

## THREE NATIONAL OIL COMPANIES IN LATIN AMERICA WITH MANAGEMENT POLICIES THAT DIFFER ON DECARBONIZATION

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### SUMMARY

- In response to the global trend toward decarbonization, the three major oil producers of Latin America—Brazil, Mexico, and Colombia—are rethinking their energy policies. While Brazil and Colombia are actively promoting decarbonization, Mexico has prioritized national interest, going against the trend toward decarbonization. Their energy policies are divided in terms of decarbonization.
- The state-owned oil companies of these countries, which produce about 80% of their respective nation's crude oil on average, have management policies in line with their government's energy policies. Petrobras of Brazil is expanding the application of carbon capture, use, and storage (CCUS) technology for the production of crude oil. Colombia's Ecopetrol aims to decarbonize by investing in renewable energy and other new businesses.
- For financing purposes, Brazil and Colombia's oil companies may accelerate their decarbonization efforts.

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### 1. ENERGY POLICIES OF THE THREE MAJOR LATIN AMERICAN OIL-PRODUCING COUNTRIES AND MANAGEMENT POLICIES OF THEIR NATIONAL OIL COMPANIES

In response to the global trend toward decarbonization, the governments of the three major crude oil producers of Latin America—Brazil, Mexico, and Colombia—are rethinking their energy policies (Figure 1). The governments of Brazil and Colombia are aiming to achieve carbon neutrality by 2050 and promoting the decarbonization of the petroleum and other industries with high greenhouse gas emissions. Both nations are expected to boost investment in new businesses such as renewable energy, while promoting diversification of their primary energy sources. Meanwhile, the Mexican government's top priority is to restore the leadership of state-owned enterprises in the energy sector. Pemex, the Mexican state-owned petroleum company, has been increasing crude oil and gas production without declaring any concrete measures for decarbonization, going against the trends in the other countries. Accordingly, the energy policies of these three countries differ on the issue of decarbonization.<sup>1</sup>

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<sup>1</sup> Petroleum of Venezuela (PDVSA), once the largest oil producer in the region, has a similar policy to Mexico. As of 2020, however, Venezuela's daily crude oil production has fallen to about one-sixth of its level in the early 2000s, and the country's greenhouse gas emissions remain at a low level.

**Figure 1. Energy policies and greenhouse gas reduction targets of Brazil, Colombia, and Mexico**

Country	Energy policy	Greenhouse gas emission reduction targets (Paris Agreement Nationally Determined Contributions: NDCs)
<b>Brazil</b>	<ul style="list-style-type: none"> <li>- To meet domestic energy demand that is expected to double by 2050 compared to 2015, Brazil aims to diversify the energy mix and provide stable supply. In particular, in order to break the current reliance on hydropower for about 60% of power generation, Brazil will expand investment in renewable energy, biofuels, nuclear power, and oil and gas.</li> <li>- In the oil and gas sector, the development and drilling of offshore pre-salt oil deposits will be expanded, and crude oil production is expected to grow about 2.5 times by 2050.</li> </ul>	50% greenhouse gas emissions reduction by 2030 compared to 2005 Carbon neutral by 2050 (Submitted in November 2021)
<b>Colombia</b>	<ul style="list-style-type: none"> <li>- While maintaining crude oil and gas production, which accounts for about 60% of the primary energy mix, Colombia will actively promote the adoption of renewable energy sources such as solar, wind, and geothermal power. Renewable energy's share of total power generation is expected to grow from just under 2% in 2020 to 20% by 2050.</li> <li>- Colombia will launch a pilot project for the production of low-carbon hydrogen by 2025 and is expected to move to full-scale production by 2050.</li> </ul>	51% reduction in greenhouse gas emissions compared to BAU emissions by 2030 Carbon neutral by 2050 (Submitted in December 2020)
<b>Mexico</b>	<ul style="list-style-type: none"> <li>- In addition to promoting oil and gas production by Pemex, Mexico will work to amend the law in order to give preferential treatment for public procurement of electricity generated using crude oil and gas from Pemex.</li> <li>- Crude oil production by Pemex is expected to increase to 2 million barrels per day by 2024, a 22% increase from 2020.</li> </ul>	22% reduction compared to BAU emissions by 2030 (unconditional) 36% reduction compared to BAU emissions by 2050 (conditional) (Submitted in December 2020)

