

The LNG and shale wildcards

Will global shale resource development and the US LNG export initiative bring more liquidity to global gas markets and help Europe's future energy needs? Allen Brooks, Crispian McCredie and Ruud Weijermars** of Alboran Energy Strategy Consultants consider the challenges facing the global LNG business.*

The role of natural gas in the world's energy supply system is targeted to expand. Not only has the less polluting nature of natural gas been grudgingly accepted by environmentalists, gas also offers a political compromise for managing the transition from a world powered by fossil fuels and a discredited nuclear generation programme, to one with a more diverse portfolio of energy supplies. Furthermore, the prospect for significant new gas supplies following the global expansion of the shale revolution and new gas fields coming onstream present some interesting scenarios.

Natural gas' role in the global energy supply system is projected by the International Energy Agency¹ (IEA) to expand from 21% in 2010 to 25% by 2035. This equates to an annual compounded growth rate of 1.6% over the coming decades. To meet the IEA's target for increased gas demand, LNG supplies are expected to grow in the range of 5–6%/y by 2020 and then at a slower rate of 2–3% until 2035. Since 2000, global LNG demand growth has averaged about 7.6%/y, rising 280% faster than the overall growth of natural gas demand (+2.7%/y).

However, there is an important geographic supply–demand mismatch due to the locations of the world's large natural gas resources, including potentially exploitable shale gas deposits, and the major centres of demand. If the present trends continue, the industry will be facing tough choices – to rely on the growing LNG supplies and expand the necessary transportation infrastructure or instead build long-distance pipelines to source regions. Shipping LNG increases the flexibility to match supply

with demand at potentially lower costs. Both choices represent attractive business opportunities and gas industry executives and local governments are eyeing demand trends and extrapolating them into meaningful business opportunities. Gas trading liquidity will surely be bolstered by a global rise in LNG shipments.

Indeed, the impact of LNG and new shale gas resources could be compared to the seismic shift experienced by the global oil industry upon Winston Churchill's historic decision to fuel the British Navy with oil instead of coal.

Outlook for Europe

For Europe in the short term, other than imported coal, there is no substitute fuel aside from gas that can provide the region's base-load power. The progressive depletion of the UK North Sea and the Netherlands' Groningen fields will increase dependency on imported gas. LNG will have to fill the void left by insufficient pipeline gas², even with the extensions of Nordstream and the southern Nabucco pipelines and Norwegian gas.

This is good news for LNG exporters, but gas prices are unlikely to come down for European gas consumers unless indigenous and global shale gas resources can be developed soon, when and if regulatory hurdles are resolved.

US debate on LNG export

The shale gas revolution has changed the US from an importer of substantial pipeline gas volumes from Canada and LNG from around the world into a potentially self-sufficient domestic supplier. The US Potential Gas Committee recently released its 2012 assessment of

technically recoverable natural gas resources in the US.³ It opines there is 2,384tn cf of gas available, a record high for this 48-year old survey, due to new evaluations of the Atlantic, Rocky Mountain and Gulf Coast regions, home to some of the largest and most successful American shale plays to date.

US natural gas production has outpaced demand, with the unintended consequence of severely depressing natural gas prices. The success of the American shale revolution coupled with the post-2008 economic downturn has resulted in a sharp drop in US and Canadian natural gas prices. From April 2008 to April 2012, the Henry Hub terminal spot natural gas price fell by over 80%, down from roughly \$10.50/mn Btu to \$1.99. A colder than expected 2012/2013 winter has boosted current gas prices to above \$4/mn Btu. To permanently relieve oversupply price pressure, US shale gas producers are engaged in a rigorous debate over the possibility of exporting LNG into the world market. They would like to capture the premium of high gas prices in Europe and Asia.

However, the interests of E&P companies and US industrial corporations are misaligned over the possibility of exporting LNG. Low gas prices and prospects for their continuation, coupled with continuing success of the shale revolution, has encouraged petrochemical and other industries that utilise natural gas as either a feedstock or raw material to plan major capacity expansions in the US. For US industry, the prospect of an industrial revival due to a competitive advantage from low-cost natural gas is an attractive prospect over exporting LNG. On the other hand, E&P companies who have invested billions of dollars in lease holdings and drilling see LNG exports as a way to bolster their balance sheets by capturing the premium being paid for LNG supplies by European and Asian buyers. American gas producers could likely double their wellhead price realisations. The US Federal Energy Regulatory Commission (FERC) estimated in June 2013 that the landed cost for LNG in Japan and South Korea is \$14.10/mn Btu, \$9.49 in the UK and \$9.77 in Belgium⁴, which remains attractive even taking into account the cost of liquefaction, regasification and transportation, compared with Henry Hub prices of about \$4/mn Btu.

