Unconventional Gas - A Game Changer For LNG?

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Gas Export Market And The Role For Unconventional Gas

The global gas market is regionally fragmented, with exports being largely driven by pipeline and to much lesser extent LNG. The LNG portion, currently accounting for less than 10% of total gas demand, is of particular relevance to the PGCC due to Qatar's position as the world's largest supplier. Historically Qatar used to ship its LNG predominantly to eastern markets, such as China, Japan and Korea. However, since the completion of RasGas Train 6 in 2009 and the recent start of production of RasGas Train 7, Qatar has also been catering to the US market. Once Qatargas Trains 6 and 7 become fully operational in 2010, it is expected that these dynamics will become even stronger as offtake from both trains is partly earmarked for the US as a base destination as well. By the end of 2010 and once all of these trains are fully operational, Qatar's total production capacity will increase from a current level of 54mn tons/year to 77-78mn t/y, representing 30% of the world's LNG demand.

Over the past few years, two developments in the unconventional gas arena are having a profound impact on the global gas market - and the LNG market in particular - and are likely to continue doing so going forward. The first of these developments is shale gas and the second is that of coal bed methane (CBM).

Shale gas is categorized as unconventional natural gas extracted from shale formations. While some of the older shale is in vertical formations, the younger shale is found in horizontal structures. Extraction of this shale requires artificial stimulation such as horizontal drilling and hydraulic fracturing - a process in which a high-pressure mix of water, sand and chemicals is pumped underground to break up the shale formations and release the natural gas. What redefined the shale gas industry over the past few years, predominantly in the US, has been the ability to deploy these technologies far more precisely and economically - in some cases rendering the costs for unconventional gas projects lower than those of their conventional counterparts.

CBM in turn consists of methane molecules that are trapped in coal seams by water. CBM also requires technology-intensive extraction processes that reduce the water pressure in the coal seams in order to release the methane molecules for capture. Australia has been at the forefront of CBM development and, due to its small domestic market, has been working diligently on turning its resources into LNG for export.

The developments within the unconventional gas revolution are being taken seriously by major oil companies, with the likes of ExxonMobil, BP, BG, Total, Petronas and Statoil aggressively pursuing unconventional hydrocarbon opportunities and in some cases - such as ExxonMobil's $41bn acquisition of XTO - acquiring companies with capabilities in these fields. In addition, service providers such as Schlumberger and Baker Hughes are looking to expand their portfolio by acquiring skills relevant to unconventional gas extraction. In the long run the advanced drilling techniques currently used in US and in Australia may be deployed elsewhere in the world, with far reaching consequences for the energy mix of various countries and the geopolitics of energy security. With the right commercial as well as political incentives, technologies always proliferate.

What Role Does Unconventional Gas Play For LNG Markets?

In light of these developments, shale gas has already turned around the historic decline of US gas reserves and changed the gas supply picture of the country significantly. According to a report released by the Potential Gas Committee in 2009, estimated US reserves of natural gas were 35% higher than only two years ago.

Subsequently reduced LNG demand of the US has had two main effects on global LNG markets. On a supply level a country like Qatar has had to divert more cargoes to European and Asian markets. This solution may of course become more precarious if China's ambitions to exploit its considerable shale gas potential and CBM resources gain further traction over the next decade. A recent sign of this was the China National Petroleum Corporation (CNPC) agreement with the government of Yunnan to develop the province's considerable CBM resources potentially with foreign partners. A number of companies including Shell, ConocoPhillips as well as the smaller Green Dragon Gas Ltd are said to hold coal seam gas acreage in China. On a pricing level, the reduced US gas demand has decreased the demand tension between the Atlantic and the Pacific Basins, thus exerting further downward pressures on already depressed LNG prices that had tumbled in the wake of the global recession last year. In light of this, countries such as Qatar may start to reassess prospects that touched upon the export of gas to its gas-strapped neighbours, albeit at a closer pricing parity to market LNG prices.

Other regions are increasingly catching on to the shale gas trend. In Europe, international oil companies (IOCs) have already started using the same technologies deployed in the US and Australia to explore unconventional gas reserves. ExxonMobil for example, holds 750,000 acres of leasehold land in Lower Saxony, Germany, where it executed 10 test well drillings last year alone. ConocoPhillips partnered with independent energy exploration company Lane Energy last year and is scheduled to drill the first shale gas test well in Poland. The data of these test wells and other efforts will determine the potential for shale gas in Europe. Even if shale gas in Europe does not materialize to the extent that the industry may expect, a stronger emergence of shale gas in the global arena may enable it to gain more independence from its gas-rich neighbour Russia by importing relatively cheaper LNG from Qatar, offshore Africa and elsewhere.

Within the MENA region, shale plays exist in Jordan and Syria, albeit initially sought after for their oil shale. While some IOCs such as Shell have publicly signed oil shale deals in Jordan, others are rumored to be buying up acreage behind the scenes to hedge their bets on potential new resources in the region. Syria, still politically isolated by the West, has approached the likes of Estonia, also regarding an oil shale play. The commercial viability and associated impact of these shale plays on the regional gas market remain to be seen.