Source: Prepared by MGSSI based on the energy plans issued by the nations concerned

The state-owned oil companies of these countries, which produce about 80% of their respective nations' crude oil on average, have management policies in line with their government's energy policies (Figure 2). The reasons for following national policies vary from country to country. In the case of Colombia and Mexico, it is likely the result of the government being a major shareholder of their respective oil companies with the ability to intervene in the management significantly. In the case of Petrobras in Brazil, even though the government allows Petrobras to manage itself, the company voluntarily coordinates its policies with those of the government. The following chapters describe the management policies of each of these three companies with respect to decarbonization.

**Figure 2. Management policies and greenhouse gas emission reduction targets by national oil companies**

National oil company	Management policies	Applicable emission scopes <sup>Note</sup>	GHG emission reduction targets (absolute quantity basis)	Reduction targets based on carbon intensity (carbon intensity basis)
<b>Petrobras</b> Brazil	Help decarbonize the oil and gas sector, which is a priority investment area for the country, by promoting the utilization of CCUS technology in crude oil and gas production.	1, 2	25% reduction by 2030 compared to 2015	[Upstream stage] 32% reduction by 2025 compared to 2015 [Refinery stage] 16% reduction by 2025 compared to 2015
<b>Ecopetrol</b> Colombia	Expand investment in renewable energy and other new businesses areas and diversify its business portfolio as part of decarbonization.	1, 2 1, 2, 3	25% reduction by 2030 compared to 2019 Net zero by 2050 50% reduction by 2050 compared to 2019	
<b>Pemex</b> Mexico	Help achieve the government's goal of "restoring the leadership of state-owned enterprises in the energy sector" and place top priority on increasing oil and gas production.	1, 2	[Upstream stage] 32% reduction by 2025 compared to 2020 [Refinery stage] 38% reduction by 2025 compared to 2020	

Note: Reduction is based on three types of greenhouse gas emissions resulting from business activities in its supply chain. Scope 1 emissions refer to greenhouse gases emitted directly by the company itself. Scope 2 refers to indirect emissions from use of energy, including electricity, required for the company's operations. Scope 3 refers to all other indirect emissions than those identified as Scope 2.

Source: Prepared by MGSSI based on the business plans released by the companies concerned

## 2. PETROBRAS (BRAZIL): EXPANDING THE USE OF CCUS TECHNOLOGY IN CRUDE OIL AND GAS PRODUCTION

Brazil's Petrobras has set a 25% reduction goal for Scope 1 and 2 emissions by 2030 compared to 2015 (Figure 2). To reach this goal, the company is investing 2.8 billion dollars annually to make active use of CCUS technology in its crude oil production and refining processes.

As one such project, instead of releasing CO<sub>2</sub> associated with oil and natural gas drilling, Petrobras has been injecting it into rock reservoirs at the Santos Basin Pre-Salt Oil Field since 2013. In 2020, the project buried seven million tons of CO<sub>2</sub> in the ground, which was about 19% of the total CO<sub>2</sub> injected underground worldwide in that year. The amount of CO<sub>2</sub> captured by this project is expected to reach 40 million tons by 2025, a sixfold increase since 2020, and it is likely to contribute to the reduction of greenhouse gas emissions. In fact, in 2020, Petrobras increased its average daily crude oil production by 4.3% year-on-year to 2.26 million barrels per day, while reducing its greenhouse gas emissions by 5.1% year-on-year (Figure 3).

