MEXICO
ENERGY REVIEW

HIGHLIGHTS 2018

FOSTERING COMPETITION AND INVESTMENTS TO CONSOLIDATE ENERGY MARKET

PEDRO JOAQUÍN COLDWELL
Minister of Energy

Q: What major achievements have helped the Ministry of Energy strengthen Mexico's electricity sector?

A: To date, we registered 32 companies participating as power producers, qualified suppliers and traders and an additional 32 have already signed market entry contracts with CENACE. A new milestone was set by the third long-term electricity auction as the lowest MWh plus CELs package price yet was obtained at US$20.57. With the conclusion of the first three electricity auctions, US$9 billion in investments and 7,000MW of additional solar and wind power generation capacity are expected, effectively quadrupling the county's renewable energy infrastructure by 2020 in comparison to the beginning of this administration in 2012. The Ministry of Energy unveiled the new contractual model for the construction of transmission lines, in which private players can participate in financing, development and operation of such infrastructure through competitive and transparent bids. We also published the first tender basis for the development of an interconnection project for Baja California with the rest of Mexico's National Interconnected System.

In January 2017, we also disclosed the new technical and administrative guidelines enabling small-scale electricity consumers to generate their own power and connect to national distribution grids in a simpler manner. This boost for distributed generation means users can install PV systems on their own residential and commercial roofs to cover part or all of their electric consumption needs and reduce their electricity consumption costs.

May and November 2017 mark the first two Universal Electric Fund (FSUE) sessions, meant to be the social face of the Energy Reform and funded by contributions from the wholesale electricity market participants. Through CFE's extension of distribution grids and private companies' contribution to installing off-grid PV systems, electricity will be within the reach of 1.8 million citizens who would otherwise remain deprived of it.

Q: What lessons has the Ministry of Energy learned from the auctions?

A: Mexico can be a launching pad for profitable clean power generation projects. Auction results attest that Mexico has joined the international trend of lowering generation costs. During the first auction in March 2016, the average package price per MWh and CEL reached US$47.78 and attracted US$2.6 billion in investments while the second auction attained a 30 percent lower average price, at US$33.47 and will contribute US$4 billion in investments. The latest auction surpassed expectations further as costs fell as low as US$20.57 for the MWh plus CELs package and reached prospective investments to the order of US$2.4 billion.

Q: What outstanding results has the coordination with other government agencies yielded?

A: The Ministry of Energy maintains a constant and extensive inter-institutional coordination mechanism whereby different federal government agencies, including CENACE, CRE, INAH and SEMARNAT, participate. The purpose of the mechanism is to expeditiously address all matters under the attribution of each office and continuously generate updated information pertinent to social and environmental requirements. The objective is to resolve them promptly and within the regulatory framework, guaranteeing the rights of communities and indigenous populations located in the areas of influence of the new projects to be developed and providing legal certainty to the inherent investments.

The Ministry of Energy's Interinstitutional Linkages Office created a follow-up methodology to monitor the results of these efforts and streamline resolution times pertaining to project development. For instance, it developed an Administrative Procedure Control Board to identify and mitigate potential risk situations that delay or block the advance of the projects in time and form. To date, we have registered an 80 percent advance in the resolution of such administrative procedures.

Q: What will the Ministry of Energy's role be now that CRE has greater responsibilities starting in 2018?

A: The Ministry of Energy will keep bolstering the consolidation of the emerging wholesale electricity market. As the sector's leading institution, we will continue

devising guiding policies for the remaining steps, fostering the entry of new players and new technologies, as well as the construction of new transmission lines that enable competitive electricity tariffs to benefit all Mexicans.

Q: What is the status of Mexico's energy transition?

A: The expansion of gas pipelines should be of note, especially considering that between 2012 and 2018, this administration estimates the increase will be 65 percent, contributing to the commitment of providing cheaper and cleaner fuel to generate electricity for a greater number of regions in the country. Mexico's wholesale electricity market is burgeoning with dynamism, as in less than two years, it went from one sole participant to more than 60 registered by CENACE, of which 32 are already active in energy trading operations, fostering competition, innovation and finding efficiencies. As new participants enter the market and our productive enterprise of the state competes on a level playing field, through effective and modern regulation, efficiencies found and new technologies used, costs will be reduced throughout the value chain, positively impacting final users' electricity tariffs.

Q: What legacy will you leave to Mexico's electricity market once your administration comes to an end?

A: The sector's progress is starting to change the architecture of the country's electricity industry, creating a solid foundation for a competitive and efficient market. With the launch of the short-term wholesale electricity market, electricity generation, supply and trading activities are witnessing new participants that compete with CFE's subsidiaries and affiliates. For long-term transactions and the fostering of clean energy sources, the conclusion of the three long-term electricity auctions show quite positive results. Mexico is steadily and hastily advancing its transition toward an economy with lower carbon emissions, enabling us as a country to reach the 2024 goal of 35 percent of green generation. A new model was created for the procurement of transmission lines, allowing private players to participate in its financing, development and operation. Through the distributed generation scheme, homes and businesses alike can place PV modules on their roofs to produce a large part of the electrical energy they require, while generating savings in their electricity bill and contributing to decreasing emissions to the atmosphere.

Q: How can continuity be fostered for the wholesale electricity market of the future?

A: The industry's answer reflects the market's confidence in the processes we have fostered. The catalyzation of the electricity market is imminent and the market has started to create its own mechanisms, guaranteeing its permanence. The power of competition and technological advances have made their presence known with competitive renewable energy prices, without overlooking the preponderant role they play in Mexico's energy transition and clean energy goals. The benefits of competition, the unlocking of electricity tariffs and the preservation of the environment are the major elements that give sense to this new model, making it self-preserving.

The construction of a solid institutional pillar for the electricity sector was our priority. The sector's regulator, CRE, is endowed with the tools and faculties to carry out its tasks objectively, effectively and efficiently. Our market operator, CENACE, acts autonomously to guarantee the electricity system's reliability, as well as the greatest possible benefits for consumers. Our productive enterprise of the state is no longer a monopoly and takes advantage of the opportunities brought about by the reform to offer better services and compete with other companies. Our regulatory structure generates incentives for all participants to act in the public interest, favoring innovation as well as public and private investments. In 2016, electric generation capacity grew 8.1 percent, the highest rate since 2003, thanks to national and foreign investments that the new market is attracting. Essentially the Energy Reform is promoting job creation and setting the groundwork for accelerated economic growth in the mid and long terms. The Ministry of Energy will continue to implement the changes and improvements required by the industry, convinced that a modern and efficient electricity sector is fundamental for promoting productivity in our country and fostering social inclusion.

Q: What challenges will the ministry face in 2018?

A: In what will be the last year of the current administration, the Ministry of Energy will continue working toward the consolidation of the reform with the same pace and commitment it has shown so far. Based on our action plan, we will keep fostering the arrival of new investments in every link of the sector's value chain. The conclusion of the first midterm electricity auction, the tender for the first transmission line under the new model of private procurement and FSUE's third stage are among the major steps that will be taken in 2018. By the end of this presidential term, we will have laid the foundation of a more modern electricity industry, witnessing the arrival of multiple operators, which will promote new investments, economic benefits, job creation, energy democratization and multiple electricity supply options for consumers.

Pedro Joaquín Coldwell *has been Mexico's Minister of Energy since the start of President Enrique Peña Nieto's government in 2012 and has overseen the liberalization of the country's oil and gas and electricity sectors*

A NEW MARKET IS BORN

EDUARDO MERAZ
Director of CENACE

Q: What expectations do you have for the Mexican energy market in 2018?

A: 2018 is the year where the energy market will consolidate. It all started with the first long-term electricity auction in November 2015. followed by the short-term market, launched in January 2016. CENACE has been working from the outset toward a variety of milestones set for 2018, including the execution of the first midterm electricity auction, contract signing for the assigned projects during the third long-term electricity auction, implementing all the aspects surrounding the short-term market and finally, executing the first auction regarding financial transmission rights. The latter should happen during 4Q18 due to the complexity it represents. Achieving all these landmarks will mean all mechanisms contemplated in the reform for the market will be ready to properly work.

Q: What was the biggest challenge for the implementation of the Mexican energy market?

A: The biggest challenge we had to overcome was timing. In less than a year and a half, Mexico had to create a completely new market, which on a global average usually takes four to seven years. The creation of the software that runs the market was a continuous improvement process that needed a deadline and constant communication between regulators and developers. Working with INEEL was an important part of this process. CENACE was also in charge of the creation of the auctions' core software. Having an in-house development of this kind has been extremely useful and speaks volumes about Mexico's capabilities in the development of technology. Talking about Mexican talent, we are also working with IPN, which acts as a third party that verifies the results of the auction. For that, IPN developed another piece of software to check our results. As is well-known, the results were positive and the projects were correctly awarded.

***CENACE** is a decentralized public entity that was founded in 2014 to act as Mexico's independent grid operator. It sprouted from CFE's former intelligence unit and now acts as manager of Mexico's National Electricity System*

Q: How was the creation of the Clearing House handled by CENACE?

A: The model of the Clearing House created for the auctions is completely new on a global level. Clearing Houses all over the world are used to mitigate risks in terms no longer than three years. For Mexico, our Clearing House has to cover risks for 15-20 years. All of the international firms that we hired to advise our activities showed their surprise, but at the same time their interest. Although CENACE has the ability to manage the Clearing House per the law, we chose to hire a specialized third party because it is a purely financial activity that does not fit with our core. Of course, we retain responsibility for its functionality. If at any moment we do not see it working as it should, we have the capacity to intervene and call for a new tender so that a new third party takes charge of the operation while we manage the interim phase. Some international experts who offered their advice also think that applying this model to finance projects for longer terms is interesting, as it would offer more certainty to the projects under development.

Q: What is hindering the development of more transmission projects?

A: The transmission grid requires expensive mega projects that are not easy to manage, or even to auction. The Oaxaca transmission line auction has gone through delays not because CFE or the Ministry of Energy are putting up barriers, but because it involves extremely high costs and a great deal of legal struggles. But Congress has overcome the issues and the auction is about to begin. Future projects to auction will be worked out in other ways, meaning that they will materialize faster. This is important for interconnection. Many people state that interconnections are being managed in a very slow and inefficient way, but the truth is that the problem is more technical than that. The grid is not capable of handling all the capacity to be interconnected. Considering that there are certain regions where projects are stockpiling and more permits are being requested, the grid is becoming saturated. Fortunately, as in every process, we are becoming more agile and knowledgeable, and with stronger transmission and generation projects Mexico will become more competitive.

A TRANSITION LEGACY FOR THE LONG TERM

LEONARDO BELTRÁN
Deputy Minister of Planning and Energy Transition at the Ministry of Energy

Three long-term electricity auctions, a committed investment of US$9 billion, new rules for the third long-term and first midterm auctions and the regulation, policy and vision for the CELs market that is ready for launch are some of the milestones achieved until now by the Energy Reform. "It was a momentous 2017 for Mexico's energy industry that not only marked the consolidation of the Mexican wholesale electricity market, but also wrote a fresh chapter in the country's energy history," says Leonardo Beltrán, Deputy Minister of Planning and Energy Transition at the Ministry of Energy. And there is more to come.

Beginning with the fourth long-term electricity auction, the Ministry of Energy will hand the reins to CRE, which will manage the process and carry out the auction through its executing arm CENACE. Beltrán expects CRE to become an even stronger regulator due to the opportunity it had to witness the auctions without being responsible for them. "CRE has been able to learn and incorporate that experience into its ethos, ultimately making it a strong, robust and impartial regulator that can ensure an unbiased market," he says.

Although the auctions have produced good results, Beltrán expects improvements in the next editions. The fact that resource availability is different across the country, with more solar power in the north and more wind in the south, is among the possibilities to explore. "It might be worthwhile to have this reflected in the process, to make resources competitive in every region," he says. "I think the regulator has to be flexible enough to increase competitivity by allowing different prices across the country for the same source of energy."

Beltrán adds that flexible regulation will attract more participants to the market, which will therefore encourage competition – the ultimate goal of the electricity auctions. "The focus has to be on having more market participants," he says. "In addition to ensuring a more competitive market, it would also confirm that the regulation, the legal framework and the models we are using are attractive."

Critics have pointed to the underwhelming participation of local industry in the electricity auctions compared to its high participation during the hydrocarbons licensing rounds, which have a minimum local content requirement. Beltrán is not worried about this because the main intention of the current administration is to create a market. "We are not yet at the point when local companies can compete against their international counterparts, mainly due to a lack of investment, technology and expertise," he says. "In doing things this way, we are ensuring that we will have the most competitive market possible." He adds that high international participation means that the country is attractive at a global level.

Investing in the long term is not always easy. Governments want to see results, most of which will not materialize during an administration's term. Beltrán is instead focused on investing in a mixed portfolio that comprises investments for the long, mid and short terms. "Talent is a long-term investment for which we will not see a return in the next few years," he says. "But that investment will produce results when people who have gone abroad to study, come back years later to the country and join the labor industry's market." For the medium term, he says Mexico should invest in infrastructure, meaning that when the talent returns, it will be able to replicate the R&D conditions seen abroad. "Finally, in the short run we need a robust legal framework that allows for the strong participation of the market," he says. "By combining these three elements, Mexico can become a powerhouse for clean energy."

Looking forward, Beltrán sees a big opportunity with storage technologies, which are the missing link keeping renewable, intermittent technologies from further spreading across the country. Although these technologies are just being adopted, he highlights the importance of incorporating storage technologies into the country's planning and day-to-day operations.

On the political front, where the winds of change will blow across the country with 2018's presidential elections, Beltrán believes the strong legal and regulatory frameworks that have been established will allow companies and investors to base decisions solely on economic factors. "Investors can be sure their capital will be safe," he says.

FROM CORPORATE STRUCTURE OVERHAUL TO CUMULATING EFFICIENCIES

JAIME HERNÁNDEZ
Director General of CFE

Q: What were CFE's 2017 milestones?

A: The reform of Mexico's electricity sector meant the overhaul of CFE's corporate structure. To date, we are operating with 13 new companies. The process involved a considerable operational challenge, which we tackled successfully. Of the 13 new companies created, six are power producers that compete against each other and the rest belong to the private sector. There is also a sole national transmission company for the sake of system security, two new energy trading companies—one for basic supply for small-scale consumers and a qualified user for primarily industrial consumers. We have one distribution company that oversees mid and high voltage with 16 business units spanning different regions, enabling us to better address the challenges pertaining to technical and nontechnical losses. Our business plan pillar is cemented on our financial strength. CFE's significant financial losses pushed us to renegotiate the company's collective labor contract in 2016, reframing the utility's pension system. Through an established incentive, we cut labor liabilities in half, obtaining US$17 billion in savings. In the last three years, we have reduced CFE's indebtedness compared to the previous year, a trend that will continue in 2018. While CFE's debt used to be issued entirely in US dollars in 2012, we now have a currency exchange exposure within a 20-30 percent threshold, guaranteeing the company's financial health during periods of high currency volatility, as we have recently experienced. CFE also managed to significantly reduce operating costs, which decreased close to 13 percent between 2012 and 2016. The combination of all these factors led to us to close 2016 with assets greater than US$26 billion. We will persevere in our financial discipline and cost reduction agenda to attain a sustainable balance toward 2021. The reform confers CFE the possibility of participating directly in the fossil fuels market. We established two additional companies for that purpose, one in Mexico and another in the US. Their primary objective is optimizing fuel supply for CFE's own consumption and eventually commercializing these fuels to third parties. Close to 80 percent of the cost in electricity generation is associated with the fuels we use, making the gradual replacement of costly and highly contaminating fuels such as fuel oil and diesel, with more cost-effective, environmentally friendly sources such as natural gas and renewables a priority.

