



Competition stiffens for MENA LNG exporters

Despite its massive gas reserves, MENA's role in the global supply of natural gas is diminishing. A major factor behind this trend is the increasing amounts of LNG becoming available from new sources of supply, forcing the major LNG exporters in MENA to adjust their export strategies in order to maintain their market share in Europe and Asia. Qatar is taking an aggressive stance in Europe, diversifying exports and offering flexible terms. Algeria will take advantage of its export flexibility by pumping pipeline gas when prices are low and exporting LNG when prices rebound. Iran will look to use Oman's underutilised liquefaction capacity with plans to construct a new pipeline. However, the region will struggle to increase output and will also need to curb domestic demand, in order to maintain exports, market share and underpin long term revenues.

MENA gas output is set to rise by over 10% to reach 756bn cubic metres per annum (bcma) in 2021. The region holds 47% of the world's natural gas reserves, mainly concentrated in two countries: Iran and Qatar. Despite this, the IEA expects natural gas exports from MENA to fall by 50bcm in 2025 from 2013 levels as domestic demand outpaces supply growth (See Vol. 1 No. 9 – MENA: LNG's top growth target). LNG export volumes in countries such as Oman, the UAE, Egypt and Yemen have been declining or have stopped altogether and the region's LNG imports have correspondingly risen to meet domestic demand. MENA exporters are also facing growing competition from new suppliers, as LNG becomes a buyers' market in the 2017 to early 2020s period. There is currently 150bcm of global liquefaction capacity under construction. When it comes on stream, importers will seek the best possible purchase terms, which will weigh down on LNG prices over the medium term.

MENA LNG exports (BCM)

Country	2011	2012	2013	2014	2015
Algeria	17.0	15.2	14.7	17.3	16.5
Egypt	8.6	6.4	3.6	0.4	0.0
Libya	0.1	0.0	0.0	0.0	0.0
Qatar	102.5	103.9	106.1	103.9	106.6
Yemen	8.7	6.7	9.3	8.5	2.1
UAE	7.9	7.7	6.9	8.3	7.8
Oman	11.0	11.1	11.4	10.5	10.3
Total	155.9	151.0	152.0	148.9	143.2

Source: GIIGNL, MEES

The shift in these dynamics potentially signals the end of the dominance enjoyed by some of MENA's key LNG exporters such as Qatar and Algeria and will affect export revenues. However, MENA exporters should be able to adapt. Production costs in countries such as Qatar are amongst the lowest in the world, and close proximity to key demand hubs will still ensure a competitive advantage over their rivals. Algeria has a long history of exporting LNG to Europe, having faced pipeline competition from Russia; and Qatar will continue to enjoy a strong presence in Asia, where it exports nearly half of its LNG. Nor should they ignore the market closer to home, with domestic demand growth in MENA amongst the highest in the world. At the moment, the regional pipeline gas trade remains limited, with the Dolphin pipeline, which transports Qatari gas to Abu Dhabi, Dubai and Oman, accounting for the bulk of intra-Arab gas trade.

Global LNG developments

Global LNG trade volumes reached 338bcm in 2015, the highest in the industry's history. The number of LNG importing countries doubled in the 10 years since 2004, whilst the number of exporters also increased by 50%. A period of relatively high LNG spot prices helped stimulate investment in new export projects, which led to the addition of over 63bcm of liquefaction capacity in total between 2009 and 2015. Until recently, Qatar has enjoyed relatively low competition, but its reign as the world's largest LNG exporter will end by 2017 as liquefaction capacity in Australia reaches 120bcm, and new supplies from the US also begin to kick in.

Australia added an additional 11bcm of nominal capacity in 2015, enabling it to become the largest provider of LNG to Japan and China and to increase its market share in other major demand centres such as India and South Korea. US exports of LNG will receive a boost from the 24bcm Sabine Pass terminal due for full ramp-up in 2017, as the country looks to assume the role of swing producer between Europe – where LNG exports are expected to be competitive – and Asia. This will be further helped by the expansion of the Panama Canal.

Qatar's market share transition

These developments clearly threaten Qatar's market share. At 24.5bcm, Qatar has the third largest proven reserves of natural gas (after Iran and Russia). QatarGas and RasGas operate 14 LNG export trains between them, across seven joint venture companies. The country exported just over 106bcm of LNG in 2015 and remains the largest LNG exporter in the world. Several factors have historically provided Qatar with a competitive advantage over its rivals, and may yet do so against new supplies.

