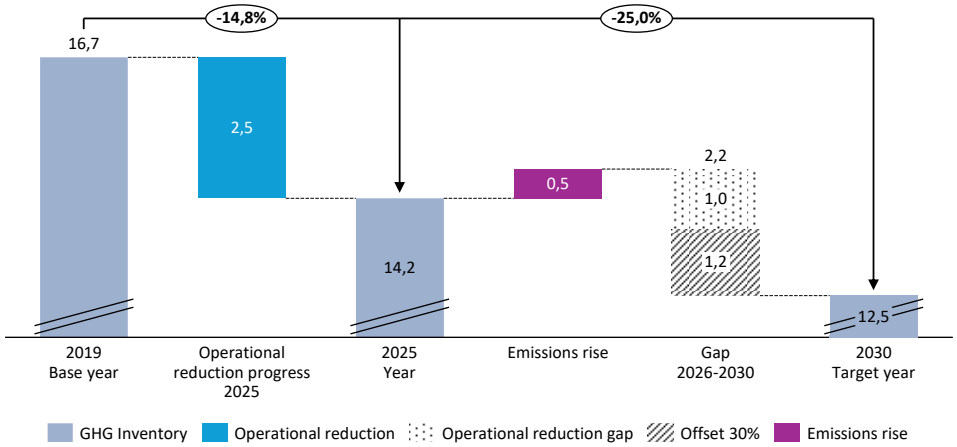
Source: Ecopetrol internal information, 2026

The analysis identified cost-effective opportunities, including measures below the domestic carbon price of US$50/tCO₂e, with an emissions reduction potential of approximately 1.2 MtCO₂e. This potential is largely driven by mature levers such as leak and vent reduction, energy efficiency, and flaring reduction. It is important to note that the order in which initiatives are presented in the Marginal Abatement Cost Curve (MACC) does not reflect their sequence of implementation. The curve presents the complete portfolio of measures and does not include their year of entry into operation. For this reason, and due to operational constraints, levels of complexity, and different investment stages, initiatives may be implemented at different times; however, all of them form part of the portfolio planned for 2030.
Within the renewable energy lever, initiatives require additional maturation stages compared to mature and cost-effective levers, as they involve higher investment levels and, in some cases, remain at the conceptual stage. In addition, their development requires the integration of additional variables, particularly when they involve infrastructure located outside the physical boundaries of operations.

For the purposes of this document, the abatement analysis corresponding to the minimum scenario—considered the most likely under current production conditions—is presented. This scenario focuses on cost-effective emissions reduction initiatives and includes those below the domestic carbon price (US$50/tCO₂e by 2030) in the marginal abatement cost curve. This portfolio of initiatives provides sufficient potential (1.2 MtCO₂e) to close the operational emissions reduction gap required to meet the 2030 target.

By 2030, the emissions reduction goal reflects progress of close to 15% toward the 25% target. Figure 6 illustrates the minimum scenario analysis, showing progress achieved by 2025, projected growth through 2030, and the remaining gap between operational reductions and compensation. To achieve the 25% emissions reduction target by 2030, GE's emissions must not exceed approximately 12.5 MtCO₂e.

Graph 6. Progress and Reduction Gap for the Minimum Scenario to 2030



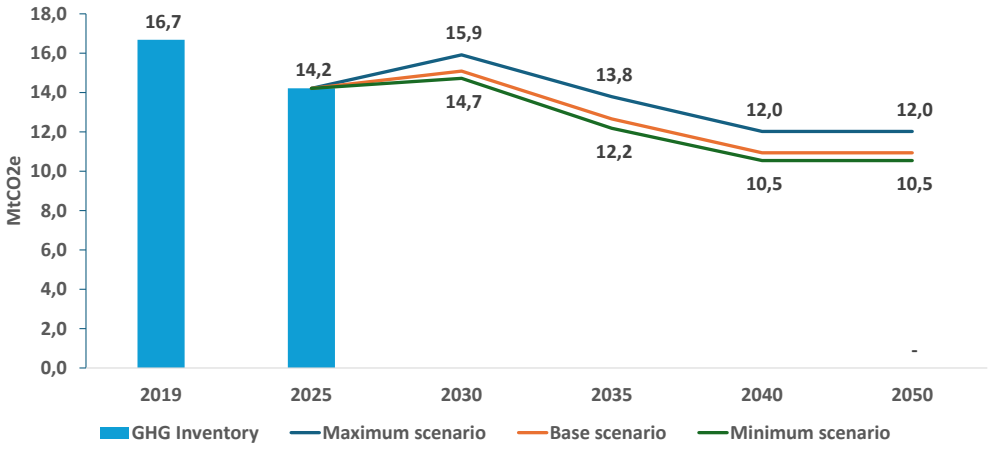
Source: Ecopetrol internal information, 2026

4.2.4 Analysis for the monitoring of the 2050 emission reduction target for the EG

Graph 7 presents the emissions projection to 2050 under the three proposed scenarios (maximum, base, and minimum). Between 2040 and 2050, production levels are assumed to remain at 2040 levels, with the base scenario aligning with Ecopetrol's energy transition resilience scenario. This scenario is primarily based on maintaining production levels that meet refinery feedstock requirements, while promoting diversification toward new business lines.

The emissions projections are based on activity profiles and carbon intensities calculated using the most recent available inventory information, which implies a high level of uncertainty in the projection to 2050. Under these assumptions, the emissions reduction required to achieve the net-zero emissions target by 2050 ranges between 10.5 and 12.0 $MtCO_2e$.

Graph 7. Greenhouse Gas Emissions Projection to 2050 (Scopes 1 and 2)

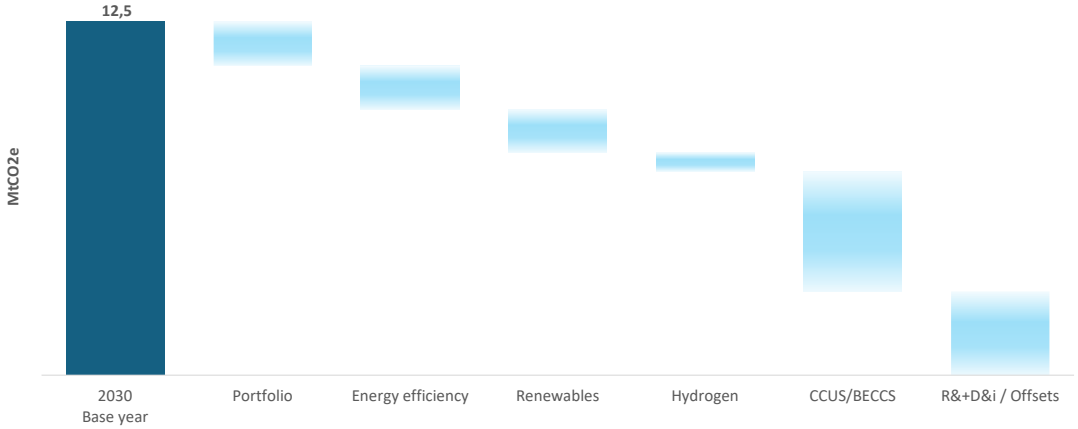


Source: Ecopetrol internal information, 2026

Graph 8 presents the technological levers currently projected to achieve the net-zero emissions target by 2050. In addition, a Portfolio component is included, representing adjustments in the composition and evolution of the asset portfolio required to reach a resilience scenario in the context of the energy transition. Among the technological levers, although energy efficiency is included, it is no longer considered a purely cost-effective option in the long term, as it encompasses initiatives that require higher levels of investment due to technological changes or increased complexity.

Levers such as hydrogen, CCUS, and BECCS require significant investment, prior development of studies and pilot projects, and confirmation of emissions reduction potentials. Given the uncertainty inherent in long-term horizons, it is necessary to continue exploring emissions reduction alternatives through research, development, and innovation (R&D+i) processes. In addition, the use of offsets is required for the management of residual emissions.

