



The future of Middle East LNG in the global market

Philip R. Weems and Amelia Jalleh, of legal experts King & Spalding LLP, discuss the future of LNG supply to world markets. Can Qatar retain its crown, or will new projects in Australia knock it off the supplier's top spot?

The Middle East has been very successful in the LNG industry since the first LNG trains in the region were brought on stream in the UAE, in 1977. Once viewed as distant from major consuming centres and merely a supplemental LNG supplier, the region today is well-positioned to supply LNG anywhere in the world. Qatar is now the world's largest LNG exporter - and is adding capacity with the start-up of three new giant LNG production facilities this year - and

Oman, the UAE, Yemen and Egypt also have significant liquefaction plants.

It is not clear, however, whether the Middle East will be able to retain its dominant position for the next twenty years. Will the region be able to make the most of its potential in the LNG sector, or will the mantle of LNG "King" someday pass to another?

The World Wants More Energy

World energy demand is estimated to increase by around 50% by 2030 - with



fossil fuels expecting to account for over three-quarters of that additional demand. That being said, the focus on climate change in the last five years has meant that governments worldwide face enormous pressure to “green” their energy mix.

This is where natural gas has taken centre stage - indeed, it is arguably more popular today than ever before.

Viewed as a clean source of energy, the environmental benefits of natural gas relative to other fossil fuels mean that it should be a big winner from efforts worldwide to curb carbon emissions. Many are viewing gas as the only sensible bridge between fossil fuels and renewables / nuclear energy.

Natural gas’ position as the most popular fuel for power generation is further cemented by the relative ease in which

gas-powered generation complements renewable-powered generation. Gas, for example, can fill the gap where there is insufficient wind to meet power requirements on a given day. It helps, of course, that gas is presently the most prolific of the fossil fuels.

The Problem With Gas...

The main problem facing natural gas today is that the large and easy-to-commercialise gas fields the world has enjoyed over the last 20-40 years are now in decline. This decline often arises at the same time that natural gas usage in the country where the field lies is expanding rapidly (for example, in Indonesia, Oman and Nigeria).

Greenfields today are generally either difficult to exploit or stranded in locations far from significant markets - whether that be offshore, in remote onshore locations or in countries where gas reserves are far larger than domestic requirements. The situation is unlikely to improve, with up to 60% of estimated gas demand in 2030 expected to come from fields that are not producing in 2010.

Finding the most realistic and efficient gas transportation method is key to connecting gas importing countries with potential gas exporters. Historically, pipelines have been viewed as the answer for many markets. However, as the multiple disputes between Russia and the Ukraine over the last five years have shown, geopolitical and financial pressures mean that existing cross-border pipelines frequently do not provide gas importers the national or regional energy security they require.

Many planned pipeline projects look equally dubious - for example, the 200km subsea pipeline proposed to deliver 1 Bcf/d of gas from Iran’s Kish field to Oman is yet to be realised. Moreover, the Nabucco gas pipeline project, intended to connect the Caspian region, the Middle East and Egypt

with European gas markets, has long been dogged by questions of supply and is also struggling to get off the ground.

Pipeline gas, therefore, is unlikely to be the answer to the world’s gas needs.

LNG to the Rescue?

Twenty years ago LNG was the most expensive fossil fuel, imported only by a select group of mainly OECD-member countries. But times have changed. While LNG import and export projects can still be capital intensive, less costly models are increasingly being developed while transportation costs are being reduced significantly. As a result, LNG today is often a more efficient, flexible and reliable fuel source than crude oil or pipeline gas, and is therefore increasingly affordable to emerging countries (such as India, China and Brazil).

LNG provides long-term energy security for a number of countries, particularly in North Asia. In the European market, given the gas pipeline problems outlined above, many countries are seeking to reduce their reliance on Russian gas, and are replacing, or at least supplementing, pipeline gas and other energy sources (including renewables) with LNG. LNG in that region is therefore providing additional long-term security of supply.

The further advantage of LNG is that it has more diverse options than pipeline gas. Being readily portable, LNG is able to meet seasonal demand shifts between geographically diverse markets and respond globally to unexpected events such as extreme or unseasonal weather and disruptions in other fuel sources (like the shut-down of a nuclear plant, as Japan suffered in 2008-09).

The “King” Of LNG

With the largest gas reserves in the world, the Middle East might seem the obvious prime source of gas for the world’s LNG

needs in the next twenty years. However, the combined impact of the following three key factors means this is by no means certain:

1. Domestic gas consumption - The Middle East is now a significant gas consumer in its own right. Domestic gas demand is growing sharply, used in power and water production, industrial diversification and enhanced oil recovery. Further, although the region as a whole is gas-rich - indeed, it has more than a third of the world's proven gas reserves - those reserves are not spread evenly country-to-country and much of the reserve base outside Qatar and Iran is associated gas, rather than a non-associated gas base capable of more independent development.

For example, both Kuwait and Dubai (each with comparatively minimal gas reserves) are now starting to import LNG in order to meet peak gas demand during the summer months. Unfortunately, in the short-term neither Kuwait nor Dubai can hope to rely on inexpensive pipeline gas supplies from Qatar, given the country's moratorium on new gas projects discussed below.

It is indeed exemplary of current gas shortages in the Middle East that, although not yet an LNG importer, Oman announced in February 2010 that it is unlikely to offer spot LNG cargoes for export, instead prioritising gas supply to meet its increasing domestic gas demand.

