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Ecopetrol aims to position natural gas as an immediate, clean, cost-effective and efficient energy solution for Colombia.

Reinventing the Ecopetrol Group

Colombia
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The Ecopetrol Group is the fourth-largest oil company in Latin America. As Colombia's NOC, it accounts for over 60% of the country's hydrocarbons production and 30% of its exports and serves as a crucial source of foreign currency, playing a vital role in an economy challenged by a fiscal deficit.

The transformation of Colombia's oil and gas sector has emerged as a cornerstone of President Gustavo Petro's agenda. Addressing the decline in the country's hydrocarbons production has been coupled with an accelerated drive toward greener and cleaner energy sources. "Our country's greatest energy potential lies not in coal or oil but in renewables. Colombia can take its place at the forefront of the energy transition, and that is where our destiny lies," President Petro said. Ecopetrol has demonstrated the most ambitious energy transition agenda among Latin American NOCs, driven in part by its constrained resource base, reflected in a declining reserves-to-production ratio of 6.1 years for gas and 7.1 years for oil. Furthermore, Ecopetrol became the first Latin American NOC to adopt a net-zero target, underscoring a climate commitment that closely aligns with the priorities of the Petro administration.

While recognising the vital role of the oil and gas sector in Colombia's economy, the NOC is striving to channel revenues from fossil fuel extraction into advancing the energy transition. For the Group, the energy transition is not about ceasing oil extraction but rather about diversifying its energy portfolio. Ecopetrol is reinventing itself as an energy company while leading Colombia's energy transition.

GAS, A TRANSITIONAL FUEL: The Group has explicitly outlined its objective of maximising the value of its oil and gas reserves by enhancing exploration and production activities, while also strengthening the competitiveness of its entire hydrocarbons business.

Ecopetrol's investment plan for 2024-2026 involves the allocation of around USD 20 billion. From this amount, approximately 60% will be channelled towards the traditional business of producing, treating, refining and transporting crude oil. Another 40% will be focused on its energy transition business line, which includes natural gas. "Natural gas is considered the axis of the energy transition and the lever that will transform our industry into a more sustainable one," Ricardo Roa, president and CEO of the Ecopetrol Group, told The Energy Year.

Moreover, Colombia's best opportunity for meeting and surpassing its gas demand lies in unlocking its vast offshore potential. The company aims to kick-start a new gas era by 2029-2030, focusing on untapped reserves in the Caribbean Sea. To this end, it has already advanced key upstream collaborations with IOCs such as Petrobras, Shell and Oxy.

In Q4 2024, Ecopetrol and Petrobras confirmed the presence of 170 bcm (6 tcf) of natural gas with the successful drilling of the Sirius-2 well in the GUA-OFF-0 block. This discovery, hailed as the largest gas find in Colombia's history, has the potential to triple the nation's current gas reserves and could significantly address its gas shortage. "We see natural gas as the hinge of the energy transition in this country, but we need to accelerate the development of these offshore assets to start producing as soon as possible," Roa said.

Along with this, Ecopetrol is looking to reverse depletion and boost production at its onshore assets, which currently account for more than 70% of the country's gas output. The NOC holds stakes in Colombia's largest gasfields, including Chuchupa, Ballena, Cusiana and Cupiagua, which constitute the core of the country's immediate gas production potential.

Through its dual strategy of both onshore and offshore development, Ecopetrol aims to position natural gas as an immediate, clean, cost-effective and efficient energy solution for Colombia.

DECARBONISATION AND EFFICIENCY: The Group has rolled out a comprehensive strategy leveraging various mechanisms to accelerate Colombia's energy transition. In March 2021, it made history as the first NOC in Latin America to announce its commitment to achieving net-zero carbon emissions by 2050. As part of its decarbonisation efforts, by 2025 the company will achieve a reduction of 400,000 tonnes of CO₂e emissions across its entire value chain. To reach this milestone, it is implementing a range of innovative solutions which include advanced energy efficiency technologies such as the AI-based system Quark; the reduction of fugitive emissions, venting and flaring through leak detection and repair programmes; and the production of cleaner fuels such as sustainable aviation fuel. Additionally, the company is investing in renewable energy sources, including solar, wind and geothermal power.

Likewise, CCUS is a cornerstone of Ecopetrol's pursuit of zero emissions. The Colombian Petroleum and Energy Transition Institute (ICPET) is developing cutting-edge CCUS technology through a series of pilot projects that are bound to be game-changers for decarbonisation. "We seek to implement viable alternatives to capture CO₂ released by industrial and energy processes for storage and reuse in applications such as the production of synthetic materials and fuels," Jose Vicente Villamizar, director of ICPET, told The Energy Year.

Energy efficiency has also become pivotal as the Group aims to achieve energy use with less energy input. In this regard, the company wants to optimise its internal energy consumption through a total combined reduction of 25 PJ by 2030. To this end, the use of technologies has proven pivotal.