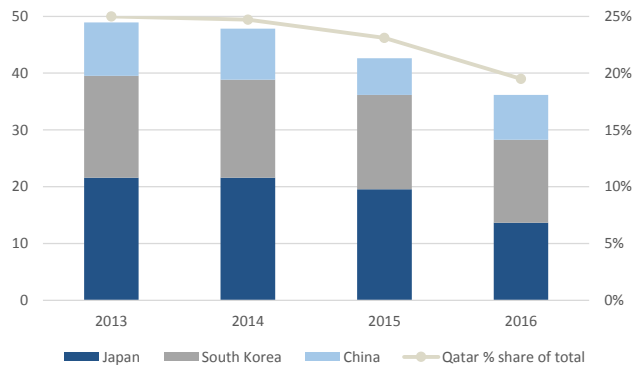
First, production costs in Qatar are globally amongst the lowest, and substantial investments in LNG projects at a time when costs were low, helped establish the country as the leading source of LNG supply. Second, the gas in Qatar's North Field (largest non-associated gas field in the world) is 'wet' and provides a valuable stream of revenue in the co-production of NGLs and condensates.

Third, its geographical location centred equidistant between the two main demand hubs of Europe and Asia allows it to capitalise on various arbitrage opportunities. Historically, it sold

most of its LNG through long-term sales and purchase agreements with the likes of India and South Korea who were ready to pay higher rates to safeguard LNG imports for the long run. In the few years running up to 2016, Qatar increasingly sold LNG on the spot market to Europe as well.

But new LNG supplies from Australia have already started to eat into Qatar's monopoly in Asia and new supplies from the US will challenge Qatar's dominance. The proportion of Qatari LNG into Japan, South Korea and China fell by 3.6% in 2016 as Australia increased its share in the three countries by 8.4%. Higher volumes into Japan are likely to push prices down from \$4.9/mmBtu this year to \$4.5/mmBtu in 2017, equivalent to the 2017-forecast price for UK NBP. Qatar is thus facing a new reality where Asian importers now have more options than ever before, whilst low prices and more supplies in Europe mean that Qatar will need to offer more flexible contracts.

Qatar LNG exports to Asia (BCM)



Source: MEES

However, in some of these key importing countries, its exports have diversified, with the number of Qatari LNG importers tripling from eight in 2007 to 24 in 2015. In Asia, its share of imports into China and Taiwan has increased modestly. In India, LNG traded close to Japanese prices at \$4.9/mmBtu prompting the amendment to Qatari export terms and the provision of cheaper gas – down to \$6-7/mmBtu this year from \$9.2mmBtu in 2015. As part of the deal, Petronet – set up by the Indian government to import LNG - agreed to import an additional 1.3bcm from RasGas.

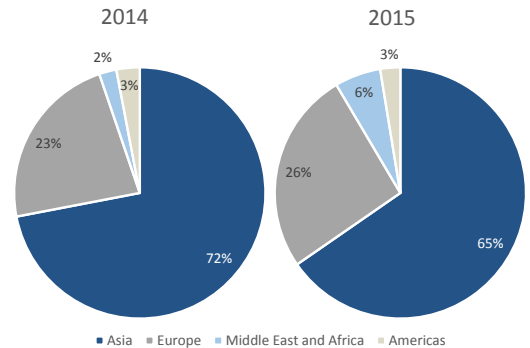
Qatargas has also agreed a 20-year deal with Turkey's Global Energy Infrastructure Limited – a company of Global Energy Group - to supply Pakistan with 1.8bcm from 2018 and rising to 3.1bcm. This is in addition to an earlier deal for the supply of 5bcm over 15-years, which began in March 2016. Not surprisingly, exports to South Asia have thus increased by 46% y-o-y for the first six months of this year.

Qatar is also keen to increase its presence in Europe by offering more flexible terms. QatarGas 3 – a joint venture between Qatar Petroleum, ConocoPhillips and Mitsui – will deliver 1.5bcm to RWEST over seven and a half years. Separately, RasGas who already provides EDF with 11bcm signed an agreement to supply their new import terminal in Dunkirk with 2.7bcm. Higher exports in 2015 to Europe increased Qatar's market share in the region by 3.3% year on year (y-o-y).

Closer to home, Qatar brokered a four-year deal earlier this year to supply Kuwait with 0.7bcm from March. More recently, Qatar's prime minister signed a deal with ADNOC to increase supplies to the UAE via the Dolphin pipeline. Furthermore, Qatar

Petroleum has taken advantage of its domestic joint ventures to forge their first major foreign partnership with ExxonMobil, and their interest to purchase shares in both Mozambique and Egypt's Zohr field.

