



IPADE BUSINESS SCHOOL
UNIVERSIDAD PANAMERICANA



CITY SERIES
BY ENERGY DIALOGUES

MEXICO CITY ENERGY DIALOGUES SUMMARY REPORT

Final report prepared by:

ENERGY DIALOGUES LLC AND IPADE BUSINESS SCHOOL

The Energy Dialogues are made possible through the support
of our corporate partners:

Boston Consulting Group and Schlumberger

INTRODUCTION

Mexico City Energy Dialogues—an edition of Energy Dialogues' City Series—convened in Mexico City, Mexico on March 26, 2019, for the purpose of discussing the current energy landscape of Mexico, including energy resource allocation, transmission and distribution infrastructure along with capabilities and challenges therein, status of energy importation, renewables potential, policies/regulation in light of the country's recent change in governmental administration, social implications, and the role of innovation in addressing energy concerns in this country.

Energy Dialogues and academic partner IPADE Business School are grateful to consulting partner Boston Consulting Group, technology partner Schlumberger for their support of the dialogue. The event brought together approximately 60 participants including top energy industry leaders, government representatives, academics, IPADE Business School students, and members of non-governmental organizations (NGO's). The agenda consisted of two panel discussions and three roundtable working sessions designed to facilitate strategic dialogue among participants.

The following report summarizes the key areas of review, deliberation, and discussion among the event's attendees. They are arranged topically and intended to be a compendium of the event's major themes.

MEXICO AS PART OF THE NORTH AMERICAN PRODUCTION REGION

Discussion of Mexico's current energy landscape and effects of the new governing regime was prefaced by deliberation of North American energy production as a whole. There was consensus among participants in the dialogue that collaboration among the North American production region—consisting of Canada, the United States, and Mexico—in oil and gas production, could benefit each country's evolution towards energy independence. The success of Eagle Ford Shale was mentioned as a positive model within the production region. Nonetheless, it was also pointed out that net exports from this region need to be increased.

Focus was then turned to Mexico, and it was agreed that this country, as part of the North American market, should use the resources of this region, particularly in light of their diminishing oil production, internal corruption and distribution issues, and certainty of escalating demand. Attendees concluded that investment in establishing new Mexican refineries is likely to yield a negative ROI, and resources would be better utilized for education or other fundamental objectives oriented toward long-term, sustainable improvements in the country's energy methodologies and innovation.

There was consensus that Mexico is a world-class economy with current needs that make investment for the long term more feasible than for the short term. This is especially true presently, since the new government has cast uncertainty on Mexico's energy policies subsequent to the reform of this sector. It was unanimous among discussion attendees

that the Mexican government must focus on how to provide energy resources for development in all areas, maintaining a vision of prosperity for the future.

THE NEW MEXICAN ADMINISTRATION: EFFECTS ON THE ENERGY SECTOR

Discussion of the new Mexican government and its impact on the country's energy sector reflected a perception of the new regime as incoherent and full of contradictions. Since President Andrés Manuel López Obrador (or "AMLO," using his popular acronym) was inaugurated last December, he appears to be enacting his own energy policy transformation, aligning with state-run companies CFE (Comisión Federal de Electricidad) and PEMEX over private investors, in an apparent attempt to increase state production and eliminate dependence on imported natural gas.

Since the new president's arrival (and contrary to the policies of Mexico's recent energy reform), open-market bidding on energy-related projects in Mexico has been restricted, and clean energy auctions cancelled. Discussion participants noted that the current government is sending unclear, seemingly reactionary messages which appear to support an outdated energy landscape based predominantly on carbon, heavy fuel oil, and refineries. It was agreed among members of the discussion that this scenario hinders opportunity for diversification and poses risk of inadequate countrywide energy provision, already being evidenced in what is known as Mexico's "energy crisis."

Attendees further pointed out that the current government is adhering to an attitude prevalent during the 1970's, that foreign companies coming to drill in Mexico actually want to "take" the country's resources, resulting in a defensive stance toward off-shore players. Moreover, the new government's lack of policy continuation and heightened regulatory risk is discouraging investors.

