

# Mexico Could Benefit from New Hydrocarbon, Renewable Bid Rounds, Says Decorated Industry Executive



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“Bid rounds, including farmouts, can bring new investment, new ideas and new technology while creating diversity in energy resources and supply options. Of course, it is Mexico’s full right to develop its energy resources as it chooses,” Chris Sladen, a decorated executive of the international energy industry, told *NGI’s Mexico GPI*.



“I also think there are great opportunities for other types of bid rounds,” such as onshore geothermal, offshore wind and floating wind, biofuel and lithium prospecting and extraction auctions, Sladen said.

“Bid rounds focused on lower carbon possibilities could help limit dependency on oil and natural gas and help constrain Mexico’s carbon footprint,” he said.

Sladen’s career in the energy sector — both in hydrocarbons and renewables — spans more than four decades. He has worked in more

than 40 countries and lived in Mexico (2001-2018), Russia, Vietnam, Mongolia, China and the UK. In his more than 20 years working with Mexico, Sladen helped build several energy businesses in Mexico and is well-known for insights on project, contract, operating, partner, and country risks.

Currently, Sladen is a non-resident fellow at the Institute of the Americas where he focuses on lower carbon energy. He is also the chair and founder of Reconnoitre Ltd., a private energy advisory, and is an advocate for better energy solutions.

Sladen has a PhD in geoscience from the University of Reading and Bachelor's in Science degree from the University of Southampton where he first developed his interest in energy trends and natural resources. He has published extensively over five decades.

His contributions to energy and education have been recognized by the UK government with both a Member of the Order of the British Empire (MBE) and Commander of the Order of the British Empire (CBE), and he was awarded the Aztec Eagle from the Mexican government – the first foreigner in the energy sector to receive the honor.

*Editor's Note: NGI's Mexico Gas Price Index, a leading tracker of Mexico's natural gas market reform, offers the following Q&A column as part of a series of periodic interviews with market experts of natural gas in Mexico. Sladen is the 111th expert to participate in the series.*

**NGI:** In your opinion, what are the big energy trends that you see in Mexico?

**Sladen:** A comparison of the present energy sector in Mexico to that existing 10 years ago shows that oil production is down significantly

compared to 10 years ago while oil consumption has fallen slightly despite considerable population growth; oil exports remain important today, albeit lower.

Natural gas production has fallen significantly whereas consumption has increased strongly; imports by pipeline from the U.S. have surged in recent years. Refinery throughput and utilization has fallen considerably over the decade whereas refined product imports (fuels) have grown dramatically.

Installed solar power capacity has grown by orders of magnitude and wind power advanced rapidly too, both starting from a low base 10 years ago; solar power capacity today exceeds wind capacity. Coal, nuclear, hydro and geothermal each add to Mexico's energy diversity, but their contributions overall have remained small.

In the Latin America and Caribbean region, Mexico continues to be an energy powerhouse; it remains either first or second-placed in most metrics of supply, production, and consumption. Energy use is underpinned by large manufacturing industries, strong export demand for Mexican products, population growth and a large economically active population.

**NGI:** In your opinion, what are the biggest challenges currently in the Mexico oil and natural gas industry?

**Sladen:** Ten years ago, Mexico was the leading producer of oil in the region, and the leading producer of natural gas. Today this is Brazil (oil) and Argentina (gas).

Brazil's success is due, in large part, to major investment in offshore deepwater plays, particularly the pre-salt reservoirs. Eight of the global top 20 largest liquids discoveries since the year 2000 are in Brazil. Argentina's natural gas success is due, in large part, to major

investment in onshore unconventional plays, particularly since 2008 in the Vaca Muerta, which is a vast natural gas & liquids-rich shale.

In Mexico, there has been a decade (perhaps two or three decades) of under-investment in exploration and production (E&P) despite extensive indications of major resources being present. Examples include both offshore deepwater (Tertiary & Mesozoic targets) and onshore unconventional (Pimienta and Eagle Ford shales).

There has been some investment in these plays, but it is minuscule compared to what could have been pursued. Investment could easily have reached \$10-20 billion per year, and this would have had a profound economic impact, created perhaps hundreds of thousands of new jobs, as well as an important economic multiplier effect. If this had begun in earnest 20-30 years ago and continued, many of the trends seen in the last decade could have been very different and Mexico would today be realizing substantial benefits.

