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FEATURED Q&A

What Does Colombia Need to Become a Hydrogen Exporter?



Colombian Energy Minister Diego Mesa said the government will publish a road map for hydrogen development in the coming months. // File Photo: Colombian Government.

Q Colombian Minister Diego Mesa announced last month that the government in September is set to publish a road map for the next 30 years, establishing the production, use and export of hydrogen. Mesa said the country's renewable water resources put it in an ideal position to produce green hydrogen, which is made from renewable energy resources. He also mentioned interest "from some companies in Germany" to develop green hydrogen in the Andean nation. How much potential does Colombia have to become a leading green hydrogen producer, and what benefits would that bring for the country? What should the government's road map for hydrogen production include? What specific regulations and incentives are necessary to jumpstart investment in Colombia's budding green hydrogen industry, and which countries and companies could be potential partners in its development?

A Natalia Gutiérrez, executive president of the Colombian Association of Electric Energy Generators (Acolgen): "According to an IDB study, Colombia has tremendous potential in the production of blue hydrogen in a first stage, but in the long term, green hydrogen has more competitiveness, especially in the north Caribbean zone, where the price could drop up to \$1.5/kilogram. However, those prices won't be reached until 2050, while other countries—Chile, for example—plan to reach them by 2030. The study does not consider two opportunities: one is related to tax exemptions to promote hydrogen production in accordance with the recent Energy Transition Law. The IDB

Continued on page 3

TOP NEWS

RENEWABLES

TotalEnergies, Equinor Exit Venezuela Venture

France's TotalEnergies and Norway-based Equinor have decided to exit their Venezuela joint venture, Petrocedeño. The deal will result in the recognition of a \$1.38 billion capital loss for TotalEnergies.

Page 2

POWER SECTOR

Brazil's Power Grid Might Soon Reach Capacity

Brazil's national power grid operator warned a drought might push the country's electricity generation to its limit by November.

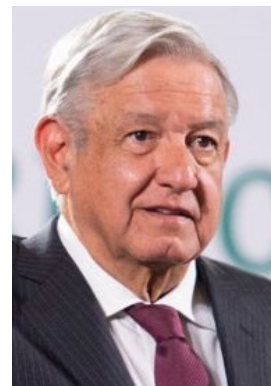
Page 5

OIL & GAS

López Obrador Downplays U.S. Complaints Over Energy Policy

A bipartisan group of U.S. lawmakers said Mexico's energy policy harms investors, but Mexican President Andrés Manuel López Obrador said the legislators represented a minority view.

Page 3



López Obrador // File Photo: Mexican Government.

OIL AND GAS NEWS

TotalEnergies, Equinor Exit Joint Venture in Venezuela

Paris-based oil producer TotalEnergies and Norway's Equinor have decided to exit their joint venture in Venezuela, Bloomberg News reported Thursday. Venezuelan state oil company PDVSA will now own 100 percent of the Petrocedeño venture, which produces extra-heavy crude oil from the Orinoco Belt in Venezuela, transports it and transforms it into light crude oil. According to a statement from TotalEnergies, the transaction was carried out for a "symbolic amount in exchange of a broad

Venezuelan state oil company PDVSA will now own 100 percent of the Petrocedeño venture.

indemnity in relation to the past and future participation of TotalEnergies in Petrocedeño." The deal will result in the recognition of an exceptional capital loss of \$1.38 billion in the financial statements of TotalEnergies. Arnaud Breuillac, the president for exploration and production at TotalEnergies, said the sale is in line with a strategy of "focusing new oil investments on low carbon intensity projects, which does not correspond to extra-heavy oil development projects in the Orinoco Belt." Although Total, as the company was formerly known, once was a major player in Venezuela, last year less than 0.5 percent of the company's combined oil and gas production came from the Andean country. Petrocedeño is one of the largest projects in the Orinoco Belt and possibly the largest private investment project in the history of Venezuela, Francisco Monaldi, director of the Latin American Energy Program at Rice University, said in a tweet Thursday. "The abandonment of the project reflects two very bad circumstances for Venezuela ... The lack of prospects for improvement in the

investment environment and the lower interest of European companies in extra-heavy crude due to CO2 emissions," Monaldi said.

ExxonMobil Makes 'Significant' Find Off Coast of Guyana

Houston-based ExxonMobil announced Wednesday that it had made a "significant new oil discovery" at its Whiptail well in the Stabroek Block off the coast of Guyana. "This discovery increases our confidence in the resource size and quality in the southeast area of the Stabroek Block and could form the basis for a future development" in the area, said Mike Cousins, senior vice president of exploration and new ventures at ExxonMobil. ExxonMobil holds 45 percent interest in the Stabroek Block, with Hess holding 30 percent interest and a unit of China's CNOOC Ltd. holding 25 percent interest. [Editor's note: See related [Q&A](#) in the June 4 issue of the Energy Advisor.]

