

ViewPoint

Beyond liberalisation: how infrastructure investors can find and unlock value in a changing Mexican gas market



Chris Walters

Managing Consultant

Email: c.walters@gasstrategies.com

Chris has been with Gas Strategies for 16 years and has built up Gas Strategies' energy transaction advisory business over the last ten years. Chris has a very wide experience of the gas and LNG business covering; project development, commercial structuring and contracts, market and commercial due diligence assessments, LNG procurement, capacity sales and financings.

Mexico's decision to upend its oil and gas industry by welcoming foreign capital into the upstream demonstrated the Mexican government's commitment to the liberalisation of the energy sector for the first time since 1938. The government has successfully steered the upstream reform programme through the turbulence of the fall in oil price and set in motion a well-functioning licencing programme which has attracted investors from around the world.

In the hope that competition will help drive down energy costs to industry and households and enhance the overall competitiveness of the Mexican economy, Mexico's gas market is in the early stages of liberalisation. The liberalisation process is creating opportunities for infrastructure investors in gas transmission networks, gas wholesaling and distribution as well as power generation and transmission.

Gas infrastructure-focused investors are right to be excited about Mexico. Market liberalisations in large, growing economies are few and far between. In this ViewPoint, we draw on our experience of working with clients in Mexico to examine the specific investment opportunities across the gas value chain created by the liberalisation process, and the issues that investors should keep front of mind when considering entering the market.

Mexico re-writes the rules of its energy market

"Nothing can last forever. There isn't any memory, no matter how intense, that doesn't fade out at last."

Juan Rolfo (Pedro Páramo, 1955)

2014 becomes the new 1938

For many commentators and industry participants, it probably seemed that Mexico's attachment to a state controlled oil and gas industry would never "fade out". However, the recognition that the old system was inhibiting the country's economic competitiveness eventually won the day and a model that had been in place since 1938 was swept away by the signing of enabling legislation in the summer of 2014.

Much has already been written on the legislative reforms (See: "Mexico's dash for gas: Opportunities and risks", Gas Matters April 2017) and in this ViewPoint, we focus on the specific changes being enacted to liberalise the mid and downstream gas sectors.

To unlock the potential of the Mexican energy sector the government has carried out a restructuring and re-orientation of the roles and responsibilities of state behemoths, accompanied by a strengthening of existing regulatory agencies – Comisión Reguladora de Energía (regulates natural gas transportation and storage, CRE), Comisión Nacional de Hidrocarburos (upstream regulator, CNH) and the Secretaría de Energía (Ministry of Energy, SENER). In addition, new independent system operators for gas and power networks (CENAGAS and CENACE) have been set up.

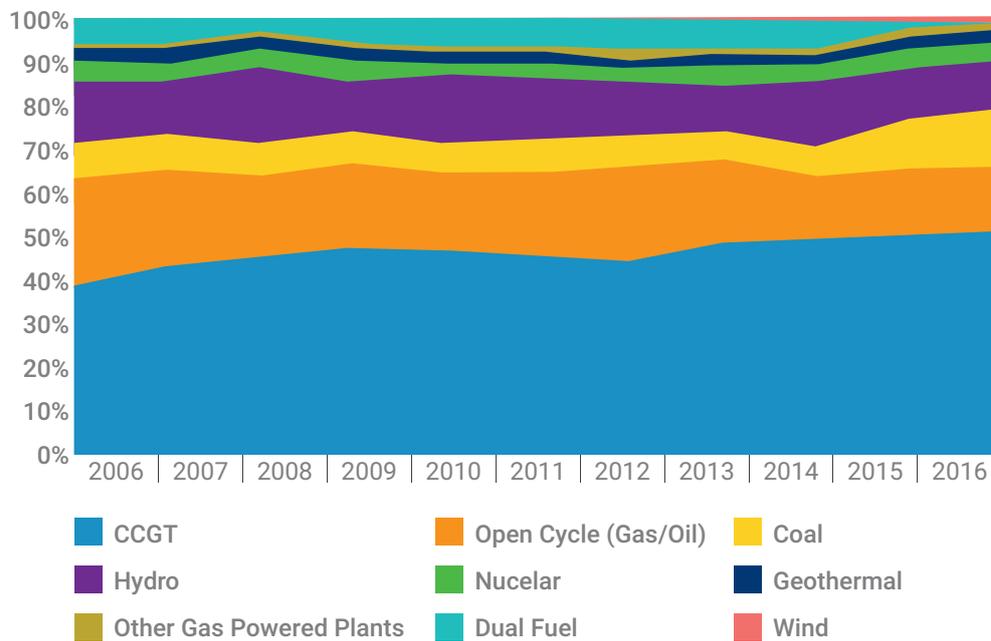
While these landmark changes in Mexico's energy market and wider economy are still developing, the government can already point to significant 'wins' that have been achieved despite the collapse in the oil price. In the upstream, two world class oil discoveries have already been made (involving Eni and Premier Oil); the midstream gas transmission network is growing considerably (over 6000 km) with many more pipes under construction and the unbundling of the power sector is laying the foundation for a liberalised wholesale electricity market.

Creating the gas market Mexico needs

With secondary legislation now three years old and the upstream opening settling into a rhythm of regular licencing rounds, Mexico’s regulatory agencies have set their sights on the liberalisation of the gas market.

