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FEATURED Q&A

Does Mexico Have the Human Capital its Booming Energy Sector Will Need?

Around 80 percent of the 135,000 specialists needed as a result of Mexico's energy reform will require technical or vocational training, Mexico's undersecretary for education policy said recently. // File Photo: justengineeringschools.com.

Q While Mexico's energy reform is expected to attract tens of millions of dollars of investment to the country over the next three years, there will be a shortage of human capital in the energy sector as Mexican universities currently do not produce enough qualified labor to meet the new demand, panelists at an Inter-American Dialogue roundtable in Mexico City said last month. What skills will be most in demand, and how big will the skills gap be? What needs to be done to match the supply of qualified labor with the needs of companies operating in the energy sector? What role should educational institutions and businesses play in preparing workers for the boom-bust cycles of the commodities sector?

A Curt W. Mortenson, principal and U.S. oil & gas consulting leader at Deloitte Consulting LLP: "The energy reform has transformed Mexico's energy landscape by opening the doors to local and international companies. In addition to current conventional methods of oil and gas extraction, organizations entering Mexico look set to explore more geologically complex reservoirs using offshore deep-water drilling and unconventional energy recovery methods such as hydraulic fracturing. Having the right quantity and type of labor will be vital. Around 10,000 additional workers will be required for hydraulic fracturing alone in order to enable the extraction of 300,000 barrels of oil per day by 2020, helping Mexico achieve its target of 3 million bpd overall by the same year. However, the challenge is not necessarily only

Continued on page 3

TODAY'S NEWS

OIL & GAS

Russia to Invest $14 Billion in Venezuela's Oil Sector: Maduro

Venezuelan President Nicolás Maduro said Wednesday that Russia will invest $14 billion in the South American nation's oil and gas sector over the next few years.

Page 2

OIL & GAS

Mexico Clears Companies to Bid in Round One's First Phase

Mexico's government has approved 19 companies and seven consortia to participate in the country's auction of shallow-water exploration blocks.

Page 2

POWER SECTOR

Brazil to Expand Private Sector Role in Nuclear Energy

Brazil's government sees the private sector taking on an expanded role in nuclear power generation, Energy Minister Eduardo Braga said Wednesday.

Page 3

Braga // File Photo: Government of Brazil.

OIL & GAS NEWS

Russia Planning to Invest $14 Billion in Venezuela's Oil, Gas Sector: Maduro

Venezuelan President Nicolás Maduro said Wednesday that Russia will invest $14 billion in the South American nation's oil and gas sector over the next few years, RT reported. "We had a great meeting and agreed on investment of over $14 billion," Maduro said in a televised address after attending a meeting in Caracas with the heads of Russian oil company Rosneft and Venezuela's state-run PDVSA. The money will go to developing the Orinoco Belt, home to some of the world's largest extra heavy crude,

Russian state oil company Rosneft head Igor Sechin and Venezuelan President Nicolás Maduro met Wednesday in Caracas. // Photo: @PresidencialVen.

he added. PDVSA also said Wednesday that Rosneft had suggested increasing its stake in the Petromonagas joint venture from 16.7 percent to 40 percent, the maximum allowed for a foreign partner in Venezuela. PDVSA and the oil ministry did not give further details on the source and destinations of the investment, but Rosneft said in an email that $14 billion is the total amount of investments it will make in Venezuela during the lifespan of current and future projects, according to Reuters. The oil giant invested $1.8 billion in Venezuela between 2010 and 2014 and currently participates in five oil extraction projects there. Venezuela has a goal of doubling national production to 6 million barrels per day by 2019, with 4 million barrels projected to come from the Orinoco Belt, a target few analysts expect to be met.