Qatar LNG exports by region (BCM)



Source: BP stats

Qatar's ability to offer more competitively priced contracts ensures a steady stream of revenue. Currently, more than 80% of its production is committed for the period 2016-2020 as part of its Supply Purchase Agreements, securing revenue stability. Going forward, a key decision for Qatar is whether to maintain the existing moratorium on the North field, and develop new LNG projects. But this depends on global fundamentals and hinges primarily on the level of US exports and the extent to which Chinese demand grows.

Already, the LNG outlook appears to be soft over the medium-term, which perhaps may not be the best time for new Qatari supplies to enter the market. In the event that the moratorium is lifted, Qatar will have to consider the costs associated with upstream projects and current liquefaction trains before developing new LNG projects. Qatar can act strategically and increase its supplies, which will depress global LNG prices further and slow the development of new LNG capacity elsewhere; but if it goes down this route, it may have to endure a period of low prices for several years. Either way, the country is well positioned given its \$250bn sovereign wealth funds, and its low production costs would keep it competitive.

Output woes in Algeria

Since a pioneering LNG shipment to the UK in 1964 (from the modest Camel plant at Arzew), Algeria's LNG capacity has evolved across changing market conditions and policy responses to a current level of 33.6bcm. This capacity, which comes from four plants sited at Arzew and Skikda, is paired with three pipelines to Europe whose capacity totals 53bcm. Due to unfavourable market conditions and less availability of gas for exports, both LNG and pipeline facilities have recently been operating at less than half their capacity. In 2015, the country exported (through its LNG operating company Sonatrach) 16.2bcm of LNG, 81% of which was to Europe, and 25bcm of pipeline gas, 83% of which was to Europe.

Competition for the European market, where Sonatrach's exports are concentrated, remains stiff. At a time of weak European demand, Sonatrach has to compete with both pipeline exporters from Russia, Norway, the Netherlands and Libya, as well as from new LNG exporters from Qatar and now from the US.

During the last decade, Sonatrach set ambitious export goals with plans to increase its share of LNG exports, targeting the then faster-growing and more valuable spot market. As a result, it expanded capacity at Skikda (GL1K) and Arzew (GL3Z), with the latter being built without securing traditional long-term, take-or-pay contracts. However, Sonatrach's plans have not worked out due to changing market conditions. Indeed, while the expectation that markets would tighten proved particularly true in Asia in the immediate aftermath of the nuclear shutdown in Japan, markets conditions have since deteriorated significantly.

Sonatrach is currently trying to regain part of its lost market share in Europe, with pipeline gas to Italy having surged (from the very low levels reached between 2013 and 2015) during the first six months of 2016 compared with the same period in 2015. Whether or not such a surge can be sustained remains to be seen. Meanwhile, we should expect Sonatrach to take advantage of its export flexibility: relying on pumping more gas to Spain (through both the GME and Medgas) and to Italy (through the Transmed) when LNG prices are low and exporting more LNG to the likes of the far East and Latin America when LNG spot prices rebound.

LNG capacity use in Algeria (BCM)

Plant	Nominal Capacity	2014 exports	Capacity use
GL1Z	10.6	6.0	0.6
GL2Z	10.7	5.1	0.5
GL3Z	6.3	0.8	0.1
GL1K	6.0	5.6	0.9
Total LNG	33.6	17.5	0.5

Source: Ali Aissaoui, OIES

Algeria will see many of its long-term export contracts ending in 2019-2021. European countries such as Spain and Italy have many underutilised regasification terminals, and intend to diversify their sources of supply to reduce their dependence on Russian gas. Given its own underutilised export facilities, this would normally provide Algeria with a good opportunity to negotiate favourably on its long-term contracts. However, in a context where European buyers are facing the new realities of an increasingly competitive market, it is doubtful that it could continue protecting the integrity of such contracts.

Algeria, along with other MENA states, has suffered from incoherent energy policies and muddled investment strategies. This ultimately led the country to lose much of the market share it once held. Domestic gas demand growth continues to eat into exports, whilst production growth prospects are flat lining as the country has failed to develop significant new sources of gas and to slow the decline of mature fields. Nonetheless, the development of shale gas resources still offers hope, with the country holding the world's third largest potential. Their remote locations may make development difficult, and this will be compounded by infrastructural and transportation challenges, and shortages of both rigs and water, not to mention local social opposition; and with collapsed hydrocarbon revenues and the fiscal buffer melting away, Algeria has no choice but to seek external finance with high risk-taking investors. But the country will need to improve its investment climate in-order to be able to boost gas availability and avoid its export facilities, chief of which is LNG, being stranded. The current low utilisation of these facilities has rendered them costly and therefore a financial burden for Sonatrach and the Algerian government owner.