The importance of gas to Mexico is difficult to overstate: it is the dominant source of fuel for power (see Figure 1 below) and plays a critical role in the country’s industry and petrochemical sectors (57% of all fuels consumed in industry in 2016).

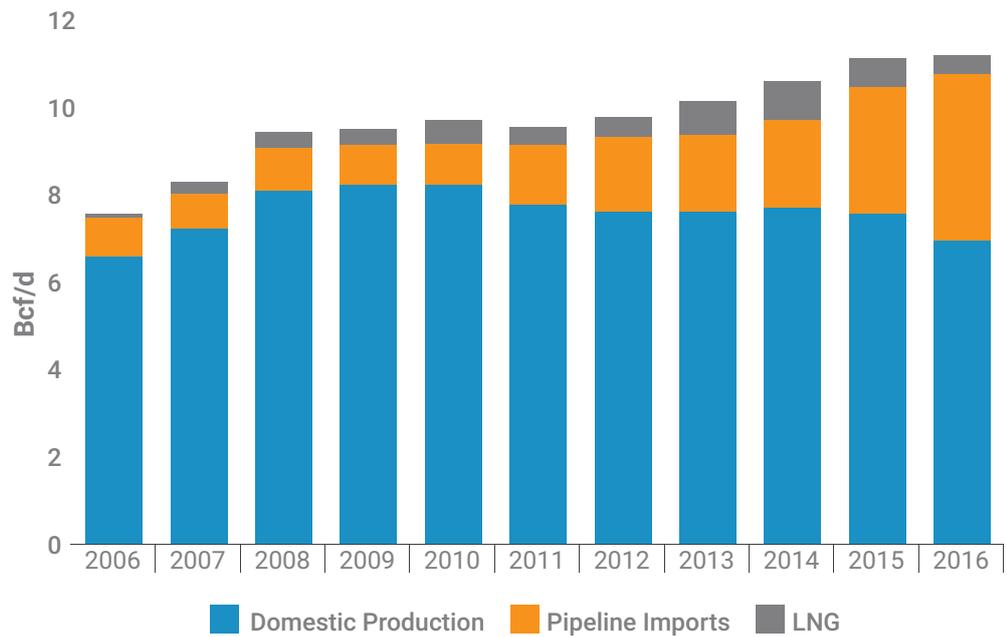
Figure 1 Mexican power mix 2006-2016



Source: SENER

Mexico’s gas is supplied from a combination of domestic production and imports of pipeline gas from the US and LNG. The availability and low cost of US gas has undoubtedly given extra impetus to the Mexican liberalisation process as the government saw the opportunity to “import” industrial competitiveness through lower fuel costs.

Figure 2 Mexico gas supply mix 2006-2016



Source: SENER

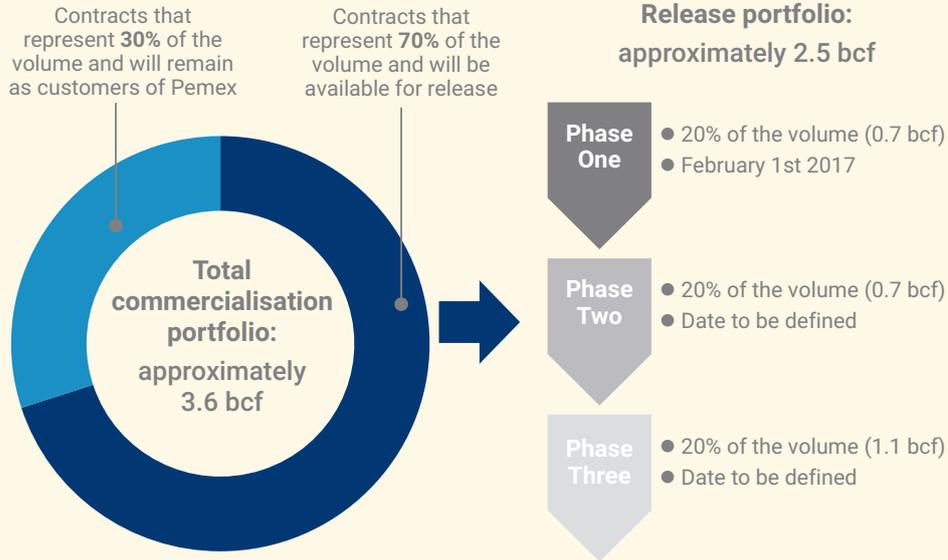
The incredibly close bond between Mexico and its northern neighbour, codified by the NAFTA treaty and the deep bonds formed through immigration from south to north, makes it difficult to consider that the Mexican reforms of its energy industry would have been pursued in the same way if the shale revolution had not taken place in the US.

Now that Mexico relies on US shale gas to meet growing domestic gas demand, it is hardly surprising that it is seeking to create the kind of deeply liquid and competitive gas market that has made the discovery of vast gas resources so powerful for the US economy.

The most glaring obstacle to transformational change was the dominance of PEMEX across the gas market. It was the owner of the Mexican national pipeline grid, and the only entity previously allowed to sell gas. These monopoly rights have been stripped away and any party can now apply to the CRE for a transportation and storage licence. The former PEMEX-owned and operated pipeline network (Sistrangas) is now operated and regulated by CENAGAS, the newly created system operator. The details of the key market reforms impacting Pemex are illustrated in Figure 3 below.

