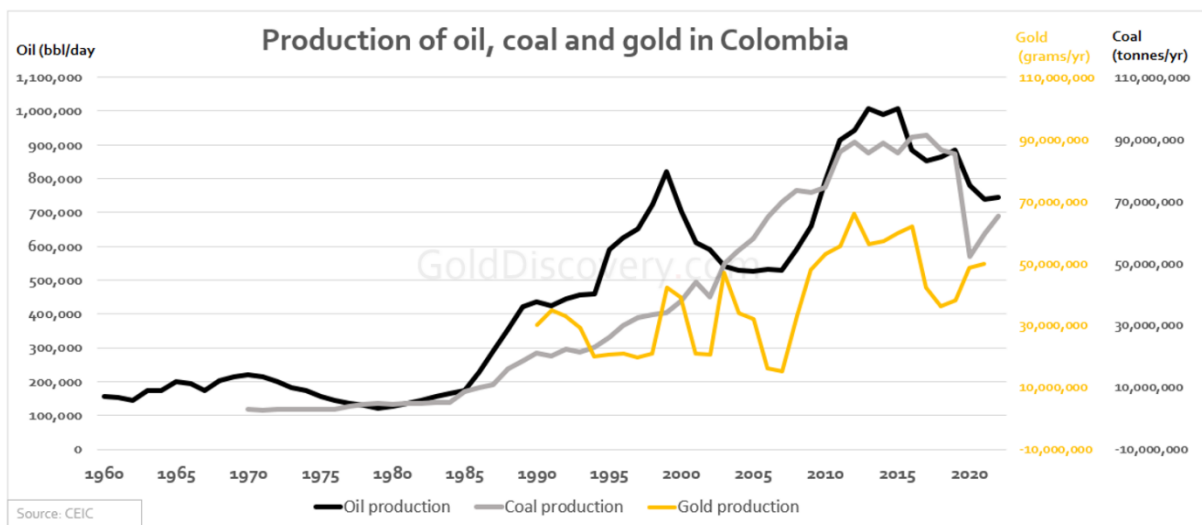


The future of mining and energy production in Colombia

Mining has a long history in Colombia, with evidence of pre-Colombian mining activities dating back thousands of years. The country is rich in a variety of minerals, including gold, copper, nickel, coal, and emeralds, and these resources have been exploited for centuries. In the colonial period, mining played a significant role in the economy of Colombia, with gold and silver being the primary minerals extracted. The discovery of large gold deposits in the Chocó region in the 19th century led to a gold rush and a rapid expansion of mining in the country. In the 20th and 21st centuries, Colombia has continued to grow its production of minerals, with the mining sector contributing a significant portion of the country's export earnings. Colombia has become a major producer of gold, with several large-scale gold mines in operation.

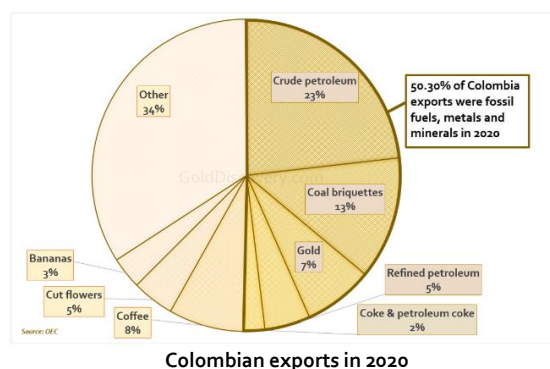
The first coal mines in Colombia date back to the early 19th century. Coal was initially used primarily for domestic and industrial purposes, such as fuel for steam engines and heating. However, with the development of the railroad industry in the late 19th and early 20th centuries, coal began to be exported to other countries, and Colombia became a significant exporter of coal.

Oil and gas are also of critical importance to the economy of Colombia. The country has large reserves of fossil fuels, including oil and natural gas. In recent years, there has been an increase in exploration and production of these resources. The majority of oil production in the country comes from the Llanos Basin, which is located in the eastern part of the country. The gas industry is centered in the La Guajira region, which is located in the northwest of the country. The leading producer in the oil and gas sector in Colombia is Ecopetrol, followed at a great distance by Frontera Energy (revenue approximately US\$20 billion versus US\$1 billion).



Production of oil, coal and gold in Colombia in the last decades

Petroleum exports are primarily going to the US and China, while coal is mainly exported to Turkey, Chile, Europe, and Israel. Gold is mainly going to the US, Italy, the United Arab Emirates, and Hong Kong.