Graph 8. Alternatives to Achieve the Net-Zero Emissions Target by 2050



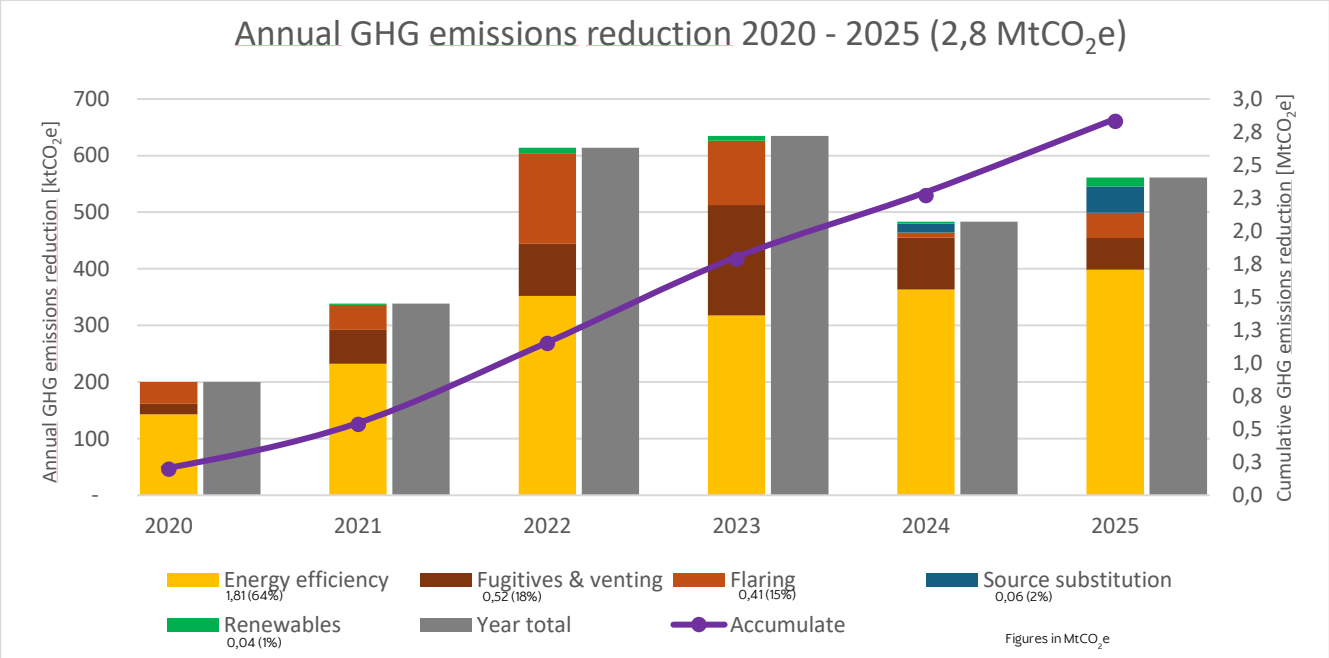
Source: Ecopetrol internal information, 2026

The analyses presented in this section may be updated based on improved availability of information, the introduction of new technological options, changes in emissions projection scenarios, or other relevant factors.

4.2.5 Progress in GHG emission reduction

On an annual basis, GE defines a GHG emissions reduction target based on the identification and implementation of new operational initiatives. As a result, during the 2020–2025 period, emissions reductions of approximately 2.8 $MtCO_2e$ were achieved through the implementation of 445 initiatives. Energy efficiency accounted for 64% of the reductions achieved, followed by fugitive emissions and vents at 18%, flaring reduction at 15%, and the remaining 3% distributed between renewable energy and source substitution initiatives. Graph 9 illustrates the progress in reducing the Group's emissions.

Graph 9. Progress in cumulative GHG emissions reduction (2020-2025)



Source: Ecopetrol internal information, 2026

Of this reduction, ~584,000 tCO2e correspond to methane emissions (20,846 tCH4) as a result of the implementation of initiatives related to leak closure, tank venting and well venting in the upstream segment.

4.3 STRATEGIC PORTFOLIO MANAGEMENT

The strategic management of the portfolio is supported by additional mechanisms that contribute to more effective management of GHG emissions. In this regard, the following mechanisms have been prioritized, which are currently at different stages of development:

a. **Internal Carbon Price**: Ecopetrol has established a methodology for conducting the economic evaluation of GE investment opportunities that incorporates the projected increase or reduction in GHG emissions (CO_2e) into the decision-making process. This approach aims to optimize and mitigate emissions generated by future projects from their early design stages. The methodology includes the definition of a price range per tonne of CO_2e reduced or emitted.

2023-2024	2025-2029	2030+
25 US$/$tCO_2e$	40 US$/$tCO_2e$	50 US$/$tCO_2e$

The implementation of the Internal Carbon Price in Ecopetrol's economic evaluations systematically integrates the costs associated with GHG emissions (CO_2e) into project cost-benefit analyses. This internalization enables investment alternatives to be assessed under a consistent framework, strengthening decision-making through the incorporation of environmental criteria aligned with the energy transition and the reduction of emissions throughout asset design and operation.

This mechanism facilitates the identification and viability of low-carbon opportunities by enhancing the competitiveness of projects focused on energy efficiency, electrification, renewable

energy, clean technologies, process transformation, hydrogen, carbon capture, and innovation for emissions reduction. In doing so, it promotes the allocation of capital toward initiatives that support portfolio diversification and decarbonization, fostering long-term sustainable value creation.

Finally, the consistent application of the Domestic Carbon Price supports the achievement of corporate decarbonization goals. By integrating climate-related criteria into investment and planning processes, alignment between capital allocation decisions and emissions reduction targets is reinforced.

b. Criteria for asset acquisition and divestiture: The company is developing a set of climate change–related criteria to be incorporated into asset acquisition and divestiture processes.

c. Economic instruments associated with emissions: Other mechanisms aimed at limiting GHG emissions are being evaluated, such as an internal tax mechanism, which consists of establishing a charge directly linked to the level of CO_2e emissions generated by the company's projects. This mechanism is currently in an early validation phase.

One of the advantages of establishing these mechanisms is that they prepare the company for higher carbon prices, the implementation of emissions trading regulations, or the introduction of potential emissions caps.

Ecopetrol is advancing a strategic diversification process focused on Sustainability®, the energy transition, cutting-edge knowledge, and competitive returns, in line with its 2040 Strategy. This approach integrates initiatives such as renewable energy, low-emission hydrogen, energy efficiency, and biofuels, with the objective of contributing to energy security and decarbonization, while promoting the development of new technological capabilities.

Hydrogen is positioned as a key strategic vector for energy diversification. The 2040 Strategy targets the production of approximately 600 ktH_2 per year of low-emission hydrogen, primarily focused on industrial applications, freight mobility, and ammonia production, subject to market conditions and cost-efficient production.

In this context, Ecopetrol has made progress in structuring initiatives for the industrial-scale production of low-emission hydrogen. Among these initiatives is the approval of the CORAL project, a green hydrogen plant featuring a 5 MW PEM electrolyzer to be built at the Cartagena refinery, with a production capacity of up to 800 tonnes per year.

ISA, for its part, continues to strengthen the transmission business and develop new energy businesses with the objective of diversifying GE's portfolio. Expansion in transmission reflects the commitment to a fair energy transition, recognizing that this infrastructure is essential to ensuring access to energy. In parallel, ISA is expected to incorporate new business lines such as large-scale energy storage and distributed energy solutions.

Finally, the long-term vision for the refining segment contemplates: (i) increasing the competitiveness of existing refinery assets; (ii) ensuring the supply of clean fuels; (iii) maximizing the polypropylene margin; (iv) evaluating diversification options toward petrochemicals to increase petrochemical participation; and (v) expanding Ecodiesel's production capacity.

5. OFFSETTING COMPONENT

The offset component has been defined to complement mitigation efforts aimed at meeting decarbonization targets. To this end, the application of the Mitigation Hierarchy has been established as a fundamental principle, prioritizing the prevention of emissions generation and the implementation of operational emissions reduction initiatives.

This approach is based on the premise that integrated energy companies, including those in the oil and gas sector, must first exhaust all technically available options to progress toward low-carbon operations, using offsets only as a last resort to address residual emissions.

In this regard, GE has established a maximum offsetting limit equivalent to 30% of the total reductions required to achieve the targets set for 2030 and 2050. However, once international standards applicable to integrated energy companies are issued or new relevant regulations emerge, this limit will be internally reviewed by GE to ensure alignment with best practices and evolving regulatory frameworks.

The definition of this approach and the limits on the use of offsets are also intended to contribute effectively to addressing the country's main climate and environmental challenges, prioritizing emissions sources and ecosystem pressures of greatest relevance at the national level.