In January 2025, Colombia's NOC and UAE-based AIQ signed a strategic agreement to deploy AI solutions in Ecopetrol's operations. AIQ holds over 16 patents related to AI tools for the energy sector, including BeakWell, the world's first autonomous control system for gas lift wells, and

IN FIGURES

Value of Ecopetrol's 2024-2026 investment plan:

Around USD 20 billion

Size of the Sirius-2 gas discovery:

170 bcm

Year by which the Group targets net-zero carbon emissions:

2050

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sector, including EcoWell, the world's first autonomous control system for gas-lifted wells, and AR360, a reservoir visualisation and performance monitoring system that uses AI to optimise field development plans. The two-year agreement will see Ecopetrol make use of different technologies to achieve operational excellence and energy efficiencies.

A CLEANER PORTFOLIO: Ecopetrol is spearheading the adoption of renewable energy in Colombia as part of its commitment to the energy transition. Over recent years, the Group has made laudable efforts to incorporate clean energy projects into its roster. By the end of 2025, the company aims to have 900 MW of renewable power generation in its portfolio, with a goal of reaching 2.2 GW by 2030.

"We have received proposals for more than 11 GW of renewable energy generation projects, of which we have selected a portfolio of 7.5 GW to develop by 2030. From this portfolio, we are prioritising 2.2 GW. In total, this pipeline of projects represents an investment of around USD 3.4 billion" Roa said.

A key project materialising this benchmark includes La Cira Infantas solar park, which was inaugurated in Q4 2024 in Santander. Fully financed by Ecopetrol, this venture includes 84,900 solar panels delivering 76.3 GWh per year, which is equivalent to the average consumption of 40,500 Colombian households. This project will contribute to the reduction of 12,500 tonnes of CO2 per year, which equates to removing 8.6 million vehicles and 2 million motorcycles from circulation in Bogotá.

Another area Ecopetrol is betting on is hydrogen. The Group aspires to be an important regional player in the hydrogen arena, with two hydrogen pilot projects located in the Cartagena and Barrancabermeja refineries that currently produce around 130,000 tonnes per year.

The Group's strategic hydrogen roadmap outlines a total investment of USD 2.5 billion to advance hydrogen-based projects, aiming to produce 1 million tonnes per year by 2040 – comprising 40% green, 30% blue and 30% white hydrogen – for both domestic consumption and export.

In December 2024, Ecopetrol announced the construction of a brand-new green hydrogen plant in the Cartagena Refinery, due by 2026. Valued at USD 28.5 million, this undertaking will include a 5-MW electrolyser with the capacity to produce 800 tonnes of hydrogen per year, making it the largest green hydrogen plant in Latin America.

A BET ON DIVERSIFICATION: The Group's business plan highlights its commitment to diversifying its operations, venturing into areas beyond hydrocarbons. Today, the Ecopetrol Group has redefined itself, evolving from a traditional petroleum giant into a forward-looking energy conglomerate. Its diversification strategy follows a two-fold path, moving both towards and away from hydrocarbons.

Firstly, the Group has made strong moves to diversify within oil and gas, as seen in its bet on petrochemicals through its subsidiary, Esentia. This company has become a referent in the production and sale of polypropylene, polyethylene and masterbatch – recyclable raw materials that are essential for the plastics processing industry and other sectors.

In mid-2024, Esentia launched its first mechanical recycling plant in Tocancipá, with a capacity to produce 15,000 tonnes per year of resins made from post-consumer plastic. Valued at USD 20 million, this venture marks a significant milestone in Colombia's circular economy. It stands as one of the most advanced facilities of its kind in Latin America and the largest mechanical recycling plant in the country.

Additionally, the plant has the capacity to process over 12% of the 120,000 tonnes of post-consumer material generated annually in Colombia. "Esentia's recycled resins plant embodies the Ecopetrol Group's circular economy strategy and represents the future of the plastics industry in the country and the world," Ricardo Olier, circular business manager at Esentia, told The Energy Year.

Secondly, Ecopetrol has embarked on a quest to diversify its portfolio while seeking ways to generate income beyond its traditional oil and gas business. In 2021, the Group acquired 51.4% of Colombian utility firm Interconexión Eléctrica (ISA). Valued at USD 3.58 billion, this transaction marks a transformational step in the Group's energy transition and diversification.

"ISA's contribution to the Ecopetrol Group's strategy is fundamental, as its focus is on energy transition and low-emission businesses," Jorge Andrés Carrillo, CEO of ISA, told The Energy Year. Moreover, the company expects to cover around 30% of the Group's self-generation and energy storage needs, thereby driving progress towards the energy transition.

ISA's contribution to the Ecopetrol brand is undeniable, serving as a key asset within the Group's portfolio. In the first half of 2024, ISA accounted for 16% of the Group's EBITDA and 5% of its total profits. By 2040, ISA is projected to contribute between 20-25% of the Ecopetrol Group's EBITDA.

"Within our Group, ISA is and will become a critical transmitter of energy in the national context, interconnecting all of the clean energy projects we are trying to incorporate in our energy matrix moving forward," Roa said. "The energy transition is not possible without transmission, and ISA is the lever enabling this transition."

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