Mexico’s fortunes have been on the rise. Presidential elections in July 2012 were followed by a smooth transition in December to the PRI administration headed by President Enrique Peña Nieto, while steady economic growth has commentators championing the future of the “Aztec Tiger.” The swift passage of labor and education reforms within the first few months of the new administration has boosted this optimism, and bodes well for the President’s expected energy reforms this summer. Yet as panelists at the Institute of the Americas Energy Security Roundtable underscored, the health of the Mexican economy is intricately linked to its energy sector, and the oil and gas industry in particular.

The resounding good news is that Mexico is endowed with tremendous energy reserves, and opportunities in the nation’s energy sector abound. However, panelists noted that Mexico will need to overcome several hurdles before this latest resource potential becomes a driver of economic growth. They called for a strategy that focuses on diversifying the country’s energy matrix, particularly as Mexico faces rising demand. Energy security, they noted, is based on Mexico’s capacity to provide reliable, affordable energy access to the entire population.

In the short term, energy supply will continue to come from hydrocarbons, although with a shift toward natural gas and away from a dependence on oil. Renewable resources will eventually have an impact on the energy matrix but this is more likely in the medium- to long-term. More immediately, panelists agreed, the success of the country’s energy sector will depend on clear policy goals from the new Peña Nieto Administration and the national oil company, Pemex.
DEFINING what the country wishes to achieve in energy terms is integral to creating a national energy strategy at the beginning of President Peña Nieto’s six-year term. There is little doubt that Mexico’s enormous energy potential must be used to foster economic growth, development, and employment for the benefit of the entire nation. Declining oil production combined with rising demand has put further pressure on Pemex and the new administration. Government officials have conceded that if current trends persist, Mexico could become an oil importer as soon as 2020. For many roundtable participants, harnessing this untapped economic potential – and thus avoiding this fate – requires a major reform of the energy sector, particularly with regards to oil and Pemex. Some commentators have suggested that substantive energy reforms could boost GDP by up to two percent.

Regardless of the shape the final reforms take, any energy strategy must address Mexico’s ‘mosaic’ of energy sources, from shallow water to Chicontepec, to deepwater and shale, as well as renewables. The challenge for the new administration will be to develop a policy framework that takes into account the differences in these resources and considers how to best develop them in terms of operational, technological and financial requirements, as well as in concert with Pemex.

TECHNOLOGY

The importance of technology in ensuring Mexico’s energy security emerged as an important theme throughout discussions. Pemex, panelists noted, lacks the technical capacity and knowledge to access or exploit many of the newer reserves. Much of the country’s previously unleashed potential is in technically difficult locations, such as deepwater, shale, and mature fields. The role of technology will only increase as Mexico enters this new era of energy policy.

Panelists agreed that Mexico has an uphill path in terms of building its technical expertise but noted how this happens will depend on the interaction between Pemex and private companies, the extent of which will be determined at least in part by the energy reforms. This is particularly the case in deepwater exploration and production but will also apply to unconventional gas if and when the country is in a position to exploit its shale reserves.

The swiftest route to increasing the country’s technical know-how, participants argued, would be through joint ventures with international oil and gas companies. Several large and medium-sized firms with experience in the US, Canada, and elsewhere, could bring much-needed expertise to Mexico, boosting production but also facilitating technology transfer to Pemex and other local actors. Such an arrangement would require wide-reaching reforms.

Technology is also one of the drivers behind increased energy efficiency, with efficiency cited by government officials during the sessions as a critical component of the country’s new energy strategy. One panelist acknowledged that the energy industry itself was an enormous consumer; much of the oil produced in Mexico is consumed before reaching the city gate. These factors are pushing Mexican officials to boost large-scale efficiency programs across the country.

ELECTRICITY

Mexico has made much progress in electrification across the country. Yet while 98 percent of the population has access to electricity, two million mostly rural Mexicans still do without. More importantly, however, these figures hide the fact that electricity is frequently unreliable and several regions of the country face shortages and power outages during the summer months.

These problems will become particularly acute as demand rises. Indeed, the Mexican government estimates an additional 14GW will be required over the next six years. This will likely further boost natural gas’ share of generation but also begs clarity on the country’s diversification strategy. Energy security, panelists emphasized, stems from a strategy that envisions a mix of conventional and unconventional hydrocarbons, and renewable sources. Given that natural gas is already the largest source of electricity generation – a figure that will rise over the coming sexenio – a more immediate strategy will need to focus on securing a reliable supply of natural gas.
The potential for increasing the role of renewables in electricity generation is also significant, with estimates Mexico could be generating 12GW by 2020. This would largely be derived from wind and solar sources. Until now, Mexico has struggled to take advantage of its renewable potential, particularly solar. There has been a push for greater photovoltaic (PV) projects in areas such as Baja California, but it is still early days for the sector. Mexican government officials expressed a desire for a greater contribution of renewable resources to the national energy matrix in the long term but in the near-to-medium term, the outlook is less certain.

One driving factor behind the push for renewable energy is Mexico's commitment to combating climate change. The General Climate Change Law (2012) calls for a 30 percent reduction in emissions by 2020 and 50 percent by 2050, as well as requiring that 35 percent of electricity be generated by low-carbon sources by 2024. These lofty goals will require a strong policy framework for success.

