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FEATURED Q&A

How Is Technology Changing How Utilities Operate?

Companies are increasingly using technology to advance renewables projects in the United States and Latin America. Solar panels are pictured above. // File Photo: U.S. Energy Department.

Q **Google and Virginia-based AES Corporation, a significant electricity producer in Latin America and the Caribbean, in November announced they were undertaking a 10-year alliance to accelerate the growth and adoption of clean energy. The companies plan to use cloud-based tools, artificial intelligence and data analytics to modernize electric grids and support new renewables projects in the United States and Latin America. How is technology changing the way utilities in Latin America and the Caribbean operate, plan and invest? What are some of the ways partnerships such as this will play out in the region? What will it take to make electric grids in Latin America and the Caribbean reliable enough to handle widespread electric transit and other modern innovations that would replace fossil fuels?**

A **R. Kirk Sherr, member of the Energy Advisor board and president of Clearview Strategy Group:** "Electric grids are an essential aspect of the energy transition taking place worldwide. The complex relationship between the 'decarbonization' of electric generation, climate change, variable renewable energy and technology is an 'all hands on deck' exercise that will be ongoing for a generation. Leading Latin American countries are already preparing for this future by recently undertaking commitments for 70 percent renewable energy by 2030. Significant onshore/offshore wind and solar power resources ('variable renewable energy'), such as the windy Patagonia in Argentina or sunny northern Mexico, are typically located far from population centers and require significant transmission investment to realize

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TOP NEWS

OIL & GAS

Shell Unit Wins Petroecuador Oil Supply Contract

The Ecuadorean state-run oil company has awarded a 20.2-million-barrel oil supply contract to Shell Western Supply and Trading, Petroecuador said.

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OIL & GAS

Ecopetrol, Parex Win Contracts to Work in Colombia

The Colombian state-owned oil company and Canada's Parex were among the companies that won contracts to operate oil blocks in the Andean nation's latest auction round.

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OIL & GAS

Petrobras CEO Objects to Delay in Braskem Sale

Roberto Castello Branco, who heads Brazilian state oil company Petrobras, said he wants to sell the firm's stake in petrochemical company Braskem within 12 months. His comments followed reports that creditors are looking to delay the sale of Braskem.

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Castello Branco // File Photo: Brazilian Government.

OIL AND GAS NEWS

Petrobras CEO Objects to Delay in Sale of Braskem

The chief executive of Brazilian state oil company Petrobras, Roberto Castello Branco, said last Friday that he wants to sell the company's stake in petrochemical company Braskem within 12 months, expressing disagreement with reported plans to delay the sale, Reuters reported. Earlier last week, Reuters reported that creditors of Brazilian construction group Odebrecht, which also has a large stake in Braskem, were in advanced talks to delay a sale for up to two years. "To me, it means they do not want to sell anything," Castello Branco said during a meeting with investors in London. Odebrecht owns about one-third of Braskem but has the majority of its voting shares, Bloomberg News reported. Castello Branco's comments followed the release of Petrobras' ambitious five-year divestment plan earlier in December. The company's 2020-2024 business plan says Petrobras is looking to sell an additional $20 billion to $30 billion worth of assets during that time period, including eight refineries across Brazil. Company officials also said that they may add its Bolivian assets to the divestment program, as well as its stake in Braskem, legacy deepwater oilfields and its remaining stake in fuel distribution firm BR Distribuidora, Reuters reported. Petrobras executives told reporters that the company may sell parts of the Marlim oilfield, one of the country's largest, as well as its majority stake in the smaller Papa-Terra field. [Editor's note: See related **Q&A** in the June 14 issue of the Energy Advisor.]

Six Ex-Citgo Officials Released to House Arrest in Venezuela

Six oil executives who were held in an overcrowded prison in Venezuela for two years on corruption charges were granted house arrest on Monday, the Associated Press reported, citing two people familiar with the case. The six men, some of whom were naturalized U.S. citizens, are former employees of Venezuelan state oil company PDVSA's U.S.-based refiner, Citgo. Tomeu Vadell, Jose Luis Zambrano, Alirio Zambrano, Jorge Toledo, Gustavo Cárdenas and Jose Pereira went to Caracas in November 2017 to attend a meeting at the PDVSA headquarters, where masked security agents captured them. The sources said lawyers for the six men had made the request to be granted house arrest for health reasons. U.S. Vice President Mike Pence and two U.S. senators had also called on Venezuela to release them, Reuters reported. The conditions of their release reportedly prevent them from leaving Venezuela. The men are awaiting trial on corruption charges in connection with a never-executed plan to refinance nearly $4 billion in Citgo bonds by offering a 50 percent stake in the company as collateral, the AP reported. Prosecutors allege that the men schemed to benefit from the proposed deal.