From the 25 gas pipelines we are developing, 12 are already operational, 12 are in construction phase and one branch line in the northern region of the country was recently tendered. Between 2012 and 2016, we decreased our emissions relating to electricity generation by 44 percent. We also launched a pilot program for fuel storage in Sonora and Baja California to strengthen the country's energy security. While the international standard sets fuel storage capacity at 30 days of average equivalent consumption, Mexico only has three. This pilot project will increase Baja California's fuel storage capacity by 10 extra days and Sonora's by 14 extra days. Considering an increased number of storage tanks will be available as we transition toward natural gas, we could practically double the country's fuel storage capacity.

On the operational side, we outlined the objective of a steady reduction in energy loss. In 2012, these losses amounted to 16 percent on average nationwide, versus OECD's average of 6 percent. Our latest data from October 2017 suggests our energy losses are below 12 percent. For 2018, we are setting a 10-11 percent objective. We are confident we can reach this milestone and will continue working to bring this indicator closer to international standards. Some regions in the country are even below the 6 percent reference, highlighting the challenge for Mexico's central region. Each additional percentage point of efficiency is more complex than the last. CFE has also designed an ambitious investment plan. We continue investing in new generation plants, with seven of these under construction. The long-term electricity auctions organized by the Ministry of Energy resulted in 52 new clean and renewable energy projects, meaning one in every two states in Mexico will have a new plant powered by clean energy, helping us contribute to the 35 percent of clean energy by 2024 landmark. Renewable energy has considerable potential in the country, as it could double the 55,000MW of installed capacity we have in the coming years. Our investment portfolio is structured to allocate an estimated US$13 billion for the next five years.

Cogeneration plant, Tula, Hidalgo

Close to US$9 billion will be directed to generation projects involving different technologies and regions, US$2 billion to transmission projects and US$3 billion to distribution projects. The aim is twofold: mitigating energy losses and modernizing technologies we use to foster a national smart grid.

Q: After CFE's transformation, what is the next step?

A: CFE's transformation is complete. The productive enterprise of the state has 13 new companies that have a separate and independent legal, accounting, operative and human resource structures. Adapting this new structure to the new rules of the game is also well underway. Our next stage will primarily consist of capturing and cumulating efficiencies, as well as strengthening the company financially and adapting CFE's culture to a competitive environment from top to bottom. The Ministry of Energy has scheduled CFE's first audit for 2018 to evaluate the compliance of our restructuring. Another important change was the separation and creation of CENACE, born from CFE's former intelligence unit to become a full-fledged, independent market operator and National Electricity System manager.

Q: What are the key elements in the intricate processes of the new CFE's strategic decisions?

A: We now have a new corporate Board of Directors with four independent members of recognized prestige, while each of CFE's companies has its own management board. Decision-making processes in a newly-created competitive context, added to our corporate rules, dictate that each of CFE's companies can determine — notwithstanding the effect these decisions might have on the other companies of the group — which investments are the most profitable and should be pursued. A common denominator can be found among CFE's generation companies in the importance of associations with the private sector to promote new generation projects, especially considering our limited capital and our ongoing efforts for cost reductions and financial discipline. Mexico's electricity consumption keeps increasing 3 percent per year, meaning there is a window of opportunity for CFE to continue building on alliances and partnerships, while private projects can have an increased participation in Mexico's electricity sector. The needs of the private sector provide an open door for harmonious development of different technologies and partners, and the long-term electricity auction results attest to that.

Q: If CFE's financial health allowed it, where would you primarily channel additional capital?

A: In the event CFE generates extra capital, we would definitely allocate it to reducing energy loss, technological modernization and two or three generation projects that would revamp the company's generation portfolio. When CFE started in 1937, it only had one generation plant. Today, it has 186 nationwide, using different technologies. Eighty years ago, CFE had no transmission nor distribution lines. Today, CFE's transmission and distribution lines amount to more than 100,000km and 800,000km nationwide, respectively. In 1937, we had close to 100,000 clients. Today, we have more than 42 million. Going forward, our challenges will be directly linked to integrating technological innovation, financial strength and identifying the most profitable energy projects, ideally in association with the private sector, to continue reinforcing Mexico's electric market.

Jaime Hernández *is an economist and PhD in Political Economy from Essex University. Before being appointed to the helm of CFE in August 2016, he served as the state-owned company's CFO*

BUILDING ON MILESTONES TO ENSURE A ROBUST ENERGY MARKET

GUILLERMO GARCÍA
President Commissioner of CRE

Q: What were CRE's successes in 2017 and what can we expect as its regulatory responsibilities increase in 2018?
A: In 2017, consolidating both the oil and gas markets by increasing the number of private participants, diversifying the offer available and empowering final consumers was our greatest achievement. We also enjoyed success regarding renewables in the wholesale electricity market to provide the country the electricity it needs.

In 2018, the fourth long-term electricity auction will be published and executed by CRE, together with CENACE. The difference will be in how the two entities are switching roles. In the first three auctions CRE acted as a technical adviser but it will now coordinate the design of the fourth auction, while CENACE will implement it and the Ministry of Energy will act as technical adviser. We will not change what is working well. CRE's message to all interested parties is one of continuity and any eventual change will help make auctions more attractive to potential participants. Financial entities are growing accustomed to the auction's new schemes and are developing project finance mechanisms. We want to maintain their interest in the auctions.

To date, there are **11 interconnections with the US**, six as **emergency interconnections** and five for **continuous supply**, with another two in the **pipeline**

CRE will also be responsible for announcing the electricity tariffs, the first of which was the Basic Supply Tariff we published on Nov. 29, 2017. Tariff methodologies have already been approved and published. The relevant point is that these tariffs will be based on the monthly electricity generation cycle, while they previously were calculated based on a 1990s methodology that used a fixed power-producing mix where price was solely impacted by fuel price variations. This new attribution is historic as tariffs will be determined for the first time by an independent, autonomous regulator, contributing to the market's development.

Q: What steps will CRE implement to ensure the continuity of the Energy Reform under the next administration?
A: Continuity is key for fostering certainty and reliability. CRE's commissioners have seven-year mandates, outside of political cycles, with phased nominations. Another major component is CRE's organizational structure. We restructured CRE to provide an ever-improving service. While my predecessor's commission was completely cross-sectional, we set out to reassemble CRE into business units, with new rules of procedure published in May 2017. These outlined our four substantive business units – petroleum products, natural gas, LPG and electricity – with four underlying departments. Each business unit comprises all of CRE's service branches: tariffs, contract terms and conditions, market monitoring and permits. This structure has helped develop procedures and protocols that work seamlessly regardless of who is at the helm.

Mexico's Energy Industry Law (LIE) was launched with the Ministry of Energy as the primary regulator but it was meant to be transitional. The Ministry of Energy published a wide array of manuals and concluded this process in the last half of 2017, creating the market's legal basis that CRE inherited as the new permanent regulator of Mexico's electricity market.

Q: CRE signed a MoU with Canada's Energy board. How is CRE shaping an integrated version of North America's energy market?
A: We also signed a MoU with the North American Electric Reliability Corporation (NERC) and the National Association of Regulatory Utility Commissioners (NARUC). To date, we have 11 interconnections with the US: six emergency interconnections and five for continuous supply, with another two in the pipeline. The

idea is to have them operating as a connected market but we still have discrepancies in terms of reliability rules, which is preventing us from enabling all interconnections as continuous supply. Baja California already complies with these rules as it incorporated NERC's best practices and our constant interactions with NERC, NARUC and Canada's Energy Board will help bring the rest of the country up to speed with these best practices. These efforts are vital for the region's energy security, especially considering the precedent of California's 2010 blackout, where Baja California responded swiftly to restore electricity to its American neighbor.

Q: How did CRE make sure CELs were ready for launch in 2018?

A: The design of CRE's S-CEL system was developed jointly with USAID over the course of the year. This platform has the potential to enhance the amount of renewable energy in Mexico's energy mix to help meet its clean energy generation commitments. Visibility and transparency on CELs transactions – purchase, sale and ownership tracking – are key.

Q: What are CRE's priorities for 2018?

A: From a regulatory standpoint, CRE will focus on developing Mexico's natural gas market through 2018's Open Season. This year's edition, proposed by CENAGAS, was regarded as highly successful and we want to build on that positive momentum. Forty-four percent of the country's natural gas capacity is now in different hands from those of CFE and PEMEX, and we want to continue to provide certainty for all interested parties.

Developing the country's natural gas price hub is also a priority. We are already shifting from publishing national monthly prices to regional monthly prices and we will eventually achieve regional daily prices. Working jointly with the Mexican Association of Natural Gas (AMGN), we identified the intrusive nature of natural gas regulation and designed a more flexible framework for permitting and profitability track terms compared with the prevailing accounting terms.

Q: How do you think the business community will react or adapt to the uncertainties of an election year?

A: Looking back, the most uncertain period in the country's recent history was last year's US presidential elections. One month later, we witnessed the success of Round 1.4, the deepwater chapter, which included participation from major US companies such as ExxonMobil and Chevron. This experience tells us that the business world is above political discourse or alignments. As long as the rules are clear, transparent and foster open participation, business will continue and investments will pour in.

Mexico requires close to **US$100 billion** of investment in **power generation alone** to remain competitive **compared to international markets**

The reform is unmovable and constitutional, and reverting it requires a two-thirds approval from Congress, meaning an unlikely association of several different political forces. For this sector, such an exercise has only been done once in the last 80 years. Achieving it in itself was a feat, repeating it, considerably harder, especially considering the Mexican Supreme Court has repeatedly pronounced itself in favor of the reform's constitutionality when any legal issue pertaining to the reform arose. Academia's intensive involvement in the sector should also be of note. Many universities are integrating curricular programs in energy law, renewable energy, and environment-related disciplines. Local governments have recognized the economic development potential of the reform, beyond political affiliation.

Q: With all these new developments going in the right direction, what is CRE's primary concern?

A: We went through an orderly and gradual gasoline price-liberalization process, with adjustments from the Ministry of Finance, so that gasoline prices would reflect logistics costs. It was a major shift, without which the wide array of international gasoline brands would not be able to set up shop across the country. Looking forward, a potential risk that must be avoided at all costs is investment levels beginning to stagnate. Mexico requires close to US$100 billion of investment in power generation alone to remain competitive compared to international markets. Being content with our recent milestones is, I think, our greatest risk.

The retail market may be moving at a fast pace but much remains to be done to develop a solid wholesale market. True competition will be achieved when wholesalers, both local and foreign, build a market footprint large enough to inject competition to the point that PEMEX feels this competition is real, strengthening and reinventing its processes. When both productive companies of the state feel pushed from their comfort zones, we can consider our work is bearing real fruit.

Guillermo García *has served as President Commissioner of CRE since April 2016. García took part in the technical and drafting group for the 2013-2014 Energy Reform and conducted support studies for the 2008 Energy Reform*

MEETING MEXICO'S NATURAL GAS NEEDS

DAVID MADERO
Director General of CENAGAS

Q: What short and long-term challenges has CENAGAS identified in the natural gas market?

A: To discern our agency's challenges we need first to understand CENAGAS' primary objectives. On the one hand, assist in guaranteeing Mexico's gas supply nationwide. On the other, contribute to this primary resource's transport and storage in conditions of optimal efficiency, enhancing productivity for all involved in the market. As such, our challenges lie in the implementation of the Energy Reform and achieving our primary objectives.

As a technical manager, we have published the second annual revision of the Five-Year Plan for expanding the gas pipeline network. Through this plan we aim for a greater balance between geographical locations where demand is increasing. We expect to increase our capacity to supply natural gas to those points, with both national production and imports. CENAGAS still indirectly operates, through PEMEX, 9,000km of gas pipelines in a secure, trustworthy and cost-efficient process with solid operational models based on the best practices available and top-tier international standards.

CENAGAS engineered better coordination between the players in charge of bringing gas molecules to the country and those in charge of operating the required infrastructure to transport gas throughout our territory. We are also ready to bid on strategic and socially beneficial projects such as a pipeline from Jaltipan to Salina Cruz and a project to transport gas from the coast of Michoacan to the State of Guerrero. In both cases, we are working closely with local governments to guarantee demand conditions so we can go forward with tendering these projects.

Our short-term challenge involves the open season we implemented and adjusted to answer the requirements of the market. We consider this successful as we procured, through firm base contracts, 97 percent of available capacity, while pre-existing contracts were maintained, in particular for independent power producers, representing 1.8bcf. The new open season offer includes both CENAGAS and SISTRANGAS pipelines. In this capacity allocation, 2.2bcf were attributed to PEMEX and CFE. For new consumers requiring firm base capacity in the system, we delivered 2.3bcf.

This allocation represents 722 applications in total, 390 private companies with acquired rights, which grant a base firm-contract option, and 332 from the general public. This dynamic contributes to the creation of a national natural gas commercialization market.

We are pausing the process so companies that received capacity allocation notifications can analyze capacity reserve swap opportunities. Between May 22 and June 16, contracts were signed, formally signaling our operation under the capacity reserve regime starting July 1.

As for our gas transportation segment, we are delighted to increase our client base from our initial three to more than 20 clients for SISTRANGAS. We are also looking for three-year O&M contracts that reduce our OPEX. We have designed four initial contracts to this end, covering close to 1,900km of gas pipelines according to the strict compliance of our work programs. Another challenge for this segment involves infrastructure modernization. We received 9,000km of pipelines and nine compression stations from PEMEX, as well as a considerable surface infrastructure that requires optimal operational conditions. We are launching four investment programs, sanctioned by the Ministry of Finance: rehabilitation and maintenance of pipelines and compressors, implementation of our SCADA system, modernization of our monitoring systems and measurement stations and financing a risk-based best-practices project to manage the integrity of our infrastructure.

Q: How is CENAGAS addressing human capital needs to respond to the agency's upcoming challenges?

A: As a recently created agency, CENAGAS also had to face human capital trials. We integrated professionals with a clear objective of selecting people who create a balance between experience and youth. CENAGAS also made a point of addressing gender issues, as the contingent of

female technical and engineering staff plays a major role in our organization. CENAGAS recognizes that both young and senior professionals need to undergo a continuous training process. We are addressing this challenge by identifying the training specificities that we need, as well as being able to attract talent and provide training that shortens learning curves as much as possible.

We are working hand in hand with the industry supported by CONACYT to form a consortium, together with TransCanada and IEnova, to spearhead a group to launch an excellence center in pipeline operation. Also, we need to train a new generation of SCADA operators.

Q: Do you believe NAFTA renegotiations could have an impact on Mexico's energy security?

A: I believe it is the other way around. If any NAFTA renegotiation includes an energy chapter, surely it will foster a solidified framework for bilateral cooperation between Mexico and the US. I have reiterated the importance of negotiating this chapter swiftly, clearly and transparently, to dissipate uncertainties. Both sides of the border need to value the importance of our natural gas exchanges. Mexico imports 4bcf of natural gas and we have reason to believe its importation will increase to 7bcf in the next five to six years. Along with the challenges this represents, there are also business opportunities for both parties, backed by a solid regulatory framework.

Q: What role does technology play in helping CENAGAS tackle the country's natural gas challenges?

A: We purchased a latest generation SCADA system to manage our pipelines. To capitalize on this tool, we need equally top-tier telecommunications and on-site measurement technologies. Hence the importance of modernizing our whole natural gas value chain for telecommunications and measurement instruments and technologies in particular so all this data can be timely analyzed via SCADA systems to optimize decisions in both emergency situations as well as day-to-day to guarantee enhanced infrastructure management for higher gas quantities at the lowest transportation cost available.

Q: What role is CENAGAS playing in CFE's transition from fuel oil to natural gas-powered plants?