2. The Qatari Gas Development Moratorium - Concerns about too rapid, and potentially harmful, depletion of the reserves of Qatar's North field - the largest non-associated gas field in the world - resulted in the decision in 2005 to put a freeze on new developmental projects in that field. Although that moratorium was originally due to be lifted in 2007, in January this year Qatar announced that it will be extended until at least 2015 to allow Qatar Petroleum time to conduct technical studies to confirm the most optimal plan of development for the field over the coming decades.

Interestingly, Qatar recently announced



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that its LNG output could be increased by 12mtpa at a very low cost simply by debottlenecking its existing liquefaction trains. However, as additional feed gas would be required in order to undertake this debottlenecking, such a debottlenecking will not occur unless and until the moratorium is lifted.

3. Low gas prices - The low pricing of natural gas in the Middle East has proved to be a significant hurdle to exploration and development.

National oil companies in the region either sell gas at considerably below global prices or subsidise the cost of gas, with the domestic gas price for industry, power and water companies often being set at \$1/mmBtu, a fraction of its true value internationally. Moreover, such a realised cost may be less than the actual cost of development, especially for sour gas, where processing is expected to be as much as four times higher than the government-set price. As a result, there are surprisingly few incentives for national or international oil and gas companies to undertake gas exploration

and development projects in the region.

If the Qatari moratorium is lifted, if fiscal incentives are put in place to redress the major pricing imbalance (including removing subsidies and raising the price of gas to at, or near, market prices), and/or if geopolitical issues are solved to allow Iran to develop its gas reserves, the Middle East could retain its position as the largest LNG exporter in the world for decades to come.

Absent of this, however, the region may be unable to dominate the LNG sector as it has in the last decade. Just as Qatar took the mantle of LNG "King" from Indonesia in 2006, Australia could take the mantle from Qatar in the not-too-distant future.

Can Australia Be The Next Qatar?

Australia certainly has the potential to become the largest LNG exporter in the world in the next twenty years. At present, almost half of the new LNG projects proposed worldwide are in Australia, with seven thought to be targeting their final investment decision in 2010 and fourteen presently undergoing FEED activities -

including four coal seam gas (or “CSG”) to LNG projects.

However, Australia faces its own challenges, chief amongst which are the following:

1. Technological Challenges - Using CSG as the feedstock for an LNG development is an as-yet untested technology, with no operating precedent evidencing that it is actually possible to aggregate sufficient CSG reserves to supply an LNG train. To put it in context, ACIL Tasman has estimated that, over twenty years, two 4 mtpa LNG trains will require around 1,800 initial production wells and an average of 150 – 200 replacement wells per year.

In addition to uncertainty surrounding Queensland’s CSG to LNG projects, the Australian LNG industry is also confronting whether it can successfully implement “floating LNG”, the as-yet untested offshore liquefaction technology (such as Shell’s current plans offshore Australia in the North West Shelf). If FLNG technology remains out of reach, due to cost or inability to resolve a multitude of technical questions, many of Australia’s planned projects may continue to be delayed.

2. Sales to Underpin Development - The

very significant capital costs of a liquefaction development mean that advance long-term LNG sales are critical - without a foundation LNG sales agreement in place it will likely be impossible to get the balance sheet or project financing required to fund an LNG project.

However, as the result of:

(a) competition from conventional gas projects;

(b) the view amongst some Asian LNG buyers that LNG prices are currently higher than justified, especially compared to gas prices in Europe and North America; and

(c) hesitation amongst some of Australia’s traditional customers to commit to CSG to LNG projects until the project risks are better understood,

a number of Australia’s projects do not yet have those all-important foundation LNG sales agreements in place.

3. Lean Gas - Related liquids production and sales provide a very appealing, and often essential, value-add to many LNG liquefaction projects - contributing 30% - 40% of total revenue in some cases. However, as CSG is a relatively “lean” gas (that is, with a lower calorific value than that used for conventional LNG projects), that

significant source of project subsidisation is missing from CSG projects. Further, as LNG produced from CSG will be far outside the specifications of traded Asian markets, it may need to be adjusted for those markets (via LPG spiking or otherwise) in order to be as marketable as non-CSG based LNG.

4. High Costs and Limited Labour - Construction costs for LNG projects have at least quadrupled since 2002. Unfortunately, although costs in some markets are easing due to the current global downturn, Australia is still viewed as a higher cost country when compared with other Asian LNG exporting nations such as Indonesia and Papua New Guinea. This is the result, not only of those rising construction costs, but also environmental concerns, a high-priced labour market and a shortage of skilled labour.

In short, there is some doubt as to whether it would even be possible to construct simultaneously numerous LNG projects in Australia on-time and on-budget.

One or more of these challenges may result in the postponement or merger of some of Australia’s LNG projects and, potentially, the elimination of others.

In contrast, projects in Qatar are generally not burdened with most of these particular challenges, enjoying instead abundant gas reserves from a single large reservoir, economies of scale in LNG operations employing conventional LNG technology, a reservoir with a high liquids content, and existing necessary supporting infrastructure and governmental backing. As a result, if one ignores the current Qatari moratorium, it appears that the strong competitive edge which Qatar retains over Australia in new LNG development may well give its LNG projects a more robust economics and project development profile for the foreseeable future.

Although the Middle East has enjoyed enormous LNG-based success, it is an open question whether this region or Australia will be the top supplier of LNG during the next two decades.