The fact of state-owned Pemex being designated to build the Dos Bocas refinery in Tabasco, was brought up as an example of policy reversal from the previous reform. At the same time, the new government has unilaterally terminated contracts with investors and contracts in the energy and other sectors. One participant commented that prior to the new administration, CFE demonstrated excellent strategic planning, which has since deteriorated.

Commentary by discussion participants. The majority of panelists and attendees agreed that the new administration's focus on and support of Pemex and CFE, to the exclusion of open market players, could be a strategic mistake with consequences potentially spanning decades. If the current government's plans don't eventuate as expected, the long-term result might be a weakened and limited private sector participation coupled with hugely expensive and inefficient state-owned companies having absolute control of the sector. Another comment relating to the new government was that they are employing a poor business model, apparently wishing to maintain a monopoly in energy transmission and distribution, despite the former being profitable, while the latter is generating huge losses.

The overall sentiment among the panelists and participants, seemingly reflective of the energy sector majority as a whole, was one of concern and desire to defend and preserve Mexico's checks and balances (including the role of the energy regulatory authorities) to achieve and maintain stability, as well as to enhance and develop the country and particularly the energy industry. At the same time, there was recognition of the fundamental need to support the current government to facilitate these same basic goals.

Related to this was a suggestion that energy players should seize upon the current "crisis" as an opportunity to change their approach such that the positive aspects of the sector are maintained while the non-functioning ones are improved.

It was noted that in the meantime, there has been strong evidence reflected in various indices that Brazil and other Latin American countries are currently the primary focus of offshore investors, "stealing the spotlight" from potential in Mexico. Also pointed out, however, was that although the new administration is not prioritizing expansion of electrical generation/transmission nor energy diversification as a whole, it will notice the financial necessity of private sector investment and participation as shortages become more critically evident.

CURRENT ISSUES IN MEXICAN ENERGY: SHORTAGES AND ATTEMPTS TO REMEDIATE

It has been reported that of the \$58.2 billion USD the Mexican government has allocated to the energy sector in 2019, 57 percent will be spent in hydrocarbon production. President AMLO's focus on refineries, it was agreed among discussion attendees, makes little economic sense considering their high cost (known to be at least \$8 billion USD) and diversion of funds from the development of cleaner energy alternatives that will be more viable in the long term. One participant's related comment was that Mexico's carbon contains higher levels of sulfur than those of other countries such as Australia, making it less efficient.

Furthermore, participants were reminded that the current president has reversed the previous phasing out of fuel oil-fired electricity plants, known to be one of the most expensive energy sources, in order to meet current shortages. AMLO is not in favor of hydraulic fracturing, and he adamantly opposes nuclear energy development. It was proposed in the course of the discussions that Mexico should be "gasified" to lower electricity prices; at the same time, however, a goal of the current administration is to decrease Mexico's reliance on imported natural gas for electrical generation. Some attendees expressed that it seemed odd that the government is blocking various private companies from importing gasoline, but takes no stance against the heavy importation of natural gas.

Electricity subsidies from the Mexican government was another talking point. These subsidies were identified as an expensive way to mitigate electricity shortages. During this summer, it was pointed out, subsidy policies in the northern part of the country will expand to the southeast, costing even more. It was mentioned that the money being used for these subsidies could be put to better use on social and other improvement programs.

Participants further noted that subsidies disproportionately favor wealthier citizens over the poor, who use less energy. One suggestion in this regard was to conduct focused studies of populations benefitting from the subsidies, to determine how the poor can be better served in their energy needs.