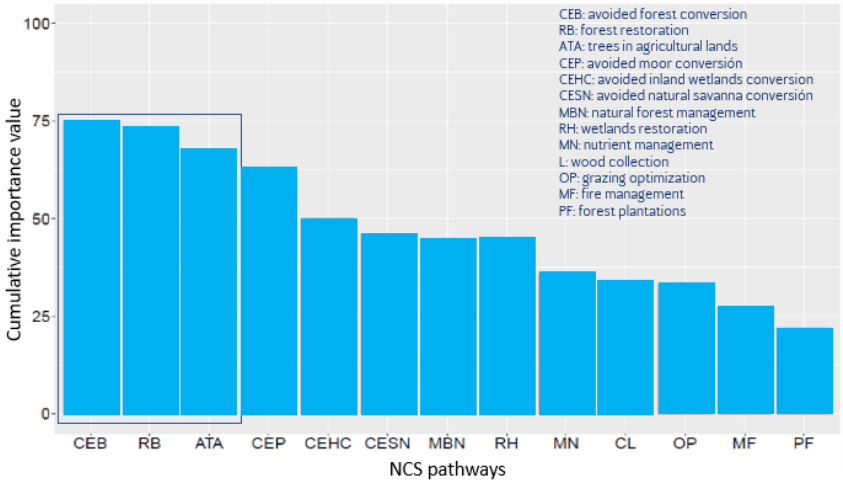
In the Colombian context, deforestation is the primary driver of biodiversity loss, due to its significant impact on the fragmentation and degradation of natural ecosystems. According to the historical records of the Institute of Hydrology, Meteorology and Environmental Studies (IDEAM), between 2001 and 2023 the country experienced an accumulated loss of natural forest estimated between 3.2 and 3.4 million hectares. Likewise, based on the National Greenhouse Gas Inventory (INGEI), approximately 60% of total national GHG emissions are associated with the Agriculture, Forestry, and Other Land Use (AFOLU) sector, mainly as a result of land-use change linked to agricultural expansion, extensive livestock farming, illegal logging, and other activities such as illegal mining.

In line with the above, GE defined a portfolio of Natural Climate Solutions with the objective of enabling supply and enhancing environmental and social co-benefits through the implementation of initiatives focused on the conservation and restoration of strategic ecosystems, deforestation reduction, biodiversity strengthening, and increased territorial resilience. These actions also seek to promote local socioeconomic development and value creation, consolidating the offset component as a strategic instrument that aligns corporate climate objectives with the country's environmental and territorial priorities, in coherence with national and international climate change commitments.

The portfolio prioritizes Natural Climate Solutions with the greatest potential for GHG emissions reductions in Colombia, based on the following criteria: (i) high carbon capture and storage potential; (ii) alignment with National Government priorities, particularly environmental and climate objectives; (iii) availability, quality, and reliability of information; (iv) generation of climate, biodiversity, community, and local economic co-benefits; and (v) cost-effectiveness of implementation.

As a result of this prioritization process, the portfolio focuses on the following intervention typologies: avoided deforestation (CEB), natural forest restoration (UBI), and the establishment of tree-based systems on agricultural lands, including silvopastoral and agroforestry systems (ATA). Graph 10 presents the Natural Climate Solutions pathways analyzed.

Graph 10. Natural Climate Solutions Analysis



Source: SNC analysis Ecopetrol – TNC, 2021

GE's Natural Climate Solutions (NCS) portfolio incorporates actions aimed at enabling and strengthening the supply of carbon projects through the development and adoption of methodologies, protocols, and baselines that ensure the technical consistency, traceability, and quality of initiatives. This portfolio is governed by the following guiding principles:

- **Mitigation hierarchy**: Emissions avoidance (non-emission) and emissions reduction are prioritized oversetting. Offsetting applies only to the management of residual emissions.
- **Action without harm**: Negative impacts on territories are prevented, avoided, or minimized, ensuring compliance with social and environmental safeguards.
- **Fair and equitable distribution of benefits**: Mechanisms are promoted to ensure the equitable distribution of benefits, in accordance with the level of participation of stakeholders, particularly local communities.
- **Comprehensiveness**: The integrity and quality of carbon credits are ensured, guaranteeing that they are real, additional, permanent, quantifiable, and verifiable.
- **Transparency**: The use of offsets is supported by clear accounting, traceability, monitoring, and reporting rules, providing reliable and timely information to stakeholders.
- **No double counting**: Credits whose emission reductions are already reflected in GHG inventories or accounts of the Business Group or other organizations may not be used for offsetting or commercialization.
- **Portfolio diversification**: Appropriate diversification by location, project type, jurisdiction, suppliers, and financing sources is promoted to manage risks associated with the use of offsets.

For its implementation, Ecopetrol has established strategic alliances with organizations with extensive experience, which support portfolio development and ensure compliance with social and environmental safeguards. Progress on the Natural Climate Solutions portfolio can be consulted at the following link SNC portfolio.

6. ADAPTATION COMPONENT

The adaptation component is based on a strategic, corporate, and phased approach aimed at identifying, assessing, and managing the risks associated with climate change that may affect operational continuity, industrial safety, environmental performance, and the sustainability of Ecopetrol's business.

This approach recognizes the complex, dynamic, and systemic nature of climate risks, as well as the need to address them comprehensively by articulating climate variables with territorial, operational, regulatory, and socio-environmental factors, in alignment with the Company's planning horizons and risk management framework.

Within this framework, Ecopetrol's projects, works, or activities hold individual environmental licenses that respond to specific conditions of design, location, technology, and project phase. The corresponding licensing files are structured in accordance with the regulatory requirements in force at the time of their assessment and approval, and are primarily focused on identifying, evaluating, and managing the environmental impacts associated with project execution.

In this context, Ecopetrol does not currently carry out climate change vulnerability analyses at the individual asset or project level, due to technical, methodological, and operational considerations, among which the following are particularly relevant:

- The heterogeneity of assets, their different operational phases, and the territorial conditions in which they operate, which makes it difficult to apply standardized and comparable methodologies at the asset or licensing-file level.
- The spatial and temporal scale required for climate vulnerability analyses, which exceeds the local scope of individual projects and requires regional or sub-regional approaches, as well as long-term time horizons.
- The availability and resolution of climate information—particularly for future climate scenarios—which is not always consistent or suitable for direct application at the scale of a specific project or asset.
- The dynamic nature of climate risk, which requires periodic updating and review processes and does not readily align with static instruments such as environmental licensing files.

These limitations imply that a fragmented, asset-by-asset or project-by-project analysis could lead to partial or inconsistent results, failing to adequately reflect the actual climate risks faced by the Company as a whole or their interrelationships at territorial and operational levels.

Nevertheless, Ecopetrol has made progress in managing climate change adaptation through a corporate and integrated approach aimed at:

- Identifying and prioritizing climate risks at the operational regional level.
- Gradually integrating climate change criteria into strategic planning, business risk management, and decision-making processes.
- Designing and implementing cross-cutting adaptation measures that strengthen the Company's operational and territorial resilience.
- Articulating climate risk management with existing environmental instruments, including environmental management plans and commitments derived from environmental licensing, while avoiding duplication or fragmentation of assessment processes.

This approach enables a more efficient, coherent, and consistent management of climate risk, aligned with the best international practices and with the expected evolution of regulatory frameworks related to climate change adaptation.