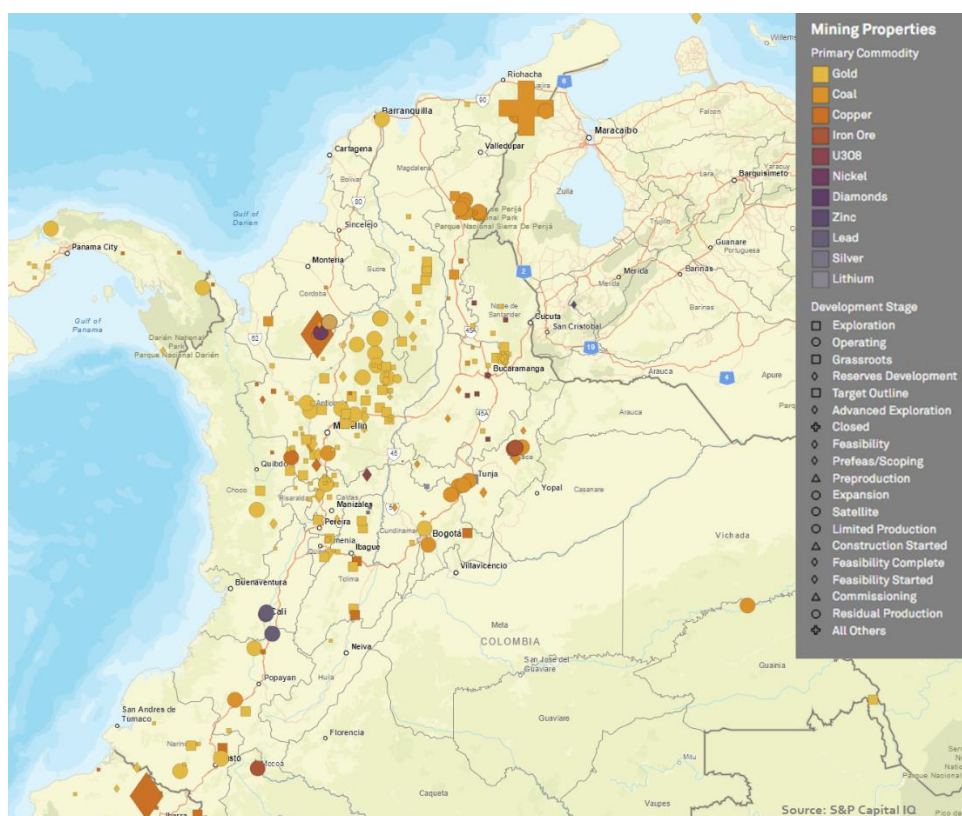


The current state of mining & energy in Colombia

Mining

According to data from the Colombian Mining and Energy Information System (SIEM), as of 2020 there were approximately 1,600 mining concessions in Colombia that were in operation or being developed. These concessions cover a wide range of minerals, and are operated by both domestic and foreign mining companies.

In addition to these concessions, there are also many small-scale and informal mining operations. These operations are often illegal and are not subject to the same regulatory and environmental standards as larger, formal mining concessions. Overall, Colombia is home to a diverse and active mining industry, with a range of large and small-scale operations that are focused on extracting a variety of minerals.



Overview of mining properties in Colombia

In order to operate in Colombia, mining companies must obtain a number of permits and approvals from the Colombian government. These permits are issued by a variety of government agencies and are intended to ensure that mining operations are conducted in a responsible and sustainable manner and that they comply with relevant laws and regulations.

In 2020, Colombia's Congress passed Law 2056, which changes the way royalties from mining projects are distributed. Under the new system, a greater share of royalties will be given to the municipalities and regions where the mining takes place, with the aim of fostering closer alignment between the interests of project developers and those of local authorities and communities. The law also streamlines the process for local and regional governments to invest these funds. A portion of the royalties, specifically 5%, must be used for environmental conservation and efforts to combat deforestation.