A: CENAGAS has a clear vision in its Five-Year Plan for pipeline expansion as an ongoing and continuous process. We are working diligently to forecast a reliable and accurate projection of natural gas demand, largely based on the electric sector's consumption for power generation. CFE's transition process will exponentially increase demand and we are closely monitoring the process and the geographical locations where this augmentation will be most intense to guarantee the availability of adequate transport infrastructure and natural gas supply. We are collaborating by identifying if our available infrastructure plus the infrastructure under development nationwide outside of SISTRANGAS is able and sufficient to cover the electric sector's demand. If not, we can pinpoint and design the required projects to sustain it.

Q: What is the strategy behind opening regional offices?

A: In addition to our Mexico City location and the new local office in Villahermosa, we are also going to open offices in the cities of Monterrey, Guadalajara and Chihuahua. This decision targets a more direct supervision of the operational contracts we have with PEMEX and the other companies that participated in the open season. The priorities of these local offices will revolve around overseeing the rights of way and our relationship with landowners and neighbors located close to our infrastructure.

Q: Could you elaborate on your interconnection and measurement contract with Iberdrola?

A: We have several natural gas interconnection contracts; we are focused on being as transparent and open as possible, providing a customer service experience that answers any interconnection requirements as needed. This was the case with Iberdrola, another success story for CENAGAS.

Q: How is CENAGAS assisting Mexico's transition toward renewable energy?

A: By its very nature, natural gas is a transition fuel. As a more efficient and eco-friendly source, the only real challenge in Mexico is delivering it to the places where it is needed. Our support in increasing renewable energy generation, intermittent by nature, lies in developing natural gas-powered electric generation terminals, either as a complement or substitution source during periods of low irradiation or wind speed. Our priorities, then, lie in increasing natural gas coverage nationwide, as well as the natural gas-pipeline expansion triggered by CFE's capacity purchase through seven infrastructure projects. Also, in the long term, as renewable energy penetration in Mexico's energy matrix increases, this will render natural gas demand intermittent as well, raising new challenges in terms of supply management, transportation and increasingly flexible systems with higher reaction capacities and natural gas storage infrastructure.

National Center for Natural Gas Control (CENAGAS) *is a decentralized organism that acts as an independent operator of the National Natural Gas Transportation and Storage System (SISTRANGAS)*

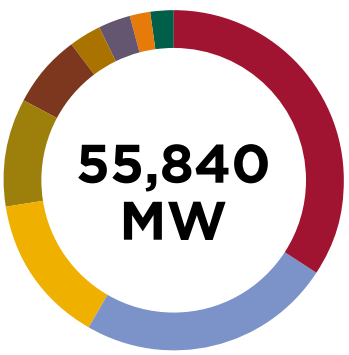
THE RACE FOR DIVERSIFIED POWER

A stable and reliable means to produce power is vital for the energy security of a country. With solar and wind accounting for 82 percent (7.81GW) of the capacity to be installed, the importance of installing and revamping non-intermittent and readily available power capacity in the country has never been more obvious

Mexico's first three long-term electricity auctions have attracted international attention due to their record-breaking results, with the last edition taking away the crown from Saudi Arabia in wind power by reaching the lowest international price at US$17.7/MWh.

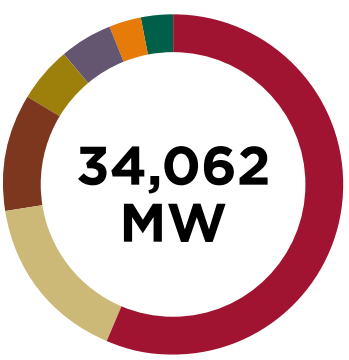
Although the success of these auctions is hard to dispute, the fact that they are based mostly on renewable technologies, which are intermittent and hard to predict, could place a burden on the system in coming years that will require secure and flexible solutions, according to many industry insiders.

SHARE OF CAPACITY TO BE INSTALLED PER TECHNOLOGY, ACCORDING TO PRODESEN 2017-31



- **34%** Combined cycle
- **24%** Wind
- **14%** Solar
- **10%** Efficient cogeneration
- **7%** Nuclear
- **3%** Hydro
- **3%** *TC, CI, TG, coal
- **2%** Bioenergy
- **2%** Geothermal

SHARE OF NON-INTERMITTENT TECHNOLOGIES TO BE INSTALLED, ACCORDING TO PRODESEN 2017-31



- **56%** Combined cycle
- **16%** Efficient cogeneration
- **11%** Nuclear
- **5%** Hydro
- **5%** *TC, CI, TG, coal
- **3%** Bioenergy
- **3%** Geothermal

**TC: Conventional Thermoelectric, CI: Internal Combustion, TG: Turbogas*

Source: CENACE

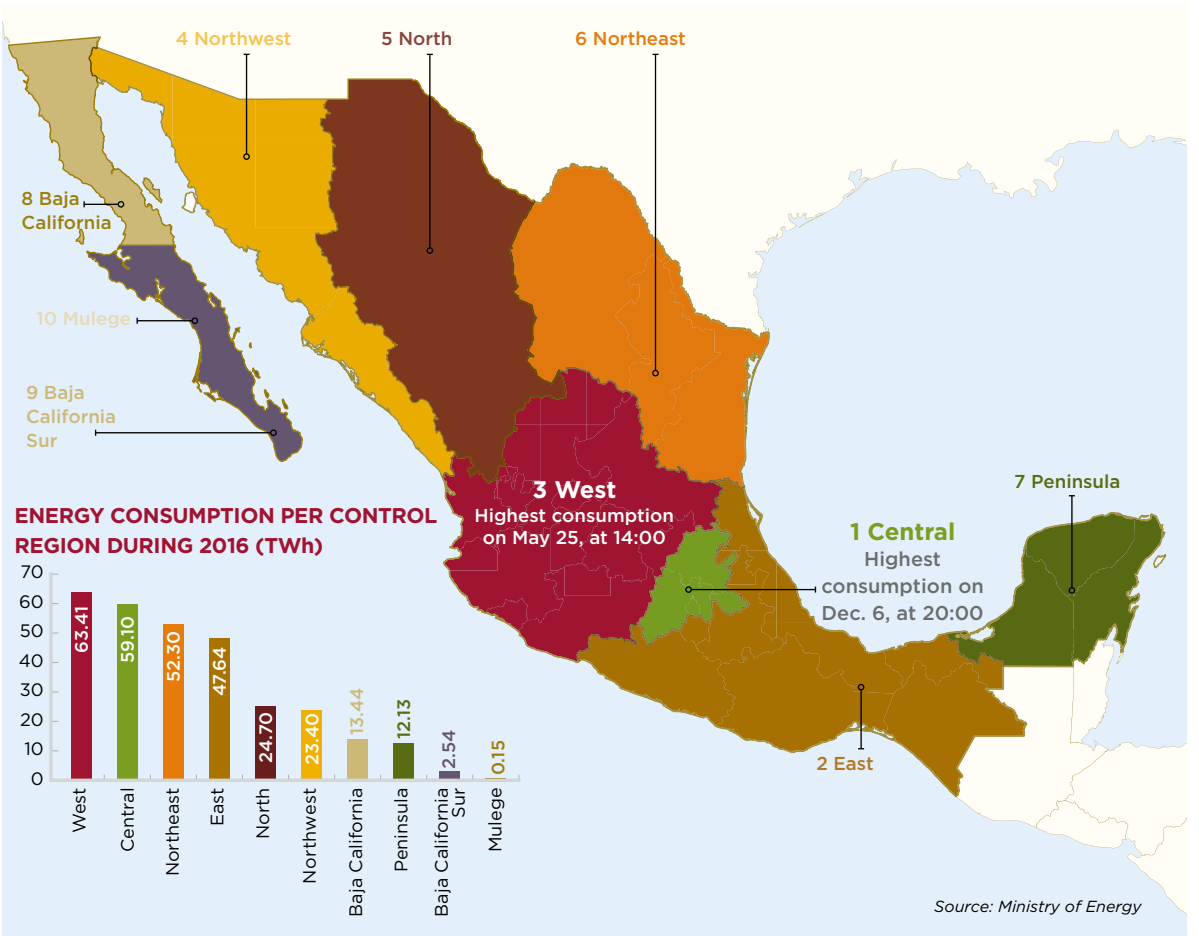
In Mexico, energy demand varies widely from one region to another. According to CENACE's National Electricity System Development Program 2017-2031 (PRODESEN 2017-31), maximum energy demand for 2016 in the Central control region took place on Dec. 6, at 8pm, while in the Occidental region it was on May 25, at 2pm, which illustrates the daily and yearly demand variations that the Mexican electricity system must cover. Four of the 10 control regions had peak demand in 2016 at times when the sun did not shine, and the two regions with the highest energy consumption were in areas where there was low wind availability (see accompanying map), suggesting the need for a secure and flexible energy source. As Jaime Zubillaga, Managing Director of MAN Diesel & Turbo Mexico, explains, "we now have a competitive market that demands all players showcase their advantages with smaller, flexible projects. These projects will provide important backup services for renewables because they will offer the possibility of having power when the wind does not blow or the sun does not shine."

PRODESEN 2017-31 considers that to cover future energy demand the country will require the installation of 55,840MW, of which 61 percent will be via non-intermittent technologies that provide security to the grid, and 38 percent from solar and wind, highlighting the importance of maintaining a secure market where intermittent technologies do not take over. The coupling of energy security with clean energy goals can be found in combined cycle, efficient cogeneration, nuclear, hydroelectric, geothermal and bioenergy technologies, which will make up 95 percent of the non-intermittent technologies to be installed, with the rest landing on the carbon, conventional thermoelectric, internal combustion, turbogas and fluidized bed. Following such a plan, a stable and balanced power generation capacity can be expected. While the construction of new capacity is a challenge both economically and from the point of view of technology, the road seems even bumpier when it comes to updating old power generation plants to current requirements of production and emissions control.

REVAMP AND EXPAND

Despite its strong clean energy goals, Mexico remains a major user of fossil fuels to power the country. Currently,

MEXICO'S CONTROL REGIONS AND ENERGY CONSUMPTION



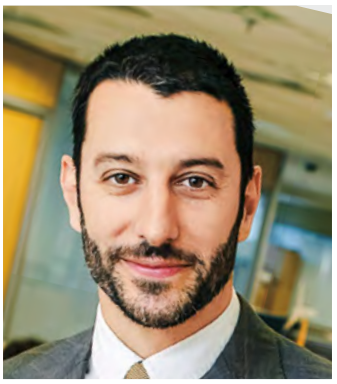
it produces 74 percent of its energy through fossil fuel technologies that offer a secure power supply, with 31 percent of that coming from turbogas, carbon and conventional thermoelectric technologies, which are highly polluting. The need to shut down that capacity, or at least make it more efficient when possible, to achieve the clean energy production goals settled by the government is clear, according to Marcial Frigolet, Vice President of Toshiba de México. "The Mexican government has placed a strong bet on the implementation of natural gas plants that include combined cycle and efficient cogeneration."

While new companies entering the market will be constructing infrastructure that includes clean technologies, CFE faces the challenge of making 19GWs of its already installed capacity from conventional thermoelectric, internal combustion and turbogas technologies more efficient, or to change it completely, if it is to compete in the new market, says Frigolet. "CFE has plants that are old and that must compete on an energy-price basis against new and more efficient plants that will be installed by new generators in the market. It is going to be hard for CFE to adapt to this change." Oscar Scolari, CEO of Rengen Energy Solutions, goes one step further: "CFE has no other choice but to improve these plants or shut them down." (See pages 74-75 for a map of plants assigned to each of CFE's subsidiaries.)

THE FUTURE

While natural gas has been targeted as a leading contender to cover future energy needs, some are looking to innovate in the market to make sure the country does not only reach its clean energy generation goals, but surpasses them with ease. Ramón Moreno, Chief Technical Officer of Mitsui & Co. Americas, emphasizes the need for properly designed regulation that allows for the integration of storage technologies. "Usually, power supply adapts to power demand, but efficient and innovative power generation requires inverting the equation. Mexico's energy authorities and regulators need to strengthen the regulatory framework to ensure economically viable energy-storage initiatives."

Others, like Francisco Carrión, CEO of MARERSA, prefer to place their bets on cutting-edge technological innovations that use new types of renewable sources, such as wave power. After almost 10 years of work, Carrión has created a technology that he hopes will revolutionize the production of power in Mexico. "During this whole time, we have improved our patents until achieving a technology that can provide a non-interruptible, 100 percent environmentally friendly energy supply. Even when the system undergoes maintenance, its modular design means it only stops production at 500kW intervals, while the overall system keeps running."



2GW OF EXPERIENCE, INNOVATION AND SUSTAINABILITY

PAOLO ROMANACCI
Director General of Enel Green Power México

Q: What are Enel's key success factors in Mexico?
A: From the outset of our venture in Mexico, which began in 2008, Enel's story has been marked by the innovations we introduced to the market. As showcased by the first two long-term electricity auctions, Enel displayed continuity in its disruptive financial processes and components within its proposals compared to the usual market behavior for the third long-term electricity auction. One of the keys of our success lies in the long and prosperous relationship we maintain with our suppliers. The fact that Enel Green Power is a renewable energy leader in the country, with 728MW of installed capacity and 1,285MW under construction, enables us to move large volumes. Our 10-year history in Mexico ensures we can rely on strategic partners with whom we exchange the best solutions available in the sector.

The four wind power projects we were awarded in the last long-term electricity auction are a testament to our commitment to top-tier technology, including larger and more efficient wind turbines by market benchmarks. Our track record of successful results has won us the confidence of both national and international markets, unlocking optimal financial conditions. Adding up all these factors equals a highly competitive economic offering, on par with the requirements of Mexico's utility-scale projects.

Q: What are your expectations and ambitions for future long-term electricity auctions in Mexico?
A: The auctions published and executed by the Ministry of Energy and CENACE are an excellent instrument for the construction of new renewable energy projects. In the three editions completed so far, Enel Green Power was awarded close to 1.6GW, making it the largest winner across the board. We have all hands on deck to turn the first auction projects into soon-to-be operational additions to the grid. Projects such as Villanueva, advancing at a record pace, will become the continent's largest PV park and Enel's largest worldwide.

These landmarks will contribute to demonstrating the successes both the public and private sectors are achieving in the design and execution of bankable renewable energy projects.

Our expectation for the future is to maintain our leadership position in Mexico pertaining to renewable energy, both in terms of installed capacity and project portfolio. We believe that the transition of Mexico's energy market from a matrix dominated by fossil fuels to greener energies is proving to be successful and will continue to do so in the future.

Q: What are your plans for Mexico's spot market?
A: Without a doubt, Mexico's Energy Reform has opened a wide spectrum of opportunities and a sizable field of potential investments for which Enel has always shown interest in participating. At present, we are focusing on two main areas. First, power generation. Enel Green Power Mexico is determined to become the country's largest renewable energy producer and a commercial leader in energy trading, with a bilateral contract portfolio nearing 2TWh per year to supply electricity to the largest commercial and industrial groups in Mexico. Second, we will keep strengthening our qualified supply division, Enel Energía México, officially launched in October 2017. Through this new division, we offer electric energy, power, CELs and other energy solutions for companies with an electricity demand larger than 1MW per year and looking to comply with the soon-to-be compulsory requirements for consuming electricity provided by clean energy generating technologies starting in 2018.

Q: What is Enel's investment portfolio status and how will it evolve in 2018?
A: Since we set up operations in Mexico, we have invested close to US$2.7 billion just on generation plants. The investment required by the four awarded projects we won during the third long-term electricity auction amounts to another US$700 million. Both numbers demonstrate Mexico is a strategic market for Enel Group.

Q: Could you give us an update on Enel's soon-to-be operational projects for 2018?