The decline in Mexico's production largely results from declines at its supergiant and giant oil and gas fields. Many developed oil fields still lack sufficient water handling technology, 4D seismic monitoring and 5D seismic interpolation, and secondary or enhanced oil recovery. With insufficient investment, both in existing plays and a reluctance to explore new plays, not surprisingly there have been very few giant discoveries in the last 20 years.

In natural gas, extra investment could have been used to create a much broader nationwide pipeline network, ensuring that all Mexico has access to cheap, reliable, secure natural gas. This would have helped all of Mexico to benefit. Today large areas remain disconnected, with particularly few pipelines in an east-west direction, and notably few linkages between the Pacific and Atlantic coasts.

Underinvestment can often also be reflected in high numbers of leaks & spills, flaring, accidents, explosions, and other negative aspects such as product theft. Sadly, the last decade has seen many incidents.

For me, overcoming this past under-investment is the number one industry challenge. In simple terms, if the lack of investment was around \$5 billion per year, there is a cumulative effect over 20 years of around \$100 billion, perhaps more. This calculation is not intended to be precise; it is simply to give a feel for the scale of the under-investment problem.

**NGI:** Do you think that Mexico would benefit from renewing the oil and natural gas auction rounds to spark further development of the country's vast natural resources?

**Sladen:** Yes, because these bid rounds (including farmouts) can bring new investment, new ideas and new technology while creating diversity in energy resources and supply options. Of course, it is Mexico's full right to develop its energy resources as it chooses.

The previous auction round process really had only just begun and was only underway for a few years before being paused in late 2018. Many companies were unable to create balanced investment portfolios that were globally significant for them. So, in my view, Mexico never really saw the positive economic impacts that could have been achieved by a long-term commitment to multiple annual bid rounds over decades and across a variety of investment opportunities and play types.

I also think there are great opportunities for other types of bid rounds. For example, onshore geothermal for base-load power, targeting large areas of high temperatures at shallow depths resulting from the Pacific Ring of Fire. Offshore wind and floating

wind licenses could be offered both in the Gulf of Mexico and along the Pacific. Bids for biofuel production could stimulate growing crops on areas of poorer quality arable land. Licenses for lithium prospecting and extraction could lead towards battery and storage opportunities.

Onshore there have been around 30,000 wells drilled for oil and gas. Many of the currently least productive wells could perhaps now be repurposed to provide geothermal heat and power, for example using new closed loop technologies that do not produce formation fluids or impact the environment. I envisage bids to take over operating wells that are today largely unwanted. Of course, not all wells would be suitable, but this could extend the life and value of many wells, making them useful again as geothermal producers.

Bid rounds focussed on lower carbon possibilities described above could help limit dependency on oil and natural gas. These can help constrain Mexico's carbon footprint.

**NGI:** Do you think the dependency on U.S. natural gas imports is a healthy long-term model for Mexico?

**Sladen:** Mexico is the largest natural gas consumer in the Latin America & Caribbean region and has been throughout the last decade. Mexico's gas imports by pipeline from the U.S. have surged. In 2012, pipeline imports were 17.6 Bcm/y and in 2022 was 56.5 Bcm/y (up 221%). By 2022, Mexico had become by far the largest natural gas importer in the region, and globally it is now the country with the second largest natural gas imports by pipeline. Over half of Mexico's natural gas consumption in 2022 was U.S. imports.

Over the last decade, Mexico subjugated itself, having in effect handed over energy security by becoming reliant on U.S. natural gas pipeline imports, most of which is shale gas. I have worked on many

large trans-border gas projects and this kind of arrangement always carries inherent supply risks. Currently, I live in Europe and here every European country is nowadays acutely aware of what energy security means and the implications and pitfalls of over-dependence on a single gas supplier.

As a solution to over-dependency, I believe Mexico should seek greater diversity in natural gas supplies. This could involve developing its own shale gas (which can have a lower carbon footprint than imports), its own conventional gas fields, having a diversity of LNG import choices, developing substantial new gas storage, expanding biogas production, and extending gas distribution pipelines countrywide. Another source of diversity and resilience would be created by having more interconnections between Mexico's electric grid with the U.S. grid. In the southeast, interconnections between electric grids in Mexico, Guatemala and Belize can further enhance diversity and resilience.

In the short to midterm, if Mexico is replacing oil and coal with natural gas in the power generation mix, I see that as good. Natural gas will be needed for Mexico's short to mid-term economic expansion and to support near-shoring. In the long term, the goal must be replacing natural gas with much cleaner renewable power – particularly solar, wind and geothermal which are all abundant in Mexico.