Mexico Pre-Qualifies Bidders for First Phase of Round One

Mexico's government has approved 19 companies and seven consortia to participate in the country's auction of shallow-water exploration blocks as the historic opening of its energy sector proceeds, Bloomberg News reported Monday. Among the companies cleared by hydrocarbons regulator CNH to bid individually on the 14 blocks are Exxon Mobil Corp., Chevron Corp., Pacific Rubiales Energy Corp., Russia's Lukoil, Hunt Overseas and India's ONGC Videsh. Around 34 companies had applied to pre-qualify to participate in the July 15 auction, which includes an estimated 80,000 daily crude barrels available for development. The pre-qualification process included paying for access to seismic information on the blocks and meeting investment capacity and experience requirements, such as demonstrating participation in at least three shallow-water exploration projects. Shell and Petrobras began the process, but dropped out and will not participate, CNH head Juan Carlos Zepeda said. Mexico estimates that the opening of the energy sector to private investment will attract $62.5 billion in private investment and boost output by 500,000 barrels per day by 2018. Final contract details for the blocks will be published on June 9, Zepeda said. The government altered the terms in March to keep the blocks attractive in light of lower oil prices. The CNH will also auction of nine shallow-water Gulf of Mexico blocks in September and 26 onshore blocks in December. A study released recently by consulting firm IHS Energy found that Mexico's marginal oil fields hold the most potential of any country in Latin America, Reuters reported. Mexico's lower-quality onshore fields have 14.1 billion barrels of incremental oil potential, which could be quickly tapped using techniques from the U.S. shale boom, study author Leta Smith said. The 26 onshore blocks to be tendered later this year are believed to hold 2.5 billion barrels of oil equivalent, with average production costs of $10 to $20 per barrel.

NEWS BRIEFS

Former Petrobras Exec Sentenced to Five Years in Prison for Corruption

A former top executive at Brazil's Petrobras on Tuesday received the harshest punishment so far in the corruption scandal that has tarnished the state oil company's image, The Wall Street Journal reported. Former Petrobras international operations director Nestor Cerveró was convicted of money laundering and sentenced to five years in prison as well as fined 543,000 reais for his role in the scheme, in which Petobras suppliers are alleged to have inflated contracts with company employees skimming off the extra money. Cerveró's lawyer said his client was not part of the scheme and will appeal the sentence.

Argentina's YPF Finds Oil in Río Negro Province

Argentine state oil company YPF said Monday it found a conventional oil field in Río Negro province in southern Argentina, EFE reported. The Manzano Grande x-1 well holds about 40 million barrels of petroleum. YPF produced about 89 million barrels of petroleum equivalent in 2014. YPF posted profit of $239 million in the January to March period this year, Reuters reported recently.

Pacific Rubiales Agrees to Offer from Mexico's Alfa and Harbor Energy

Toronto-listed oil producer Pacific Rubiales, which operates fields in Colombia, said it accepted a buyout offer from Mexico's Alfa Sab de CV and Harbor Energy, Reuters reported May 21. The transaction is expected to close later this year, yet some Venezuelan investors opposed to the bid said they may continue to buy up more shares of Pacific Rubiales. Harbor Energy is formed by EIG Global Energy Partners and the Noble Group.

Peru's Government Wins Case Against Camisea Consortium

Peru's government has won a dispute with the Camisea consortium, which operates the gas field of the same name in southern Peru, according to a ruling issued May 21 by the World Bank's International Center for the Settlement of Investment Disputes in Washington, Xinhua reported Tuesday. The Pluspetrol-led consortium must pay hydrocarbons promotion agency Perupetro about $64.9 million for royalties related to the reload of LNG. Peru filed the lawsuit in 2012 after finding that 10 LNG cargoes shipped to the U.S. Gulf Coast had been re-exported to Asia, which is permitted, but royalties must be paid on the final destination, according to Argus Media. Peru argued that Argentina's Pluspetrol was responsible for compensating for the royalties lost due to the reload and was responsible for the gas under its contract. Pluspetrol argued that it was not responsible for the actions of traders. The arbitration award includes $48 million in royalties plus interest and arbitration costs and attorneys' fees, Xinhua reported. The Camisea consortium, which has not commented on the ruling, is comprised of Pluspetrol, U.S. company Hunt Oil, South Korea's SK Energy, Algeria's Sonatrach, Argentina's Tecpetrol and Spain's Repsol.

FEATURED Q&A / Continued from page 1

quantitative. The academic requirements for many of the key occupations needed for hydraulic fracturing and deep-water drilling are the same as for conventional methods, including petroleum, electrical, environmental and other engineering degrees. Mexico already has an abundance of such workers, and academic institutions produce a steady stream of new graduates. The problem lies in the additional skills needed in order to operate the more advanced technologies of the new energy recovery methods, such as handling operations in high-pressure and high-temperature conditions and conducting directional drilling. One needs not just the right academic degree, but also a combination of several years of practical hands-on experience and customized certifications, with the latter two not currently provided in Mexico. However, hydraulic fracturing is not expected to pick up for another three to five years, while deep-water operations could take as much as eight to 10 years. The oil and gas industry and its professional workforce are no strangers to working outside of their corporate host countries, and the industry has eliminated more than 100,000 positions globally since the oil price decline in 2014, which creates additional capacity available to respond to increased activity in Latin America. There is still time for academic and professional institutions, local and foreign energy companies as well as governmental entities to act together through the design of relevant academic and professional training programs as well as certifications. Ramping up the use of intern programs, on the job training and leveraging coaching and mentoring programs for prospective and incoming recruits have proven to shorten the time required for college recruits to be productive in petrotech roles."