A: Enel's 754MW PV solar plant in Villanueva, Coahuila and its Don José 238MW PV solar plant in Guanajuato, awarded during the first long-term electricity auction, will begin operations in 2018. The same can be said for our Amistad, Coahuila wind farm with 200MW of installed capacity, the fruit of a signed PPA. This means that before the end of 2018, Enel will be contributing to Mexico's energy transition efforts and goals with close to 1.2GW of additional renewable energy capacity connected to the grid.

Q: What project best attests to Enel's expertise in self-supply, and how is Enel increasing this business line in Mexico?

A: Enel Green Power supplies electricity to more than 17,000 client-owned load points, a significant contribution to consolidating our leadership in renewable energy. Our ambitions in self-supply will be covered by Amistad, our PPA wind farm. Through our qualified supply division, Enel Energía México, we will develop new ways to answer our clients' needs with our characteristic elements: experience, innovation and sustainability.

Q: How would you rate the progress of the long-term auctions?

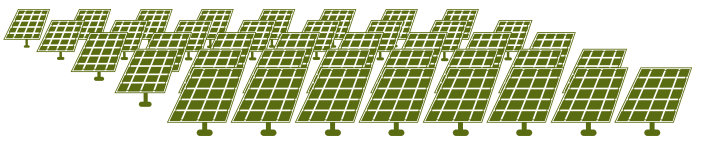
A: The Energy Reform has been positive for the sector and the auction system, in particular, has established a catalyst for the growth of renewable energies. When renewable projects such as Villanueva or Don José become operational, we will be in a position to showcase the first fruits of the auctions, providing a tangible argument in favor of the auctions' success. While we cannot speak for other projects, we can assure that projects won by Enel Green Power will be operating under the stipulated time-frame.

Q: What is your assessment of congestion risks in permitting processes due to the large number of projects arising in Mexico?

A: We are fully confident in the capacity and faculties of Mexico's authorities, as they were able to implement an ambitious Energy Reform in record time. Enel's global experience has shown that such a complex paradigm shift as the one we are living now requires both time to mature and adaptation processes, making this potential congestion a natural process of any major transition. It is vital that the agencies in charge of these processes continue implementing improvement measures to avoid delays that impact the sector's value chain as a whole, including Mexican society.

Q: How can Mexico manage renewable intermittency given its current electric infrastructure?

A: Intermittency draws attention to the necessity of a diversified energy mix. Enel Green Power's four wind power projects won in the third long-term auction complement other projects using solar PV technology that were also awarded. We believe wind power can effectively answer solar power's inherent intermittency. We are aware of the challenge that renewing and extending Mexico's electric transmission grid entails. We also know the country's authorities are aware of the importance of this factor and that they are working tirelessly to improve conditions in the short term.



Enel Green Power's Mexican portfolio includes **728MW** of installed capacity and **1,282MW** of projects under construction

Q: What positive impact will Enel have on Mexico's energy market in 2018?

A: Enel Green Power is always aligned with its three trademark characteristics: experience, innovation and sustainability. Those are the three guiding principles with which we want to impact Mexico's electricity market in the long run. The cumulative experience from operating in 30 countries enables us to set the course opened by the reform. We can bring expertise and experience from diverse markets to ensure, from the private sector, the best implementation and benefits for Mexico as a whole. Innovation is a major element in the disruptive moment we are experiencing. As a group, we are aware of this and are constantly exploring new ways of doing things, always focusing on our clients. We want to bring new and better practices.

Our commitment to sustainability will enable us to guarantee that the benefits from all our initiatives will spread evenly among all parties involved, including local communities. Enel Green Power integrates into the development of every project with which it is involved the sector's entire value chain by implementing economic, social and environmental best practices. Our objective for 2018 is to use our identifying characteristics and leadership to guide and develop Mexico's energy sector toward the best possible outcome.

Enel Green Power *is the renewable energy division of the Enel Group, present in 30 countries. Enel Group is a global leader in the green energy sector with a managed capacity of around 40GW including wind, solar, geothermal, biomass and hydropower*

WINDPOWER GIANT BETS ON SOLAR

GERARDO PÉREZ
Director General of EDF Énergies Nouvelles México

Q: Which renewable source is the top priority for EDF?
A: Since our arrival in Mexico in 2001, we have bet heavily on wind power. Today, the 68MW we operate comes 100 percent from wind farms. In the second long-term electricity auction, we won two projects, one 252MW wind power project in Oaxaca and a 90MW solar PV farm in Sonora. Considering the evolution of Mexico's energy market, we are responding to this development by focusing our attention on wind and solar power, while at the same time scouting opportunities in mini-hydraulic projects.

Q: What challenges is Mexico's electricity infrastructure facing?
A: PRODESEN outlines the construction of the first high-voltage direct current line from Oaxaca to the center of Mexico, with a transmission capacity of 3,000MW and a length of 610km, with two 500kV circuits. The project will be carried out through an open bid process under a PPP scheme and is set to become operational by 2021. In total, there will be four lines of this type in the country. These projects will ensure grid interconnection for the upcoming projects in renewable energy, which is set to increase our total electric-power capacity. For us, this is Mexico's greatest challenge. The abundant renewable resources are there, as well as the financing to develop them. Social and environmental impact assessment processes for renewable energy projects can also be improved and social unrest addressed, but this is progressing. Infrastructure, in contrast, has to be operational without delay.

Q: How has wind farm development changed since 2013?
A: The changes implemented by the reform are overwhelmingly positive. Everyone involved, including CRE, CENACE and the Ministry of Energy, have clear responsibilities and know the issues very well. Local governments in particular, as shown by our work in Sonora and Oaxaca, have surprised us with their involvement, making sure our projects are implemented smoothly. The overall process pertaining to permits has also become more efficient.

Q: How is EDF facing the industry's human capital availability challenge?
A: Our company's approach is twofold. First, we bring in highly-qualified professionals with solid expertise, both from the local and international markets, capitalizing on our presence in over 22 countries. Second, we are backed by EDF's US branch office in San Diego and its vast structure. The San Diego office has more than 1,000 professionals, while our Mexico City office has 100. We are in constant communication when it comes to personnel requirements or outlining effective commercial strategies.

Q: How will EDF allocated its US$800 million investment in Mexico?
A: This investment is intended for the two projects we won at the second long-term electricity auction. The wind farm project will receive between US$500-600 million and the PV solar park will receive the rest. We are estimating both projects will generate around 2,500 temporary jobs and 100 permanent positions once both projects are completed.

Q: What are EDF's long-term ambitions in Mexico?
A: In 2001, we made our first moves in the industry. In 2008, we planted our foundations with the La Mata La Ventosa wind farm. Between 2010 and 2011 we created two more wind parks. In 2015, this meant 400MW of installed and operating renewable energy. In 2016 alone, we practically won another 400MW, duplicating in a year what took us 16 years to achieve. From here until 2021, our goal is to operate a total of 2,000MW. To achieve this, we are counting on both auction participation and PPAs. Of the 300MW we have in Oaxaca, 252MW were won at auction and 50MW are operating under a PPA. Our potential off-takers can count on EDF's longstanding expertise, top-tier technology and its firm grip across the entire value chain. EDF's differentiator is its presence throughout the different phases and entire lifespan of a project.

EDF Énergies Nouvelles *is a global IPP based in France that generates, develops, builds and manages renewable energy projects. In Mexico, EDF operates 392MW of wind power and is developing 300MW of wind and 365MW of solar PV power*

THE STATE OF MEXICAN WIND POWER

ANGÉLICA RUIZ
Vice President and Managing Director Mexico and Latin America of Vestas

Q: What is needed for wind power in Mexico to reach the level of importance it has in countries like Denmark?

A: It all comes with time. The Energy Reform is still new, having been implemented in 2014. If we look at where we are now, a lot has been done. We find ourselves in a transitional phase: the starting point of the Energy Reform in terms of power generation has been extremely successful. The results can be seen in the power auctions. We should highlight the fact that we come from a monopolistic sector, with CFE and PEMEX at the center for decades. We have just started a learning curve that is reflected in how the auctions have evolved. We have a good conceptual design but we are still lagging behind in the implementation component, such as project financing and warranties for the sector. There is one issue that needs to be addressed, which revolves around non-technical risks: security and communities, and everything surrounding the topic of corporate responsibility. The authorities need to define the proper legal framework to address these issues and provide the private sphere with the tools to tackle them. Also, the available infrastructure has to respond to the growing energy demand, the grid has to be ready to deal with our goal of a diversified energy matrix. These are the challenges we will be facing in the coming years.

Q: How can private and public players work together to address nontechnical risks?

A: Both are necessary. We have three levels of government: federal, state and municipal. Each level already has some policies in place. We have to ensure that all those policies are coherent and in line with the goals of the reform. The interaction between these three levels of government and the private energy sector has reached an increased level of complexity, considering the previous scheme was a direct and centralized communication between these three levels of government, CFE and PEMEX. The increased number of private players in the game, as well as the diverse institutions overlooking the sector, heighten the intricacies of the private-public interaction. From the public sector, we need guidelines on how to assess communities, for instance. Decision-makers need to be able to coordinate with and advise companies on the viability and social impact studies of their projects. Private companies have business plans they must adhere to, encompassing the companies' obligations, targets and the government's guidelines and regulations. It has to be a joint effort.

Q: What are wind power's strengths in Mexico compared to other renewable energies?

A: Wind power has proven to be competitive enough to win in competition with other technologies. Technically speaking, it takes longer to develop a wind farm than a solar park, but the generation capacity is better in the former. Wind blows 24 hours a day. There is a 7:1 ratio of land usage when you compare wind to solar energy. You can find great resources in Mexico, such as in the states of Tamaulipas, Oaxaca and the northern part of Baja California, with capacity factors of 40 percent on average. It is a matter of finding the right place and the right resources, which does not necessarily mean that you will find yourself competing against other renewable resources. At the end of the day, we are looking to have local, diversified energy matrices that assist local economies and governments to diversify power risks, enable the use of both fossil fuels and renewables and optimize local power systems.

Q: Is it feasible to introduce wind power into the residential self-supply market in Mexico?

A: Vestas specializes in working with industrial capacity but I absolutely believe it is. Producing renewable energy is only one part the energy triangle. You cannot disassociate energy generation from energy consumption. Consumption is all about energy efficiency. Are you aware of your energy usage at home? Are you optimizing power use while driving? Energy consumption is a mindset of its own. The energy circle starts with energy generation. Without the previously mentioned mindset, the circle remains open. Finally, you have to consider the sustainability part relative to climate change.

***Vestas** is now a global company and an energy leader for the manufacturing, operation and maintenance of wind turbines. It has over 75GW of wind capacity installed, representing around 20 percent of the global installed base*

SIMPLIFIED PROCESSES FOR GREATER GROWTH

NARCÍS DE CARRERAS
Country Manager Mexico of Gas Natural Fenosa

Q: How does Gas Natural Fenosa make the most of its global footprint in the Mexican natural gas market?

A: 2018 will mark Gas Natural Fenosa's 175th year in business. Throughout its lifespan, the company has grown based on its natural gas distribution business. As we underwent acquisition, incorporations and global market entries, Gas Natural Fenosa considerably diversified its business lines. To date, our company has consolidated four main business branches: gas distribution networks, electricity distribution networks, natural gas commercialization and electricity generation, with our clients at the center of it all, as our primary, downstream focus. This is our global model, which we can deploy either in its entirety for some countries such as Spain while in others, the number of business branches we develop depends on market conditions.

In Mexico's case, electricity distribution is still primarily in government hands. Gas Natural Fenosa entered the Mexican downstream gas distribution market in 1997 when it opened to private initiative, winning successive distribution zone tenders and fostering our growth. We incorporated electricity generation in 2001 through PPA projects with CFE. In 2014, we integrated renewables into our portfolio and the Energy Reform unlocked the possibility of launching our natural gas commercialization branch, effectively deploying all four of our business lines.

Q: Why did Gas Natural Fenosa choose green bonds to finance its renewable energy portfolio?

A: Gas Natural Fenosa issued its first green bond in November 2017 on an international scale as part of its strategy to diversify its financing portfolio. In Spain, we were awarded some bids throughout 2017 in renewable energy, enabling us to conclude this issuance with resounding success. These additional funds will be exclusively allocated to the renewable energy projects we won.

Gas Natural Fenosa *is a Spanish private utilities company specialized in generation, commercialization and distribution of electricity and natural gas. Its global presence spans over 30 countries with a portfolio of over 25 million clients*

Q: How is Gas Natural Fenosa capitalizing on its tenure and expertise applied to renewable energy projects?

A: Through our client-based focus, we dedicate ourselves to supplying our 25 million clients worldwide the best combination of energy costs, energy supply security and an environmentally-friendly portfolio as a final business strategy. Competition in the renewables business, not only in wind power but also solar, is increasingly aggressive, making these sources mandatory to inject added competitiveness into our power generation portfolio these last few years. It is a general trend observable not only with Gas Natural Fenosa but also among other integrated players involved in the same business as ours.

Q: What new business opportunities unlocked by the reform is Gas Natural Fenosa planning to take advantage of?

A: Our priority remains focusing on the growth of our core business in natural gas distribution. CRE's last public tender prior to the Energy Reform for natural gas distribution zones in Sonora and Sinaloa was awarded to us, in 2014 and 2015. We want to grow in parallel to these zones. The reform's new rules and sector growth priorities have simplified the process considerably. Competitive and public tenders are no longer required to grow. We have requested permits to expand in Campeche, Yucatan, Quintana Roo and Tabasco. We are already permit-holders for the latter. This simplification process fosters a considerable boost for Mexico's downstream natural gas distribution sector and is in line with one of the core objectives of the reform, which is magnifying natural gas and renewable use in Mexico.

Q: What is your assessment of the potential of Vehicular Natural Gas (VNG) applications in Mexico?

A: Vehicular natural gas is a complement; a new use for natural gas within our distribution network business. Gas Natural Fenosa has been present in this new subsector since 2004 with two vehicular natural gas service stations in Monterrey. Prior to the reform, developing this particular application was especially complex as all service stations were owned by PEMEX and the business was not liberalized. Now, the potential for vehicular natural gas is on the rise and enjoys renewed interest from private players. In our case, we are

Expanding Mexico's natural gas pipeline network

particularly interested in participating not as service station operators, but rather as natural gas network promoters for either private or public entrepreneurs with the intention of installing service stations and connecting them to our network and to provide our natural gas commercialization services. We believe this particular business venture has a bright future based on two main drivers: the positive environmental impact from the use of natural gas and this fuel source's cost-competitiveness compared to other fuels; and second, VNG represents savings well over 50 percent. We expect it will become a generalized fuel service, particularly for public and merchant transportation.

Q: What main drivers are fostering Gas Natural Fenosa's interest to expand toward the country's tourism zones?

A: The southeastern part of the country has varying levels of natural gas transportation infrastructure, both from CENAGAS and private players, which we can use for our transportation service. Some isolated portions of that territory are absent of pipelines and have no connections, which is what we do. We can also provide our expertise in gasifying cities via Compressed Natural Gas (CNG) pipes, which is the opportunity that these zones in Mexico offer. The consumption levels in the commercial sector, particularly tourism-related infrastructure, are attractive for us, potentially providing tremendous benefits not only in economic savings but also in increased energy efficiency. Gas Natural Fenosa's innovative energy solutions include a significant efficient-consumption component in large-scale electric installations, such as hotels and hospitals.

Q: What new technological developments are you looking to showcase in Mexico?

A: The natural gas distribution and commercialization business has been around for quite some time in various parts of the world. Technological developments and innovations are rather focused on supply service security. Events such as the Sept. 19 earthquake in Mexico justify the importance of this particular component. In the aftermath of this event, 99.7 percent of our 503,438 clients in Mexico City could count on an uninterrupted, leak-free and seamless service whereas other supply services such as electricity experienced several days of interruption. Energy efficiency is the other primary component to which we allocate the development of innovative products and services.