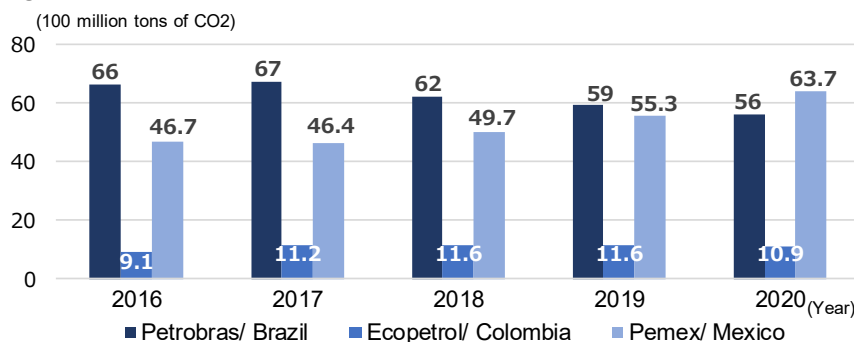
Nevertheless, according to its current five-year business plan, the company will not invest in renewable energy or other new businesses until at least 2026. In fact, for the past few years, Petrobras has been selling assets, including wind power and other renewable energy facilities. Renewable energy is being left to other state-owned enterprises, such as power company Eletrobras, which the government decided to privatize in 2021. Therefore, the policy of Petrobras is to specialize in crude oil and gas development. Given its limited funds, the company has likely determined it is more profitable to invest in crude oil and gas development, rather than in renewable energy, while there is still demand for fossil fuels.

The current Brazilian administration is aiming to privatize not only Eletrobras, but Petrobras as well. However, former Brazilian President Luiz Inácio Lula da Silva (2003 to 2010 in office), who is now leading in the polls ahead of the next presidential election in October 2022, has indicated that he is likely to review the planned privatization. If he is elected again, government intervention in state-owned enterprises will be likely to increase. He is also keen on climate change measures, as he set Brazil's first national emission reduction targets during his time as president. This means that he could strengthen the decarbonization policy at Petrobras.

## 3. ECOPETROL (COLOMBIA): AIMING TO DECARBONIZE BY INVESTING IN RENEWABLE ENERGY AND OTHER NEW BUSINESSES

Colombia's state-owned Ecopetrol is aiming for a 25% reduction in Scope 1 and 2 greenhouse gas emissions by 2030 compared to 2019, while aiming to become net zero by 2050. This is the first time that a Latin American state-owned oil company has declared a net-zero goal. It is also aiming for a 50% reduction in Scope 1, 2, and 3 emissions by 2050 compared to 2019. In fact, Ecopetrol achieved a 6.0% year-on-year emissions reduction in 2020 (Figure 3), which was greater than the decline in crude oil production due to the COVID-19 pandemic (3.9% decline year-on-year).

**Figure 3. GHG emissions of state-owned oil companies**



Note: Pemex figures represent emissions in the company's refinery stage only.

Source: Prepared by MGSSI based on the data released by the companies concerned

The company is planning to decarbonize its business by expanding investment in natural gas and renewable energy such as solar power and biofuels. It is also investing in low-carbon hydrogen<sup>2</sup> that emits less CO<sub>2</sub> during the production process. For the short term, Ecopetrol is focusing on expanding natural gas production and adopting renewable energy. In particular, the company has placed great importance on natural gas, which emits less CO<sub>2</sub> during combustion than oil and coal. The company sees it as an energy source for the transitional period before complete decarbonization. By 2024, Ecopetrol aims to invest more than USD1.8 billion in relevant projects. These are existing offshore gas field development projects, as well as the Piedemonte natural gas and light crude oil project in eastern Casanare, which began operations in June 2021. Ecopetrol's outlook for the proportion of natural gas in its business portfolio (on a production volume basis) is growth from 18% in 2020 to 30% by 2030. In the area of renewable energy, five new solar power plants, in addition to the company's three existing plants, will start operations during 2022. Compared to 2021, the installed capacity of Ecopetrol's renewable energy generation, including solar, wind, and geothermal, is expected to grow about fourfold (up to 400 or 450 MW) by 2023.

As a long-term objective, Ecopetrol will proceed with a pilot project for the production of low-carbon hydrogen by 2025, and then move to full-scale production by 2050. In its refineries, the company is now using gray hydrogen derived from fossil fuels, but it plans to replace it with low-carbon hydrogen. It expects to eventually turn low-carbon hydrogen into an export product to replace crude oil.

The reason Ecopetrol is planning to transform itself into a clean energy business is that Colombia has abundant natural gas resources, in addition to renewable energy such as solar power and wind power. Moreover, most of the natural gas Colombia produces is not a byproduct of oil drilling. This makes it possible to expand gas production while reducing crude oil output. On the other hand, Brazil's natural gas is usually a byproduct of oil drilling, which means crude oil and gas production cannot be separated there.