A Lisa Viscidi, member of the Energy Advisor board and director of the Energy, Climate Change and Extractive Industries Program at the Inter-American Dialogue: "The skills most in demand will be from fields directly related to the energy sector such as geophysics, geology, oil engineering, oil chemistry and renewable energy. Technical skills will also be in high demand–according to government estimates, 80 percent of jobs created by investment in the energy sector will require vocational and technical training. Enrollment in many of the higher education programs directly related to the energy sector is low, but the skills gap is not merely a result of an insufficient number of students studying related fields, but rather that students graduating with relevant degrees lack the specific skill sets needed to execute the day-to-day demands of energy

Continued on page 6

POWER SECTOR NEWS

Brazil to Expand Private Sector Role in Nuclear Energy

Brazil's government sees the private sector taking on an expanded role in nuclear power generation as the country aims to address rising electricity demand, Energy Minister Eduardo Braga said Wednesday, Reuters reported. Braga said nuclear power is "a necessity but not a priority" and that the nation is looking to construct up to four new reactors to provide dry-season backup for dams under construction in the country's Amazon region. Brazil is heavily reliant on hydropower, which accounts for more than two-thirds of its energy, but it has been hard-hit by a drought that has reduced output. Additionally, new hydroplants under construction faced environmental resistance and have much smaller reservoirs than previous plants, so they can only operate during the wettest part of the year. The drought has prompted the government to speed up the construction of new power plants and transmission lines. "The Angra 3 nuclear power station under construction west of Rio will be the last to be built as a public-works project," Braga said. "The next power station will be built by the private sector." Currently, Eletronuclear, a subsidiary of state power company Centrais Elétricas Brasileiras, also known as Eletrobras, has the exclusive right to operate nuclear power stations, but the government could move to allow private investors to participate. Angra 3 is the most recent reactor to be constructed at the nation's only nuclear power facility. Brazil's government and Eletrobras are considering 21 sites as possible locations for the four planned nuclear reactors. Private companies will be able to bid to construct the plants with financing guarantees of future revenues.

SunEdison Acquires Chilean Company

U.S.-based SunEdison has acquired renewable energy developer Latin American Power from Brazil's BTG Pactual Asset Management and its partners, Bloomberg News reported May 21. Known as LAP, the Chile-based company has 119 megawatts in hydroelectric and wind energy projects operating in Peru and Chile, with 214 megawatts in projects under development. The value of the transaction was not disclosed. BTG Pactual partnered with investment fund P2 Brasil and GMR Energia to acquire LAP in 2012, according to Bloomberg News. Last December, SunEdison said it had received a $146 million loan to build an 82-megawatt solar power complex in Honduras, Business News Americas reported. In November, the Missouri-based company said it had created a joint venture with Brazil's Renova Energia to develop utility-scale solar projects with a capacity of 1 gigawatt over the next five years in Brazil. Renova Energia, Brazil's largest renewable energy company by installed capacity, and SunEdison each hold a 50 percent stake in the venture, investing nearly $200 million. [Editor's note: See "**How Bright Is the Outlook for Solar Power in Latin America?**" in the February 16-20 edition of the Energy Advisor.]

RESEARCH ALERT

Governments Not Doing Enough to Curb Extractive Industry Conflicts: Report

Latin American countries are among those with the most widespread conflicts over energy and extractive industries projects, and governments must do more to balance community concerns with national interests and develop and apply appropriate regulations and practices, according to a recent **report** published by the Inter-American Dialogue. In "Local Conflicts and Natural Resources in Latin America: A Balancing Act for Latin American Governments," Lisa Viscidi, director of the Dialogue's energy, climate change and extractive industries program, and Jason Fargo, Latin America team leader at Energy Intelligence Group, examine the causes of conflicts in Peru, Colombia, Mexico and Chile and offer suggestions to reduce natural-resource fueled disputes.

Fuels and mining products accounted for 40 percent of South and Central American exports in 2013, nearly double the global average, and the commodities boom over the last decade "coincided with a spike in conflicts over natural resources in Latin America, some of which have turned violent," said the report. The needs of expanding populations and a growing middle class as well as the dependence of many regional governments, which often seek to move ahead with energy and mining projects, create conflicts with local communities, whose complaints about projects often focus on economic benefits, environmental protection or land rights.

