



Bahrain LNG: a game changer for the kingdom

The Kingdom of Bahrain is constructing a permanent LNG import terminal due for commissioning in 2019. The 4.1bn cubic meters per year (bcma) facility is a microcosm of the shifting trends in gas demand-supply dynamics, particularly in the Middle East - demonstrating the region's commitment to tackle energy security at a time when supplies are struggling to keep pace with growing demand. Consisting of a floating storage unit (FSU), it offers the kingdom the flexibility to cater to seasonal demand and the option to re-export to regional demand centres. Bahrain LNG is to be developed on a public-private-partnership (PPP) basis, including a combination of equity and debt through a consortium of regional and international banks, representing a shift away from traditional government funding methods.

Sometime in 2019, as Bahrain prepares for another hot summer, the country will for the first time import natural gas in order to meet peak power demand. The kingdom that witnessed the first oil discovery in the Arabian Peninsula is currently constructing a permanent LNG import terminal within the industrial area of the Khalifa Bin Salman port. At 4.1bcma, the terminal's regasification capacity is modest by global standards, but is significant for the LNG market, representing another example of the growing role of LNG trade, which increased by 5% in 2016 compared with the previous year.

But for an island with a little more than 1.3 million inhabitants, the construction of a permanent terminal would present several challenges – with the LNG terminal in Malaka, Malaysia, the only similar project in the world. A deteriorating credit rating would complicate the financing of the capital-intensive project given low government revenues and tightening budgets. More, lenders needed assurance on projected gas demand given the uncertain outlook domestically and across the region, and the strength of the sponsors behind the project was also an important factor.

The decision to develop the project on a PPP basis will enable Bahrain LNG to utilise the expertise of the private sector and secure the financing needed to carry out the project. The project is owned jointly by Bahrain's oil and gas investment arm "Nogaholding" and a consortium consisting of Teekay LNG, Gulf Investment Corporation (GIC) and Samsung C&T. A syndicate of nine international and regional banks is participating in the \$741m loan, which included the Arab Petroleum Investments Corporation (APICORP) with Korea Trade Insurance Corporation (K-Sure) providing commercial and political risk cover for approximately 80% of the financing.

MENA will rely on LNG

MENA countries continue to explore options to secure gas supplies given the surge in expected demand. According to the IEA, demand for natural gas in the Middle East will reach 804bcm in 2040, a 68% increase on 2015 levels. Despite holding nearly 40% of global proven gas reserves, production has largely failed to keep pace with historical demand growth, a trend likely to continue.

Demand for gas has grown more quickly than for either oil or electricity over the past three decades. First, gas has been prioritised in power generation, which has itself risen strongly to

meet the needs of a growing population. Second, MENA countries have encouraged gas-intensive industrialisation, partly to capture value from low energy prices and, in the case of oil-producing countries, to help diversify their economies. Indeed, petrochemicals and energy-intensive industries have been beneficiaries of policies designed to increase the use of gas. The MENA region's reputation as a supplier of global energy obscures a looming domestic supply crunch for natural gas, which will be mostly met by LNG imports.

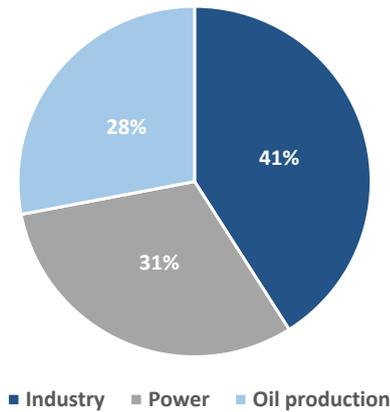
Absent also is a large build-out of regional gas pipeline import options. The potential for LNG to make up some of the balance is therefore strong. In 2016, demand for LNG in the MENA region grew at a higher rate than anywhere else in the world. Net imports by consumer countries in the region increased from 13bcm in 2015 to 23bcm in 2016. Egypt and Jordan – who received their first LNG shipments in 2015 – more than doubled their imports in 2016; and Abu Dhabi opted to import LNG via a floating storage and regasification unit (FSRU). Kuwait - the GCC's first LNG importer - has committed \$3.3bn towards the construction of a permanent LNG-import terminal with an initial capacity of 15bcma. Regional LNG importers are seeking to tie up term supply deals, making the most of structural oversupply to lock in favourable pricing and flexibility. It will all make MENA a growing demand-side force in the global LNG sector.