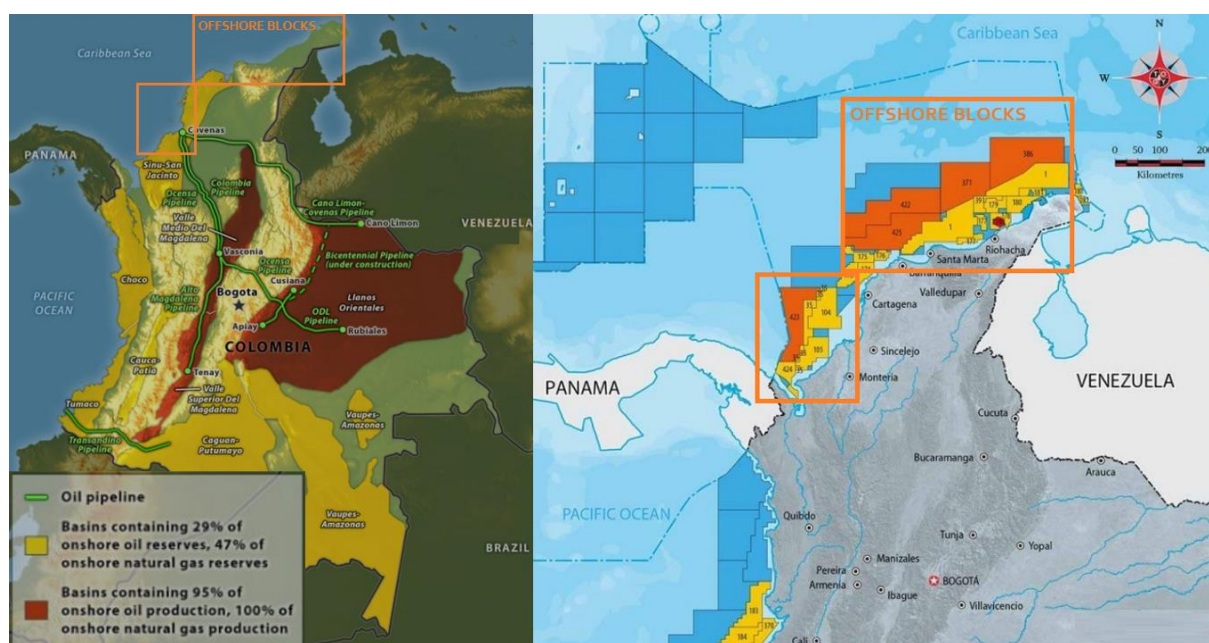
Since Colombia is planning to rewrite the mining code, these types of initiatives and laws are expected to continue, with the goal of benefiting the communities, avoid mining in national forests and parks of Colombia. This would bring it in line with premier mining countries like Canada, the US, and Australia.

Oil & gas

A wealth of knowledge and experience about Colombia's onshore fields has been gained over the years. Unlike offshore, there is a century's worth of onshore exploration and production (E&P) knowledge to draw upon, starting with the historic La Cira and Infantas oil fields in the Middle Magdalena Basin in north-central Colombia. The majority of the country's oil and gas production has come from this region.

One advantage for foreign companies interested in Colombia's offshore resources is the low cost of entry. In Brazil, the cost of gaining access to acreage is much higher. Risk is reduced through technical evaluation agreements, which allow companies to conduct technical studies on large areas of unexplored or under-explored land without committing to expensive work. If the companies decide to proceed with drilling, they can negotiate the acreage into an exploration and production (E&P) contract that includes well commitments.

Colombia is turning to offshore exploration in deep and ultra-deep waters in an effort to add to its hydrocarbon reserves. This approach has been successful for Brazil, which has used advanced technology and significant investments to become one of the world's top oil producers. In Colombia, corporate social responsibility (CSR) has been a crucial part of the offshore oil and gas industry from the start. The government recognizes the value of a company with a strong CSR policy, and has made it a requirement for participation in competitive bidding processes for offshore areas. As a result, only the largest oil and gas companies, such as Exxon, Repsol, Shell, Petrobras, and state-owned Ecopetrol, are involved in Colombia's offshore sector. These companies have not only operational and technical expertise, but also a strong commitment to social and environmental issues.