The new Mexican regime supports expansion of electricity, but one discussion participant pointed out that CFE currently has over \$2 million USD in overdue accounts receivable. Inadequate electrical energy distribution, it was stated, is a particular issue in the states of Sonora and Oaxaca, since projects planned to remediate this issue were canceled, e.g. the \$1.2-billion USD Oaxaca HVDC transmission line construction. Baja California reportedly does not have enough electricity generation capacity; it has been forecast that during the summer of 2019, there will not be enough energy for its inhabitants, and blackouts will be common. The current government is addressing the electricity shortfall in the short term by bolstering CFE with public funds, but again, leaves unaddressed the overall expansion of power generation in the country, including the development of transmission infrastructure and renewables.

As part of the new government's anti-corruption crusade, AMLO's recent policy changes have been an attempt to address robbery of oil and gasoline – known in Mexico as *huachicoleo*. Although fiscally successful to some extent, these measures have aggravated widespread gas shortages throughout several states and caused the death of over 125 people earlier this year during the explosion of a tapped pipeline. It was mentioned during the discussion that PEMEX reportedly has the necessary infrastructure to track the movement of stolen fuel, by virtue of Supervisory Control and Data Acquisition (SCADA) technology, but doesn't appear to be applying it.

RENEWABLES AND CLEAN ENERGY

Mexico is known to have vast wind, solar, and geothermal resource potential for renewable energy. The government has set forth a plan to generate 35 percent of total power output with clean energy sources by 2024. In February of this year, however, it had reached only 18 percent of this target, so the current regime will be hard-pressed to meet this objective by the end of their six-year tenure. Given the overall power landscape in Mexico, it will be up to the government to transition its population's energy dependency away from fossil fuels to greener alternatives.

AMLO has reportedly allocated \$5.2 billion USD to the expansion of the country's hydropower operations. However, as discussion attendees agreed, hydro falls far short of natural gas for electricity generation. Related to this, it was mentioned that the total generating capacity of the country is around 75 GW, but only 20% of it relies on hydropower (15 GW). Given these numbers, the participants agreed, it seems unlikely that AMLO's heavy investment in hydro will be successful toward reaching less expensive and more reliable base-load energy output.

In discussing renewables and clean energy in Mexico, it was mentioned that one of the biggest obstacles to expansion of these technologies is lack of clarity regarding who – the

government or currently operating utility companies – should pay for transmission and grid maintenance. Another major obstacle identified by attendees is the issue of storing excess capacity in order to mitigate intermittencies in production. Storage technology isn't developed enough to be competitive because batteries don't yield as much energy as fossil fuels and are not an efficient storage solution in the long term. In fact, in migrating to renewables with storage capacity, the cost of storage eclipses overall system efficacy. Attendees concurred that this situation will eventually change with greater innovation in storage technology.

An additional discussion point raised was that accelerated transition to renewables will require some incentive from the government to make it viable and cost-effective to the masses. The price of renewable energy will need to be competitive with non-renewable sources in order for it to succeed, as the population's bottom line is price. Millennials and younger generations were identified as a possible exception, as they may be more willing to pay for green energy as a reflection of greater environmental consciousness. The topic of electric vehicles was raised, as these are a current automotive trend. Problems hindering expanded use of electric cars in Mexico include increased energy demand and high oil prices.

SUGGESTIONS FOR A BRIGHTER MEXICAN ENERGY FUTURE

Ideas to mitigate Mexico's current energy crisis included moving regulation of energy matters away from the government's Energy Ministry (SENER) and instead have it overseen by the Ministry of Economy, with possible involvement by SEMARNAT and/or the Secretaría de Hacienda y Crédito Público. It was agreed that combating energy poverty in the country should be a priority of the new administration. In the meantime, regional programs could be helpful in addressing location-specific problems, instead of total reliance on central government mitigation policies.

There was agreement that prioritization of energy development in Mexico will require participation on the part of the private sector in emphasizing the significance of energy projects on social wellbeing, and proactively generating ideas for incorporation into public policy. It was suggested that a possible future trend might be to produce and generate energy in specific areas of high demand, in order to reduce transportation and logistics costs.

There was consensus that the future of energy in Mexico will depend upon investing in young, inventive individuals who can propose new solutions that may not have been considered previously. It was noted by all that "Innovation is key to maximize resource allocation across the value chain."