Natural gas balance is uncertain

Bahrain's relatively low oil and gas reserves have led the country to become one of the most diversified economies in the GCC. But at 77%, petroleum exports in 2014 still constituted a large portion of the country's total goods exports. The kingdom has developed its services sector and its industrial base, putting a strain on gas demand.

Demand for natural gas is concentrated between industry, power and gas reinjection. Industry accounts for the majority of gas needs. It represented 41% of demand in 2015, with Aluminium Bahrain (Alba) accounting for nearly half. The aluminium smelter is one of the largest in the world with its own 2GW gas-fired plant meeting all its electricity requirements. An existing expansion project due for completion by 2019 will increase demand for gas by more than 40%. The Bapco refinery, whilst not on the same scale as Alba, is also a large consumer of gas, and demand for natural gas is expected to more than double within the medium term horizon following the refinery expansion.

2015 natural gas demand by sector



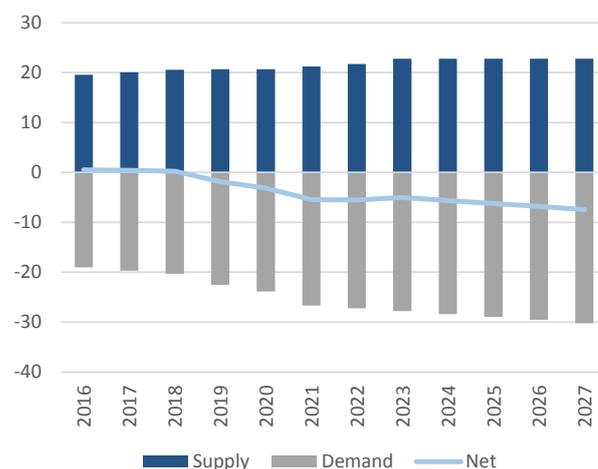
Source: CIO, Kingdom of Bahrain

Bahrain's power sector is completely dependent on natural gas for electricity generation. Current capacity stands at 4.2GW, but demand over the medium term is expected to increase by nearly 6% per annum requiring an additional 1.4GW of capacity by 2021.

In the long run, demand growth will be underpinned by gas subsidies, despite some reform in early 2015. Bahrain raised the price of natural gas to industries in April 2015, to \$2.50/mmbtu from \$2.25/mmbtu. The last increase to that tariff was a 50% hike in 2012. The Bahraini government also introduced a multi-phased adjustment programme for gas prices, which would have seen the price of natural gas increase by \$0.25/mmbtu each year to top \$4/mmbtu in the beginning of 2022.

Gas output in Bahrain is around 19.5bcm and is primarily sourced from the Khuff gas reservoirs – accounting for nearly 80% of gas supplies. The remaining 2.6bcm comes from residue gas production from the Bahrain National Gas company (Banagas). Supplies are expected to increase marginally over the next five years due to the Deep Gas resource from the Bahrain onshore field, only to plateau to a little under 23bcm by 2024. Although current demand is adequately met by existing levels of output, natural gas demand is expected to continue rising where by 2019 the country will experience a gas deficit of around 1.9bcm.

Natural gas supply and demand balance (bcm)



Source: Nogaholding, APICORP Research

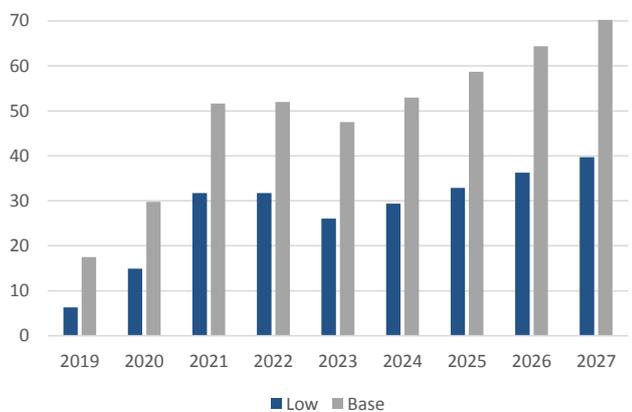
LNG imports to meet deficit

Given the uncertain demand and supply outlook, LNG imports will likely fill the country's natural gas shortages and ensure security of supply over the long term. In our base case scenario, the country will experience a deficit of 1.9bcm in 2019, although it could be as low as 0.8bcm under a lower case scenario. The deficit is anticipated to rise rapidly between 2019 and 2023 as expansions of Alba and Bapco refinery warrant significant natural gas. By 2027, the deficit could have risen to as much as 7.4bcm.