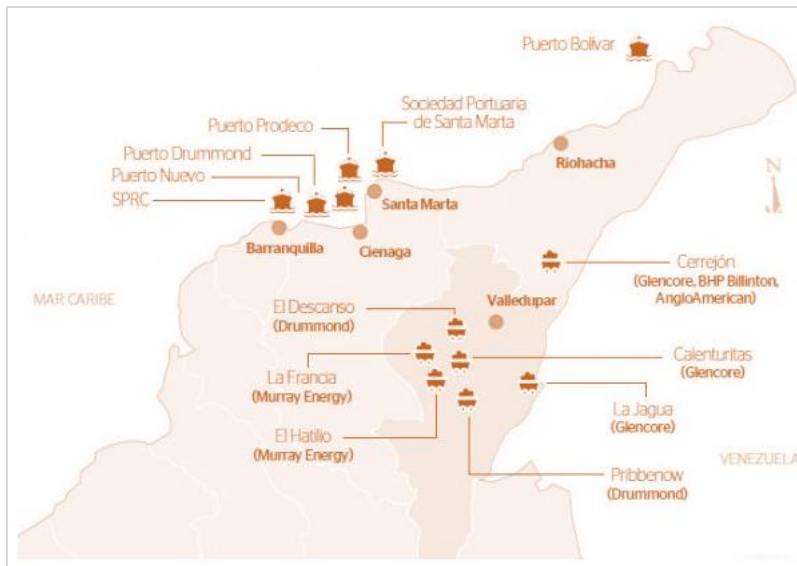


Overview of oil & gas in Colombia (left: onshore reserves and pipelines, right: offshore blocks)

Two offshore discoveries were recently announced. One discovery announced in August 2022, by a joint venture between Shell and Ecopetrol (50/50 JV). The companies stated that this well confirms a gas province in the Colombian Caribbean. Also Petrobras announced a gas discovery in the deep waters 32 km off the coast of Colombia. The discovery is about 76 km from the city of Santa Marta in a water depth of approximately 830 m.

Coal

Coal mining in Colombia is dominated by two foreign-owned companies: Drummond (U.S.) with its local subsidiary Drummond Colombia, and Glencore (Switzerland) with its Cerrejón and Prodeco subsidiaries. The biggest coal mines in the country are located in the north, in the departments of La Guajira and Cesar. Cerrejón is considered one of the largest open-pit coal mines globally. There are also smaller coal mines located throughout the rest of Colombia.



Coal projects in Colombia

New government and possible changes

A new left leaning Colombian government was elected in 2022. There are investors who are concerned about what this means for the oil & gas and mining sectors. Congress passed a tax reform bill in November 2022, that will increase taxes on coal and oil companies by up to 10% and 15%, respectively.

In November 2022, Colombia's fiscal rule committee said that income derived from hydrocarbon exploration and production in Colombia is key to the country's financial stability and its trade balance. In a statement they added: "The nation's high dependence on these transfers means that a policy of suspending the activity or disincentivizing investment in the sector represents an elevated risk for the fiscal and exchange rate sustainability of the country, with adverse effects on development and economic growth".

In October 2022, Jose Roberto Acosta, the director of public credit, stated that Colombia's government may reverse its position on prohibiting new contracts for oil exploration due to the financial benefits of the sector. This potential change in policy would be a significant shift for President Gustavo Petro's administration, which previously characterized oil and coal as harmful and pledged to move away from hydrocarbons.

Petro's earlier comments have caused the Colombian peso to decline significantly and reach an all-time low. Despite the political uncertainty, oil drilling in Colombia has increased significantly. In an effort to address these concerns, Petro's government has agreed to modify a tax reform proposal to introduce new taxes on oil and coal at a slower pace.

The new government has also set a goal of reforming the mining sector and encourage production of minerals that are important for the energy transition. Except for one major nickel mine, there are currently no significant lithium, cobalt, or nickel deposits or discoveries in Colombia. Therefore the energy transition metals are mainly copper and silver. In addition, a new state-owned mining company was announced. Two companies, with assets seized from illegal groups will be placed under the control of this new state-owned company. In addition, the national mining company will only buy gold from informal miners who produce the yellow metal without using mercury or cyanide. With these actions the government wants to bring an end to the illegal gold trade, by offering higher prices to informal miners than those who are currently buying it.

Relative to the coal projects in Colombia, the gold, copper, and nickel projects are of much smaller impact, both from a earth moving point of view (tonnage), and also from an insitu value point of view. The table below shows the biggest mining projects in Colombia (US\$ insitu value).