Q: What milestones are you expecting to achieve in 2018?

A: Pertaining to natural gas distribution, we would like to initiate operations in all the states in which we have launched permit-holder processes: Sonora, Sinaloa, Tabasco, Campeche, Yucatan and Quintana Roo. Our innovation and energy solutions business continues to grow, doubling every year since 2014, and we want to maintain this upward trend in the future. We also secured an important wind farm project for our renewables portfolio, which we would like to complement with an additional solar asset for 2018. After 20 years of continued presence, Gas Natural Fenosa is comfortable in Mexico thanks to the quality, consistency and seriousness of the sector's regulator. In this fundamental moment of overture, which is always complicated, we must say that Mexico's authorities — the Ministry of Energy, CRE, CENAGAS and CENACE — need to be commended for their excellent work. Opening an entire market and implementing all the inherent regulatory changes in only three years is possibly a world record.

SOLAR TRACKER LEADER MAKING ITS MARK IN MEXICO

ALEJO LOPEZ
Senior Director of Business Development and Sales for Mexico and Latin America for NEXTracker

Q: As an American company, do you see the current US administration support on fossil fuels affecting you?
A: Renewable energies, mostly wind and solar, have been boosted via incentive schemes such as renewable portfolio standards (RPS) and tax credits. Although these incentives still exist and remain important for the development of renewables in the US, clean energy technologies are cheaper than fossil options even without the incentives. Traditionally, solar development occurred mostly in regions with high solar irradiation that also had incentive mechanisms and policies. Other areas where there are no incentives have since adopted the technology because people have been able to see the benefits of that technology. If the incentives were to be eliminated that would certainly impact near-term growth but would not reverse this trend.

Q: How does the Flex acquisition fit into NEXTracker's strategy?
A: NEXTracker has a global vision that includes all major solar markets worldwide. Flex is an established global leader in the electronics manufacturing space with a robust energy practice. The synergies are sizable. Flex has been manufacturing in Mexico for over 20 years and has over 30,000 employees nationwide. Moreover, prior to the acquisition, Flex manufactured the controller — effectively the "brain" of the system — for our tracker. Being a Flex company, NEXTracker is the only player in the tracker market that is investment grade and backed by a profitable parent company with US$24 billion in revenues in 2017. This makes NEXTracker's warranty the strongest in the market.

Q: What is NEXTracker's strategy to maintain its market-leading position?
A: Although we have achieved a market-leading position two years in a row with a 30 percent global share, we continue to explore ways to lower our costs and improve our value proposition. We differentiate ourselves from our competitors in three major ways. First, we have developed the most advanced single-axis tracker in the market today, with capabilities that lower overall lifetime solar plant costs and directly address the solar LCOE. Second, we have a strong focus on our customers and their satisfaction globally. Lastly, we continue to innovate. NEXTracker moved from being the pioneering developer of the independent row self-powered tracker to being the first to develop a tracker and solar energy storage system, NX Fusion Plus, which we recently launched.

Q: What is NEXTracker's strategy for the distributed generation market?
A: NEXTracker has gathered a significant experience in the distributed generation market with its flagship NX Horizon tracker system that addresses "behind the meter" projects under 20MW. Our DG team has deployed over 500MW globally with the US, Chile and Australia being its largest markets.

Our new vanadium flow storage and solar technology, NX Fusion Plus, is an excellent integrated application in those markets with high-demand charges and significant arbitrage between peak and base power costs and therefore there is significant value in "peak shifting". For this purpose NX Fusion Plus uses flow batteries as opposed to lithium-ion, because they enable longer discharges with no long-term battery degradation.

Q: What are NEXTracker's plans in Mexico for the near term?
A: Mexico is the largest and fastest-growing market in Latin America with 4GW in the pipeline. NEXTracker's main focus is to become a leader in the Mexican tracker market and our flagship 750MW project that we recently started in Northern Mexico lays the foundation for this direction. Going forward we will continue to implement projects in that range, keep serving our clients with the highest quality of service and continue growing and improving our leading position in the region.

NEXTracker *is an American global leader in PV trackers. Founded in 2013, the company offers design, permitting, logistics, installation and maintenance services for PV utility-scale and distributed generation projects*

KNOCKING ON MEXICO'S SOLAR DOOR

HONGBIN FANG
Director of Product Marketing for LONGi Green Energy Technology

Q: What elements of Mexico's energy market and the reform spiked LONGi Green Energy Technology's interest?

A: The first element that interested us was the demand factor. Mexico has exhibited strong economic growth, which will foster energy demand in the coming years. The Mexican government is determined to keep the Energy Reform on the road to success and this will help boost the percentage of renewables in the energy mix. We are convinced that Mexico's PV market has bright days ahead of it, and we want to take advantage of every opportunity.

Q: How did LONGi Green Energy Technology achieve its low LCOE solutions?

A: From the beginning, we focused on monocrystalline technology because intrinsically it constitutes a better material for efficient energy conversion, demonstrates better energy yield, and delivers better value (lower LCOE) for end users. The main obstacle for widespread mono module adoption was the higher cost in manufacturing a mono wafer in the past. For the last 17 years, we have focused our efforts on technology development in mono wafer manufacturing to improve productivity and performance, thus driving down cost. Our company was founded in 2000, yet by 2013 we were the largest mono wafer manufacturer in the world. At the end of 2014, we acquired Lerri Solar, a small module manufacturer in China, to strategically move downstream to solar cell and module manufacturing, and deliver the value of mono technology closer to our end users. Because we can produce high-efficiency mono modules at lower costs, ensuring better value for our customers and the end user, we have delivered more than 3GW of mono modules to the market within two years, increasing our market share of mono modules in China from 5 percent in 2014 to 27 percent in 2016. We expect this share to reach 35 percent by the end of 2017.

Q: How does the company's focus on research and development set it apart from other PV manufacturers?

A: In 2014, we expanded from our initial business in mono wafers and ingots to mono cells and modules, as well as project development, to become a truly vertically integrated company. Technology has always been a primary aspect of our company, compared to other PV manufacturers. We consistently invest 5-7 percent of our total revenue into technology research and development. Our company always strives to develop better equipment to improve productivity and better technology to improve performance, which translates into a consistent trend of increasingly competitive products with better performance and lower cost.

Q: What client portfolio are you targeting in Mexico?

A: We believe all segments of the market are important, with particular interest in distributed generation applications. In Mexico, the majority of the volume in renewable energy is still owned by utility-scale projects. With the distributed generation sector (industrial, commercial and residential) expanding at a much faster rate, and the much higher value of our high efficiency mono modules, we think we will have a larger impact in distributed generation applications to help the industry bring down total system cost, as well as lower LCOE with better energy yield.

Q: What are LONGi's longer term plans for Mexico?

A: Our company goes hand-in-hand with high performance, high quality and competitive prices. We are trying to understand the market, going through a learning phase, learning how to work with local players, letting our customers understand the value of high-efficiency mono modules so we can make an even better contribution. Mexico and Latin America are important markets for LONGi Green Energy Technology and we are committed to bringing high quality, better performance mono modules at a competitive price to those markets. We hope to become a significant part of the market so more and more customers can realize the value of high-efficiency mono modules.

LONGi Green Energy Technology *was founded in 2000. The Chinese company is the largest single crystal manufacturer worldwide. It provides high-quality products and services for PV systems and semiconductors products*

MEXICO BUSINESS PUBLISHING

Mexico Business Publishing supports business and political leaders in driving the development of Mexico's main industries by offering first-hand industry intelligence and analyses based on face to face interviews with carefully selected stakeholders. As an independent publisher of comprehensive, high-level annual reviews, our mission is to accelerate the exchange of vital industry information that enables Mexico and its business community to capitalize on emerging opportunities.

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COGENERATION CONGLOMERATE SEES OPPORTUNITY IN DISTRIBUTED GENERATION

GEORGE OPOCENSKY
Director General of ATCO

Q: What is missing from Mexico's wholesale electricity market to make it more attractive for investment?

A: Mexico's wholesale electricity market is armed with all the key components it requires to generate competition and foster new projects. From a regulatory standpoint, however, the accelerated pace of the Energy Reform seems to often get ahead of the required regulatory policies, causing confusion and inconsistent interpretation and application by the various energy-focused government bodies. In our particular case, given the distributed generation portfolio we set out to develop in Mexico, our understanding of the rules was often met with differing views of the various government bodies, causing extended delays and additional costs in completing projects.

Another hurdle to overcome for new generators is the continued dominance of CFE in the market, whereby many customers continue to compare and link the price of non-CFE delivered energy to the existing and fluctuating CFE tariffs. Rather, we try to focus our client's attention on its own business needs and competitive energy pricing to help it achieve the optimum business results.

Q: How did ATCO adapt its market expansion strategy for Mexico?

A: ATCO's footprint in Canada and Australia was developed over a long period of time, while our presence in Mexico is relatively new. For the first two markets, ATCO built customer-centered business strategies. Identifying potential customers, pinpointing their needs and providing tailored solutions laid the groundwork for our success in those locations. This is the approach that we are looking to duplicate in Mexico. While differences in market conditions, regulatory landscape and culture have to be taken into consideration in our strategy, we are confident we will replicate the success we have had in other markets. ATCO has the advantage of being able to provide a wide variety of products and services from logistics, modular structures, gas pipelines and liquids, power generation, distribution and transmission to provision of water treatment and conveying systems, all under an innovative solution benchmark. Our diversified portfolio gives us the flexibility to provide and adapt to all of our customers' needs under one umbrella.

Q: Considering your experience in retail energy, what are your plans for this particular business line in Mexico?

A: We are pursuing all forms of gas fired and renewable generation, with a focus on distributed and solar energy. A flexible generation portfolio does not tie us to a single generation source that can be impacted with technological advances or changing market conditions. Flexible generation also provides customers' choices to meet their business needs. The reason we are pursuing gas fired generation in addition to renewables is that stable baseload generation that comes from gas fired units becomes increasingly important for grid stability while bridging old and fuel-oil fired generation with renewables. Energy storage solutions are also of interest and we are pursuing several technologies in other operating jurisdictions.

Q: What was the added value of your Grupo Hermes partnership for the Hidalgo cogeneration project?

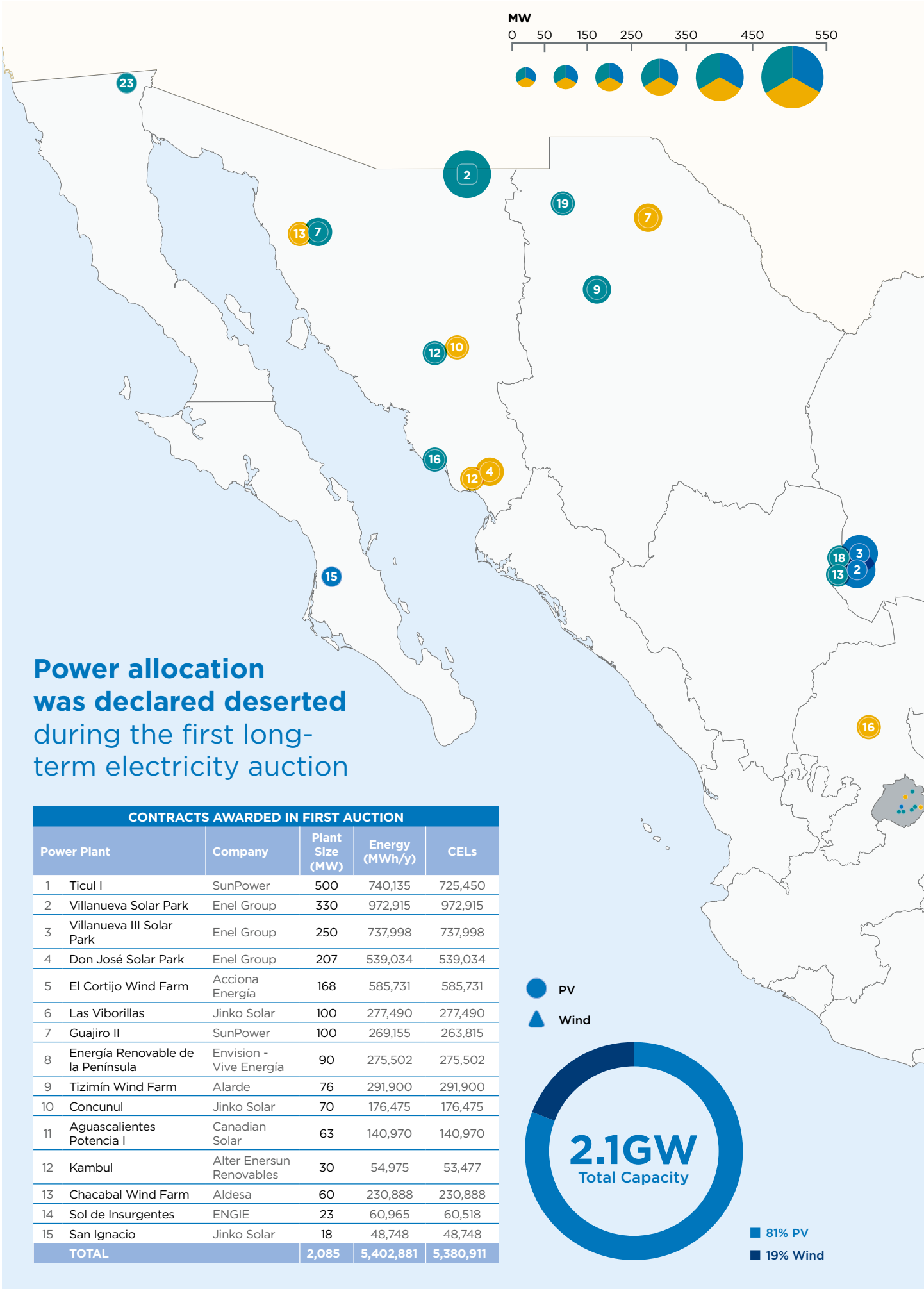
A: ATCO considers it vital to work with Mexican partners because of their expertise in dealing with land owners, facilitating permitting processes and understanding how to deal with government agencies, among others. They bring specific knowledge of the Mexican market to the equation.

Q: How is ATCO capitalizing on its cogeneration expertise in Mexico?

A: We are the largest cogeneration provider in Western Canada and also own several cogeneration facilities in Australia, a direct result of our ability to design tailor-made cogeneration plants for our customers. Our experience is not only in designing and building tailored cogeneration plants, but also in the operation and maintenance of these plants.