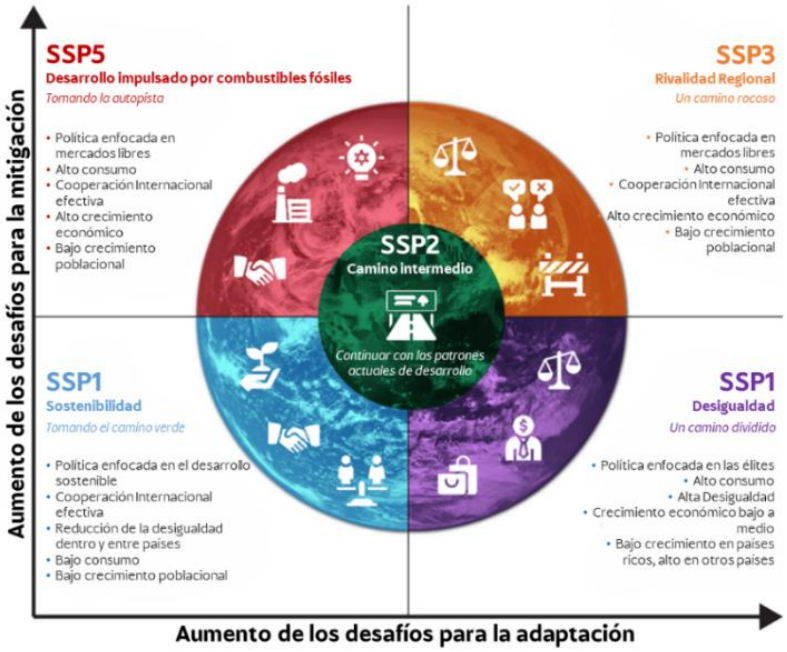
In this context, Ecopetrol has advanced in the development of a regional analysis for the management of adaptation to climate change, as a more appropriate methodological approach to capture the systemic and territorial nature of the climate risks faced by the Company. This analysis has been conceived as a strategic input that allows understanding trends, exposures and possible climate impacts at relevant regional and operational scales. For its development, internationally recognized climatic and

socioeconomic scenarios have been used, which facilitate the incorporation of long-term information and the prospective analysis required for decision-making in the field of adaptation.

As a technical input for understanding future climate risks, the Intergovernmental Panel on Climate Change (IPCC) has developed several climate scenarios that relate the increase in global average temperature to the future trajectory of GHG emissions. These scenarios describe possible socioeconomic development routes, considering, among other aspects, the use of fossil fuels and the social, economic and technological factors that influence such use.

Likewise, these scenarios explore a wide range of futures in terms of technological advances, socioeconomic dynamics and public policy frameworks, incorporating the challenges associated with both climate change mitigation and adaptation to its impacts. Within this framework, five (5) Shared Socioeconomic Pathways (SSPs) have been developed, which are presented in Figure 6.

Figure 6. IPCC-based climate scenarios



Source: *Climate Change Scenarios from the Fourth National Communication, IDEAM, 2025*

The scenarios can be summarized as follows:

- **SSP1 (Sustainability):** It implies low population growth, high economic growth, high levels of education and governance, international cooperation, sustained technological advances and strong environmental awareness, which translates into low challenges for both mitigation and adaptation.
- **SSP3 (Fragmentation):** It is characterized by high population growth, low economic development, limited international cooperation and low environmental awareness, implying high challenges for mitigation and adaptation.
- **SSP4 (Inequality):** It presents a concentration of technological and economic development in specific sectors of society, generating high challenges for adaptation due to the increase in social gaps and response capacity.

- **SSP5 (Fossil Fuel-Driven Development):** Assumes a strong dependence on fossil fuels, with high economic growth and human development, but with high challenges for mitigation due to the magnitude of the associated emissions.
- **SSP2 (Intermediate Scenario):** Represents an intermediate development trajectory, reflecting the continuity of current historical trends without drastic changes.

The information derived from these scenarios is essential to assess how the different natural, productive and social systems could be affected by the eventual materialization of these trajectories. However, the inherent complexity of the climate system, coupled with the limitations of models and the incidence of human factors, makes it difficult to accurately determine future climate changes.

In this sense, adaptation planning must incorporate additional elements, such as the vulnerability of assets according to their exposure, the capacity to respond to different climate impacts, planning horizons and the useful life of projects or assets. The integration of these factors makes it possible to reduce uncertainty and formulate coherent adaptation strategies aligned with other environmental and operational management actions, such as disaster risk management, integrated water resource management and biodiversity conservation, among others.

For the oil and gas sector, climate change is one of the most relevant challenges, affecting both operational continuity and the environmental and social sustainability of production projects. The IPCC's climate projections indicate that Colombia will experience increases in average temperature, changes in precipitation patterns, and a greater frequency and intensity of climate variability in the coming decades.

In this context, systematic climate risk assessment has established itself as a key input for strategic planning and decision-making on adaptation. In 2025, Ecopetrol updated its analysis of climate-related physical risks for the production segment, by constructing the Climate Risk Index (CRI) under current conditions and prospective scenarios for the 2011–2040 time-horizon. This analysis was carried out in 34 polygons distributed in the operational areas of Andina (12), Central (11), Piedmont (6), Orinoquía (3) and Oriente (2), which allows capturing the climatic and environmental heterogeneity of the Colombian territory where hydrocarbon production activities are carried out.

In the framework of the energy transition, the assessment of climate risk for projects associated with new energy sources and technologies requires additional information and specific methodological approaches, which in many cases are not yet sufficiently developed or available with the required level of detail. These limitations respond, among other factors, to the novelty of technologies, the absence of robust historical series and the limited characterization of their interactions with climate, environmental and territorial systems.

Ecopetrol recognizes the need to strengthen and progressively adjust its climate risk analysis tools to incorporate these new energy transition projects, ensuring consistency with IPCC guidelines and international best practices. Consequently, the Company will advance in the development and methodological refinement, as well as in the consolidation of climate, environmental and territorial information, which will allow for a comprehensive assessment of the exposure, vulnerability and adaptive capacity of these projects, contributing to informed decision-making, coherent and aligned with the objectives of sustainability and climate resilience.

6.1 CLIMATE RISK INDEX METHODOLOGY (CRI)

The CRI methodology is based on the conceptual framework established by the IPCC in its AR5 (2014) and AR6 (2021) assessment reports, in which climate risk is defined as the result of the interaction between threat, exposure and vulnerability. These three components are interrelated in a dynamic and synergistic way, determining the level of risk to which each analysis polygon is exposed.

In line with this approach, the CRI structures the climate risk analysis based on the following components:

Hazard (H): corresponds to the potential occurrence of climate-associated physical phenomena that can generate adverse impacts on natural and human systems. It includes both short-term extreme events, such as floods, droughts, and wildfires, as well as long-term climate trends, such as climate variability and changes in precipitation and temperature patterns. This component allows characterizing the intensity, frequency and probability of occurrence of adverse climatic events in each polygon of analysis. In the CRI system, the threat is assessed through four specific subcomponents:

1. Natural climate variability
2. Extreme events
3. Fire hazard
4. Water hazard

These subcomponents comprehensively capture the main climatic factors relevant to the territorial context of the operations.

Vulnerability (V): represents the propensity or predisposition of natural and human systems to suffer negative impacts as a result of the occurrence of climate threats. This component integrates two complementary dimensions:

- Sensitivity, which reflects the degree to which a system can be affected by a given climate impact.
- Adaptive capacity, which assesses the availability of resources, infrastructure, knowledge, and organizational and institutional mechanisms that allow anticipating, responding to, and adjusting to changing climate conditions, reducing potential damage.

In the CRI system, the vulnerability is characterized by four subcomponents:

5. Susceptibility of the terrain
6. Adaptive capacity
7. Water sensitivity
8. Pressure on resources

These elements allow us to capture both the biophysical conditions and the socio-environmental factors that influence the response to climate change.

Exposure (E): quantifies the presence and location of valuable elements in areas susceptible to being affected by climatic threats. It includes physical assets, natural systems, and human populations whose functioning, integrity, or well-being could be compromised.

For CRI, exposure considers three main subcomponents:

9. Productive assets associated with hydrocarbon operations
10. Strategic ecosystems under some figure of environmental protection
11. Ethnic communities and vulnerable populations

This component allows the spatial coincidence between the exposed elements and the areas of greatest threat and vulnerability to be identified.

Climate scenarios

The CRI analysis is developed under three climate scenarios, explained above, for the 2011–2040 time-horizon, considering the useful life of the assets.