Figure 3 Regulatory reforms designed to break PEMEX dominance of the midstream gas sector

Gas Release programme to reduce PEMEX market share

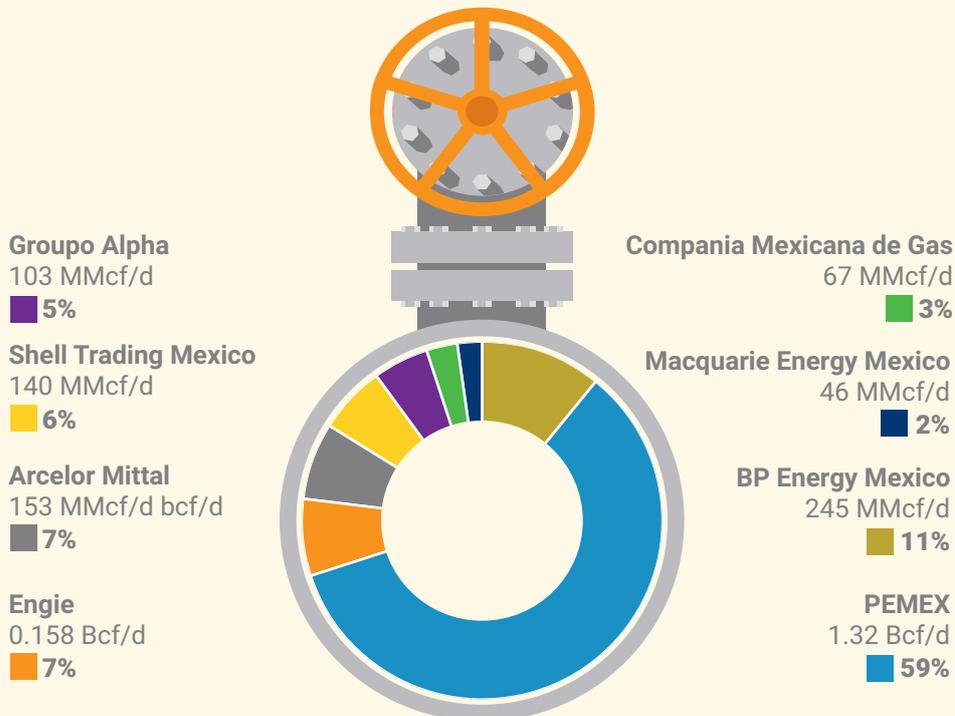


Outcomes of Phase One

- Contracts subject to release: 111 contracts (758 Mcf)
- Contracts that remain with Pemex: 113 contracts (1,104 Mcf)

Bcf: billion cubic feet Mcf: million cubic feet

Capacity Auctions to give access to Third Parties to transportation capacity
Results from May 8 2017 pipeline open season



Capacity reserve contracts started operating on July 1 2017 and will run for one year.

Source: CRE, SENER

The other element of this reform movement is the liberalisation of gas prices. Under the old system, the price at which PEMEX sold its gas was subject to a published cap, based on Henry Hub and Houston Ship Channel prices with an added transportation cost from the main injection points of Reynosa in the north and Ciudad PEMEX in the south-east.

On 30 June 2017, this cap was lifted to allow prices to be set by market forces. In parallel the CRE began to publish a monthly price index based on trades reported by gas suppliers and marketers for the preceding month. The price for August 2017 (the latest reported as this ViewPoint went to print) was USD 4.31/MMBtu.

The shift to a liberalised market where prices are set by supply and demand will have two important effects: (i) stimulation of new gas production within Mexico as producers will have a liquid market and a transparent price at which to sell their production, and (ii) enabling the development of regional gas pricing hubs within Mexico, which will create price signals for infrastructure providers – identifying where new capacity may be needed.

What are the opportunities for investment?

Upstream infrastructure

Compared to the midstream sector, there has been very little coverage of the possible opportunities for investment in the infrastructure that enables upstream activity to take place. In other mature basins, such as the North Sea or the US onshore, there have been a great number of transactions covering the sale of gathering pipelines and processing facilities, often catalysed by the desire of the original owner to realise the value of non-core assets. In its 2017-2021 Business Plan, PEMEX laid out its own strategy for debt reduction through asset sales and farm outs, building on divestments already made.