Ecopetrol, Parex Win Contracts to Operate Blocks in Colombia

Companies including Canada's Parex Resources and Colombian state-owned oil company Ecopetrol won contracts to operate oil blocks in the South American country's latest auction round on Dec. 5, as Colombia seeks to reactivate its oil sector, Reuters reported. Ecopetrol and its subsidiary, Hocol, as well as Frontera Energy and Amerisur were each awarded one contract, the national hydrocarbons agency, or ANH, said, after their bids did not receive counteroffers. Other successful participants included Canadian firm Gran Tierra Energy and Parex, which each won two contracts, while Bogotá-based CNE Oil and Gas was awarded three contacts. Additionally, a consortium consisting of Ecopetrol and Parex was awarded one contract, as was a consortium of Hocol and Geopark, Reuters reported. Colombia's government has been working to boost the

NEWS BRIEFS

Petroecuador Awards Oil Supply Contract to Royal Dutch Shell Unit

Ecuadorean state-run oil company Petroecuador has awarded a 20.2-million-barrel oil supply contract to a unit of Royal Dutch Shell, Petroecuador said last Friday, Reuters reported. Shell Western Supply and Trading won over two other bidders, Trafigura and Mitsubishi, with a bid to pay premium of 71 cents per barrel above the reference price for West Texas Intermediate crude, according to the report. Petroecuador expects the deal to bring in some $950 million.

Construction Work Ends, Testing Operations Begin at Argentine PV Plant

Construction work has finished and testing operations have begun at the Cauchari I photovoltaic power plant in Argentina's northern province of Jujuy, the local government said Saturday, Renewables Now reported. It is the last phase of the 312-megawatt Cauchari complex, after Cauchari II and Cauchari III were completed in October. Total investment in the complex amounted to nearly $390 million, with 85 percent of the project's financing from the state-owned Export-Import Bank of China. The Jujuy local government financed the remainder through a green bond placement.

Brazil's Petrobras Begins Pre-Qualifying Process for Lease of LNG Terminal

Brazilian state oil company Petrobras has begun the pre-qualifying process for bidders for the long-term lease of its Bahia import terminal for liquefied natural gas, or LNG, and its associated pipeline, Argus Media reported Monday. The move opens the company's lock on Brazil's LNG imports. The lease agreement will not include the 138,000-cubic meter "Golar Winter" floating storage nor the regasification unit that is currently installed at the site.

country's oil and gas sector since President Iván Duque took office last year, with the aim of maintaining energy self-sufficiency given that the Andean nation's oil and gas reserves have been dwindling, Luis Miguel Morelli, the president of the ANH, told the Advisor last week. Colombia's reserves average 6.2 years for oil and 9.8 years for gas, he added. The country's "biggest challenge is accelerating exploratory activity," Morelli said. "Without new findings, no reserves or royalties are generated." [Editor's note: See related **Q&A** in last week's issue of the Energy Advisor.]

Venezuelan Gov't, Opposition Discuss Changes to JVs

Venezuela's government and the opposition have discussed the possibility of allowing private firms to operate oil fields in the country in joint ventures with state oil company PDVSA, a move that would reverse a longstanding requirement for PDVSA to control such operations, Reuters reported last Friday, citing three people familiar with the talks. The sources said the current proposal was more promising than a similar move last year, which had little impact on production, since joint ventures with oil companies such as Chevron, Russia's Rosneft and state energy group China National Petroleum Corp. control Venezuela's largest oil fields. The change has been debated in Caracas over the past two months, including at the so-called Boston Group, an informal meeting between government officials and opposition activists. The talks focused on the possibility of modifying joint venture contracts to remove a clause preventing them from "transferring its function as an operator," one of the sources said, but the change would not affect a requirement that PDVSA retain a majority stake in the joint venture. Neither PDVSA or Venezuela's oil ministry responded to Reuters' request for comment. The talks suggest President Nicolás Maduro's government is looking for ways to offset the effects of U.S. sanctions targeting the Andean nation's oil sector by increasing crude production, Reuters reported. PDVSA and