Mexico's Pemex Swings to a Profit for Second Quarter

Mexican state oil company Pemex on Wednesday reported a net profit of 14.4 billion pesos (\$721 million) in the second quarter, Reuters reported. Crude production rose 3.8 percent as compared to the same period a year earlier, with profits boosted by higher prices for oil. However, financial debt at Pemex surpassed \$115 billion at the end of the quarter, raising alarms among investors over the sustainability of its debt burden. In an earnings call Wednesday, Pemex CEO Octavio Romero pushed back on a decision this week by Moody's Investors Service to downgrade Pemex's ratings further into junk status. "It seems to us that it's an action taken by the credit rating agency that lacks professionalism, ethics—in short, it's something shameful," Romero said, Bloomberg News reported. Pemex was also in headlines Wednesday over a proposal from President

NEWS BRIEFS

Argentina to Have 51 Percent Renewable Energy by 2040: AGEERA

Argentina's association of electricity generators, AGEERA, estimates that renewable energy sources will make up 51 percent of the country's energy matrix by 2040, EconoJournal reported last week. Meanwhile, the Argentine Industrial Union (UIA) and the Association of Large Users of Electric Energy, or AGUEERA, forecast that about 20 percent of cars and 50 percent of buses in 2040 will be electric. [Editor's note: See related [Q&A](#) in the July 23 issue of the Energy Advisor.]

Acciona Energía Begins Operations at 922-MW Solar Complex in Chile

Acciona Energía last week began operations at the Malgarida solar complex in Chile's Atacama desert, Energía Hoy reported. The complex, which consists of 580,000 solar panels, has an installed capacity of 922 megawatts. Total investment in the solar power plant was of 144 million euros, or about \$170 million, according to the report. The Malgarida complex is expected to generate 654 gigawatt-hours per year, or enough to supply around 280,000 homes in Chile.

Curaçao's RdK to Close Utilities Subsidiary

Curaçao's state-owned RdK is set to close its utilities subsidiary CRU as of Sept. 30, the company announced, Argus Media reported last week. RdK will also begin selling some 865,000 barrels of locally stored Venezuelan crude, products and blendstock that it acquired from CRU in a June 11 auction. The moves are part of the company's broader strategy to consolidate its assets amid uncertainty over revamping its Isla refinery, which used to be operated by Venezuelan state firm PDVSA.

Andrés Manuel López Obrador's administration to set a maximum price for cooking and heating gas, a practice that harkens back to before major energy reforms nearly a decade ago that introduced competition to Pemex's monopoly role in the sector. López Obrador tried this week to invoke emergency powers to decree a six-month price cap, but the country's federal economic competition commission has pushed back, saying in a statement that current law does not allow the president to set price ceilings, the Associated Press reported.

AMLO Downplays U.S. Complaints Over Energy Policy

Mexican President Andrés Manuel López Obrador last week downplayed U.S. legislators' complaints of Mexico's energy policies, Argus Media reported. Twenty-one U.S. lawmakers from both the Democratic and Republican parties recently sent a letter to U.S. President Joe Biden, calling on his "immediate and sustained attention and a timely solution" to recent changes to Mexico's energy policy, which they said harm U.S. investors. Among the signatories were Senators John Cornyn (R-Tex.), Ted Cruz (R-Tex.) and James Inhofe (R-Okla.) as well as 17 members of the U.S. House of Representatives. However, López Obrador said the legislators represented a minority. "There is really no problem," he said, Argus Media reported. "Mexico's situation is exceptional, unbeatable for investment. We see, as always, some who protest, but they are an insignificant minority," the president added. The U.S. congresspeople argued that Mexico's energy policy "undermines the spirit and letter of the U.S.-Mexico-Canada free trade agreement (USMCA) and affects the livelihoods of our fellow Americans working in the energy sector." Recent changes in Mexico's energy sector have sparked investor concern, among them reforms that favor state energy firm Pemex and state utility CFE in regulatory proceedings. The U.S. lawmakers argued that dispatch preferences to CFE will drive up electricity costs for Mexican consumers and manufacturers and increase