Many governments "lack clear processes, adequate resources and the political ability to prevent and defuse conflicts, leaving companies with too much responsibility for direct mediation," the report added. Although governments are aware of the problem, they do not always adequately engage communities in consultations, provide enough information about plans and potential impacts or do enough to ensure that communities have reasonable expectations of project benefits. "The key to reducing conflicts in every country appears to be proactive and sustained government-led engagement from the start of the project," the report said. Governments must look to invest revenue in long-term development, such as in education and infrastructure, ensure that projects benefit local communities and balance investment between resource-rich and resource poor areas of the nation. Despite the ongoing nature of a number of conflicts, successful cases such as the strides made in applying Peru's prior consultation law and inter-ministry coordination, emphasize that conflicts can be successfully managed or avoided, the report concluded.

ECONOMIC NEWS

FDI to Latin America, Caribbean Falls 16%: U.N. Commission

The amount of foreign direct investment to Latin America and the Caribbean declined 16 percent last year, interrupting a growth trend, the United Nations Economic Commission for Latin America and the Caribbean, or ECLAC, announced Wednesday. Last year, the region received $158.8 billion in FDI, the commission announced at its headquarters in Santiago. Investment declined last year due to the economic deceleration in the region as well as lower prices for its raw materials exports, ECLAC said in its annual report, "Foreign Direct Investment in Latin America and the Caribbean" 2015. Between 2003 and 2013, foreign direct investment to Latin America and the Caribbean grew from $46.94 billion to a nominal record of $189.95 billion, the report said. Until last year, FDI flows grew every year during that period, except for declines in 2006 and 2009, according to the report. ECLAC said it expects another decline in investment flows to the region this year. "ECLAC believes that Latin American and Caribbean countries' policies should not be oriented towards recovering the amounts of foreign direct investment achieved in the last decade, but rather towards attracting the FDI that contributes to productive diversification," ECLAC's executive secretary, Alicia Bárcena, said in a statement. "This means articulat-

NEWS BRIEFS

Negotiator for Colombia's FARC Killed in Military Bombing Raid

A negotiator of Colombia's FARC rebels who had been involved in the group's peace talks with the Colombian government was among those killed last week in a government bombing raid in Cauca province, BBC News reported Wednesday. The negotiator, known as Jairo Martínez, had been on an "educational mission" to tell guerrillas about the peace process when he was killed in the raid, said FARC Commander Pastor Alape. Martínez had joined the FARC negotiating team in February 2014.

Morales Replaces Officials After Belaunde's Escape

Bolivian President Evo Morales on Tuesday named a new interior minister and national police chief after Martín Belaunde, a former advisor to Peru's president who faces corruption charges, escaped house arrest over the weekend, Reuters reported. Hugo Moldiz resigned as interior minister, and lawyer Carlos Romero was named as his replacement. Police chief Luis Enrique Cerruto also resigned and was replaced by Ramiro Téllez, head of a special unit known as the Special Force to Fight Crime.

Peña Nieto, Rousseff Agree to Expand Trade Deal

Mexican President Enrique Peña Nieto and Brazilian President Dilma Rousseff on Tuesday in Mexico City agreed to expand a deal that they hope will double trade between their nations, Latin America's two largest economies, over the next decade, The Wall Street Journal reported. The nations agreed to expand their 2002 economic cooperation agreement to cover agricultural and industrial products, services, e-commerce and intellectual property rights, Peña Nieto said.

ing FDI with industrial policies and national development strategies based on equality and environmental sustainability." In 2014, Brazil continued to be the region's largest recipient of foreign direct investment. With the methodology used last year to calculate FDI in Brazil, the country's level of investment amounted to $62.5 billion last year, said ECLAC. However, using a new methodology, Brazil's level of FDI in 2014 amounted to $96.85 billion, the report said. After Brazil, Mexico received the region's highest level of investment, with $22.8 billion in inflows last year, a 49 percent decline from 2013. The decline resulted from an "extraordinary deal" in 2013—the purchase of the Modelo brewery—and AT&T's $5.57 billion disinvestment in Mexico in 2014, said ECLAC. Europe, mainly the Netherlands, and the United States remained the largest investors in Latin America and the Caribbean, according to the report. [Editor's note: See Q&A on FDI in the region in the May 21 issue of the daily Advisor.]