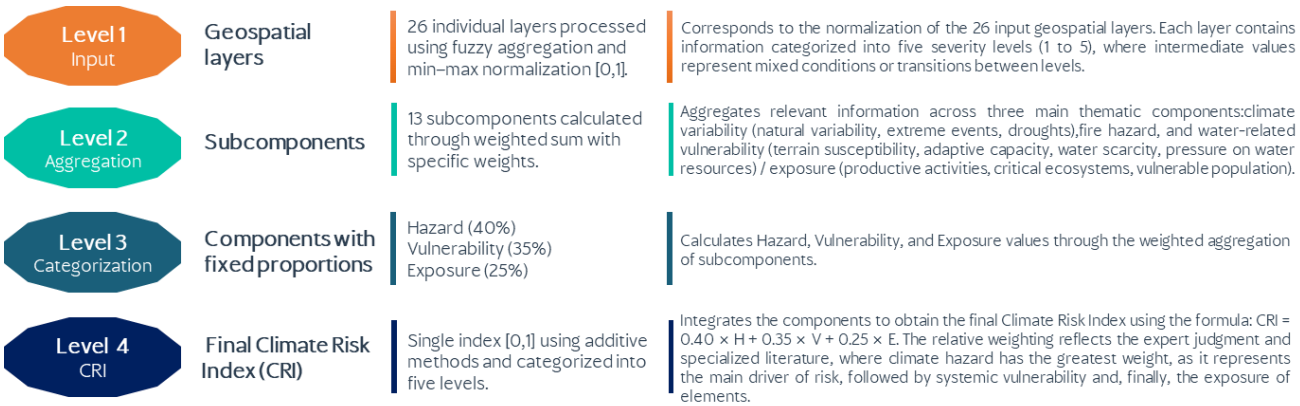
- SSP1: Represents a sustainability scenario, with low GHG emissions. This scenario limits the global temperature increase to about 1.6°C above pre-industrial levels.
- SSP2: Corresponds to an intermediate scenario, adopted as a reference scenario, with a projected warming close to 2.8 °C.
- SSP5: Describes a high-emissions future, associated with intensive development based on fossil fuels. This scenario projects temperature increases more than 4.0 °C and an approximate 40% amplification in the frequency of extreme events, compared to current conditions.

Information integration and processing

The CRI system integrates a total of 26 geospatial layers, from official national and international sources, including IDEAM, the Colombian Geological Service (SGC), the NASA POWER database for climatological variables and the EM-DAT system for the historical record of extreme events.

These layers are processed using a four-level hierarchical architecture, which combines standardized normalization techniques, fuzzy logic, and weighted aggregation of the different subcomponents. This methodological approach ensures the internal consistency of the index, the complete traceability of the results and the reproducibility of the analysis, allowing it to be updated periodically as new information becomes available. Figure 7 presents the hierarchical architecture of the CRI in its current condition.

Figure 7. Hierarchical architecture of the CRI



Source: Ecopetrol internal information, 2025

For the calculation of the prospective CRI under SSP scenarios, a two-stage methodological process is applied:

1. **Recalculation of the threat component**: The threat component is updated by incorporating four additional layers specific to the climate scenario considered, going from four to a total of eight layers. These additional layers allow to reflect projected future weather conditions, according to each SSP scenario.
2. **Application of adjustment factors by scenario**: Subsequently, differentiated adjustment factors are applied for the threat, vulnerability and exposure components, in order to represent in a simplified way how the level of risk changes under different development and emission contexts

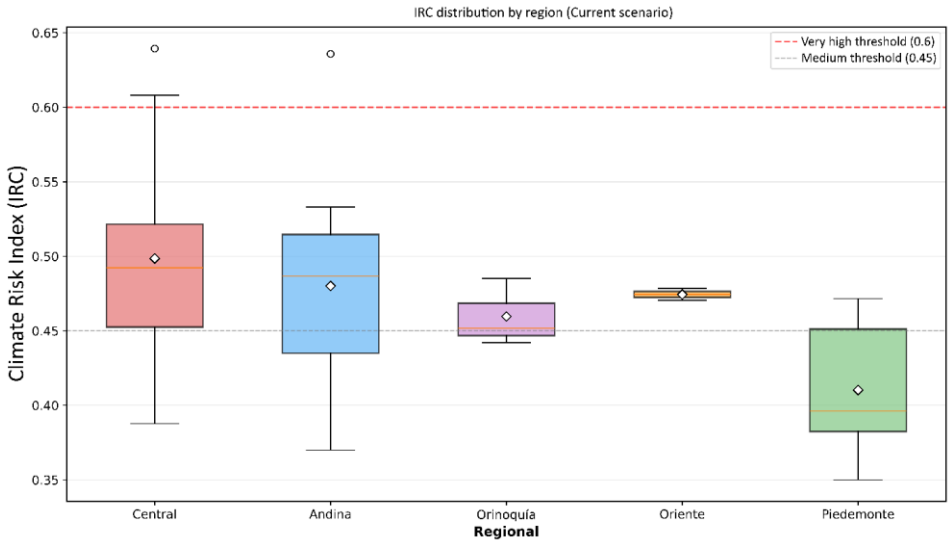
    - SSP1 scenario: A factor of 0.85 (15% reduction) is applied to the threat component, reflecting the benefits associated with ambitious climate mitigation. The vulnerability and exposure components remain unchanged, assuming more favorable socioeconomic conditions.

- SSP2 scenario: Adjustment factors of 1.0 are used for all components, representing an intermediate scenario that is used as a reference, without amplification or reduction of the projected risk.
- SSP5 scenario: Risk increase factors are applied, with a factor of 1.40 (+40%) in the threat component, 1.12 (+12%) in vulnerability and 1.03 (+3%) in exposure. These adjustments reflect the intensification of climate risks under a scenario of high emissions, disorderly growth and increased socio-environmental pressures.

6.2 CRI RESULTS

According to methodological application, the results of the CRI at the regional level are presented below. Graph 11 shows the distribution of the CRI by regional in a current scenario. The Central and Andean regions have the highest levels of risk and variability, including specific cases of very high risk; the regional regions of Orinoquía and Oriente show more homogeneous medium risks, with less internal dispersion, while Piedemonte is positioned as the region with the lowest relative risk, although with early signs of vulnerability.

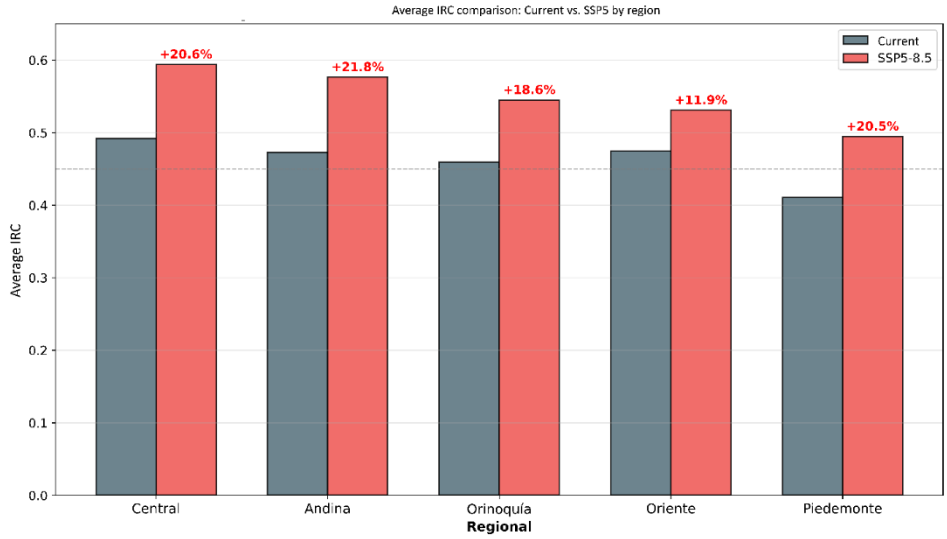
Graph 11. Result of the current CRI distribution at the regional level.



Source: Ecopetrol internal information, 2025

In relation to the behavior of the current average CRI compared to an SSP5 scenario (see Graph 12), Andina shows the highest percentage increase (+21.6%), followed by Piedemonte (+20.8%) and Central (+20.7%). Orinoquía shows a moderate increase (+18.6%), while Oriente shows the smallest increase of the group (+11.9%), suggesting greater relative climate resilience.

Graph 12. Current average CRI result vs SSP5 scenario at the regional level (pessimistic).



Source: Ecopetrol internal information, 2025

The above results indicate a generalized increase in risk. Under the high-emission scenario (SSP5), the regional average CRI increases between ~12% and ~22% compared to the current one, evidencing systemic amplification of risk in all regions. The largest percentage increases are observed in Andina (+21.8%), Central (+20.6%) and Piedmont (+20.5%). This suggests high risk sensitivity to increases in threat and/or changes in exposure-vulnerability in these territories.