FEATURED Q&A / Continued from page 1

said it would include it in its next version of the study—we will have to wait and see what Colombia's real level of competitiveness is as a result. The second is that the country might be missing the chance to produce in hydroelectric plants, as these were excluded from the benefits provided by the Energy Transition Law to new renewables sources. The definition of 'green hydrogen' was limited only to hydrogen produced with non-conventional sources of renewable energy, while the definitions set by international agencies such as IEA or IRENA includes all renewable sources. This reduces Colombia's competitiveness and limits the production potential. One benefit hydrogen production can bring is the opportunity to decarbonize an important amount of the industrial and transport sectors, two energy-intensive sectors with a significant potential for emissions reduction. Colombia still has key coal reserves, and it needs to develop a road map to still benefit from this energy source by extending its lifespan with the use of carbon capture, utilization, and storage (CCUS) technology. We also expect the road map to include a plan to promote the use of hydrogen and technical adjustments to use existing natural gas infrastructure. Colombia has great potential for hydrogen use, which will allow for cleaner energy and the sustainable use of coal and natural gas, in order to meet our climate goals."

A **Jose Zapata, partner at Holland & Knight LLP:** "July 10's Law 2099 sets forth key regulatory aspects for Colombia's 'Energy Transition, Improving Energy Market Dynamics and Reactivating the Economy' plan. The regulation modifies and adds to the 2014 Law 1715, which fosters unconventional

the country's carbon dioxide emissions. In related news, Mexico's Federal Economic Competition Commission, or Cofece, on Monday said that Mexico will fail to meet its climate change commitments due to the current gov-

ernment's energy policies, La Jornada reported. The recent regulatory changes in the electricity industry discourage the installation and operation of new projects with more efficient generation, Cofece said in its quarterly report,

“[Becoming a leader in hydrogen production] will require clarity in the rule of law, stable taxes and timely permitting...”

—Jose Zapata

eration fuel ensuring clean transport. The Inter-American Development Bank has also been assisting the Colombian government in understanding the steps required to develop this subsector. Blue hydrogen has great potential given Colombia's historic coal production capacity, as does green hydrogen, if renewable energy sources can be consolidated. To the extent that Colombia can find a way of avoiding overregulating the industry as it develops and secure long-term stable ties with companies specialized in hydrogen development, such as Siemens Energy, it would undoubtedly become a leader in this area. This will require clarity in the rule of law, stable taxes and timely permitting, considering that Chile already has a head start. By following this plan, the Ministry of Mines and Energy of Colombia expects to produce eight million tons of green hydrogen by 2030, which would be a great achievement for the country."

Continued on page 6

ernment's energy policies, La Jornada reported. The recent regulatory changes in the electricity industry discourage the installation and operation of new projects with more efficient generation, Cofece said in its quarterly report,

which it submitted to Congress. “[López Obrador’s] views of a government-controlled sector that relies on dirty fuels to produce power contradict global principles on climate change and clean energy,” Carlos de María y Campos, partner at Galicia Abogados, told the Energy Advisor in a **Q&A** published June 25. López Obrador’s proposals would “breach international commitments, such as the Paris Agreement, and regional trade deals, including USMCA, putting Mexico at the brink of an unnecessary dispute against its most important partners,” he added.

ANP Approves BP Transfer to Petrobras in Foz do Amazonas

Brazilian oil and gas regulator ANP last week approved the transfer of BP Energy’s 30 percent stake in five deepwater exploration concessions in the Foz do Amazonas basin to state oil company Petrobras, BNamericas reported. With the transaction’s approval, Petrobras is now set to own 100 percent of the five blocks in the basin, where no operators have obtained drilling licenses in recent years. ANP previously approved the transfer of French company Total’s 40 percent stake in the blocks to the Brazilian firm. In addition to Petrobras and BP, only two other firms, Brazil’s Enauta and Brasoil Manati Exploração Petrolífera, have assets in Foz do Amazonas, according to the report.

Attorney Who Fought Chevron in Ecuador Case Is Convicted

Steven Donziger, a disbarred attorney from the United States, on Monday was found guilty of six counts of criminal contempt of court in the latest development of a nearly three-decade case against oil company Chevron in Ecuador, The Wall Street Journal reported. U.S. District Judge Loretta Preska found Donziger guilty, writing in an order issued Monday that “it’s time to pay the piper.” Donziger, who has spear-

THE DIALOGUE CONTINUES

Why is Argentina’s Output of Natural Gas Still Lagging?