Owner	Project	Primary commodity	Stage	Activity	In situ value (US\$)
Yildirim Holding A.S.	Best Coal	Coal	Construction Planned	Active	781.8B
Glencore PLC	Cerrejon	Coal	Expansion	Active	664.0B
Drummond Co	El Descanso	Coal	Expansion	Active	229.5B
C.I. Carbocoque SA	Cundinamarca	Coal	Operating	Active	203.4B
Drummond Co	La Loma	Coal	Operating	Active	73.0B
AngloGold Ashanti	Quebradona	Copper	Feasibility Complete	Active	56.9B
AngloGold Ashanti	La Colosa	Gold	Prefeas/Scoping	Inactive	51.3B
South32	Cerro Matoso	Nickel	Expansion	Active	50.6B
Libero Copper & Gold	Mocoa	Copper	Reserves Development	Active	29.0B
Aris Mining	Soto Norte	Gold	Feasibility Complete	Active	24.9B
GoldMining Inc	Titiribi	Gold	Reserves Development	Active	20.9B
Colombian Natural Resources SA	La Francia	Coal	Operating	Temporarily on hold	18.9B
Zijin Mining	Buritica	Gold	Expansion	Active	18.6B
Aris Mining	Marmato	Gold	Expansion	Active	16.4B

Source: S&P Capital

Biggest mining projects in Colombia (insite value US\$)

The international mining companies and their projects in Colombia have seen positive developments since the new government started. Some recent announcements:

Aris Mining

In November 2022, **Aris Mining** announced that the Marmato PTO (Plan of Operations) was **approved** by the **Agencia Nacional de Minería (ANM)** as a progressive step toward fully permitting the Marmato expansion project.

South32

In December 2022, the ANM also approved a **15 year mining license extension** to **South32's Cerro Matoso nickel mine** to 2044 (from 2029)

JCHX Mining & Cordoba Minerals

In December 2022, after extensive due diligence, JCHX Mining Management Co Ltd is announced the acquisition of 50% of Cordoba Minerals proposed open pit Alacran project for \$100 million. Permits are planned to be filed with government in 2023.

With **Chinese company JCHX** investing \$100m in Alacran, **Australian company South32** receiving a 15 year extension of their major Cerro Matoso nickel mine, and **Canadian company Aris Mining** receiving approval for the Marmato Plan of Operations, actions by government and bigger corporates have been positive since the inauguration of President Gustavo Petro.

In terms of mining results in 2022, Colombian Mining Association President Juan Camilo Narino said: "This year the Colombian mining sector is going to have record exports in terms of value".

The forecast export-value for the sector in 2022, including gold and other minerals, was \$22.16 billion.

On the exploration front, a number of multi-billion dollar mining companies were active in Colombia in 2022, including Rio Tinto, Zijin, Agnico Eagle, South32, AngloGold Ashanti, and IAMGOLD. The sum of all exploration in 2022 was US\$125m. This means that 45% of exploration is performed by majors, and 14% by intermediates. These companies typically do very detailed due diligence before they invest time and money in a certain jurisdiction. Juniors sometimes take bigger risks, especially when the mineral endowment has a lot to offer.

Company	Head office	Market cap (US\$M)	Exploration Budget (US\$M)
AngloGold Ashanti	South Africa	8.2B	37.3M
Aris Mining	Canada	338.3M	12.5M
Collective Mining	Canada	77.5M	9.6M
Rio Tinto	UK	116.8B	8.3M
Cordoba Minerals	Canada	34.3M	7.6M
Outcrop Silver & Gold	Canada	43.2M	5.7M
Los Cerros	Australia	27.3M	5.6M
Zijin Mining	China	37.4B	5.3M
Atico Mining	Canada	17.8M	4.1M
Soma Gold	Canada	22.1M	3.9M
Max Resource	Canada	28.6M	3.8M
Liberio Copper & Gold	Canada	8.9M	3.2M
Agnico Eagle Mines	Canada	23.7B	2.9M
South32	Australia	12.6B	2.9M
Green Shift Commodities	Canada	6.4M	1.9M
Antioquia Gold	Canada	7.0M	1.8M
Baroyeca Gold & Silver	Canada	2.0M	1.4M
Batero Gold	Canada	2.1M	1.2M
Royal Road Minerals	Jersey	24.4M	1.2M
GoldMining	Canada	182.9M	1.1M
Mineros S.A.	Colombia	115.3M	1.1M
Denarius Metals	Canada	5.9M	963.1K
IAMGOLD	Canada	1.2B	963.1K
FenixOro Gold	Canada	9.2M	770.5K

Exploration budgets for Colombian mining projects in 2022

All in all, base and precious metals projects managed by international companies with high technical, environmental and social standards are moving ahead and are getting their exploration and development permits.