ATCO *is a Canadian conglomerate that entered Mexico in 2014, engaged in logistics, electricity production, pipelines and retail of energy. Its services range from natural gas delivery to provide modular housing and water infrastructure solutions*

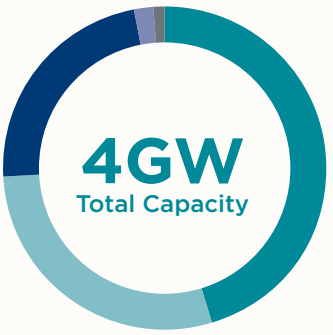
POWER AUCTIONS



Power allocation was declared deserted during the first long-term electricity auction

CONTRACTS AWARDED IN FIRST AUCTION

	Power Plant	Company	Plant Size (MW)	Energy (MWh/y)	CELs
1	Ticul I	SunPower	500	740,135	725,450
2	Villanueva Solar Park	Enel Group	330	972,915	972,915
3	Villanueva III Solar Park	Enel Group	250	737,998	737,998
4	Don José Solar Park	Enel Group	207	539,034	539,034
5	El Cortijo Wind Farm	Acciona Energía	168	585,731	585,731
6	Las Viborillas	Jinko Solar	100	277,490	277,490
7	Guajiro II	SunPower	100	269,155	263,815
8	Energía Renovable de la Península	Envision - Vive Energía	90	275,502	275,502
9	Tizimín Wind Farm	Alarde	76	291,900	291,900
10	Concunul	Jinko Solar	70	176,475	176,475
11	Aguascalientes Potencia I	Canadian Solar	63	140,970	140,970
12	Kambul	Alter Enersun Renovables	30	54,975	53,477
13	Chacabal Wind Farm	Aldesa	60	230,888	230,888
14	Sol de Insurgentes	ENGIE	23	60,965	60,518
15	San Ignacio	Jinko Solar	18	48,748	48,748
	TOTAL		2,085	5,402,881	5,380,911



- 46% PV
- 29% Wind
- 23% Combined Cycle
- 2% Hydroelectric
- 1% Geothermal

CONTRACTS AWARDED IN SECOND AUCTION

	Power Plant	Company	Plant Size (MW)	Energy (MWh/y)	Power (MW)	CELs
1	Planta Frontera 06 PFT-PTA	Fisterra Energy	505	0	475	0
2	Agua Prieta II	CFE	394	0	375	0
3	Reynosa Wind Farm	Intaván México	388	1,613,416	0	1,613,416
4	Potosí Solar	Fotowatio Renewable Ventures	300	779,161	0	779,161
5	Gunaa Sicarú	EDF Énergies Nouvelles	252	818,264	0	818,264
6	El Mezquite Wind Farm	Cúbico	249	820,636	77	774,938
7	AT Solar	Acciona Energía - BioFields	180	478,261	29	478,261
8	Alten Aguascalientes	Alten	150	373,577	39	420,335
9	Santa María	Fisterra Energy	143	393,611	0	393,611
10	Proyecto Planta Fotovoltáica	Alten	140	348,467	36	392,082
11	Trompezon	ENGIE	126	342,630	0	338,851
12	Orejana	Fisterra Energy	125	0	0	353,466
13	Torreón-HQ 100	Hanwha Q-Cells	101	252,445	18	252,444
14	Salitrillos	Enel Group	100	399,130	0	399,129
15	Tepezalá II	IEnova	100	278,358	10	285,606
16	Bluemex Power	Bluemex Power	90	249,982	0	249,982
17	Energía Renovable de la Península	Envision - Vive Energía	90	0	30	0
18	Andalucía II	OPDE	83	213,655	0	213,655

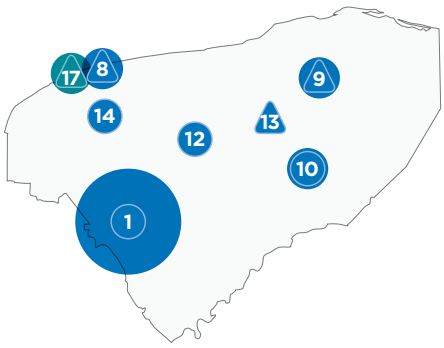
Source: CENACE

POWER AUCTIONS

CONTRACTS AWARDED IN SECOND AUCTION (CONTINUED)						
	Power Plant	Company	Plant Size (MW)	Energy (MWh/y)	Power (MW)	CELs
19	Conejo Solar PV Park	X-Elio	80	193,771	16	193,771
20	Xoxocotla Solar PV Park	X-Elio	70	169,366	14	169,365
21	Necaxa	SME - Mota-Engil	53	0	0	250,245
22	Tres Mesas III	Oak Creek Energy	50	223,011	22	223,010
23	Rumorosa Solar	Ienova - Intergen	41	114,116	0	117,064
24	Mexsolar Solar PV Park	Grenergy	30	146,958	12	146,957
25	Aguascalientes Sur I Solar Park	OPDE	30	75,854	0	75,853
26	CG Azufres III	CFE	25	198,764	25	198,764
27	Patla II	SME - Mota-Engil	15	0	0	64,386
TOTAL			3,908	8,483,433	1,177	9,202,616

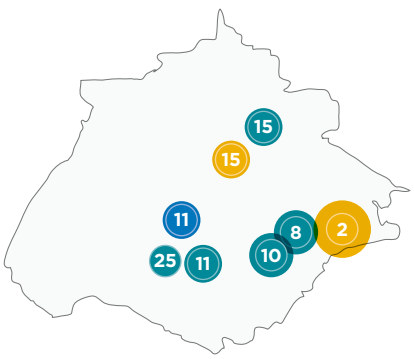
BRIGHT SUNLIGHT, STRONG WINDS

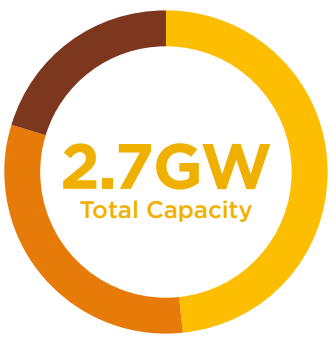
Home to Mexico's largest solar park in development to date in terms of installed capacity, Yucatan has the resources to foster a harmonious coexistence between its projected 618MW of solar power and 316MW of wind power.



SMALL STATE, SIZABLE CAPACITY

Despite being Mexico's fourth-smallest state with a surface area of 5,618km², Aguascalientes is becoming a renewable energy gold mine. Between the three long-term electricity auctions, the state will become the location of 1,104MW of PV installed capacity.





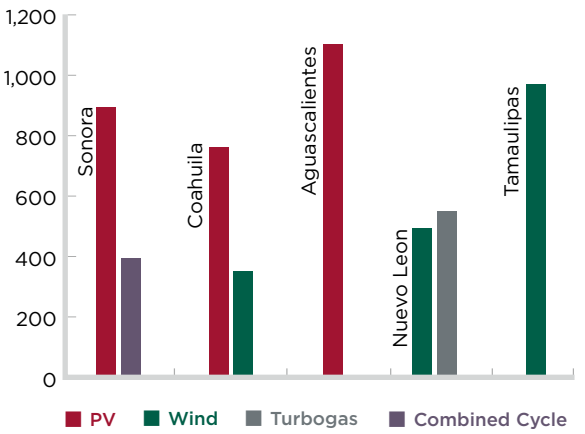
- 48% PV
- 31% Wind
- 20% Turbogas

CONTRACTS AWARDED IN THIRD AUCTION						
	Power Plant	Company	Plant Size (MW)	Energy (MWh/y)	Power (MW/y)	CELs
1	Compañía de Electricidad Los Ramones	Compañía de Electricidad Los Ramones	550	0	500	0
2	Pachamama	Neoen International	300	616,692	0	770,864
3	Dolores	Enel Group	244	848,883	0	848,883
4	FV Bacabachi 1 Solar Park	X-Elio Energy	200	435,355	10	483,727
5	Calpulalpan	Consorcio Engie Solar 1	200	486,313	0	524,997
6	El Cortijo Wind Farm	Energía Renovable del Istmo II	168	0	52	0
7	Villa Ahumada	Consorcio Engie Solar 4	150	379,603	0	434,486
8	Energía Limpia de Amistad IV	Enel Group	149	510,680	0	510,680
9	Energía Limpia de Amistad II	Enel Group	101	373,017	0	373,016
10	Tastiota	Canadian Solar Energy Mexico	100	235,640	0	265,095
11	Energía Limpia de Amistad III	Enel Group	100	357,032	0	357,031
12	El Mayo	Canadian Solar Energy Mexico	99	210,426	0	252,511
13	Abril 99	Consorcio Engie Solar 1	99	280,055	0	302,332
14	TM4 V150 4.0 105 v1	Consorcio Engie Eólica	96	362,935	31	391,805
15	Horus AG (HORUS Solar)	Canadian Solar Energy Mexico	95	206,017	0	247,220
16	Calera Solar Park	Mitsui & Co. - Trina Solar	80	189,928	0	189,928
TOTAL			2,731	5,492,576	593	5,952,575

LONG-TERM ELECTRICITY AUCTIONS KEY FIGURES

Auction	First	Second	Third
Date	Mar 30, 2016	Sept 28 2016	Nov 15, 2017
Avarage Package Price [US$/ (MWh+CEL)]	47.7	33.7	20.57
Expected Investment (US$ billion)	2.6	4	2.4
Demanded Power (MW)	500	1,483	593
Power Covered (%)	N/A	80.1	41.9
Demanded Energy (GWh)	6,361	10,630	6,089
Energy Covered (%)	84.9	83.8	90.2
Demanded CELs	6,361	10,630	6,089
CELs Covered (%)	84.6	87.3	97.8

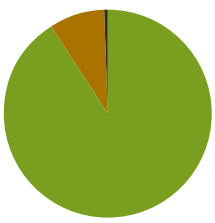
TOP FIVE STATES IN RENEWABLE ENERGY CAPACITY TO BE INSTALLED (MW)



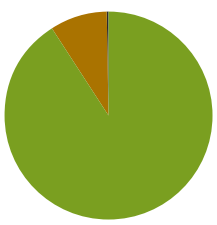
THIRD AUCTION POWER PURCHASE OFFER (MW)

1,288	CFE	91.1%
122	Iberdrola	8.6%
4	Menkent	0.3%

Total 1,414 MW



THIRD AUCTION ENERGY PURCHASE OFFER (MWH)



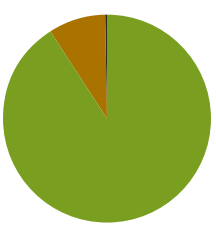
5,547	CFE	91.1%
526	Iberdrola	8.6%
16	Menkent	0.26%

Total 6,089 MWh

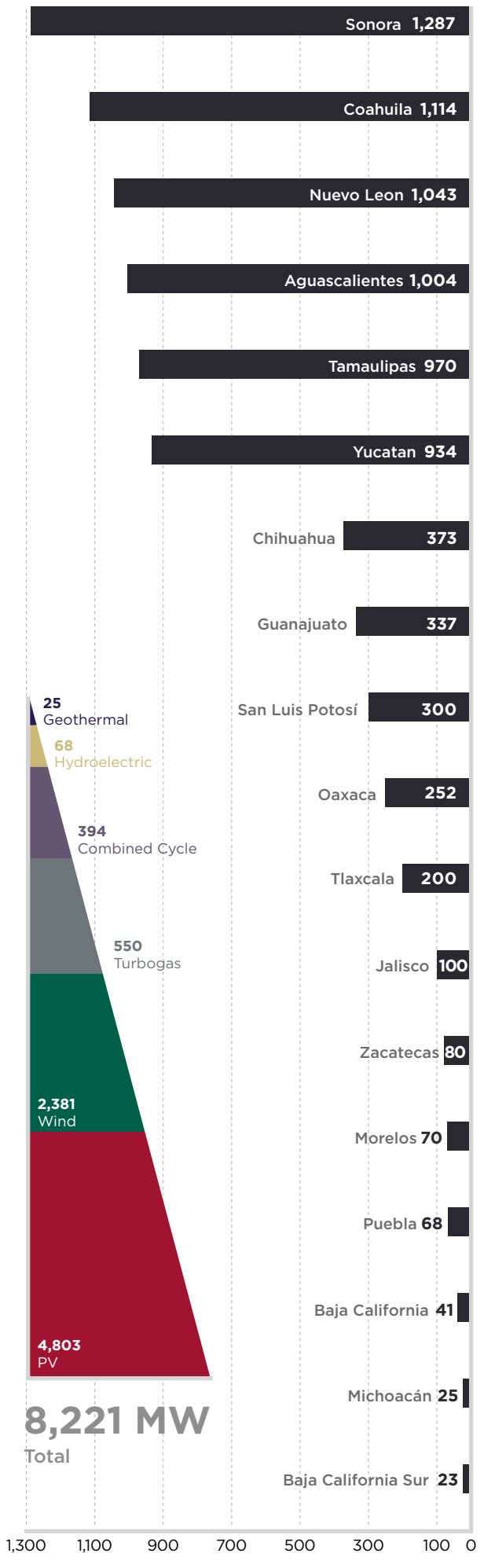
THIRD AUCTION CELS PURCHASE OFFER

1,288	CFE	91.1%
122	Iberdrola	8.6%
4	Menkent	0.3%

Total 6,089 CELs



TOTAL CAPACITY TO BE INSTALLED PER STATE (MW)



FROM DISCIPLINED PROJECT DEVELOPMENT TO FLAWLESS EXECUTION

Paul Abitante
Country Manager, Mexico, of Invenergy

Jaime Burguete
Commercial Development Director of Invenergy

Q: What are Mexico's prevailing challenges in project development?

PA: As in most power markets, securing land rights and a competitive electrical interconnection to the electric grid are fundamental challenges. Renewable projects in particular require special attention because they involve very large parcels of land. Working through this process with full awareness of the potential social and legal issues with a local team that has local knowledge and experience is fundamental. The electrical interconnection process also requires special attention and local knowledge. The Energy Reform turned Mexico into a market of high interest for companies from around the world, including Invenergy. CENACE processing thousands of interconnection requests annually attests to that. But in most cases these requests are for projects that are speculative and will never be built. Lastly, securing the commercial off-takers for projects is also a challenge. In Mexico, the long-term electricity auctions are one such avenue to sell capacity, energy and CELs.

Q: What are the key elements of Invenergy's strategy in Mexico?

PA: Our strategy in Mexico is underpinned by our philosophy and values as a company. Innovative spirit in what we do, diversity in our project portfolio and off-take sales, attention to detail when it comes to project development, execution and operation as well as heavy doses of discipline and patience. Of these elements, perhaps the most important are the last points: discipline and patience. I mention these points because in recent years in Mexico we have seen some very aggressive, irrational behavior in the market where the end game is clearly driven by market share rather than project economics and investor returns. Unfortunately, this behavior distorts the market and creates unrealistic and unsustainable pricing levels where in my view many of the short-term winners will eventually become the losers.

***Invenergy** develops innovative clean energy solutions. The Chicago-based project developer has more than 110 projects, almost 17,000MW, in development, construction or in operation across the US, Canada, Europe, Japan and Latin America*

In Mexico, we are developing a broad, geographically diversified, well-developed portfolio of projects, such as wind, solar, energy storage and thermal power, including cogeneration, that we can then take to the market either through the long-term auction process with CFE or through bilateral agreements with commercial and industrial customers. Our strategy in Mexico paid off in late 2017 when we closed out the year with the award of two thermal projects. The first project, Compañia de Electricidad Los Ramones, is a 550MW natural-gas fired thermal peaker project that was awarded a capacity contract in the third long-term auction. When it enters into commercial operation in early 2020, it will be the most efficient natural gas-fired peaker plant not only in Mexico but perhaps in all of Latin America.

Q: How would Invenergy define project financing done right?

PA: A primary element would be getting things right up front. A well-developed project includes what lenders are going to look for, promptly identifying risks and efficient as well as effective ways of mitigating them. Identifying all those elements early is a must and something we do particularly well. The core of our project finance team is in Chicago but we have a highly experienced finance professional heading our project finance activities in Mexico. Despite the fact that his responsibility here is project finance, we routinely involve him in development discussions. He sees what we are doing early on — permitting, site control, contractual issues, how we structure commercial off-takes. He can then share with us a lender perspective and capture those elements into our contracts. Doing it any other way could frustrate projects, lengthen schedules and time to reach financial close and jeopardize not only the entire project but also our credibility.

JB: Invenergy is a long-term player. When we sit with our lenders it is because we will be involved in the project for over 20 years. One of the major worries a lender can have is whether the project can yield what the financial model generates. When we put on the table all our expertise applied throughout the project's development stages and include operations and management services, it reassures lenders regarding the actual cash flow of the project.

BANKABILITY TO ENTICE COMMERCIAL INSTITUTIONS

MARIAN AGUIRRE
Energy Finance Vice President of Bancomext

Mexico's long-term electricity auctions are considered the benchmark of the country's energy transition. To guarantee their success, the Ministry of Energy announced in August 2017 that development banking institutions had approved the first financing packages for the auctioned projects. The participation of the development banks is critical.