Chile, China Sign 10 Agreements to Boost Trade, Finance

Chilean President Michelle Bachelet and China's premier, Li Keqiang, on Monday signed 10 cooperation agreements in Santiago covering trade, finance, science and the economy, EFE reported. In an effort to boost trade ties, Chile's central bank entered into a three-year currency swap with the People's Bank of China, and the two governments are clearing a path for the use of the Chinese yuan in the South American country, Reuters reported. China is looking to set up a yuan clearing bank in Chile, which would be the first of its kind in South America, Li said in a presentation Monday. In another announcement, the leaders said that as of July 1, tourist visas between Chile and China will be free, La Tercera reported. The move is aimed at increasing tourism. Currently, about 11,000 Chinese visitors each year arrive in Chile, while about 10,000 Chileans travel to the Asian country annually. Chile and China have had diplomatic relations for 45 years, the longest of any country in South America.

POLITICAL NEWS

Uruguay's Almagro Takes Office as OAS Secretary General

Former Uruguayan Foreign Minister Luis Almagro took office Tuesday as secretary general of the Organization of American States, pledging to re-incorporate Cuba into the organization, EFE reported. "Cuba's presence, combined with renewed bilateral relations with the United States... is beneficial for the entire hemisphere," Almagro told the OAS' Permanent Council in Washington. Cuba's membership in the OAS was suspended in 1962. The OAS lifted Cuba's suspension in 2009, but the Caribbean nation has shown little interest in rejoining the organization. Almagro succeeds Chilean José Miguel Insulza, who held the secretary general post for 10 years.

> **Cuba's suspension from the OAS was lifted in 2009.**

Mexican Authorities Deny Suggestions of Police Executions

Mexican officials on Monday publicly stood by their account of a shootout that killed 42 suspected criminals and one federal police officer on May 22, The Guardian reported. Questions have been raised in the media about the lopsided death toll. "There was not one single execution, I can say that categorically," Enrique Galindo, head of Mexico's federal police, told local media. Forty-two men died during a three-hour gun battle on a ranch in the western state of Michoacán when police officers came under fire while responding to a report of armed men taking over the Rancho del Sol, in Ecuandureo, a township near the border with Jalisco state.

FEATURED Q&A / Continued from page 3

sector jobs. Panelists suggested solutions like creating certifications for university students designed based on the skills needed to perform on the job. By directing their curricula toward these skills and preparing students for the certification exams, universities would produce graduates equipped to work in the sector. Industry companies can play an important role in developing human capital by creating training programs and professional development opportunities and retraining engineers specialized in other fields. Creating a sector that attracts talent is another important component of bridging the skills gap; incentivizing top students to study key fields and incentivizing women to study relevant areas will be important to develop the sector's competitiveness. Increased opportunities and competition from international oil companies entering the Mexican market will also create additional professional development opportunities, fomenting a more dynamic and competitive market."

A **Lisa Guáqueta, Mexico Center program administrator at Rice University's Baker Institute for Public Policy:** "Mexico's energy reform seeks to create an environment more conducive to private and foreign direct investment in the energy sector. It is expected that the energy reform will boost employment opportunities, especially in jobs requiring skills in energy-related occupations. The data available seem to indicate that Mexico will have a skills gap challenge, meaning that there will be more jobs than qualified applicants. This gap will primarily affect jobs requiring workers with 'middle skills,' or those that require more training and education than a high school diploma but less than a four-year college degree. Only 9.4 percent of Mexico's total employed citizens have a higher education degree. According to the National Institute of Statistics and Geography (INEGI), 43 percent of people between 15 and 19 years of age are not enrolled in any education program (high school or vocational training), and only five out of 100 individuals over 20 are currently in school. Institutions in Mexico are quickly mobilizing, putting into place more as well as improved higher education programs for careers in engineering, energy and the law. However, similar changes have not been made at technical schools. Companies interested in working in Mexico will most likely have to bring in international workers to supplement the available talent. This will be necessary as Mexico strengthens its current workforce. The real question is how will Mexicans be able to directly reap the benefits of the energy reform activities and job opportunities? Much of that response will probably lie with jobs that are complementary or supportive of the energy sector, such as construction, health care, education and manufacturing. For Mexico to fully gain the benefits of energy reform, it must focus resources to strengthen the pipeline of local talent: increase the number of people earning a high school degree; quickly address the middle-skills gaps; support the ongoing establishment and expansion of new energy-related degrees in higher education; and prepare students for STEM careers (science, technology, engineering and math) throughout their school years."

> **"Around 10,000 additional workers will be required for hydraulic fracturing alone..."**
>
> **— Curt W. Mortenson**

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

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