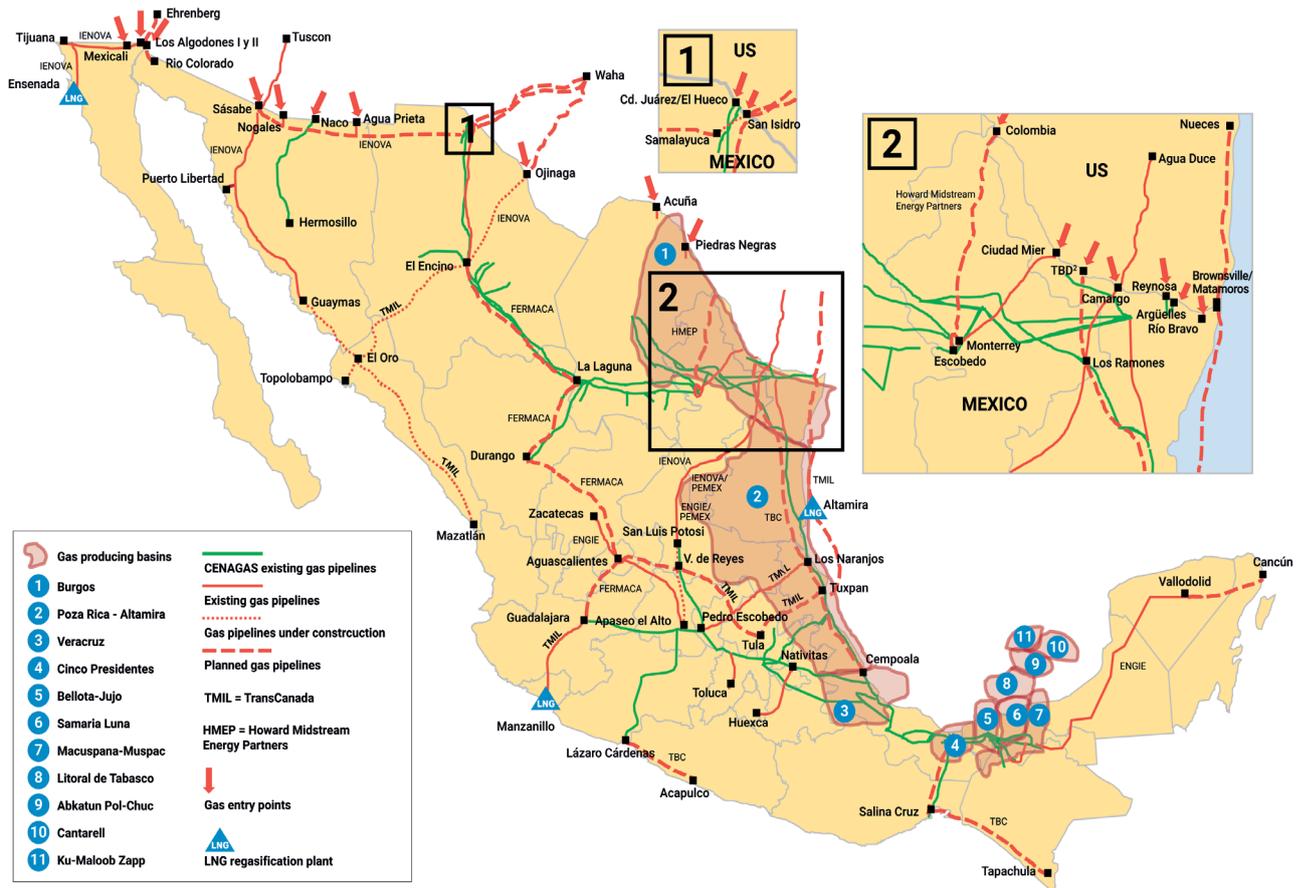
Although not yet announced, this may represent opportunities to invest in brownfield pipelines and processing facilities that connect existing production assets to the main pipeline grid. Most of these assets are in the south-east and the north-east of the country, where most of Mexico's gas is produced. In both the Burgos Basin and in Tabasco in the south there is a network of pipelines that connect the fields to the network. PEMEX also has nine gas processing complexes, eight in the south-east of the country and one in the north-east which, in aggregate, can process more than 5,000 MMcf/d of gas. While the decline in gas production is an obvious risk to these assets' long-term utilisation, the prospect of new drilling and the connection of discovered, but undeveloped, gas fields could create an opportunity for investors if PEMEX decides it can relinquish ownership.

In the longer term, the development of newly discovered gas (and oil) fields by foreign companies could create opportunities for investors, both financial and strategic. However, the long lead times of these often complex, offshore developments mean that these opportunities probably will not appear on deal scans for at least five years.

Midstream infrastructure

The arrival of private capital into Mexico's midstream gas industry began in 1994/5, although progress was initially slow with only two privately owned pipeline transmission pipelines in the country brought on stream in the ten years to 2006.

Figure 4 Mexico's Gas Infrastructure and Producing Basins



Following a period of limited demand growth between 2007 to 2011, a new phase of growth began in 2012 that was catalysed by two factors: renewed economic growth in Mexico and the rapid growth in US gas production. The decline in Henry Hub prices that followed the growth in US production fed the rapid rise in Mexican gas demand, with new cross-border pipeline capacity brought online by entrepreneurial US players. This increase in import capacity was rapidly filled as demand rose. By 2013, the continued decline in domestic production combined with pipeline capacity constraints on the Mexican side of the border began to curtail consumption. A gas 'crisis' followed, with PEMEX rationing supply leading to an outraged reaction from industrial players who suffered output losses as a result.

In response, a massive pipeline expansion programme has been launched, creating new interconnections with the US and new capacity within Mexico that will increase the overall capacity of the Mexican network by over 50% compared with 2012.

The massive expansion in capacity, underpinned by long-term capacity contracts with CFE, has potentially created an imminent oversupply of capacity – at least in the coming few years. This could herald a reduction in new greenfield investment opportunities as Mexico digests the capacity it has already commissioned. For those wishing to invest in existing and under construction pipelines there is a risk that utilisation may remain below nameplate capacity for some time.

Gas transmission ownership and operation is concentrated in five key players, all with extensive in-country experience (shown on Map):

- **Sistrangas (the national pipeline network, operated by Cenagas)**
- **TransCanada**
- **INova (Sempra subsidiary)**
- **Fermaca**
- **Engie**

Benefits of this asset class

- Transmission assets benefit from being secured by long-term ship-or-pay contracts with CFE, with strong renewal likelihood due to the anticipated growth in power demand;
- The fundamentals for incremental demand from customers beyond the power sector are favourable, with large-scale industrial consumers set to require more gas as a result of fuel substitution and growth in output;
- Due to Mexico's history as an oil and gas producer and status as a manufacturing powerhouse, there are regions where gas use is already well established and where the prospects for continued growth are good;
- Transmission assets will benefit from the likely increase in domestic gas production as the current exploration activity enabled by the licencing rounds delivers new production over the next decade.