Before the July inauguration of the new President, there were also a number of major investments into the mining industry of Colombia. Continental Gold and its Buriticá gold mine was taken over by Zijin Mining for C\$1.4 billion in cash. Wheaton Precious Metals and Caldas (now Aris) announced a US\$110m streaming deal on the Marmato project. The table below shows mining M&A back to 2019.

Date	Target	Buyer	Seller	%	Metals	Transaction Value (US\$)	Comments
2022-12-13	Escondida Mine	FenixOro Gold	Undisclosed Seller	100	Au	3,014,890	Currently produces around 1,000 oz of gold annually @ 10 g/t Au
2022-12-08	Alacran project	JCHX Mining Management	Cordoba Minerals	50	Cu	100,313,235	China-based mining construction company JCHX Mining to jointly develop Alacran Cu-Au-Ag project
2022-03-21	Soto Norte project	Aris Gold	Mubadala Investment Co	20	Au	92,834,559	Aris Gold buying a 20% JV interest in Soto Norte gold project, with the option of acquiring a further 30%.
2021-06-28	Correjon mine	Glencore plc	BHP Group	33.3	Coal	265,724,118	Glencore to become sole owner of Correjon thermal coal mine by buying out BHP and Anglo American
2021-06-28	Correjon mine	Glencore plc	Anglo American plc	33.3	Coal	265,724,118	Glencore to become sole owner of Correjon thermal coal mine by buying out BHP and Anglo American
2021-05-12	Guayabales Project	Collective Mining	Undisclosed seller	100	Au/Cu	10,661,912	Collective to purchase Guayabales exploration project from private vendors
2020-09-09	Gold assets of 3 properties	Nueva Granada Gold	Soma Gold Corp.	n/a	Au	4,845,478	Off Take Agreement with Nueva Granada for gold production in Antioquia, Colombia
2020-07-09	Otu Central project	O2Gold Inc.	Bullet Holding Corporation	100	Au	8,704,324	O2Gold buying Oto Central gold exploration project from Bullet Holding
2020-06-22	Assets of Marmato	Wheaton Precious Met	Caldas Gold Corp.	n/a	Au	109,885,147	Wheaton will purchase 6.5% of Au and 100% of the Ag production for an upfront payment of \$110 million
2020-04-30	New Gold Mine	Asia Metals	Undisclosed seller	100	Au	4,095,029	Asia Metals to acquire a gold mine and its surrounding property in Colombia with historical artisan mining
2019-03-15	Gold and Silver assets	Triple Flag Mining Fin	Continental Gold	n/a	Au	97,968,382	Continental Gold Announces US\$175 Million Financing Package Backed by Newmont Mining and Triple Flag

Recent M&A on Colombian mining projects

Conclusion

Actions by the government so far suggest that within the traditional mining sector, the government has proven itself to be supportive to those projects that contribute towards the transition metals framework. Economic lithium and nickel deposits have not been discovered to date, except for the Cerro Matoso nickel mine operated by South32. For that reason, copper and silver are the metals that stand to benefit from the push for transition metals for electrification purposes. Since Colombia is rich of gold, the transition metals may come as a by-product of gold production, or gold will come as a by-product of transition metals production.

There are major companies active in Colombia, such as Rio Tinto (UK), South32 (Australia), Zijin (China), AngloGold Ashanti (South Africa), and Agnico Eagle Mines (Canada). These companies have very high standards for corporate social responsibility and environmental policies. With Colombia updating its mining code, it is likely that Colombia moves towards a system comparable to that of the major mining countries in the world like Australia, Canada, and the United States.

On the oil and gas side, the government may reverse its position on prohibiting new contracts for oil exploration due to the financial benefits of the sector. This potential change in policy would be a significant shift for President Gustavo Petro's administration, which previously characterized oil (and coal) as harmful and pledged to move away from hydrocarbons. If the offshore discoveries prove to be significant and can be extracted in due time, the Colombian oil and gas industry may shift towards more offshore exploration and development, where environmental and safety standards are extremely high.

It is more difficult to know what will happen to the coal sector. Will the government want to phase out coal operations, or is there a future for coal in the country, now that the demand from Europe is getting much higher? It is likely that this will become more clear in the months to come.

All in all, new left leaning Colombian government could lead to positive developments for the Colombian mining sector. If the government continues to be pragmatic, investors and mining companies will be able make well informed decisions about their future mining investments and operations.

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