Note on scope and uncertainty of results:
The results of the CRI presented correspond to an aggregate and prospective analysis exercise, built from analysis scales and information sources available at the regional level. In this sense, these results should not be interpreted as determinant or conclusive at the local scale, but as an initial approach for the identification of general trends and areas with potentially differentiated levels of climate risk.
Given the complex and multidimensional nature of climate risk, CRI values are subject to uncertainties associated with the spatial resolution of information, data availability, parameterization of threat, vulnerability and exposure components, as well as the assumptions adopted for each climate scenario. These uncertainties can be significant when the results are interpreted at more detailed territorial scales. Therefore, the results obtained must be complemented with local analyses and specific studies, which incorporate more detailed information, knowledge of the territory and participation of local actors. This type of analysis will reduce levels of uncertainty, validate the results at a fine scale and strengthen decision-making in terms of climate risk management, adaptation and territorial planning.

6.3 ADAPTATION MEASURES PORTFOLIO

The adaptation measures are established in order to increase the resilience of Ecopetrol's operations and infrastructure, related to climate variability and change. The climate risk determined in the previous paragraph for climate variability and change is a reference of the probabilities of occurrence of certain events, therefore, the behavior of extreme events must be observed at the local level, to establish adaptation measures that increase the response capacity of the different systems.

Therefore, at Ecopetrol, a portfolio of indicative adaptation measures has been defined to facilitate the understanding and alignment of the implementation of measures with other actions available in other operational planning instruments (Environmental Management Plans, Environmental Impact Studies, Disaster Risk Management Plans, Emergency and Contingency Plans, etc.). among others). Similarly,

the measures proposed are for reference, which may be expanded or modified according to the needs and dynamics of the operation.

The portfolio has defined the following categories:

Water resource management

Climate-resilient infrastructure

Biodiversity and ecosystem services

Climate-aligned operation

The above categories incorporate measures with different adaptation approaches:

Ecosystem-based adaptation (EbA):[6] according to the Convention on Biological Diversity, EbA is understood as the "use of biodiversity and ecosystem services as part of a global adaptation strategy to help people adapt to the adverse effects of climate change".

Infrastructure-based adaptation (AOI):[7] is an approach that seeks to increase the adaptive capacity of infrastructure works that play a determining role in economic development. Physical infrastructure has an impact on growth, the efficiency of the productive sector and social development, both because of its effects on connectivity and access to services for the population, and because of its decisive role in regional and local progress, and in national and international integration.

Community-based adaptation (AbC)[8]: is an approach that seeks to increase the adaptive capacity of the communities most vulnerable to the impacts of climate change and variability. These are community-led processes that are based on local priorities, needs, knowledge and capacities, which seek to empower people to face the impacts of climate change in the short and long term.

Technology-based adaptation (AbT):[9] based on the use of technologies to help reduce, estimate and prevent risks arising from climate risks.

Adaptation based on Traditional Knowledge (AbCT)[10]: it is based on knowledge and knowledge about the behavior of climatic variables and their effects on the dynamics of the territory. Based on this precept, Ecopetrol contextualizes the workers' knowledge of the dynamics of the operation and its relationship with incidents caused by climatic variables.

Each category and indicative measures are developed below, which are aligned with Ecopetrol's Environmental Strategy, the National Climate Change Policy (PNCC) and the Comprehensive Climate Change Management Plan - Mines and Energy Sector (PIGMME):

Water resource management	
Objective	Reduce vulnerability to climate variability and climate change resulting from water scarcity and flooding.
PNCC Strategic Line	Management and conservation of ecosystems and ecosystem services for low-carbon and climate-resilient development.

[6] (Ministerio de Ambiente y Desarrollo Sostenible. Colombia, 2018)
[7] Ibid.
[8] Adapt to (Ministerio de Ambiente y Desarrollo Sostenible. Colombia, 2018)
[9] Transcribed from https://www.youtube.com/watch?v=YrqY2Jl36gw. Ministry of Environment and Sustainable Development. 2014.
[10] Adapt to (Unión Internacional para la Conservación de la Naturaleza y de los Recursos Naturales. UICN, 2014)

PIGCCME Strategic Line	Climate governance (Water availability and efficient use program for the mining and energy sector).
Related Material Issue (ECP)	Integrated Water Management.

Measure	**Type**
Water Saving and Efficient Use Programs	AbCT
Prevention plans for water supply through secondary sources	AbT
Plan production and development activities considering the climate variable (occurrence of climate variability phenomena) in order to anticipate and take preventive actions against water shortages or flooding.	AbCT
Develop a dynamic water management model that integrates supply needs with effluent management and environmental constraints, and includes cost-effective alternatives in the event of an extreme climate event (drought).	AbE
Establish a portfolio of reuse, recycling, and disposal alternatives to reduce pressure on water resources.	AbE
Monitoring plan for main water bodies, considering climate variable information from IDEAM, enabling the monitoring of water levels and flows, especially during seasonal periods of rainfall or drought.	AbT
Maintenance and cleaning campaigns in water bodies that are critical for operations to reduce the occurrence of suspended solids affecting wastewater discharge during rainy periods. (*) As part of the process for applying for, modifying, or renewing discharge permits, include the requirement for periodic maintenance of receiving water bodies.	AbCT

Co-benefits	• Reduction of conflicts related to water resource use • Optimization of operational conditions • Cost reduction • Improvement of reputational image

Biodiversity and Ecosystem Services	
Objective	Reduce vulnerability in strategic ecosystems for operations through conservation, restoration, and recovery
PNCC Strategic Line	Management and conservation of ecosystems and ecosystem services for low-carbon and climate-resilient development
PIGCCME Strategic Line	Climate governance (Priority Territories Program)
Related Material Issue (ECP)	Biodiversity and Ecosystem Services

Measures	**Type**
Identify strategic ecosystems for the protection of water supply sources in order to implement recovery, protection, and/or conservation projects.	AbE
Promote vegetation cover restoration projects that enhance water retention and regulation capacity during flood events in areas near operations.	AbE
Establish conservation agreements that contribute to the protection and care of ecosystems associated with strategic water supply sources for operations.	AbCT
Identify and implement nature-based alternatives that contribute to water resource regulation in order to reduce vulnerability, particularly to drought, flood, and wildfire events.	AbE

Co-benefits	• Consolidation of carbon sinks • Restoration of ecological connectivity • Ensuring essential goods and services for the well-being of the population surrounding the operations

Climate-resilient infrastructure

Objective	Reducir la vulnerabilidad de las instalaciones de Ecopetrol por los impactos generados de eventos climáticos extremos
PNCC Strategic Line	Desarrollo de infraestructura baja en carbono y resiliente al clima
PIGCCME Strategic Line	Medida: Protocolo de seguridad de la red de transporte de hidrocarburos por ductos y de energía eléctrica ante riesgos climáticos
Related Material Issue (ECP)	Seguridad Industrial y de Procesos

Measures	**Type**
Reduce the vulnerability of Ecopetrol's facilities to impacts generated by extreme climate events.	AOI
Development of low-carbon and climate-resilient infrastructure.	AOI
Measure: Safety protocol for hydrocarbon and electric power transportation networks (pipelines and power lines) in response to climate-related risks.	AOI
Industrial and Process Safety	AbT
Co-benefits	• Reduction of operational costs associated with disaster response and impacts • Preservation of the Company's assets • Decrease in workplace incidents • Improvement in product transportation conditions

Climate-aligned operations	
Objective	Expand and strengthen operational capacities to address the effects of climate variability and climate change.
PNCC Strategic Line	Low-carbon and climate-resilient mining and energy development.
PIGCCME Strategic Line	Knowledge Generation and Dissemination (Communication, awareness-raising, and positioning strategy of the PIGCCME).
Related Material Issue (ECP)	Industrial and Process Safety

Measures	**Type**
Create training and capacity-building opportunities to strengthen conceptual foundations on climate variability and climate change.	AbCT
Increase capacity to understand and assess climate information, including monitoring.	AbCT
Review official alert systems for extreme events under climate variability and climate change scenarios.	AbCT
Actively participate in Municipal Risk Management and Climate Change Councils.	AbCT
Incorporate climate variability and climate change scenarios and response actions into Risk Management Plans and Emergency and Contingency Plans.	AbCT
Ensure the availability of equipment to respond to events occurring in the surrounding environment.	AbT
Co-benefits	• Improved operational performance • Reduction of operational-level incidents • Strengthening of workforce capacities • Enhanced preparedness to respond to situations related to climate variability and climate change

7. GOVERNANCE COMPONENT

The governance component establishes the guidelines and means of implementation necessary to advance the company's climate ambition and strengthen the resilience of its operations to the risks associated with climate change. This component integrates strategic decision-making, assignment of responsibilities and monitoring of climate commitments at the different levels of the organization. In this

context, the company has made significant progress in the appropriation of climate issues by decision-making areas and levels, in the availability and management of the financial means required for the implementation of mitigation and adaptation actions, as well as in the transparent and systematic disclosure of climate-related information, metrics and performance. in line with national and international best practices.