"Echoing the vision of the Ministry of Finance we want to incentivize commercial banking to participate in these types of projects," says Marian Aguirre, Energy Financing Vice President of Bancomext. "Our institution is involved across the sector's value chain, including generation, distribution, transmission and all the segments in oil and gas." Showcasing bankable projects is the institution's bet to dissipate prevalent worries pertaining to market risks as there is not yet a long enough track record to make an informed investment decision. "We are aware that commercial banks have a more complicated setting in which to absorb these risk levels, which is why we provide A/B loans so they can participate via shorter time frames, as some banks have term limitations."

While long-term projects are predominantly financed by development and multilateral entities, Bancomext can participate with two schemes. Either through mini perms for which refinancing takes place during the last year, or taking shorter financing tranches, where Bancomext covers the rest. But the core issue remains devising financing schemes that can ensure with a certain degree of certainty an economically viable and profitable project. "We use project finance schemes in which every risk factor is compartmentalized and mitigated separately," says Aguirre. For instance, Bancomext uses Debt Service Reserve Accounts (DSRA) via Contingency Lines of Credit to protect lenders against cash flow variations once the loan is refundable. Term reduction mechanisms are also used, such as anticipated payment schemes or cash sweeps. "We provide the tools necessary for a tailored solution for each project's specificities based on a particular financial structure where a commercial bank can work with the risk levels it is comfortable with," she adds.

The latest instrument to be introduced by Bancomext to the benefit of commercial banking is the Imbalance Account. "This novelty helps when there is insufficient power generation. In that case, a power purchase must be completed to compensate the shortfall, which, considering power price fluctuations, is an additional risk and cost that the project should not incur. Based on differential calculations, this account can cover potential imbalances. Bank committees are quite satisfied with it," Aguirre says.

Mexico's energy projects require sizable financing, which Bancomext provides normally on a co-financing basis. It works closely with other development banks to coordinate energy portfolios, reaching combined assets of more than US$2.5 billion in 2016. "Even when every bank has its own risk areas, particularities and different mandates — Banobras for infrastructure projects, NAFIN for productive chains and Bancomext for foreign trade — the financing needs of the sector are quite high. Our common denominator is that we consider energy as a strategic sector for the country's economic development," says Aguirre.

Aguirre also stresses the importance of social and environmental factors in the bankability of projects: "Bancomext's rules stipulate that every project we take to our committee must comply with our Environmental and Social System (SARAS). Our system's focus is primarily based on the Equator Principles and IFC standards." Mexico's energy market transformation also entails a major shift toward social and environmental components, making Environmental and Social Impact Assessments a mainstream practice deeply embedded within projects from the initial structuring and followed throughout the financing life cycle.

Bancomext's objectives for 2018 are focused on supporting the reform's projects. "We are still in the process of assimilating the gears and shifts of the auctions, as well as taking on the challenge of providing the best financing options for the projects assigned through the third auction's Clearing House," Aguirre says. The development bank is setting things in motion to face the complication of financing and managing simultaneous utility-scale projects. "Between August and-September 2017, we concluded six financial closings of auctioned projects. That was quite a challenge."

STEPPING STONES TO A REINVIGORATED MARKET

ENRIQUE GIMÉNEZ
Director General of Fisterra Energy

Q: What needs to be done to improve Mexico's Energy Reform?

A: The reform is a positive step forward for Mexico. Considerable effort was invested in it and there is an undeniable sense of quality in its provisions. There are two basic areas for improvement. Firstly, the reform is being implemented and regulated simultaneously, causing some inefficiencies in market operations, generating unease with potential operators and delays. Secondly, in Mexico the long-term and short-term electricity markets were launched concurrently. In our view, the long-term market has been predominantly prioritized because of the long-term auctions. Meanwhile, the short-term market lacks liquidity due to the scarcity of players operating in it. The picture of undeniable economic success and achievement of competitive prices does not reflect the day-to-day reality of the market.

Q: Could you elaborate on Fisterra's bilateral transaction with CFE?

A: The new regulatory framework stipulates that power generators must sell all the electricity produced to CENACE and CENACE pays for it all. In turn, qualified suppliers have to buy all the electricity they need from CENACE and sell it to qualified users. Plus, qualified suppliers are obligated by law to purchase an additional 60 percent of its electricity consumption from a power producer through an energy-trading contract. Generators sell an additional 60 percent of electricity directly to qualified suppliers. This design flaw can be compensated through a financial bilateral transaction mechanism that power producers and qualified suppliers have at their disposal to alert CENACE of these additional energy-trading contracts so the government agency can adjust the amounts charged and paid to power generators and qualified suppliers. Fisterra Energy basically capitalized on this tool designed by the Ministry of Energy for Mexico's electric market.

Fisterra Energy *is specialized in energy infrastructure investments worldwide. Fisterra enjoys technical expertise and extensive experience in M&A, project financing, development, construction and operation*

Q: With Blackstone, Ektria and Frontera México Generación, what is Fisterra's strategy to avoid diluting your brand?

A: A brand is important for consumers. In our line of business, this is significant for the spot market. The wholesale electricity market is not so adamant about branding and is more concerned about financial statements and loan guarantees. Ektria oversees the spot market, while the rest of our branches focus on the wholesale market, where there are fewer players.

Q: What is the comparative advantage of Fisterra's energy supplier branch?

A: Blackstone, our financial arm, provides the financial solidity our clients look for. Blackstone also provides an important input from the US electricity market that Mexico also uses. As a result, we can anticipate the evolution of the Mexican energy market because we have seen other markets mature.

We have pioneered the energy financial trading market in Mexico in accordance with the tendencies we have observed elsewhere. We regularly release our forward price curve from one week to five years. Fisterra also helps represent small power producers, from 1-15MW power capacity, that are unable to take advantage of the opportunities presented by the developing regulations. Our company takes the power they generate to the market.

Q: What is Fisterra Energy's long-term vision for Mexico?

A: Mexico is a country with tremendous opportunities in the energy sector. Mexico is ranked 15th globally in terms of energy consumption volume, and this consumption is expected to grow exponentially. Despite its few mishaps, the Energy Reform is sound. Our new-arrival status in Mexico gives us an important comparative advantage. Fisterra already provided the stepping stones toward invigorating the market through financial trading and we have high hopes in the development of this segment. Our company is also motivated by the announced midterm auctions. We will continue devising strategies in client-attraction, power generation and diversifying our product portfolios.

DIGITALIZATION-DRIVEN GROWTH, A NEED BEYOND A DREAM

VICENTE MAGAÑA
President and Director General of ABB Mexico

Q: How do you expect digitalization will change Mexico's energy infrastructure?

A: Digitalization will change not only Mexico but the entire world. By 2020, we expect that 30-50 percent of the jobs around the globe are going to be related in some way to digitalization. With a strong focus on developing that concept, at ABB we are comfortable with the change. That is precisely the added value we want to offer to the country. With a production basis that is shifting from conventional resources to renewables, a transmission and distribution grid that requires an overhaul and the concept of smart grids, digitalization is a critical concept for Mexico. Furthermore, proper grid digitalization will not only allow Mexico to cope with renewable and distributed generation projects, but it will also improve the country's energy security by increasing the ability for it to integrate storage systems and allow for the creation of new business models in the market.

Q: What business opportunity does ABB find within the concept of digitalization in Mexico?

A: By 2020 we expect that there will be about 26 billion devices connected to the internet. Taking this into consideration, the management of those devices and the proper digitalization of the grid to cope with them will be crucial. ABB is already working with its ABB Ability Platform to bring together all the required digitalization services in one place. With it, predictions can be made, such as when a transformer is going to fail, its behavior and what predictive maintenance will be required, all in favor of a stronger grid.

PRODESEN expects an investment of up to MX$2 trillion in the coming 15 years to revamp Mexico's energy industry. Of that amount, 19 percent will go to the transmission and distribution sectors, and the rest mostly to renewable generation projects. Although renewables provide social benefits, they also introduce problems to the grid. As ABB has installed most of the cutting-edge stabilization systems in the world, we are looking to also implement them in Mexico.

Q: How can ABB support CFE's new added-value business model?

A: Taking a look at what CFE has been doing, the company is really putting a stake in the ground and moving toward excellence. In this regard, CFE has strong objectives for the reduction of losses, both in its technical and nontechnical versions. The company is working really hard on bringing those losses down from the current 13-16 percent of losses to the world average of around 6 percent. The implementation of digital meters is one of its first actions in pursuing this goal and ensuring that consumers of energy can also become producers and sellers of energy.

Q: How does ABB bring the best solutions in the world to the Mexican market?

A: Mexico had a vertically integrated company, covering every aspect from power generation to distribution. Now we are going to see a much more open but complex grid. To handle these complexities, at ABB we spend about US$1.5 billion annually on R&D, and we are looking to spend even more. To further strengthen our position, we are developing strategic alliances such as the ones with Microsoft to develop a cloud platform and IBM to work on artificial intelligence. At ABB we understand that investing in our own R&D is not enough. Innovation is driven by creating alliances that provide a strong portfolio of projects that can be implemented later on.

ABB has a large industrial complex in San Luis Potosi, which is a unique location that offers services to the entire Latin America region. We also have a strong R&D center at this location. Among the many innovative solutions that have been developed is a mid-voltage solar panel that can be used directly for distribution purposes. To achieve these kinds of innovations we have a nurturing team composed of specialized seniors working together with young entrepreneurs.

***ABB** is a pioneering technology firm that works closely with utility, industry, transportation and infrastructure customers to write the future of industrial digitalization. The development of talent is critical for ABB to foster its activities*

GROUP RELISHES ENERGY CHALLENGE, EYES MORE

ANDRE VON FRANTZIUS
Commercial Director of Grupo DESMEX

Q: How is Grupo DESMEX working to strengthen its position in Mexico's energy market?

A: Four years ago, Grupo DESMEX started working on a circular business structure that was designed to cover all our business units. This concept started when we bought Solarnova, a German manufacturer of solar PV panels with over 25 years of experience in the European market and a capacity to produce 80MW per year. Becoming full shareholders of the brand, we acquired the capacity to directly produce solar panels for the market segments in which we are present, from residential to industrial. This reinforced our already strong presence in those markets with over 428 products and 52 solutions for interconnected and isolated energy systems, illumination integration, desalination and recycling, to mention a few. Grupo DESMEX is also an exclusive supplier of many brands that are leaders in other countries. To provide the Mexican market with these brands we have worked hard to develop strategic partnerships.

After buying Solarnova and introducing more products to our portfolio, we changed our business model into a franchise scheme, recognizing that our nine offices were not enough to manage all our products and the markets in which we were present, nor to provide the full coverage to the Mexican market that we wanted. In 2016, we incorporated EPC services into our portfolio along with our own financial leasing branch, allowing us to offer an extra added value to our clients. These last services are for installations where traditional solutions such as third-party integrators and banking institutions do not fit clients' needs. Finally, and to close the circle, we are starting to work in the energy generation area.

In April 2017, Grupo DESMEX bought a legacy permit for a 30MW project in Chihuahua that is expected to be operational by December 2018. This legacy permit will be used for our energy sales division. We have several investors on board who are constantly looking for ways to add more solutions and increase our added value. With this circular structure in place, we expect to become a clean-energy conglomerate in Mexico in 10-15 years.

Q: What is the main added value Grupo DESMEX provides that will allow it to become an energy conglomerate?

A: Our main added value is our broad experience of over 10 years in the energy market and 21 years working in Mexico. We are one of the strongest players in distributed generation, with over 7,200 distributed generation installations performed by our branches in both the residential and commercial sectors for an accumulated installed capacity of 54MW. This success has not come easily; it is the result of hard work and advancing step by step with a clear goal in mind. Our commitment to the market is reflected not only in our first foray into the energy-generation market, with a 3MW project, but also in our follow-up 30MW project.

Grupo DESMEX has a strong engineering team with over 175 people that allows it to enter the engineering and installation segments for energy projects. For projects under 250kW we let our franchises manage everything. Because we train and certify them, the final customer can be assured that the project will be carried out to the highest quality standards.

The group is also analyzing the possibility of building a manufacturing plant in Mexico. In the upcoming months, we will make the decision of whether to build a 40-60MW capacity facility in Guanajuato. This production capacity will be used to nurture all our distribution channels. This project is feasible not only because of the already strong presence we have in Mexico, but also because of the strong expertise we have from Solarnova, whose panels are of the highest quality.

As a matter of fact, an installation done in 1989 in Veracruz with Solarnova panels continues to offer 85 percent of its initial performance, which is a major achievement. Our strategy is clearly outlined and executed with an eye to offering the greatest benefit to our customers in the future.

***Grupo DESMEX** is versed in automation and engineering, with a presence in Mexico of over 20 years. Its energy branch serves the residential, commercial and industrial sectors, including EPC and O&M services*

GUIDANCE THAT REFLECTS CORE VALUES BOOSTS SUCCESS

Alejandra Bueno
Strategic Ally in Texas of Access to Energy

Miguel Marmolejo
External Strategic Researcher in Energy Affairs of Access to Energy

Q: What makes Access to Energy unique among the shelter companies in Mexico?

MM: Our biggest added value is not the ability to provide specific, isolated services, but the integration of these services that gives our clients the ability to review their business model considering social, cultural and economic factors in Mexico. We can determine if the business model is suited to the Mexican market or not. If it is not, we can suggest how to change it so that the business becomes successful, all according to the company's core purpose. Few companies can offer this kind of service, as most focus solely on activities to create companies in Mexico, and not on the validation of the business model. Nevertheless, it is much better to spend time and resources on the initial planning of the business than to jeopardize the company because the business model was not compatible with the reality of the country.

AB: Any new participant in the energy market can establish a company in Mexico. Our group, meanwhile, offers companies entering the market the business-model understanding and integral services they will need. We make sure that a Mexican entity created to develop energy projects will fulfill all the corporate and fiscal requirements to participate in a number of energy projects. Besides providing corporate and fiscal services, we can also help our clients to immerse in the new energy markets in Mexico.

One clear example of our abilities is the service we provided to one of our clients that already had operations in the US. This client was not sure which business structure to establish when entering the Mexican market due to the different terminologies used in both markets. After discussing their roles and activities as new electricity market participants we analyzed the best corporate, labor and fiscal options and assisted in their specific permitting process before the Energy Regulatory Commission and the Center for the National Control of Energy. We sat with this client, offered all our services and determined that the best option was to become an energy broker, instead of an energy supplier. The Mexican energy market is unique and with our services, companies can comfortably venture into Mexico, even acquiring a network of potential clients and suppliers.

Q: How can Access to Energy provide such a complex integration of services for new companies?

AB: Access to Energy has a great deal of experience offering shelter services to companies that want to enter new markets. We know that no client has just one specific issue. We discuss with our clients the whole spectrum of their needs and expectations and work with them in structuring a road map to accomplish their objectives in Mexico. Our team understands the wholesale electricity market, the upstream bidding process and associated logistics very well. One of the sectors where we have focused the most is oil and gas, which gives us a strong knowledge of the energy markets in Mexico that we can use to further leverage the market entrance services we provide to our clients.

Q: What is needed to further incentivize the entrance of more companies into the Mexican energy market?

MM: Mexico needs to keep working on the development of its regulatory framework. The rules have to be crystal clear and market-oriented for entrant companies to find it an interesting and level playing field where their investments can grow. Courts also have to be up to date with the new market, with the ability to understand, follow and apply the rules according to both a business and technological vision. This is not only important to increase the number of companies working in Mexico, but also to be able to produce more clean energy, ultimately allowing the country to reduce its GHG emissions and have a clean and sustainable energy matrix.