Risks associated with this asset class

- We see some danger of misaligned price expectations, as sellers put possibly too great an emphasis on short/medium-term upside potential, when the market is still digesting the capacity;
- Transmission assets are part of a network that is still evolving. Many assets that are currently under construction will only come online in the next few years. Given the quantity of capacity being brought onstream it is likely that pipelines will need to compete for customers, which may negatively impact the value of any uncontracted capacity;
- Although the fundamentals for gas demand are favourable, the pace of growth in renewable power generation has taken many in the industry by surprise and its growth creates a risk for future gas demand and network utilisation. As the dominant source of fuel for conventional power generation, gas is first in line to be displaced by renewables in Mexico.

LNG regasification

LNG has found itself in the shadow of imported pipeline gas in recent years as it represents 'yesterday's' solution to Mexico's need for gas supply. Now that the US can easily meet any gap that exists between domestic gas supply and demand, Mexico's LNG terminals have less strategic importance.

Table 1 Mexico LNG import terminals

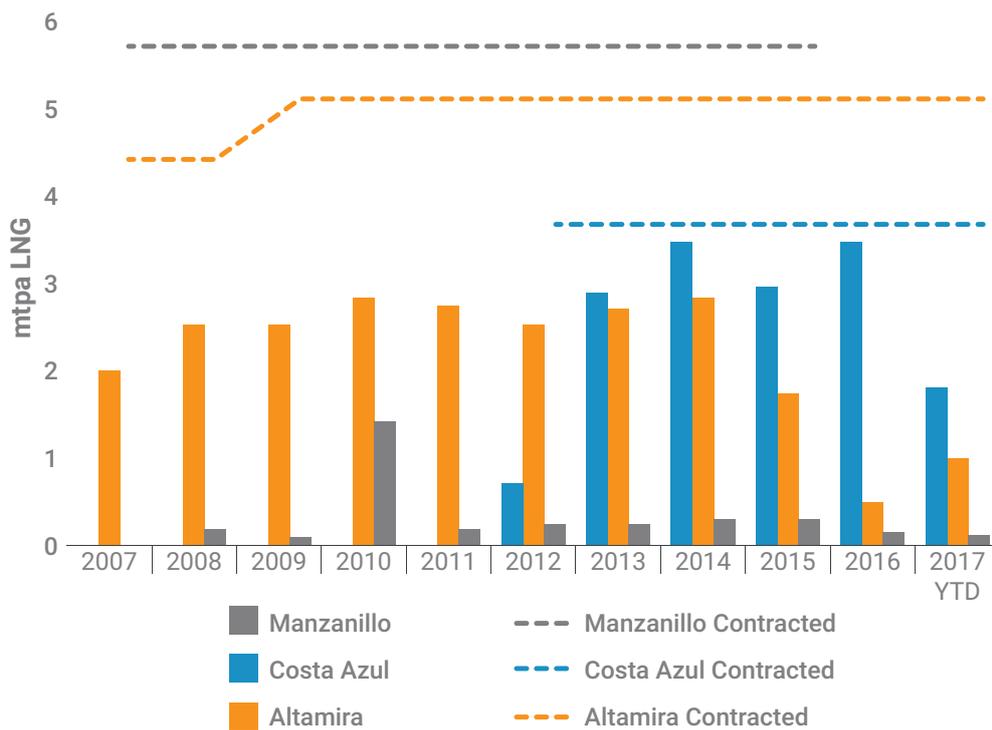
Terminal name	Start up	Shareholder /Owner	Receiving capacity (mtpa)	Receiving capacity (Bcf/d)	Receiving capacity (mcm/d)	Storage ('000 m3 LNG)	Storage mcm	Tanker berth ('000 m3 LNG)
Altamira	2006	Vopak, Engas	5.4	0.72	20.3	300.0	182.9	70-217.4
Costa Azul	2008	Sempra Energy, Shell	7.5	0.99	27.9	320.0	195.1	75-200
Manzanillo	2012	Samsung C&T, Kogas, Mitsui Trading	3.8	0.50	14.2	300.0	182.9	70-216

Source: Thomson Reuters

Manzanillo and Altamira were developed to serve the Mexican market and are underpinned by long-term supply agreements with CFE to feed power plants and other demand. The Costa Azul terminal is different because it was built primarily to serve demand in California, with connection only to the local grid in the north of the Baja peninsula (see map). With gas demand in both southern California and northern Baja now being met through US shale gas, there is no need for LNG imports. This explains the very low utilisation at the terminal, with only occasional deliveries made to keep the tanks 'cold'.

Altamira’s utilisation has fallen in step with growing volumes flowing into north-west Mexico from the US, while Manzanillo has a more constant stream of deliveries reflecting the relative disconnection of the central-west portion of the country that the Manzanillo terminal serves. However, this will change when new pipelines to the region are completed in the next few years, including Fermaca’s Aguascalientes to Guadalajara pipeline and TransCanada’s Villa De Reyes pipeline, both currently under construction.