7.1 APPROPRIATION OF CLIMATE CHANGE ISSUES

Regarding the appropriation of climate change issues at the organizational level, the EG has a solid corporate governance model, which helps to facilitate the understanding and supervision of climate-related issues.

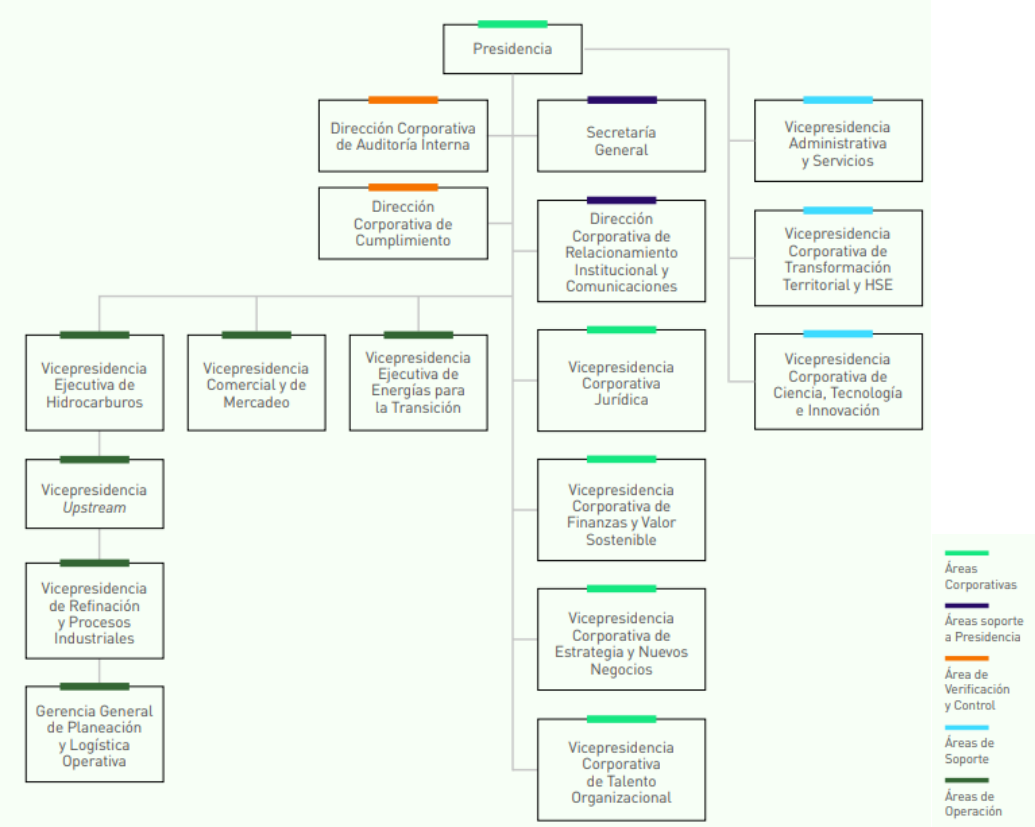
In this regard, Ecopetrol's Board of Directors defines and supervises the Strategy in which issues related to the Sustainability pillar of the 2040 Strategy are regularly reviewed and addressed®, which includes, among others, climate change and the energy transition.

This supervision is carried out through board committees, which guide the different issues. In the case of climate-related issues, the Board of Directors is supported by the following committees:

- Audit and Risk Committee: oversees business risks, including matters related to SustainabilitySustainability® and the Business Risk Map, which incorporates risk associated with climate change, water and biodiversity.
- Territorial Transformation Committee and HSE: guides and monitors the development of health, industrial and process safety, territorial and environmental transformation, including climate change.
- Compensation, Nominating and Culture Committee: reviews and recommends to the Board of Directors the approval of issues related to variable compensation (CV), this includes the GE Balanced Management Board (TBG) and the Long-Term Incentive Plans (LTPs). The TBG includes indicators related to climate aspects.
- Technology and Innovation Committee: assesses opportunities for the development of emerging technologies aligned with the Group's decarbonisation and energy transition objectives.
- Business Committee: analyzes the annual and three-year financial plan, considering project risks, climate change impacts, and alignment with energy transition.
- Corporate Governance and Sustainability Committee: aims to recommend to the Board of Directors systems for the adoption, monitoring and improvement of corporate governance and sustainability practices.

Figure 8 identifies the focus areas in which climate change issues are managed.

Figure 8. Ecopetrol's climate change governance structure



Source: Based on the 2025 SASB–TCFD Standards Convergence Report (Spanish version), Ecopetrol

For more information, see the chapter on the role of management in assessing and managing climate-related risks and opportunities, available in the Convergence Report Standards **SASB-TCFD**.

7.1.1 Relationship map and identification of needs

Based on the climate change roadmap approved by the Board of Directors, the needs (Table 2) of each of the themes – mitigation, compensation and adaptation – were established, aimed at meeting the company's climate ambition and strengthening the management of the material issue, in line with corporate objectives.

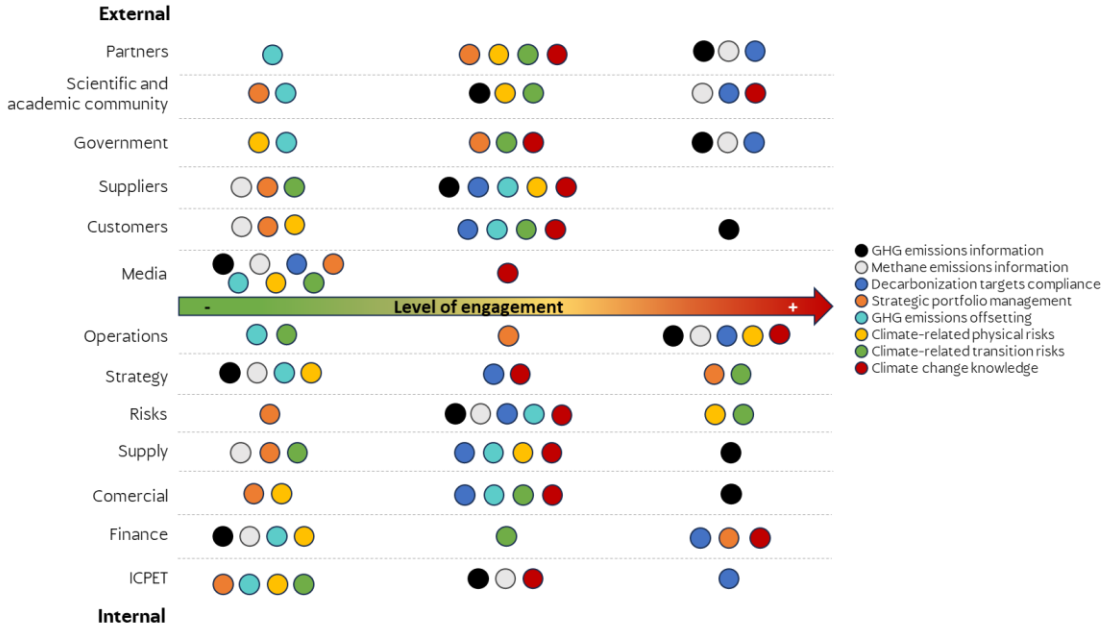
In addition, the actors, both internal and external, whose participation is essential to achieve the established objectives were identified. This exercise made it possible to recognize the capacities, roles, and levels of influence of each actor, as well as to prioritize those with the greatest potential to generate impact, facilitate the implementation of initiatives, mobilize resources, and promote organizational collaboration.

The result of this analysis is consolidated in the relationship map (Figure 9), which represents the connections between the company and the identified actors, as well as their level of influence, in order to support decision-making and ensure that the actions undertaken effectively contribute to mitigation. Climate Change Offsetting and Adaptation.