Bahrain LNG will construct an offshore import facility boasting an initial capacity of 4.1bcm with the potential to expand to 8.2bcm. This would present the kingdom with adequate capacity to cover the deficit up to 2027 at the very least. The plan is to seek agreements with LNG sellers for the supply of spot and short-term cargoes and pursue long-term purchases once there is clarity about demand.

Industry will be the main driver behind demand between 2016 and 2027, growing nearly 60%. But the greatest uncertainty will come from growth in demand for power, which will range from 36% in the lower case scenario to 62% in the base case scenario for the same period. Assumptions for demand for gas re-injection in the oil sector remain the same under all scenarios and will therefore have little impact on natural gas balances over the next 10 years.

Annual LNG cargoes required



Source: Nogaholding, APICORP Research

Given the demand gap, the import terminal should be able to secure the country's needs over the projected period - following the expansion - but will struggle beyond 2027. Bahrain will therefore need to find additional sources of natural gas supplies, or more likely increase import capacity to cater for additional demand growth beyond our projected period.

Flexibility is important

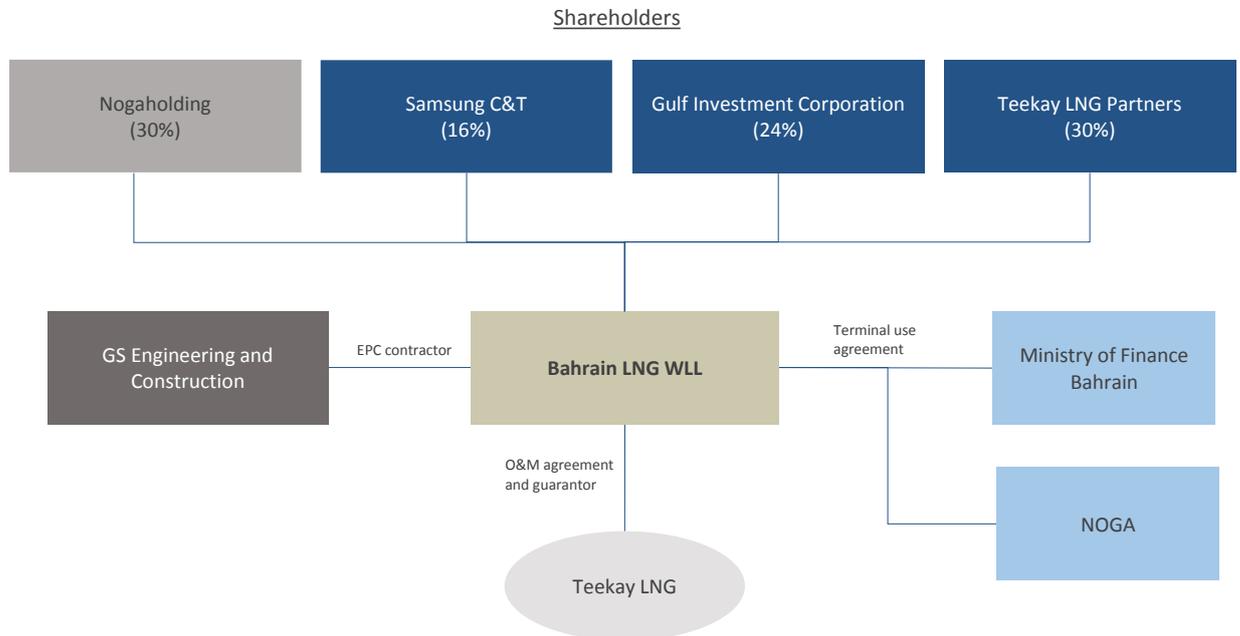
The LNG terminal has presented the Kingdom with several challenges, amongst those the design specification. LNG infrastructure is capital intensive and with low energy prices, investing in a long-term LNG facility in an energy-exporting country becomes unattractive. Over the past three years, the credit worthiness of MENA economies has deteriorated, with Bahrain downgraded by S&P from BBB investment grade in 2013 to BB- today.

Currently, countries are either constructing permanent LNG facilities or chartering and FSRU. In many gas-importing countries, with a clear outlook for growing gas demand, investing in permanent LNG facilities would arguably present the most effective outcome. Kuwait, for example, has taken a decision to construct a permanent onshore LNG facility. As an LNG importer, Kuwait currently relies mainly on FSRUs to meet existing shortfalls, but the relatively larger population coupled with a growing demand outlook means that a permanent import facility is needed as well as prospects to continue chartering FSRUs.