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the long-term energy cost benefits. Rapidly declining grid-scale battery costs and new HVDC technology make the incorporation of variable renewables even more attractive. In addition, artificial intelligence, the Internet of Things, communications improvements and sensors allow easier incorporation of energy technology on a regional or national level. In ways that were unimaginable just a short time ago, complex grid operation software programs now can integrate rooftop generation, microgrids, building energy management systems, grid-scale battery storage and demand-side management through smart meters and the Internet of Things to enhance system reliability, reduce losses and (potentially) lower costs. Partnerships—particularly between leading technology players, local utilities and grid operators will be the key to preparing grids for the dramatic changes ahead. For these partnerships to flourish, many countries will need to move faster on the regulatory side to allow more rapid development and private investment and ownership in transmission assets, which are often fully under government control."

A **Andrés Chambouleyron, chairman of ENRE, Argentina's Federal Electricity Regulatory Authority:** Electricity used to be a commodity: electrons were just electrons. As long as we could use them to power our TV sets, we didn't care where they came from. Well, not anymore. Now, we do care where electrons come from—a coal-burning plant or from a clean energy source—not only because we care about the environment, but also because clean energy is becoming increasingly less expensive than alternative ones. Now we can both help our environment and reduce our electricity bills at the same time. The question, however, is: how do users make sure that they are indeed getting clean electrons as opposed to dirty ones? In other words, how do we make electrons traceable? For large users such as manufacturing plants and shopping malls, electron traceability is easy: just bypass the local utility (which buys in bulk from the wholesale market) and buy electricity directly from a clean source (such as wind or solar) through a PPA, then deal with its

> **"Now we can both help our environment and reduce our electricity bills at the same time."**
> **— Andrés Chambouleyron**

intermittence with a second firm power source as back-up or with storage, or both. For residential users, though, PPAs with generators may not be feasible, but electron traceability can be achieved by installing PV panels on their rooftops plus storage. Distributed PV generation not only involves less fossil fuel generation and losses, it also demands less investment in the expansion of distribution and transmission grids. In sum, if utilities want to keep (and grow) their customer base, they need to provide electron traceability. Otherwise, their users will do it themselves."

A **Virginia Snyder, energy specialist at the Inter-American Development Bank:** "Latin America has made great progress in the last decades in the energy sector. However, the region still has power utilities with high operating costs and inefficiencies, outdated assets, high numbers of employees per customer and high technical and nontechnical losses. There are also significant innovation gaps in the power utility sector within the LAC region. In an era of great technological innovations, it is key to modernize and improve utilities, and we must take advantage of new technologies. Additionally, the great transformation of the energy sector is making the customer a more relevant player for the utilities and putting the customer at

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its joint ventures' exports rebounded in November, up to more than one million barrels per day of crude and fuel due to larger sales to Asia, particularly India. Exports in November, which totaled 1.037 million barrels per day, registered a 25 percent increase from the previous month and were the third-highest monthly figure since the U.S. administration slapped sanctions against the company in January, according to internal company reports and Refinitiv Eikon data.

POWER SECTOR NEWS

Venezuelan Gov't Seeking CAF Loan to Restore Power Grid

Venezuela's government is seeking a controversial loan of $350 million from Caracas-based development agency CAF in a bid to restore its power grid, Argus Media reported last Friday. Maduro's economy and the country's finance ministry made the official application, though the loan has been presented as a humanitarian initiative involving the opposition-controlled National Assembly and the U.N. Development Program, according to the report. The proposal to create a financing mechanism for the struggling power sector has sparked controversy within the country's opposition, which is divided, Reuters reported. Some opposition members see the investment as positive humanitarian assistance, while others view it as funding for Maduro's government, which is widely accused of corruption and mismanagement. "The project is a CAF loan to the Bolivarian Republic of Venezuela, which is requested by the Ministry of Finance and has to be approved by the National Assembly," a U.N. official wrote in an emailed response to questions from Reuters. CAF confirmed to the wire service that the loan will go to Venezuelan's government. However, no funds would be transferred to state electrical authorities, the U.N. official said, adding that the financing mechanism has a system of checks and balances "to ensure that the resources are only used for this purpose," Reuters reported.

> **Critics view the loan as funding for the Venezuelan government, which has been widely accused of corruption.**

ADVISOR Q&A

Will AMLO's Plan for Infrastructure Reactivate Mexico's Economy?