Q Argentina might sink into an energy deficit that could reach \$1 billion due to local natural gas shortfalls that have forced the country to turn to more costly imports of liquefied natural gas, or LNG, Reuters reported. While the country’s oil production has strongly rebounded from stalling levels last year amid the pandemic, gas output has continued to lag despite the government’s so-called Gas Plan, which aims to incentivize natural gas production. What accounts for the Argentine oil sector’s fast recovery this year? Why has natural gas production failed to rebound in the same way, and what does that mean for the country’s electricity supply and the broader economy? To what extent has the government’s Gas Plan been effective, and what else can President Alberto Fernández’s administration do to help increase gas output?

A Graciela Bravo, business manager at NRG Energía, and Carina Guzowski, professor at Universidad Nacional del Sur in Argentina: “Natural gas is a critical input for the evolution of Argentina’s entire energy system, mainly because it is the fundamental resource to supply power plants, and because it is a key energy source in the residential and industrial sectors. Its lack of availability triggers direct effects on the electric system and on the economy. Due to the local gas shortage, Argentina has sometimes been forced to resort to more expensive imports of natural gas or LNG. To face this problem, the government designed the Gas Plan, whose main objective is to encourage natural gas production. It has given a strong boost to the gas market, mainly to sustain a certain volume to satisfy the residential sector’s demand as well as

electricity generation through contracts signed after the tenders. This is possible due to enormous subsidies that support and ensure prices for gas producers of \$3.60 per metric million British Thermal Units (MMBtu) from 2021 to 2024. The plan gave certainty about the evolution of prices for producers. However, in March, union problems brought

“The Gas Plan has been useful ... but it is not enough.”

— Graciela Bravo & Carina Guzowski

pickets at gas production plants that prevented the entry and exit of personnel and machinery to deposits for a very long time, practically paralyzing all activities. It took more than 20 days to resolve the issue. It had a strong impact on the local market, as activities related to unconventional fields require a long time to resume production at maximum efficiency. The Gas Plan has been useful, but it is not enough. The challenge is improving infrastructure and reactivating local demand so that the Vaca Muerta can reach full potential—maximum exploitation could bring enormous volumes of production. Pipelines are needed to allow the country to export it, as local demand is small compared to its export potential. It is necessary to complement the plan with investments and a strong commitment to regional integration, and we need Vaca Muerta to go from being a resource to a meaningful producer.”

EDITOR’S NOTE: More commentary on this topic appears in the **Q&A** of last week’s issue of the Energy Advisor.

NEWS BRIEFS

Salvadoran Judge Orders Arrest of 10 Ex-Officials Including Sánchez Cerén

A judge in El Salvador on Wednesday ordered the pre-trial arrest of 10 former government officials, including ex-President Salvador Sánchez Cerén, on corruption charges that involve \$2.6 million in illicit money, the Associated Press reported. All of the former officials were part of the government of ex-President Mauricio Funes, who has received political asylum in Nicaragua. The court said it would work with Interpol to seek the arrest of Sánchez Cerén, who is reported to be out of the country, and four others who are at large.

Ecuadorean Court Revokes Citizenship of WikiLeaks' Assange

An Ecuadorean court this week revoked WikiLeaks founder Julian Assange's citizenship in the South American country, CNN reported Wednesday. Then-Ecuadorean President Lenín Moreno's government granted citizenship to Assange in January 2018. Assange had spent nearly seven years holed up in Ecuador's embassy in London but was eventually arrested in 2019 and is currently imprisoned in Britain.

Mexico Signs Deal With U.S. FAA in Hopes of Recovering Safety Rating

Mexico has inked a deal with the U.S. Federal Aviation Administration, or FAA, with the hopes of recovering its Category 1 air safety rating, Mexico's ministry of communications and transportation said on Monday, Reuters reported. FAA representatives are set to visit Mexico in August to provide technical assistance and an evaluation of the country's efforts to reverse a safety demotion to the lowest level in May. The downgrade bars Mexican airlines from adding new flights to the United States.

headed the fight against Chevron over pollution in the Amazon, has been under house arrest for nearly two years awaiting a trial over charges that he repeatedly neglected court orders.

Preska said the contempt case is unrelated to any responsibility Chevron might bear regarding accusations of environmental harm by the company's predecessors in the Andean nation's jungles. Chevron has repeatedly denied any culpability, and it has accused the disbarred lawyer of bribing the judge in Ecuador following a 2011 decision ordering the company to pay \$9.5 billion in damages, The Guardian reported. Donziger said Monday that he plans to appeal the decision, adding that it marked "a sad day for the rule of law, for our democracy and our planet." He faces as many as six months in jail, The Guardian reported.