Ecopetrol's decarbonization policy is likely to remain unchanged, even after Colombia's presidential election in May 2022. Currently, a left-wing candidate who advocates a break from fossil fuel dependence is leading in the polls. If a change of government takes place, renewable energy adoption is expected to accelerate in Colombia.

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#### 4. PEMEX (MEXICO): NO CONCRETE DECARBONIZATION PLANS

The administration of Mexico's Andrés Manuel López Obrador has been reversing the energy sector liberalization promoted by his predecessor. Obrador aims to restore the leadership of state-owned enterprises in the energy sector. The current president claims that private companies threaten national energy security and also intentionally raise electricity prices, thereby making the lives of citizens more difficult. The Mexican government regulates renewable electricity generation, a market with many private companies. The government gives preferential treatment to the procurement of electricity derived from crude oil and gas produced by Pemex, the state-owned oil company.

In response to the governmental policy, Pemex has been prioritizing increased crude oil production over decarbonization. In its five-year plan ending in 2025, the company anticipates that just by improving and modernizing its refineries, greenhouse gas emissions will decrease by 32% in the upstream stage and by 38% in the refinery stage compared to 2020 (Figure 2). However, Pemex has made no significant efforts toward decarbonization, and its greenhouse gas emissions rise each year (Figure 3). The widely held view is that its emissions will continue to escalate.

The Mexican government's policies tend to go in the opposite direction of decarbonization and prioritize short-term national interest instead. This has made Mexico less attractive as an investment destination for companies

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<sup>2</sup> In Colombia, there are two types of low-carbon hydrogen being produced. The first is "blue hydrogen," which is derived from fossil fuels while minimizing CO<sub>2</sub> emissions in the manufacturing process based on carbon capture and storage technology. The second type is "green hydrogen," which is derived from renewable energy and therefore does not result in CO<sub>2</sub> emissions in the manufacturing process.

already operating in the country and for those considering future investments there. For example, it has become difficult for companies operating in Mexico to procure renewable electricity, which creates obstacles to decarbonizing their entire supply chains. The Executive Council of Global Enterprises, made up of executives from multinational companies in Mexico, has warned that some companies will withdraw from the Mexican market if the government continues to be reluctant to develop clean energy.

Nevertheless, 63.8% of Mexicans support the government's energy policy for the reasons of energy security and lower electricity prices. Given the president's high approval rating (62.8% as of January 2022), there are no signs that the government will commit to decarbonization. For this reason, no policy change can be expected at least until after the current administration's term ends in 2024.

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## 5. FUTURE OUTLOOK: DECARBONIZATION EFFORTS OF NATIONAL OIL COMPANIES MAY ACCELERATE DUE TO FINANCING NEEDS

Petrobras and Ecopetrol, which are already committed to decarbonization, are likely to accelerate their decarbonization efforts going forward to help secure the financing they need. Unlike Pemex, which is becoming more dependent on the Mexican treasury, these two companies rely on international financial institutions and private creditors, from which they procure most of their funds. As global standards for corporate evaluation place ever stronger emphasis on decarbonization, Latin American state-owned oil companies will have no choice but to seriously focus on renewable energy and the production of low-carbon hydrogen.

Ecopetrol has already demonstrated outstanding progress in this respect. The company has been accelerating the development of low-carbon hydrogen since the Colombian government released its national hydrogen strategy in September 2021. Ecopetrol is now constructing the country's first electrolysis plant for hydrogen production in Cartagena on the Caribbean coast. It is expected to begin trial operation by the second half of 2022. The company is also expanding its R&D investment to enable the utilization of low-carbon hydrogen in refineries and the field of mobility. Moreover, it is exploring practical application of the hydrogen produced in-house.

Petrobras is currently in the process of asset liquidation and is likely to limit decarbonization efforts to its core crude oil and gas business over the short and medium term. That said, some Petrobras executives have indicated that they may undertake large-scale renewable energy operations in the future. It is believed that the company will make relevant decisions looking at trends in the external environment, including financing.