Q **Mexican President Andrés Manuel López Obrador's government on Nov. 26 announced the first phase of a $44.3 billion infrastructure plan that includes nearly 150 projects and would be underwritten largely by the country's private sector. The plan includes projects in areas including transportation, tourism and telecommunications. Will the projects come to fruition as anticipated, and how would they affect the country's economy? How attractive are the conditions for public-private investment in Mexico, and will private companies participate to the extent planned? What obstacles could the infrastructure plans face?**

A **Antonio Ortiz-Mena, senior vice president at Albright Stonebridge Group:** "Mexico needs to improve its infrastructure: it has one of the most extensive free trade agreement networks but ranks only 54th out of 141 countries in the WEF Infrastructure Competitiveness Index. It will not be able to fully use its network without world class infrastructure. Improving infrastructure would generate immediate jobs and long-term positive externalities to increase GDP growth and boost confidence—which is badly needed to get the economy out of its 2019 standstill. There are no specifics on energy projects, and no electricity projects until 2021. Mexico, as a manufacturing powerhouse, needs reliable sources of energy at competitive prices. In fact, the agreement lists electricity generation, gas pipelines and fuel storage as opportunity areas, so it does not make sense to delay some of these projects. There is no dearth of capital to finance the 147 priority projects. The question is who will be willing to risk capital and under what terms, given that the government has sent negative signals to infrastructure investors on at least three occasions: first, the ex nihilo cancellation of the new Mexico City airport; second, the renegotiation of gas pipeline contracts; and third, changes to rules on clean energy certificates. Given these precedents, the implementation mechanism, to be presided by AMLO, will be critically important in providing assurances to investors so concessions can be part of the mix and not all projects are turnkey, for in the latter case the government could end up bearing a large share of risks and expenses."

> **"The question is who will be willing to risk capital and under what terms, given that the government has sent negative signals to infrastructure investors..."**
> — Antonio Ortiz-Mena

EDITOR'S NOTE: More commentary on this topic appears in Wednesday's issue of the Latin America Advisor.

NEWS BRIEFS

Argentina to Begin Talks With Bondholders: New Economy Minister

Argentina will begin talks with bondholders in a bid to delay the country's debt payments, new Economy Minister Martín Guzmán said in his first public comments on Wednesday, adding that Argentina needs to modify its debt schedule in order for the economy to grow, Bloomberg News reported. His comments echo remarks of new President Alberto Fernández, who said in his first day in office that Argentina wants to meet debt obligations but must first accelerate growth. Guzmán said he was already negotiating with the International Monetary Fund for a new program, without providing specifics.

Mexico's President Sends Updated USMCA to Senate

Mexican President Andrés Manuel López Obrador said Wednesday that he will send the updated United States-Mexico-Canada, or USMCA, trade deal to the Senate immediately for ratification, the Associated Press reported. The president suggested the move is just a formality. López Obrador said the agreement, which needs to be approved by the three countries' legislatures before taking effect, will benefit Mexico's economy. Representatives from the three countries signed updates to the trade deal on Tuesday.

Brazil Poised to Beat Own Record for Beef Exports Next Year: Trade Group

Brazil is on track to beat its own beef export record next year as it strengthens trade ties with Asia, attempts to enter the Japanese market for fresh beef and increases sales to Russia, exporter group Abiec said Tuesday, Reuters reported. This year's beef exports reached an estimated 1.828 million metric tons, up from a previous record of 1.643 million metric tons.

POLITICAL NEWS

Human Remains Found After Crash of Chile Military Plane

A rescue crew has discovered human remains following the crash of a Chilean military cargo plane that had been headed to Antarctica when it went missing on Monday with 38 people on board, BBC News reported Thursday, citing a regional governor. "We received information today from the air force, telling us that they'd found some wreckage from the plane as well as remains of people who were on board," the governor of Magallanes province, José Fernández, said Wednesday. Relatives of the missing personnel had been notified of the discovery, said Fernández. Also on Wednesday, Chilean Air Force General Eduardo Mosqueira said debris, possibly from the fuel tank of the C-130 Hercules, had been found floating in icy waters between Antarctica and the tip of South America, the Associated Press reported. The debris was found about 19 miles from the location where the military plane lost contact with controllers on the ground, Mosqueira added. The plane took off from a base in far southern Chile and was on a routine flight to assist with maintenance of a Chilean base in the Antarctic. Ground controllers lost contact with the plane 70 minutes into its flight.