By contrast, the UAE have already scrapped their plans to construct a permanent 12.3bcma LNG-regasification-and-storage facility in Fujairah. The Emirates boast huge gas reserves, and although current power generation consumes large amounts of natural gas, they have instead opted to boost imports by chartering an FSRU in Ruwais.

Overcoming financing hurdles

The estimated total cost to develop and finance the project is approximately \$990m. It will be financed through a combination of equity and senior debt on a 75:25 debt to equity ratio. Compared to other permanent LNG facilities, the cost of the project is at the lower end. Historically and prior to the oil price crash in 2014, governments in the GCC would fund energy projects themselves. But given low revenues and budget constraints, particularly in Bahrain where the country does not hold the foreign reserves enjoyed by its GCC peers, there has been a greater shift towards private finance. Thus, funding this project on a public-private-partnership (PPP) basis proved to be the most economically viable option. First, because it reduces the burden on government budgets allowing funds to be allocated to other sectors of the economy. Second, and more importantly, given the unique design of the facility, it allowed the government to draw on the expertise of multiple parties.

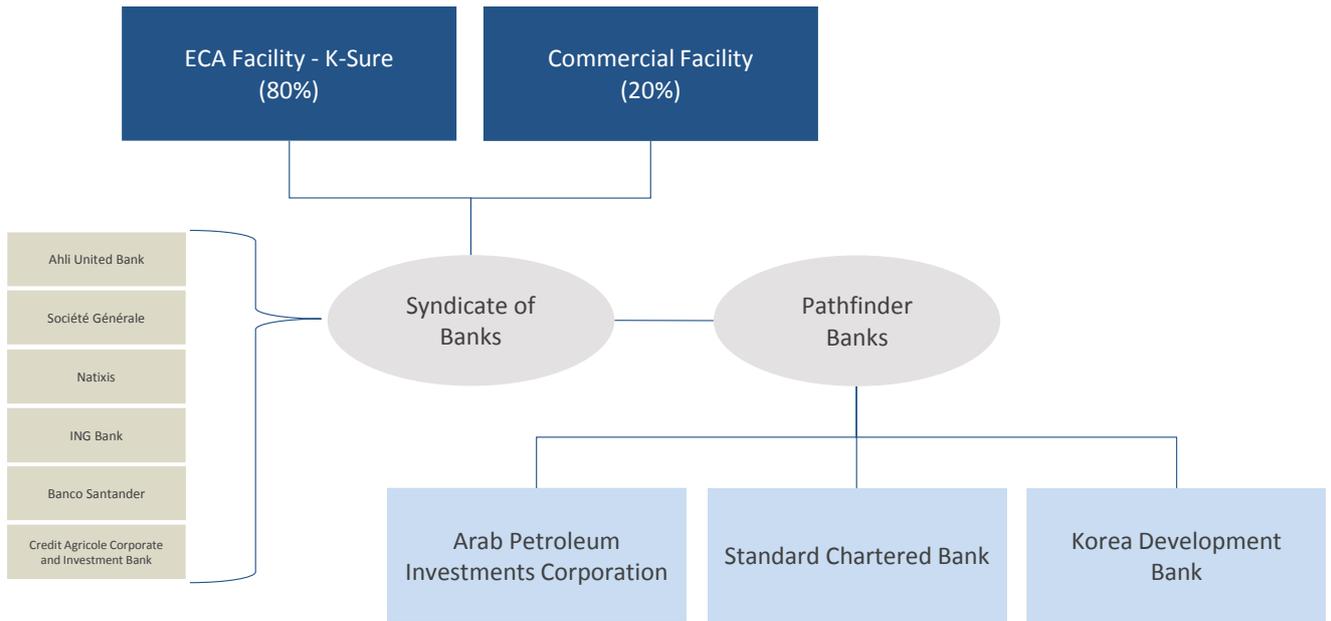


This option utilises the current cheaper prices and offers a flexible solution to meet power shortfalls, until the UAE's four nuclear reactors are all commissioned in the early 2020s. The first reactor is expected to come online as early as this year.

Bahrain's case is unique. Firstly, its population is relatively small, meaning that the construction of a permanent LNG terminal may prove cost ineffective, certainly in the medium term given the small volume of demand. Second, the country is still self-sufficient and therefore uncertainties lie around the outlook for demand growth against future gas output. Thus, even if the country becomes a net importer, in the short to medium term, their needs will be low, seasonal, and will be governed predominantly by demand for power year-on-year.