High demand in the UAE

The UAE has large reserves of natural gas and was the GCC's first LNG exporter. Abu Dhabi's liquefaction plant boasts a capacity of 7.9bcm across three trains. Tokyo Electric is the main buyer as 2015 LNG exports reached 7.6bcm. But exports volumes are likely to fall in the next few years as domestic gas demand continues to rise.

The UAE consumed 69bcm in 2015 compared with an output of 56bcm. Abu Dhabi relies on cheap imports from the Dolphin pipeline whilst imports of LNG in Dubai reached 3.1bcm. Imports are expected to increase over the coming years. Overall, domestic demand is expected to increase 6% annually and the country plans to divert more volumes of domestic gas towards enhanced oil recovery projects. However, UAE efforts to ramp up production suffered a setback earlier this year when Shell withdrew from the \$10bn Bab sour gas field project. The Shah gas field – also critical to the UAE plans to increase output - is progressing better than expected but will not be enough to meet supply shortfalls.

Abu Dhabi will also see four nuclear reactors with a 5.6GW capacity come on line by the start of the next decade and Dubai is committed to reducing the share of gas in power generation to 70% by 2030. However, this may not be enough to close the supply gap, and will leave the existing plants underutilised. With some of its key long-term LNG contracts expiring from 2019, the UAE may decide to decommission some of those plants by 2020.

Finance still a problem in Iran

Iran is home to one of the world's largest gas reserves, but a series of International sanctions and high domestic demand have hindered the prospects for significant exports. The IEA expects net exports to reach only 4bcm by 2021. It will therefore need to find ways of increasing capacity and reducing domestic demand growth to meet some of its official trading targets for Asia and Europe.

Production received a massive boost last year following the completion of the long delayed phase 12 of the south Pars field, lifting capacity by 17%. Iran also recently signed an MoU with Saipem in April 2016 to develop the Toos gas field. The country exported 8.4bcm (7.8bcm to Turkey) last year but imported 7.2bcm from Turkmenistan. Thus, the prospects for further exports to the likes of Iraq and Pakistan and India in the short term are slim. Iran reaffirmed plans to export to Oman by 2019 with Dutch based Intecsea and South Korea's KOGAS both keen to invest in the \$1.5bn Iran-Oman pipeline project. The project is currently under study and involves importing around 10bcm of Iranian gas, with up to 30% allocated for onwards LNG exports using Oman's existing underutilised LNG liquefaction capacity.

Prior to international sanctions, Iran had plans to export 95bcm of LNG, having launched six LNG production facilities. After cancelling those contracts, Iran lost many valuable opportunities. Sanctions placed huge risks on foreign firms to invest, leaving Iran with unfavourable terms. Last year, Total and Shell both failed in their attempts to construct two LNG plants with a combined capacity of 34bcm. The proposed construction costs for Pars LNG and Persian LNG were deemed too expensive, especially as both Shell and Total required the purchase of LNG at 28-30% of the market price in the first year.

LNG in Iran will receive less priority due to high costs, technological gaps and cheaper pipeline alternatives. For now, Iran LNG - standing at 50% completion and a capacity to export a little over 10bcm - looks to be the country's most prospective plan. Negotiations are currently ongoing with Germany's Linde to resume the development of the \$2.5bn project, whilst KOGAS have also signed an MOU with NIOC to complete the plant at Tombak.

Spare capacity in Oman, but options on the horizon

Oman is typically a net exporter of LNG. The Qalhat plant, operating three trains has a combined capacity of 14.5bcm. In the past two years, over a period of low energy prices, Oman has consistently surprised on both oil and gas production. But rising demand for electricity has limited gas availability for exports with 5% of LNG shipments already rescheduled this year.

In 2015, gas production increased 1.6bcm y-o-y whereas LNG exports declined for the second year from 10.6bcm in 2014 to 10.2bcm in 2015. LNG exports remained at a little above 70% of capacity as demand soared to over 36bcm towards the end of 2015 compared with 34.5bcm the year before.