**CONVENTIONAL AND UNCONVENTIONAL GAS**

Several panelists noted that rising demand could strengthen the case for a strategy of 'gasification' in the country, and a shift away from Mexico's dependence on oil. Indeed, most participants agreed that conventional and unconventional gas will play an increasingly central role in the national energy matrix, particularly given its potential natural gas reserves of an estimated 61 trillion cubic feet (tcf).

Reserves notwithstanding, Mexico faces several hurdles before it could guarantee reliable and affordable natural gas on a large scale. Enormous investments in infrastructure would need to be combined with incentives for domestic gas production, as reliance on US imports is not a long-term solution. It is questionable whether Mexico could afford to make these adjustments in the short- or even medium-term. Instead, some panelists warned that the strategy could jeopardize the country’s economic performance and growth prospects. For many, gasification remains an admirable goal, but for others it may be too much of an illusory one.

Forecasts for increased domestic demand support proponents’ arguments for increased natural gas consumption. In 2011, over 48 percent of electricity was generated from natural gas; a figure expected to rise to 73 percent by 2020. Yet with the natural gas boom in the US pushing down prices across the border, it has been far more economical for Mexico to import natural gas from the US rather than exploit its own reserves. In the US, Henry Hub natural gas prices have hovered below $4 per million British thermal units for 2012. Efforts to expand the natural gas pipeline infrastructure in Mexico will continue to favor this trend. There was no consensus at the roundtable on how to develop economically viable production domestically, although some panelists suggested that developing LNG capacity could open the more lucrative Asian markets to Mexico. Gas prices in Asia and Europe remain significantly higher than in North America.

Ageing and inadequate infrastructure has also limited gas exploration in the country. In terms of infrastructure, Mexico is effectively split into two, with gas pipelines in the north not connected to the south, which negatively impacts non-producing regions. Improving transportation and distribution was highlighted in discussions as a critical area for the new administration to tackle.

In terms of shale gas, the lesson to heed from the United States is that its success has not come without challengers, particularly from environmental and community groups. While many of opponents’ concerns are valid, argued panelists, others are not. Panelists felt that technological improvements had addressed many of the problems surrounding the process of ‘hydraulic fracturing’, or ‘fracking’, including its impact on the water table and the argument that the process has the potential to cause earthquakes. The more pressing issue, they argued, is heavy water usage, particularly in arid parts of Mexico where the opportunity cost of water is high. They also warned that methane leakage and venting was a dangerous problem as the methane gas has a greater impact on global warming than CO2.

Mexico is at an advantage in coming later to the unconventionals party, in that it can benefit from the technological advances and
lessons learned elsewhere. This puts Mexico in a better position to take advantage of shale gas once the policy framework becomes clearer. This framework will play an important role in attracting investment and companies with the know-how to develop these reserves in a timely manner.

Panelists urged that seizing the opportunity to increase domestic exploitation of natural gas reserves should not be stalled over a false choice between developing unconventional gas versus conventional gas.

**OUTLOOK FOR OIL**

Despite the excitement surrounding conventional and unconventional gas potential, much of the day's discussion focused on Mexico's oil outlook. As the third largest oil producer in the region, Mexico is still generally characterized as an oil country. Panelists centered on the potential of deepwater E&P, mature fields, and the likely impact of President Peña Nieto's energy reform agenda on the oil sector.

As panelists discussed the future role and relevance of Pemex, several focused on its past performance. In particular, they argued that the company has suffered from years of underinvestment, and now compares poorly with other major emerging economies, such as China. This has hampered Pemex's ability to take advantage of the more technically difficult reserves, such as those located in deepwater. That said, Pemex does not have the financial resources to substantially increase its investments, prompting several participants to advocate for greater private participation in the oil sector.

According to Pemex, Mexico has an estimated 27 million barrels of potential deepwater reserves, with several wells already yielding commercially viable oil and gas resources. Yet several panelists noted that Pemex will need to rapidly improve its technical and management capacity if it is to take advantage of the reserves. Others also argued that Pemex has simply become overstretched, and would be unable to operate effectively with regards to deepwater exploration and production, regardless.

The argument follows that Pemex should instead focus its activities on areas in which it has the financial, human, and technical capacity to succeed, while opening up deepwater reserves to international oil companies. The sheer investment required for Mexico to take full advantage of its hydrocarbon reserves, particularly in terms of improving infrastructure, exceed the financial capacity of the government, lending further support to the argument for increased private participation. Again, the outcome of these debates rests on the reach of the eventual energy reforms.

In terms of mature fields, Pemex has held 2 bidding rounds in 2011 and 2012, using the integrated service contract model from the 2008 energy reforms. The bidding has attracted several companies with the technological expertise to boost production, making it more likely that Pemex will achieve its goal of producing 200,000 barrels per day from mature fields. However, the limitations on private resource ownership have meant that the rounds have failed to attract exploration and production companies. Greater participation of E&P companies would substantially improve Mexico's ability to unleash its hydrocarbon potential.

**CONCLUSION**

Since the February roundtable, the Mexican Congress and Senate have approved the national energy strategy, paving the way for a more formal debate on energy reforms in the coming months.

How Mexico chooses to address the urgent need for development of its significant hydrocarbon reserves may dictate many of the other energy policy decisions, which in turn will have an impact on the country’s ability to ensure long-term, reliable energy supplies. And without a doubt, the outcome will have a lasting affect on the Mexican economy.

Overall, there remains a high level of enthusiasm and optimism both in Mexico and abroad. Much of this excitement surrounds the summer unveiling of the Peña Nieto Administration's energy reform package. By then, it is likely that many of the foregoing policy questions will be answered.