POWER SECTOR NEWS

Brazil Power Grid to Reach Limit by November: ONS

Brazilian national power grid operator ONS said last Friday that the worst drought in nearly a century might push the country's electricity generation capacity to its limit by November, Reuters reported. Hydroelectric plants have struggled amid depleted water reservoirs in recent months. Despite expectations that the power system will reach its limit in four months, the ONS said it did not forecast electricity shortages for consumers. "With regard to meeting power requirements, there are significantly reduced surpluses in the month of October, with the exhaustion of practically all resources in the month of November," the ONS said in a note. The agency earlier this month asked electricity generators to delay maintenance and technical work for as long as possible to avoid exacerbating the power crisis, but the ONS has insisted that there is no need for energy rationing. Despite reports that the government had floated the idea of rationing electricity, the administration of President Jair Bolsonaro announced this month that there are no plans for that. Instead, the government has

called on consumers to be conscientious in their use of power and water, designing a voluntary program to encourage companies to use power outside of peak hours, Reuters reported earlier this month. Hydroelectric dams in Brazil have reported the lowest water inflows in more than 90 years, which has driven up energy prices and contributed to the country's rising inflation rates. "Shortage of energy is unlikely to happen in the near future, but higher prices are expected," Renato C. Zambon, professor at the University of São Paulo, told the Energy Advisor in a [Q&A](#) published May 28.

POLITICAL NEWS

Castillo Inaugurated as Peru's President

Leftist rural schoolteacher Pedro Castillo, a political novice who has never before held an elected office, was sworn in Wednesday as president of Peru. Castillo defeated conservative former lawmaker Keiko Fujimori in a razor-thin June 6 runoff that election officials took six weeks to decisively call. In his inaugural speech, which also marked the country's



Castillo // Photo: Facebook Page of Pedro Castillo.

bicentennial, Castillo said colonial-era divisions still separate Peruvians from each other, Reuters reported. "The defeat of the Inca Empire gave rise to the colonial era, it was then ... that the castes and differences that persist to this day were established," said Castillo. Castillo said he would respect private property and set clear rules for the mining sector. However, he also said he would crack down on "monopolies" in the utilities and financial services sectors, leading the country's bonds to fall, Bloomberg News reported.

FEATURED Q&A / Continued from page 3

A **Juanita Hernández Vidal, managing partner at Estudio Legal Hernández in Bogotá:** “Regarding the potential for green hydrogen production in Colombia and the development of a road map that incorporates incentives and promotes the use and generation of this energy source in the country, the timing could not be better, as the expansion in the use of nonconventional energy sources is increasingly opening up the green

and road infrastructure, as well as creating and expanding tax benefits to compensate for high investment costs.”

A **Ana Angel, Latin America manager at Hincio:** “Colombia has excellent potential to produce solar and wind energy close to its Atlantic coast and is one of the leading countries in the production of hydropower in the world. This will allow for producing green hydrogen at very competitive costs for national consumption and eventually for exports. The government is also considering reviving the hydrocarbon and coal industries through the production of blue hydrogen. This strategy is questionable and requires further study, since gas reserves in Colombia are limited, and several authors indicate that the cost of hydrogen produced with coal and carbon capture and storage (CCS) could exceed the costs of production of green hydrogen. The country's carbon storage location and total sequestration potential should also be studied, since not all depleted oil and gas reservoirs are suitable for finding attractive business cases for carbon storage. The most important question surrounding hydrogen is how to make green and blue hydrogen competitive against gray hydrogen. This requires multiple policy instruments such as a carbon tax or some carbon disincentive, financing mechanisms and tax reductions. Colombia should quickly start developing hydrogen projects aimed at the export market, as competition among potential exporters such as Australia, Chile and Morocco is rapidly intensifying. These projects have a long development cycle, so Colombian developers must prepare today if they want to gain first mover advantage and secure the first off-take contracts at international markets.”

“**The expansion in the use of nonconventional energy sources is increasingly opening up the green hydrogen market worldwide.**”

— Juanita Hernández Vidal

hydrogen market worldwide. This is true not only in hydrocarbon production or metallurgy (markets that will continue to require its use and in the case of metallurgy will even see an increase in its demand), but also in the transportation and electric energy industries. Colombia not only has great hydrological potential (used in the production of green hydrogen), but it also has been strengthening the production of electricity (used for the separation of hydrogen from water), especially from non-conventional renewable sources, with privileged solar and wind resources because of its mountainous and equatorial geography. The roadmap should focus on promoting elements common to the production of any good in Colombia in order to make the country an attractive market, such as the necessary infrastructure for easy transportation and access, including the construction and improvement of ports

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