Therefore, the model they have adopted is to construct an offshore LNG terminal with an FSU. The configuration will include an LNG vessel serving as an FSU, with on jetty regasification. This will enable the kingdom to optimise the utilisation of the FSU, by re-deploying it to trade as an LNG carrier when imports are not required. Meanwhile the country can devise a strategy that could see it transform into a regional gas distribution hub with capabilities to process several billion cubic meters a year, import from a variety of countries and positioned to service large demand centres such as Saudi Arabia.

Bahrain LNG WLL is to be developed on a Build, Own, Operate, Transfer (BOOT) basis. The National Oil & Gas Authority (NOGA) through its investment arm Nogaholding issued a competitive tender in 2014 to select a project developer. The selected consortium included Teekay LNG Partners (30%), Gulf Investment Corporation (24%), Samsung C&T (16%), with Nogaholding owning the remaining 30%. The partnership allows the kingdom to draw on the experience and benefits of all the project parties. Teekay LNG - the third largest independent owner of LNG carriers - will supply the FSU and operate the terminal. Samsung C&T is the longest established and leading trading company in South Korea with a strong track record of LNG developments in the Gulf including Oman and Qatar. Gulf Investment Company is an experienced regional PPP investor; equally owned by the six GCC states and one of the largest international investors in Bahrain. The \$670m Engineering, Procurement and Construction (EPC) contract was awarded to GS Engineering & Construction, a South Korean conglomerate with a successful record of similar ventures including a range of LNG terminal projects in South Korea, South East Asia and the Middle East.



The unique composition of the Bahrain import terminal would nevertheless present several impediments. Given political turbulence since 2011 and Bahrain's relatively small economy, financiers need to be assured that the country can service its debts, although the project's sponsor Nogaholding demonstrated its ability to raise a \$570m Islamic loan early last year. In order to secure a low tariff over the long term, a longer term financing option was required. However, Bahrain's lower credit rating would mean securing adequate finance capacity for a duration of more than 20 years would be difficult. Moreover, the financing of an FSU in addition to the standard concessions and EPC placed further pressure on the capacity to secure finance, given the absence of an existing financing model to go by.

The provision of finance by an Export Credit Agency (ECA) was therefore of paramount importance. A syndicate of nine international and regional banks is participating in the \$741m loan. K-Sure was selected to provide commercial and political risk cover for 80% of the financing and with the support of a pathfinder bank to handle certain elements of the deal. A consortium, which included Standard Chartered, APICORP and Korea Development Bank (KDP), helped structure the deal. The pathfinder bank would assist in providing advice on risk mitigation specifically around supply and demand uncertainty, re-deployment and insurance. The need for a pathfinder bank was therefore instrumental in the process, playing an advisory role and assisting in the transaction.

MENA must push ahead

As demand for energy continues to grow, the region will need to ensure that adequate investments are made today in order to secure supplies for the future. MENA production capacity is struggling to meet growing demand particularly for natural gas, and therefore policy makers will need to take steps to ensure that the region capitalises on the currently lower energy prices to secure cheaper tariffs over the long run. Whilst budgets are constrained, critical projects will need to be prioritised.

The flexibility of the LNG terminal means that Bahrain can cater to seasonal demand but also utilise the FSU for re-export. In effect, the country – despite its relatively small economy - can become a regional hub for LNG trade with potential to double existing capacity and in the short to medium-term serve neighbouring countries including Saudi Arabia.

Despite its unique design, the project overcame several difficulties in turn due to the combined expertise and track-record of the individual shareholders. The presence of two Korean shareholders with a background in similar developments in the region meant that the project was able to secure a reputable contractor for the EPC.

Bahrain LNG ensured low tariffs over the long run even after a downgrade in the kingdom's credit rating in the midst of structuring the deal. Thanks to K-Sure, the ECA was able to provide cover for 80% of the financing by attracting a syndicate of nine international and regional banks to participate and drive financing costs to a mere 15% of the total project costs. The pathfinder bank helped in structuring the overall deal but also in providing the necessary advice and support to ensure risks were mitigated particularly in connection with supply and demand uncertainty, FSU re-deployment and insurance cover.

Bahrain's LNG terminal, only the second of its kind, thus marks a pivotal point for the region's growing import needs. This is testament to the shifting trends in gas demand-supply dynamics with MENA countries committing to tackle energy security. The facility also represents a shift away from traditional government funding, and more towards securing private finance, reducing the burden on governments to overcome financing hurdles. Poor planning and delays have been the downfall of many energy schemes in Bahrain. But as a PPP, sponsors will be focused strongly on the project's schedule as delays will incur significant penalties.

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