Table 2. Climate change thematic needs list

Temática	Necesidades
Mitigation	GHG emissions information
	Methane emissions information
	Compliance with decarbonization targets
	Strategic portfolio management
Offsetting	GHG emissions compensation portfolio and carbon credit trading
Adaptation	Riesgos físicos asociados al clima
	Riesgos de transición asociados al clima
Cross-cutting	Conocimiento en cambio climático

Figure 9. Stakeholder engagement map



Source: Ecopetrol internal information, 2025

7.1.2 Global initiatives and commitments

In addition to the identification of needs for engagement with external stakeholders described above, Ecopetrol has recognized the importance of actively participating in global initiatives and commitments as a key element in strengthening its climate governance. This participation allows demonstrating a transparent, verifiable commitment aligned with best practices, as well as improving credibility, competitiveness and responsiveness to the expectations and requirements of its stakeholders.

Likewise, linking to these spaces facilitates the alignment of the operation with global decarbonization trends, while providing access to international standards, robust methodologies and good practices that contribute to the strengthening of internal climate change management. In addition, these initiatives promote articulation with multilateral organizations, governments and other companies in the sector, generating opportunities for collaboration that can expand the scope, effectiveness and impact of the mitigation, compensation and adaptation actions planned by the company.

In 2018, Ecopetrol joined the Climate and Clean Air Coalition's (CCAC-OGMP) Hydrocarbon Methane Alliance, and in 2020 the new version of this initiative, called the Oil and Gas Methane Partnership, more

commonly known as OGMP 2.0, led by the United Nations Environment Programme (UNEP, UNEP). The highest industry standard for managing, reporting, and reducing methane emissions from global oil and gas value chains. Ecopetrol reports its emissions annually to OGMP 2.0. along with an implementation plan for both operated and non-operated assets to achieve reporting level 5 and comply with Gold Standard requirements.
In 2020, Ecopetrol joined the World Bank's Zero Routine Flaring by 2030 initiative, which brings together governments, oil companies and institutions that recognize routine gas flaring as unsustainable from an economic and environmental point of view, for which the different organizations agree to cooperate to eliminate routine gas flaring no later than 2030 in production activities. To this end, annually, the company reports total and routine burns.

In November 2023, Ecopetrol joined the Aiming for Zero Methane Emissions Initiative, led by the Oil and Gas Climate Initiative (OGCI) that encourages the oil and gas industry to aim for zero methane emissions by 2030. Ecopetrol also signed the Oil and Gas Decarbonization Charter (OGDC) during COP 28, a global agreement to accelerate the decarbonization of the hydrocarbons sector signed by more than 50 companies, with operations on five continents, representing approximately 40% of the world's hydrocarbon production.

7.2 FINANCIAL MEANS FOR THE IMPLEMENTATION OF MITIGATION AND ADAPTATION ACTIONS

In order to guarantee the availability, allocation and efficient management of the financial resources required for the implementation of projects and actions aimed at decarbonization, the strengthening of climate resilience and the energy transition, Ecopetrol has an internal financial management process framed in the principles of: (i) capital discipline, aimed at responding to the current challenges of sustainable value generation; (ii) interdependence of processes, which seeks alignment and articulation between projects, initiatives and areas of the organization; and (iii) alignment with the strategic objectives of the Business Group.

This process includes short-, medium- and long-term financial planning, the allocation of resources for both operating expenditure (OPEX) and investment (CAPEX), as well as follow-up and monitoring of execution, ensuring that investment decisions incorporate environmental performance and climate management criteria. Within this framework, the company has different budgetary investment allocations for the implementation of initiatives and projects aimed at reducing GHG emissions in operations, as well as for reducing the vulnerability of the operation to variability and climate change in accordance with risk management. These allocations allow for adequate management of climate risks and promote the identification and exploitation of opportunities associated with the transition to a low-carbon economy.

In addition to its own financial resources, Ecopetrol has managed and executed resources from international cooperation. In particular, actions for the management of methane emissions have been financed with resources from the United Nations Environment Programme (UNEP), within the framework of the global initiative Oil and Gas Methane Partnership (*OGMP* 2.0).

The management of the financial means for climate action at Ecopetrol is based on a gradual approach and continuous improvement. This approach recognizes that the transition to activities aligned with climate change mitigation and adaptation objectives is a progressive process, which requires strengthening technical, financial, and operational capacities, as well as making gradual adjustments in the planning, prioritization, and execution of investments.

For more details on the financial strategy, investment mechanisms and projects implemented, it is recommended to consult the current Integrated Management Report, available on the Company's website.

7.3 DISCLOSURE OF CLIMATE-RELATED ISSUES AND METRICS

Ecopetrol complies with the requirements established by the different control entities and competent authorities, and periodically and transparently discloses information related to climate change, in line with its corporate strategy and climate ambition. To this end, the company adopts and applies best practices and reporting standards, with the purpose of ensuring consistency, comparability and traceability of the metrics and climate issues disclosed.

Currently, Ecopetrol reports its performance and progress in environmental and climate matters through various nationally and internationally recognized frameworks, which allow it to respond comprehensively to the expectations of stakeholders, strengthen decision-making and demonstrate the management of risks and opportunities associated with climate change. These reporting frameworks also facilitate the articulation between strategy, governance, risk management and metrics, in line with global climate disclosure trends.

Figure 10 presents the relationship of the respective reporting frameworks used by the company for the disclosure of environmental and climate information, among other relevant issues, evidencing the comprehensive and progressive approach adopted by Ecopetrol to strengthen transparency and accountability in climate change management.

Figure 10. Climate change–related reporting frameworks

Source: Ecopetrol internal information, 2025

These frameworks consider the four pillars of climate disclosure recommended by the Task Force on Climate-related Financial Disclosures (TCFD): Governance, Strategy, Risk and Opportunity Management, and Goals and Metrics. They are also aligned with the International Financial Reporting Standards on sustainability, in particular IFRS S2 – Climate-related disclosures, issued by the International Sustainability Standards Board (ISSB), which consolidates and deepens the TCFD guidelines, directly integrating climate issues into financial disclosure. Table 3 lists the main metrics disclosed in the different reporting frameworks.

Table 3. Climate change metrics disclosed

heme	Need	Metric
Mitigation	GHG emissions information	Total Scope 1 GHG emissions, in tCO_2e
		Total Scope 2 GHG emissions, in tCO_2e
		Total Scope 3 GHG emissions, in tCO_2e
		Carbon intensity for Scopes 1 and 2, by segment, in $kgCO_2e/boe$
		Methodologies, emission factors, and global warming potentials used
		Renewable and non-renewable energy consumption, in MWh
		Energy intensity, in kWh/bbl
	Methane emissions information	Total methane emissions, in tCH_4
	Decarbonization targets compliance	GHG emissions reductions, in tCO_2e
		Progress toward decarbonization targets
		Energy optimization, in PJ
Offsetting	GHG emissions offsetting portfolio	Total compensated emissions, in tCO_2e
		Carbon credits retired, in tCO_2e
Adaptation	Climate-related physical risks	Climate Risk Index
		Adaptation actions aligned with Environmental Management Plans
		Probability of occurrence of extreme climate events
	Climate-related transition risks	Identification, description, and assessment of transition risks
		Transition scenarios used
		Identified opportunities
Governance	Climate change direction and oversight management	Climate change roles and responsibilities
		Compensation incentives
		Frequency of climate-related issue monitoring

These metrics are monitored on an ongoing basis to identify in advance physical and transition risks that may affect the Company's operational continuity and strategic objectives. Additionally, monitoring ensures the quality, consistency, and comparability of the information reported in the international standards mentioned above, which require accurate, verifiable metrics aligned with good practices of disclosure on climate change.

The PIGCCe is progressively updated as the Company's climate change management evolves, with the purpose of incorporating the identified opportunities for improvement, as well as regulatory updates and other relevant elements associated with this material matter. However, the plan contemplates a periodic review to ensure its continued alignment with Ecopetrol's corporate strategy and climate ambition, ensuring that the information disclosed adequately reflects the evolution, maturity and strengthening of the Company's climate management.

All the information associated with the progress of the implementation of the PIGCCe is reported in the Integrated Management Report annually, as well as on the Ecopetrol S.A. website. and in the other reports associated with ESG (Environmental, Social and Governance) information.