CBM's large scale deployment in Australia is likely to have a significant impact on the Pacific Basin LNG market and several international companies have invested heavily in the industry. Arrow Energy for example, a major CBM player in Australia that recently received a joint bid from Royal Dutch/Shell and PetroChina, which valued the group at around $3.5bn, has been considering the option of utilizing Shell's Gladstone LNG plant as an export base for its CBM reserves. These exports would predominantly head towards Asia. Australia's CBM ambitions thus directly compete with Qatar's main export routes. This scenario could be reinforced if countries such as Western Canada, Angola or Egypt turn into LNG suppliers in the future.

On a fundamental level, both shale gas and CBM add considerably more volume to domestic and regional gas supply and potentially create opportunities for LNG export by the US and Australia. However, the ultimate impact of both of these technologies outside these two countries remains to be seen as the extraction of gas from shale and coal beds is a complicated process and the availability of unconventional gas resources does not automatically warrant that they are proven reserves possible to be developed from an economic standpoint. Potential hurdles vary by region and include environmental concerns regarding water pollution, lack of service infrastructure, equipment shortages, regulatory and tax issues as well as higher drilling and labor costs. In addition, even US producers' economics often focus on oil shale and natural gas liquids (NGLs) first, because they are directly priced off international crude prices, which are considerably higher than the depressed natural gas prices.

With a view to the regional LNG market in the short run, the emergence of the unconventional gas supply and a large amount of LNG capacity coming on stream in the midst of a global economic downturn is likely to reduce greenfield project activity in the PGCC LNG sector over the coming years.

Fig 1. Awarded versus planned PGCC LNG capex spend workload

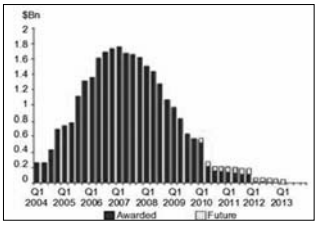
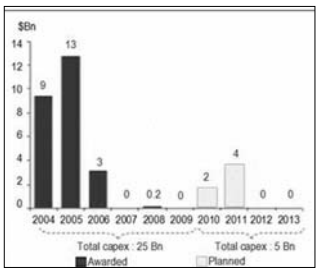


Fig 2. PGCC LNG



Note: Considered projects include LNG production projects, LNG carriers and LNG storage facilities.

In the longer term however, the regional LNG market will continue to profit from strong international LNG demand, especially in the Pacific Basin. While Japan's matured demand for LNG is likely to stabilize, South Korea's LNG demand is expected to increase by 30% and China's LNG demand is forecast to quadruple in the next decade. In response, China is expanding its LNG regasification capacity from two terminals to five terminals in the near future. India's demand for LNG is also expected to grow considerably. Looking at Europe, after the 2008 drought in Southern Europe and the subsequent impact on its hydropower generation, Spain is also expanding its gas infrastructure rapidly. LNG suppliers are currently waiting to see how the US market's unconventional gas volumes and its LNG demand levels play out, but they know that in the longer run, LNG supply from the Middle East is crucial to Asia's economic growth sustainability and the rest of the world's energy supply.

Opportunities In The Regional LNG Market And Beyond

Given the prospects for sustained LNG demand in the long term, new LNG project opportunities in the region, particularly in Qatar, may present themselves after 2015 when the reservoir study of the North Field has been finalized and the moratorium is potentially lifted. This will - amongst other factors - depend on the shifts in the LNG demand picture in the coming years and on the emergence of new or expanding import markets, such as Cyprus, whose LNG terminal is expected to be operational in 2013, Italy which is adding two more terminals, South Africa which is completing its LNG terminal this year and the above-mentioned Asian countries.

For the time being, LNG opportunities in the region will mainly be constricted to brownfield projects that are focused on the maintenance and debottlenecking of existing LNG assets, such as the engineering contract that was signed between Qatargas and Chiyoda Almana. Another area that may provide opportunities, albeit limited, is that of regasification facilities which may be interesting where gas transport via pipeline encounters political difficulties in the region. Kuwait and the UAE are examples of countries that are shifting their attention to LNG imports for potential long term relief from its domestic gas shortage and may not remain the only ones. In December 2009, the Dutch terminal operator Vopac and the private Saudi al-Zamil Group signed a memorandum of understanding expressing their intention to create a joint venture for the development of bulk liquid and LNG terminal facilities across the MENA region. Some industry sources have suggested that even Saudi Arabia may consider importing LNG from Qatar in the future.

With regards to opportunities in the field of unconventional gas itself, the effect that Jordan and Syria's deposits will have on the gas balance and the respective regional project landscape depend largely on the speed at which exploration efforts advance and could provide long term market prospects for those involved in the industry.