Figure 5 Mexico LNG imports vs. contracted supply



Source: Thomson Reuters

In the case of Altamira, the decline in utilisation was reported to be the result of a deal between Shell and Total (who have a joint supply contract) and CFE to swap LNG for pipeline supply. In April 2017, Argus¹ reported a statement by the general counsel of CFE Internacional that this was not the case; it is believed that the reduction in deliveries in fact reflected Shell supplying at a minimum threshold and accepting a penalty for the diversion of cargoes.

The contract between Peru LNG and CFE at Manzanillo (with Shell as the owner of the LNG supplied DES to CFE) also involves commercial difficulty. As the pricing for this contract is at a *discount* to Henry Hub, under current market conditions, Peru LNG receives a very low price for its gas. It is known that the Peruvian government has attempted to engage with the Mexican government over this issue, although no change to the terms has been reported.

¹ <http://www.argusmedia.com/news/article/?id=1450163>

For both terminals, we foresee a reduction in LNG supplied over the duration of both long-term contracts in place as US pipeline gas is able to meet a greater share of demand, providing CFE with a more flexible source of gas.

A potential opportunity for Mexico's LNG receiving terminals is to convert them to LNG export facilities (making them bi-directional) as has happened to several such facilities in the US. Any conversion would likely be based on US gas supply. Costa Azul and Manzanillo may have an advantage over Altamira for conversion as they are on the west coast and therefore able to serve LNG markets in Asia more economically. Sempra, the owner of Costa Azul, has already announced its intention to convert the terminal for exports subject to finding buyers for its production.

Benefits of this asset class

- Ownership offers the optionality to convert to a bi-directional terminal and entry into liquefaction with possibly attractive brownfield conversion economics in a market where price competition between projects will be highly intense;
- LNG still serves a strategic purpose in Mexico, providing security of supply in the case of cessation of US imports or disruption to domestic supply. All three terminals are underpinned by take-or-pay regasification contracts of varying durations but all have more than ten years remaining;
- LNG terminals are well positioned to meet periods of peak gas demand, where pipeline capacity is not sufficient, and this can provide the basis for utilisation over the long-term.

Risks associated with this asset class

- For infrastructure investors with long term investment horizons, the LNG terminals in Mexico are subject to considerable uncertainty over future utilisation as US pipeline and domestic supply grow their share of the overall market. All three terminals have long term contracts that are due to expire in less than 15 years (Costa Azul's contract expires in 2029), with question marks hanging over re-contracting;
- Any investment made with the expectation of conversion to an export facility will be risky given the highly competitive nature of today's LNG market. The project will be in direct competition with expansions in US LNG projects already operating or under development, the second wave of US projects and other export projects in Africa and the Middle East.

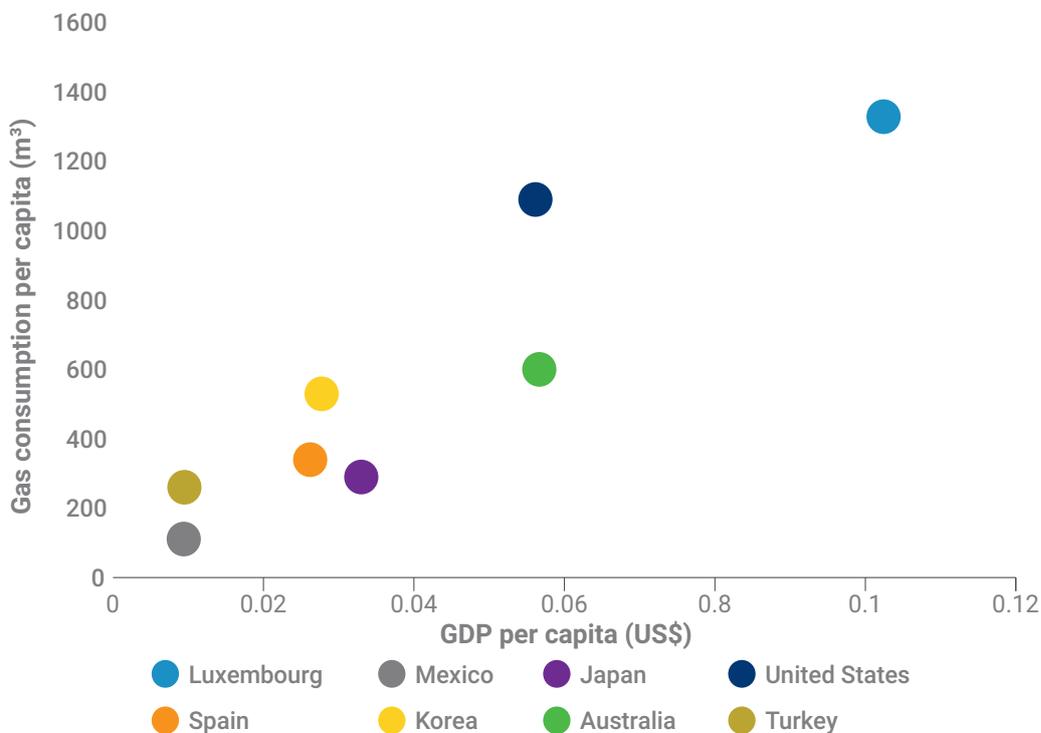
Gas distribution

The outlook for local distribution company (LDC) development is positive as there remain large areas of the country that have yet to be gasified. Even within regions where networks have been established there is significant opportunity for growth. There are 23 LDCs in Mexico, serving more than 2.5 million customers, all regulated by the CRE. International gas distributors such as Engie and Gas Natural Fenosa (GNF) and homegrown players are actively operating and developing distribution businesses in Mexico.