Something that is not good right now are recent increases in Mexico's gas flaring. In 2012, natural gas flaring was 1.4 Bcm/y. In 2022 this had increased significantly to 6.8 Bcm/y (386%). Mexico's gas flaring in 2022 was equivalent to 14% of its total natural gas production. Not only is this polluting the atmosphere, but it is also burning gas potentially worth around \$1 billion each year.



Mexico is the highest emitter of total carbon dioxide (CO<sub>2</sub>) equivalent emissions in the region. This highlights the importance of Mexico developing a robust approach to decarbonization and moving away from hydrocarbons. Mexico's rate of progress with energy transition will be in the spotlight for decades.

**NGI:** Where do you see the biggest growth opportunities in the Mexican natural gas industry?

**Sladen:** The supply and efficient distribution of imported natural gas to meet Mexican demand will continue to be a big opportunity. Historically, there has been limited gas-on-gas competition.

To support energy security, there is a substantial opportunity in natural gas storage. Now, Mexico is heavily reliant on storage facilities in the U.S. and managing line-pack in the domestic pipeline system. The fragility of the supply network has already been exposed by the winter storms of Feb. 2021 when disrupted supplies from wells in Texas led to large price spikes, up to 8 times normal prices. This put millions of citizens and industrial output at risk. Greater gas storage in Mexico would add valuable system resilience.

With increased electrification and grid investment, there will be great opportunities for the gas to power generators, renewable power generators, and battery specialists to work together to develop battery storage solutions and other energy storage solutions that solve the intermittency issues of some renewables. With more power-on-power competition hopefully this creates consumer choice. The goal surely must be affordable electrification that benefits everyone, all the time.

The building of LNG export facilities (largely using imported US gas as feedstock) has great potential. Mexico can become an important exporter in the global marketplace. In Europe for example, the last

few years has highlighted the benefits of diversity in LNG supplies.

With time, I expect to see projects that convert natural gas to make blue hydrogen and blue ammonia fuels with capture and underground storage of CO<sub>2</sub> most likely in Mexico's old oil and gas fields. Mexico can create a global storage hub for CO<sub>2</sub> underground storage serving both domestic and international emitters.

**NGI:** You've worked all over the world in the energy industry. What would you say are Mexico's biggest strengths when compared to other nations and major players in the global energy industry?

**Sladen:** In my view, the quality and scale of the resources are first class, as good as anywhere. It's not only oil and natural gas; solar, wind and geothermal each have world-class scale and quality. Of course, Mexico's people are a major asset. The energy sector is renowned for its dedicated and capable professionals. The unique geography offers access to both Atlantic and Pacific basin energy markets, and throughout the hemisphere.

Mexico has, in my view, a rare combination of both a very large resource base, and a very large domestic market. This creates opportunities for a wide variety of both domestic-oriented and export-oriented energy projects.

In summary, there is a great co-existence of resources, talent, location, and markets. I encourage Mexico to be a leader, at the forefront, investing in the energy transition in all its forms. Its universities have an opportunity to lead not only locally but globally in both preparing the talent needed for the transition and pioneering research in renewables and clean fuels.

**NGI:** And its biggest weaknesses?

**Sladen:** I don't see big weaknesses. Mexico has its own permutations of subsurface and above ground risks. Each country where I have worked has its own blend of risks. Knowing how to manage the risks is fundamental for investing in Mexico. I help investors with that. Some potential investors might find the Mexico risk matrix unusual or unfamiliar. But all these risks in my experience are manageable.

**NGI:** Finally, what are your thoughts on the energy transition?

**Sladen:** I am passionate about the energy sector doing things better than we did in the past. The challenges of the energy transition are enormous and there is not much margin for error. It is important to learn from past experiences; I write about real-life things that happen to me, both good and bad, amusing, and sad. I hope this helps people in Mexico understand the realities of the industry and the energy transition.

I had the privilege to live in Mexico for 17 years and help build many energy businesses there. My children were born there. We talk everyday about our vision of Mexico – it is one where affordable energy is available to all, 24/7, where energy supplies are secure and reliable, where people have energy access and choices, quality jobs, and where there is an energy transition, a just transition, in which all of Mexico benefits from cleaner fuels and lower carbon energy. I am passionate about that, and my family also shares that Mexico passion.