Fortunately, the fact that more and more companies are entering the market not only to participate in the generation of energy but across the sustainability spectrum, such as in the future green bonds and carbon market, suggests the possibilities the Mexican market has to offer.

Access to Energy *is a multidisciplinary corporate service shelter that integrates knowledge and experience to provide comprehensive tailored solutions that help its clients enter the Mexican energy market, from opening to operations*

SECURE ELECTRICITY SUPPLY FUELS COMPETITIVENESS

FRANCIS PÉREZ
Shared Value Creation and Sustainability Director of Nestlé México

Q: What is the status of Nestlé's RE100 goals?

A: We have been in constant negotiations with different players in the energy sector because we are fully committed to reaching our RE100 goals (in which a group of companies have pledged to go 100 percent renewable in their electricity consumption), but we also have to achieve them in a competitive way. Mexico stands out because its market is just opening, and although qualified suppliers are fighting hard to gain a share of the market, CFE is fighting back with very attractive proposals to keep its industrial customers. Securing constant electricity supply is one of the most important factors we consider when looking at our possibilities because our industrial processes cannot be under constant threat of unwanted changes in the electric input. Sourcing from renewables is as important as competitiveness or security, because any change in costs will not only affect the business, it will affect final prices as well, therefore making Nestlé more or less competitive against other brands.

Whoever offers the best combination of supply security and competitiveness will most likely work with us. In 2013, Enel was the best option, but as other energy solutions become more competitive, with higher and steadier production availabilities, we are starting to consider a wider spectrum of possibilities. At Nestlé, 80 percent of our electric-energy consumption has come from renewable sources since 2013. We expect to close negotiations before the end of 2017 to reach our RE100 goals, while keeping our business healthy.

Q: How can the government help industrial companies such as Nestlé to increase their clean-energy mix?

A: What we need most is legal certainty from our suppliers. We, as energy buyers, know that the long-term commitments of our energy suppliers mean they have a long-term business to meet our demand in the years to come despite changes in the market. We know that the market will change, but no one can say how much, and we need to have security of supply no matter what. That is the crucial point in which the country's legal framework should help industrial energy consumers.

Another important point on which Mexico has to focus is not only in energy generation, but in energy transmission and distribution. Much attention is being focused on distributed generation, but the truth is that most industrial consumers are and will remain for a long time, dependent on centralized generation, which is the safest and most secure energy income we can have. This is not only about electricity, but also heat. Industrial companies with industrial processes need large quantities of heat. To produce it, natural gas is required. Mexico needs a safe and sufficient grid that dispatches the much-needed energy, electricity or natural gas for all industries, and we still do not have that. Having a sufficiently large distribution grid, both for electricity and natural gas, is beneficial for everyone. It is not a matter of making us, the industries, more competitive, it is a matter of making Mexico, as a country, more competitive.

Q: How does Nestlé evaluate natural gas virtual pipelines as a feasible energy supply?

A: We have considered the use of virtual pipelines for natural gas but the truth is that those virtual pipelines are much costlier for us than standard natural gas pipelines or even LP gas. The cost of compressing and decompressing, as well as maintaining such infrastructure, is significant and there comes a point at which compressed natural gas stops being economical or even clean. Compressed natural gas can be a solution for energy consumers that have lower requirements but we must also consider it a transitional alternative. Many companies are still producing heat through oil derivatives because of lack of access to natural gas; that is why delivery of compressed natural gas through virtual pipelines has become a solution in the market. But it is still more expensive than the use of oil derivatives. Talking about competitiveness, the ideal is to have the certainty of the supply offered by a natural gas pipeline and Mexico should fight to offer this certainty.

Q: How is Nestlé working to reduce the environmental impact of its heat consumption?

Nestlé México *is part of the global nutrition and wellness group. During the last 10 years, it has introduced several efficiency and renewable energy technologies into its processes to reduce its environmental impact and become more competitive*

Solar panels at Lagos de Moreno, Jalisco

A: As heat is such an important part of our energy consumption, we are looking for ways to implement efficiency measures, or other heat-production techniques, when viable. First, we look to reduce energy usage, diminish losses, or even change whole processes. Then, we consider implementing other sources of renewable energy like solar thermal or biomass. For instance, at our Lagos de Moreno plant, we have used parabolic solar concentration since 2014 as a way to preheat the water that goes into our boilers. In Toluca, our plant has a biomass boiler, and at many others we are taking advantage of heating processes that would otherwise be wasted to preheat other processes. Although this is not directly related to the energy market, it shows ways in which we are working to make our energy consumption more efficient and varied to make us not only more environmentally friendly but also more competitive.

Nestlé has very clear goals for carbon emissions reduction. To achieve these goals, we are committed to having full consumption of renewable electricity and to implement energy-efficiency projects to decrease our energy consumption. We closed 2016 with reductions of around 47 percent in energy consumption and 66 percent in carbon emissions, both per ton produced, compared to 2017 levels.

Q: What are Nestlé's goals for the future in terms of sustainability, as it nears compliance with the RE100 commitment?

A: Nestlé is committed to the RE100 main goal, but we have to admit that electricity is only 25 percent of our energy consumption, and the remainder is heat. To further reduce our environmental footprint, Nestlé's objective is to become a carbon-neutral company by 2030. It is a very ambitious goal, even more so for an industrial company with big heating demands. We do not know how feasible it is but this goal is our aspiration and it motivates us every day.

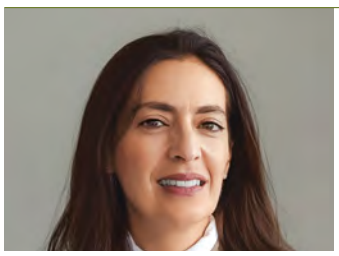
We have an organizational unit that takes care of making our processes more efficient. We are also about to sign a voluntary agreement with CONUEE to look for innovation and cutting-edge technologies in the processes used at our plant with the highest energy demand, and in this way, create a blueprint that can be used at other plants. In this voluntary agreement, we are going to commit to a 14.5 percent reduction in energy consumption in the coming three years. The agreement also illustrates our commitment to the governmental goals of reducing greenhouse gas emissions for 2025 and 2050. Therefore, it is not only important because of the reduction in energy consumption and environmental implications, but because of competitiveness and our desire to offer the best nutritional products, with the best environmental performance.

This reduction is achievable. We have already done it. Not long ago, I performed a study in which I found that if we had not started to implement energy-efficiency measures 10 years ago, we would be paying MX$330 million extra every year, which would translate into less competitive products. During the last 10 years, we doubled our production levels with only 5 percent more energy consumption, with 1 million fewer cubic meters of water, and with 122,000 fewer tons of CO_2. That is efficiency, that is producing more with less and that is also a very tangible example of how much energy efficiency can help a company in the long term.

Nestlé is a global food company, vulnerable to climate change like all food producers. Our purpose is to improve quality of life and contribute to a healthier future. We do that for individuals and families, for communities and for the planet. Therefore, we have to be very active in favor of actions that not only mitigate but reverse climate change. We have been present as a company for over 150 years and we want to continue for 150 years more.

HOW DOES GENDER EQUALITY IMPACT MEXICO'S ENERGY TRANSITION?

Although women are increasingly entering the industrial field, their presence is still low. Although the World Development Report highlights that having more women in the industry enhances productivity, advances development outcomes and makes institutions more representative, on a global level women make up for only 30 percent of the industrial workforce. We asked women that are already present in the industry what is the role does gender equality play in Mexico's energy transition, what challenges have to be yet faced, and how are they being overcome.



MONTSERRAT RAMIRO
Commissioner at CRE

Gender equality creates diversity, which enriches professional environments and decision-making processes, leading to better outcomes. It therefore does not only benefit Mexico's energy transition but its economy and society in general. Access to education in STEM areas, flexibility in the workplace and with business hours must be addressed to allow more women to enter the energy sector. Most issues improve when communication is fluid and flexibility is favored. Fortunately, there is a growing network of women who are deeply committed to helping each other and who are clearing the path for younger generations of women to work in the energy sector. Gender equality is not only about women, it is also about men. If men are not encouraged to take advantage of flexibility and enjoy the same benefits women have and vice versa, gender equality will remain an aspiration and not a reality.

FRANCIS PÉREZ
Shared Value Creation and Sustainability Director of Nestlé México

It is through the joint talent of men and women that we can bring balance to Mexico's energy transition and sustainable future. As a woman in the energy sector, I bring a creative and long-term vision where not only the results but also any collateral effect are considered to create win-win situations. Women have the same ability as men to use their talent for the benefit of Mexico's energy transition, and although our industry is creating opportunities, regardless of gender, there are few places that demystify the role of women in society and allow them to sit in a decision-making chair. We are in an extremely significant transitional period, and it is important to help women rise to those positions. Women in the energy sector need confidence in their competitiveness, because when a person knows where to go, all the doors are open.

ELSA BERNAL
Operations Director at CITRUS

Gender equality is key for the development of every aspect of our society. This also is true for the energy transition. Having talented women as leaders in the public and private sectors will ensure that the energy transition has a wider focus and impact. Gender equality is entrenched in the Energy Transition Special Program 2016-2018 published by the Ministry of Energy. Public policies like these can be transferred to public and private institutions to create programs aiming to promote gender equality, such as the Network of Women in Renewable Energies and Energy Efficiency (REDMEREE), which is supported by GIZ, CITRUS and 47 other leading institutions. As part of REDMEREE, CITRUS is a key driver in promoting the development and certification of more women in the industry and attracting newer generations of women to REDMEREE to boost their professional development.

The energy transition cannot succeed without the involvement of women. Although we are witnessing more participation of women in important roles in the industry, we must admit that they are not yet being offered the same opportunities. We need to work on providing equal rights for all. Slowly but surely institutions are giving more attention and protection to women who raise their voices, and this is helping educate and encourage new generations of both women and men to collaborate and work together. Initiatives such as MERM are breaking paradigms and encouraging women to show their capabilities. Associations like this are key to creating synergies and connecting the dots that will bring more empowered women into the energy sector. I consider the creation of MERM one of my biggest personal contributions to Mexico's gender equality equation.

PATRICIA TATTO
Partner and Country Head of Mexico and Central America for ATA renewables

The participation of women in the energy sector is becoming more important and is growing every year. The fact that the energy industry is an engine that drives the country's economy makes the need for gender equality even more important. Today, there are more women in all of the working fields related to energy, from banking and the revision of legal aspects of the projects to implementing them in the technology or operational elements. This is due to the fact that women are now more qualified and competitive. But we still have a long way to go to reach full gender equality. It is nevertheless encouraging to see that women are also starting to fill more decision-making and C-level positions, providing the sector with a wider vision of what the country needs.

MARIAN AGUIRRE
Energy Financing Deputy Director of Bancomext

The energy transition requires the best and brightest talent in the country to be engaged in the process. There are many capable and talented women but unfortunately, they are often not given the same visibility as their male counterparts. Gender equality is imperative because it means that the best talent will reach its full potential for the benefit of the industry. An important area that needs work is an improvement in the primary or basic education to make sure that cultural biases are not reinforced in schools. The energy sector is complex and challenging, making it a very interesting industry in which to work. I was attracted to it because it allows me to give people access to clean, efficient, reliable and safe energy. My added value to the industry as a woman is to identify commercial opportunities and to work in a culturally sensitive and effective manner.

ANNA RAPTIS
CEO of Raptis Group

If women are able to reach more decision-making positions driven by their dreams and the belief of them being able to reach them, a more enriching vision will be reached in all areas of life. Diversity and gender equality is a key theme for ABB, and we are making concerted efforts to address it. We support women's forums in the country, and are working on the development of catalysts. For us, a catalyst is an empowered man that can drive a cultural change for the benefit of diversity and gender equality. This opens the discussion beyond having just more women in the workplace, but actually empowering them and allowing them to be complete equals. Diversity and gender equality is much more than numbers; it is about changing the way we think. With catalysts and other similar initiatives, at ABB we have managed to reach gender equality not only in numbers but in culture.

VICENTE MAGAÑA
President and Director General of ABB Mexico

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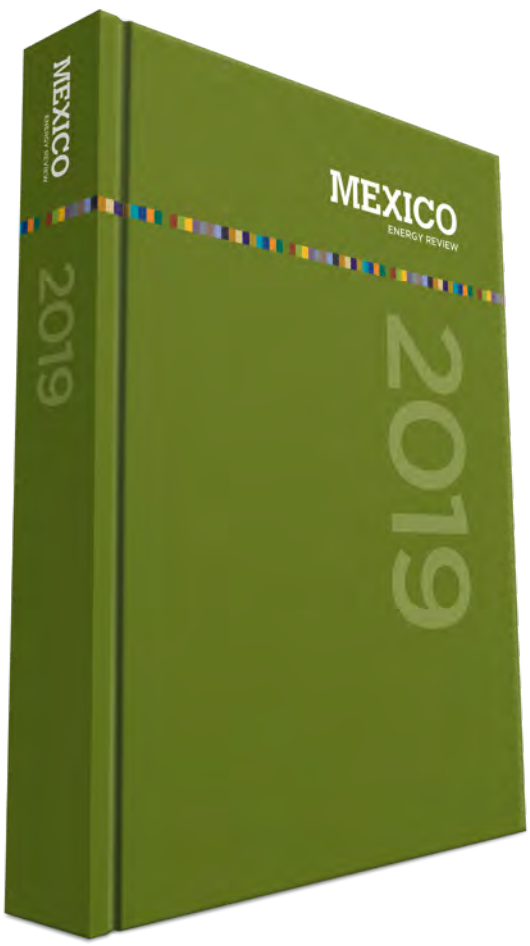
THIS IS HOW WE DO IT

Filtering out the most important information has become a critical success factor for business and political leaders alike. Rather than time or money, attention has become the scarcest resource. We are committed to delivering the right information to the right people in the right format. This is how we do it:

- Cutting-edge information based on interviews with the industry's most influential stakeholders
- Dedicated editorial team with an in-depth understanding of the Mexican energy industry
- Editorial cooperation with the leading voices of the Mexican energy industry
- Customized readership ensuring unprecedented reach among key decision-makers in Mexico and around the world
- Available on today's most impactful business intelligence platforms: print, online and iPad

WHY MEXICO ENERGY REVIEW?

In this changing environment, reliable and relevant information is crucial to take full advantage of both current and emerging opportunities within the country's Energy industry. By connecting key stakeholders across the Mexican and international public and private sectors, Mexico Energy Review is dedicated to accelerating the exchange of essential industry information that will drive the Energy industry's development. Published annually, Mexico Energy Review features the perspectives of the leading players in the industry, providing a comprehensive overview of the latest exploration and investment trends, technological breakthroughs, social and environmental achievements and operational challenges in the Mexican Energy industry.



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We would like to invite you to nominate your company for inclusion in Mexico Energy Review 2019, including direct interview features, guest article submissions and specific topic coverage requests. All participants are also welcome to take advantage of the opportunity to advertise in the publication, the details of which can be found on the following page.

INTERVIEWEE INCLUSION

Interviewees will have the opportunity to directly highlight development strategies, industry trends, innovative technologies and successful projects relating to their company. Being featured as an interviewee in Mexico Energy Review 2019 will enable top executives to share their direct insights in the most comprehensive review of the Mexican Energy industry available.

ARTICLE SUBMISSION

We welcome valuable editorial input from knowledgeable players in the industry interested in contributing their voice and authority to Mexico Energy Review 2019. The inclusion of a guest article in Mexico Energy Review 2019 will provide authors with the opportunity to share in-depth insights and gain exposure among our vast readership network.

TOPIC SUGGESTION

We recognize that cooperation is one of the keys to success in the Energy industry. Mexico Energy Review 2019 will be a continuously evolving knowledge-gathering exercise and we invite industry experts to suggest any additional topics that would further enhance the quality and comprehensiveness of the publication.

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