ECONOMIC NEWS

Brazil's Central Bank Cuts Rate for Fourth Straight Meeting

Brazil's central bank on Wednesday cut its benchmark interest rate for the fourth consecutive meeting, dismissing a drop in the real currency, Rádio CBN reported. The country's monetary policy committee, known as Copom, voted to cut the Selic rate by 50 basis points to a record low of 4.5 percent. The decision was unanimous. The bank was not clear as to what its next step would be, though it indicated in a statement that it is open to continue cutting rates next year, The Wall Street Journal reported. The move came just a week after the real plummeted to record lows against the U.S. dollar, which some analysts said declining interest rates partially caused, the Financial Times reported. The real has seen some volatility in recent months, and it has dropped nearly 6 percent against the dollar this year. Inflation has remained below the bank's target amid signs of a recovering economy, The Wall Street Journal reported. Brazil's GDP expanded 0.6 percent in the third quarter, as compared to the previous such period, sparking hopes of a cyclical recovery for Latin America's largest economy. Compared to the same quarter last year, Brazil's economy grew 1.2 percent. According to a central bank poll this month, most economists forecast economic growth of about 1 percent this year with inflation at 3.4 percent, the Financial Times reported.

Norway, Germany, Britain Pledge Funds for Amazon

The governments of Norway, Germany and Britain announced on Thursday that they would spend as much as $366 million over the next five years in order to help fight deforestation in Colombia's portion of the Amazon rain forest, Reuters reported. The South American country has sought to protect nearly 60 million hectares of rain forest since 2015, and some $180 million has so far been invested in that effort. "The renewal of the declaration is a recognition of Colombia's ability to reverse the deforestation trend, having achieved a 10% reduction in deforestation in 2018 compared to 2017," the European nations said in a joint statement that was made at the United Nations climate talks in Madrid. "Colombia's ambition and commitment to reduce deforestation is of global significance," said Ola Elvestuen, Norway's climate and environment minister, Reuters reported. "We cannot solve climate change without stopping deforestation. The international community should now step up to mobilize," she added.

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the center of the business. Power utilities and regulators must accommodate customers' interest, allow customer participation through the installation of solar rooftops, energy demand management systems, EV chargers, smart appliances and more. The increasing use of sensors, EV chargers, the Internet of Things and the growth in the number of connected smart devices (20 billion by 2020 according to IEA), confirms and reinforces the strong connection between customers, data and energy. The combination of data (data analytics and data services) and energy is crucial for the future. The power sector needs data, and data centers demand high volumes of electricity to operate. Players such as Google and AES are making the right move by joining forces and maximizing the use of renewable energy."

A **Carlos St. James, board member of the Latin American and Caribbean Council on Renewable Energy (LAC-CORE):** "This is good news and an opportunity for Latin America and the Caribbean. It's a clear indication that Industry 4.0 (cloud technology, AI, smart factories, big data) is coming to our region. And, arriving to the energy sector at the hands of these two highly respected corporate names, it will help intermittent renewables such as wind and solar to find better ways to make their way into the grid—and thus foster more investment. It should also accelerate the incorporation of grid-facing energy storage technology and therefore require more specialized jobs. But to succeed, it will also require that those stakeholders involved in power and transmission place on the front burner the issue of investing in outdated transmissions lines and weak substations and overall prepare for what's coming. It is an opportunity that should not be missed, and it will be interesting to see which countries in our region take note of news items such as this one and take action."

A **Natalia Gutiérrez, executive president of the Colombian Association of Electric Energy Generators (Alcogen):** "First of all, we want to congratulate Google and AES Corporation for such an important alliance. We are sure that it will bring great advancements in terms of technology that will materialize as developments for the growth and incorporation of clean energy. At Alcogen, we believe in and uphold the message that the future of electrical systems, and therefore of public utility companies' investments, especially in terms of electricity, must be aimed at achieving the sector's '4Ds': decentralization, digitalization and democratization are great and will help update the portfolios of companies that should increasingly be focused on users' empowerment. Furthermore, we believe that this must go hand-in-hand with a greater participation of electricity in the energy matrix. Especially in Latin America, the electrification of the economy will be the biggest leverage factor for the fourth 'D'—decarbonization. Additionally, the penetration of distributed resources, the development of intelligent measurement and, in general, all the developments that translate into technologies based on and for the consumer require hard work in terms of modernizing not only of networks and infrastructure, but also of modernizing the energy market's very architecture."

The Advisor welcomes comments on its Q&A section. Readers can write editor Gene Kuleta at **gkuleta@thedialogue.org**.

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