The country faces more pressure due to low LNG prices agreed with some of its Asian buyers. It exported 5.2bcm to South Korea and 3.2bcm to Japan in 2015. Not surprisingly, both countries hold shares in Oman's LNG trains – Korea LNG holds 5% while Japans Mitsubishi, Mitsui and Itochu together hold 6.5%. A series of oil-indexed contracts has meant that Oman was not able to maximise the higher value of the LNG spot market. But the LNG demand outlook for both importing countries is on the downside, freeing up capacity for Oman to export more to the likes of China and India.

For this, Oman will seek new sources of supply in the hope of boosting exports again. LNG revenues in 2015 declined by \$1.4bn y-o-y and are forecast to reach their lowest levels this year since 2009. So far, Oman has made use of the Dolphin pipeline from Qatar to meet Asian demand for Omani LNG, but will struggle to secure anything more through this pipeline.

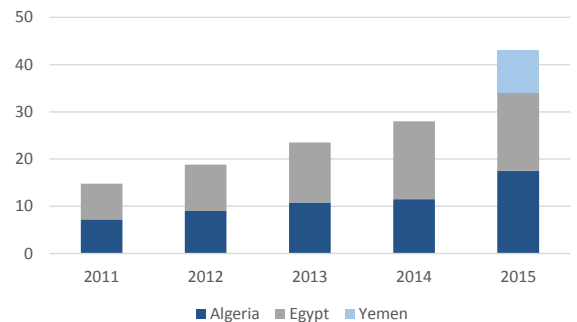
Two options present opportunities for Omani output. In the near term, tight gas from BP's Khazzan and Makkarem fields could provide a combined plateau production of more than 15bcm, or 40% of Oman's demand. Phase 1 is expected to be completed in 2018 and would serve the country for decades. But the higher cost of tight gas will require higher LNG prices, in what is already an oversupplied and depressed market. In the longer term, there is the option to construct a pipeline between Iran and Oman. But talks are still embryonic, with difficulties arising around the pipeline route, the securing of adequate financing, pricing issues and above all, Iran's ability to secure output.

Offline capacity

In Yemen, LNG exports declined by nearly 80% from 8.9bcm in 2014 to 2bcm in 2015, as production stopped half way through the year. The Balhaf terminal remains one of Yemen's largest industrial complexes and an important revenue stream. However, the terminal suffers from intermittent closures (closed for the past year) because of the ongoing conflict, with the most recent disruption (between April and June) a result of a feed pipeline explosion. Attempts to resolve the conflict through UN-backed

talks continue, but with no prospect of an oil export restart before early 2017.

LNG export facilities off line



Source: IEA

Egypt became a net importer of gas in 2013, leaving it with 16bcm of stranded LNG liquefaction plants. Higher output from the Zohr discovery and BP's West Nile Delta project are unlikely to boost supplies above growing domestic demand before 2021. Egypt therefore has a huge task of securing adequate feedstock to utilise its two exporting projects at Idku and Damietta, with new gas supplies expected to enter the market from Cyprus and Israel.

A brave new world

MENA is becoming increasingly less influential in the global supply of natural gas, with more and more of its countries now importing LNG. LNG exports in the region are therefore more likely to decline or at best stagnate than grow.

In Qatar, exports are constrained and are increasingly threatened by new entrants to the market subject to the lifting of the moratorium. In Algeria, Oman and the UAE, domestic supply is failing to keep pace with rapidly rising demand. Iran will de-prioritise LNG behind pipeline projects as they struggle with funding following their return to the global market post sanctions; whilst in Yemen, the current conflict has resulted in intermittent outages with output not expected to return to previous levels before the end of this year. This has resulted in a vast amount of underutilised liquefaction capacity particularly in Yemen, Egypt, Algeria and, more recently, in Oman. Whilst some of this capacity can be absorbed, as is the case with Iran's plans to export through Oman, there are still many barriers.

For existing exporters such as Algeria and Qatar, the competition is stiffer and both countries will need to adjust their strategies in a more competitive world. Australia will continue its aggressive push in Asia, and US exports of LNG will challenge for both European and Asian shares. Traditional exporters such as Russia will also be competing for market share in Europe. Qatar can weather current conditions given its impressive foreign assets and relatively low cost base. However, improving market conditions over the medium term will hinge on the extent to which Asian demand grows, particularly Chinese gas demand, and the impact that low prices are having on investments in new gas projects. In order to maintain exports and secure revenues, MENA countries will need to preserve their customer base by offering more flexible terms and must also seek to diversify exports.