In step with regimes in other jurisdictions, distribution businesses are granted permits to construct and operate distribution grids for an initial term of 30 years and with a 12-year exclusivity period within the geographic zone. Those bidding for distribution concessions must put forward plans to connect at least 40,000 customers within the first 5 years of operation in order to qualify for selection.

LDC rates for distribution services are regulated by the CRE through a maximum rate mechanism, which may vary by type of customer and service, provided they are not discriminatory. If the distributor is also the supplier of gas, the overall charge to customers is the sum of the gas price (related to the wholesale gas price) and applicable transportation, storage and distribution costs.

Figure 6 GDP per capita vs. gas consumption per capita in selected OECD countries



Source: IEA, World Bank

Gas demand in the residential and commercial sector is far lower in Mexico than in its OECD peers given the very limited need for heating in Mexico. Residential and commercial demand is currently approximately 130 MMcf/d (less than 3% of total demand) and we predict that by 2030, this will rise to 148 MMcf/d, a CAGR of less than 1%.

LDCs also connect industrial demand (i.e. that which is not connected directly to transmission) and this is an area with bright prospects. Morgan Stanley² estimates that around 45% of all power demand is met on-site in the sector and that approximately 75% of this generation is gas-fired. This presents an opportunity for switching demand as users convert from other fuel types as well as from organic growth in new industry, particularly manufacturing.

Mexico offers manufacturers a range of strategic advantages in relation to labour costs and access to the US market, although the energy position has been an Achilles heel in recent years, eroding competitiveness. The government's determination to tackle this issue is being rewarded by global manufacturers making large investments in the country. A cloud of uncertainty has recently descended on Mexico's industrial sector following US President Donald Trump's threats to walk away from the NAFTA treaty. Negotiations to alter the treaty are currently ongoing, based primarily on the need to assuage the Trump administration's concerns about jobs within the US manufacturing sector.

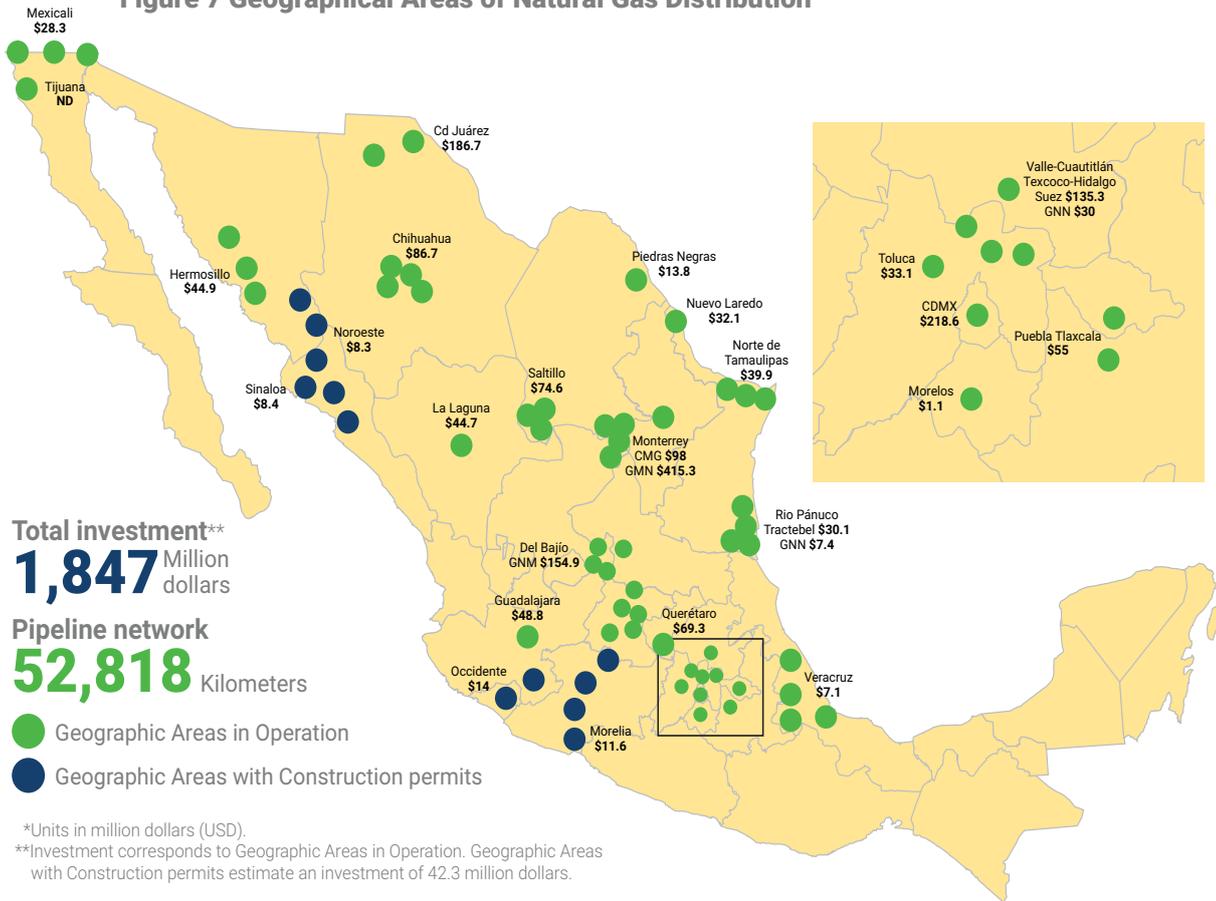
Donald Trump has expressed specific displeasure with the impact of NAFTA on US jobs in the automotive and aerospace manufacturing sectors. Both have been a real success story in Mexico, and are forecasted to continue to grow strongly; to illustrate, the automotive industry is on track for 5 million cars produced per year by 2020, which would make Mexico a global leader. Any significant changes to NAFTA or its termination are likely to have a negative impact on direct investment into Mexico, although specific out-turns are unclear at this stage.

With this caveat, the industrial sector will drive gas consumption growth in two ways. Firstly, the number of industrial consumers will increase, leading to greater demand for power (generated on-site) and secondly, from those customers who will want to switch from other fuels. We project gas consumption in this sector will grow from 2 Bcf/d in 2016 to 3.2 Bcf/d in 2030, a 3.4% CAGR.

² US-Mexico Gas Industry: LatAM Insight: Link Between US and Mexican Gas Industries Getting Stronger, Morgan Stanley Research, April 14 2016

Not all LDCs are or will be created equal. The varied geography of Mexico and its population distribution mean that in some areas growth in demand from smaller industry or residential and commercial users is unlikely to be strong, even when a new pipeline is built. In the state of Sinaloa, for example, the main industry is mining (not gas intensive) and population density is relatively low. In such areas driving customer growth beyond the power sector will be challenging.

Figure 7 Geographical Areas of Natural Gas Distribution



Source: CRE

Benefits of this asset class

- In prospective areas (e.g. large urban conurbations with significant industrial activity) distribution grid investments can offer potential for strong customer growth and accompanying CAPEX spend opportunities to boost regulated asset bases. As LDCs in Mexico are built on a licence system, operators enjoy a monopoly;
- There are natural synergies between gas distribution and transmission and LDCs can be developed through strategic partnerships with transmission businesses: expanding distribution boosts utilisation through both asset types.

Risks associated with this asset class

- Mexico's relatively temperate climate exerts downward pressure on residential gas demand for heating and cooling. Sector growth rates are likely to be lower than others (particularly transmission, with its direct link to the power sector), although this is offset by non-seasonal industrial usage;
- Investors will face competition from incumbent gas businesses, including European companies with decades of experience and well-honed skills in driving customer growth and asset/business management;
- Pay back times may be longer than expected as it takes time for new customers to be connected. Players that Gas Strategies has engaged with have pointed out that commercialisation strategies have been challenged by slow response from potential customers and deficiencies in marketing approaches.

Five key points for infrastructure investors

Gas infrastructure-focused investors are right to be excited about Mexico. Market liberalisations in large, growing economies are few and far between. The country is an interesting hybrid of established and emerging market. On the one hand, it is part of the OECD with a highly mature oil and gas industry, while on the other its gas market is in the very early stages of liberalisation with considerable uncertainty over how it will evolve. Based on the work we have done supporting clients, we see the following as some key considerations for investors considering entering the market:

Strong national fundamentals for gas growth may not be representative of all regions: Mexico is a large country with complex gas supply demand fundamentals and increasingly interconnected gas infrastructure. The usage of specific pipelines and LNG terminals will be determined by local conditions and competition between infrastructure providers, which in turn will be influenced by international pricing of gas and LNG and changes in national production. Understanding the specific competitive environment for each asset and its interaction with local, regional, national and international market dynamics will be essential to effectively evaluate any asset.

In a newly liberalised market, skills gaps emerge: When considering acquisitions in Mexico it is important to remember that the kind of skills and experience built up in liberalised gas markets may be lacking. Without experience of operating in a liberalised market, it can be harder for management teams to anticipate change and seize market opportunity. Rigorously testing for these skills at target companies and possibly bringing new expertise could be an important step to ensuring ambitious growth plans can be realised.

Watch out for corruption: Even in a liberalised market, investors in Mexico must be cognisant of the attendant corruption risks. As recently as 2010 the Ministry of Public Service deemed PEMEX “the most corrupt entity” of the Mexican government and CFE has been heavily criticised in the past for

financial irregularities. Mexico is ranked 123 out of 170 on the Transparency International's Corruption Perception Index. This makes it the most corrupt economy in the OECD.

Don't expect a quick turnaround in domestic gas production: Although the midstream and downstream sectors are changing at a fast pace, significant growth in oil and gas production will take more time to feed through because of the long cycle nature of exploration and production. Also, while the US shale revolution has been a boon for Mexico in many respects, the growing availability of competitive gas (and oil) may hold back Mexican developments, particularly if the situation of oversupply and low global prices continue. While the government could well use supportive measures to ensure security of supply, this cannot be counted on to turn around Mexico's oil and gas production.

Growth in renewables will catch some off guard: Low auction prices for wind and solar projects indicate Mexico's potential for renewable power generation. With gas the dominant power generation fuel, and very little coal and oil-fired generation, it is 'first in the firing line' for decarbonisation based switching. CCGTs could see reductions to their running times that could become structural, impacting utilisation of gas infrastructures. The recent decision to scrap the LNG project for the gasification of the Baja Peninsula and instead use an underwater electricity cable may hint at a strategy to push for greater electrification, with renewables taking a bigger role.