Regulatory developments

As of June 2013, only two US LNG export terminals have been given the go-ahead, with several others nearing approval. There are 19 export terminals in the approval pipeline, which if all were given the green light and oper-

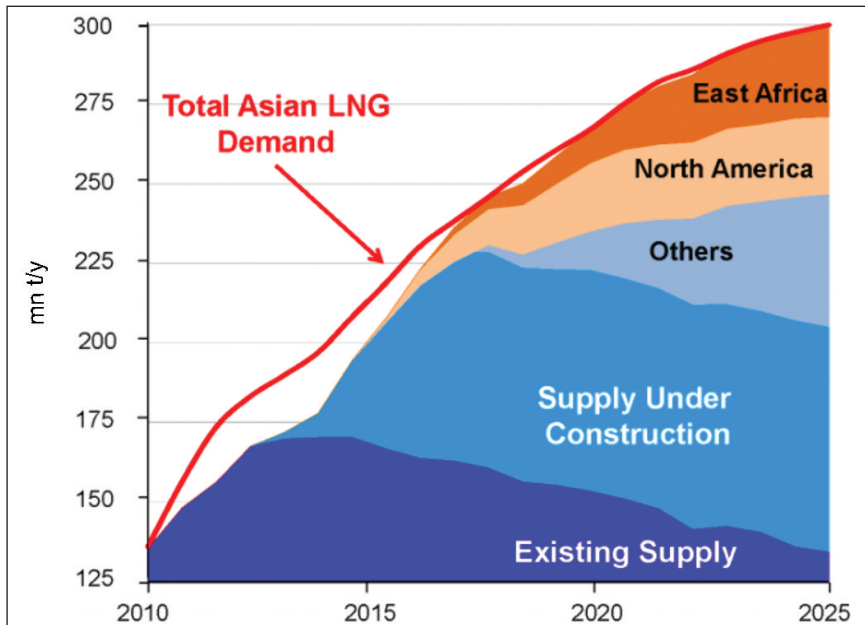


Figure 1: Asian gas demand captures about half of global LNG supply
 Source: Alboran, E&Y, Poten & Partners, and energy agencies

windfall for producers will vanish. The first North American LNG shipments via the Atlantic Basin from Cheniere's Sabine Pass facility are destined for Europe (BG Group and Total) and via the widened Panama Canal for Asia (GAIL and Korea Gas).

Figure 1 illustrates how North American LNG from shale resources and from conventional African gas fields are needed to meet Asian demand if local shale resources remain unsuccessful. The ability of LNG exporters to capture the European and Asian gas price arbitrage may evaporate altogether if local or nearby shale resources can be exploited at costs well below landed LNG prices. Just as we have seen cheaper shale gas output eliminate the need for more expensive US LNG imports, the same phenomenon might occur in Europe, Asia, and especially in China. If on the other hand global shale resource exploitation proves unsuccessful or is inhibited by government regulation, it will open up a greater market potential for LNG exports.

ated at capacity would account for nearly 40% of present US natural gas production. There is little likelihood all these export terminals will be approved. But which ones will, or should be?

Unfortunately, the history of regulation of the US natural gas industry has been marked by mis-steps, which have contributed to periods of supply shortages or huge gas surpluses. As in Europe, counting on regulators to get it 'right' is a dangerous strategy. A restructured US gas producing industry will alter control over gas volumes available for export, further impacting the dynamics of the global gas business. Five to 10 years from now, we may find that the global LNG business has barely been affected by sluggish regional shale gas developments. That may be welcome news for conventional gas exporters who may be worried about their future. Another issue that will affect shale gas is the question of regulation of hydraulic fracturing, which is a critical component of successful shale gas exploitation. If that technology is regulated or outlawed, the US E&P shale gas industry will be forced to reconsider its future, along with the potential American re-industrialisation. European governments may be likely also to follow any US regulatory initiative.

The pricing issue

One reason for high LNG prices in Europe and Asia is that the price of long-term LNG contracts is tied to the price of crude oil, which is high due to geopolitical concerns and demand growth from developing economies.

India and Japan have recently discussed establishing gas-price linked LNG contracts in the future rather than continuing oil-linked contracts. Meanwhile, Russian and Chinese discussions over Eastern Russia gas supplies are deadlocked over price.

The first US LNG export terminal contracts are spot gas-indexed with the buyer paying the Henry Hub price plus the costs of liquefaction, regasification, transportation and a slight premium. But if new buyers of US LNG will only pay a marginal cost premium to Henry Hub prices, then some of the expected

Outside the US

The success of the US shale industry has encouraged the exploitation of shale globally. The world's shale resource potential, coupled with the technical success demonstrated in North America, underlies the IEA's forecast of shale gas growing from 8% of the world's gas supply in 2012 to 25% in 2035. Estimates are that global LNG demand in 2012 was approximately 250mn tonnes, and current LNG supply capacity is estimated at roughly 300mn t/y (see Figure 2).

World LNG supply from existing liquefaction plants and those under

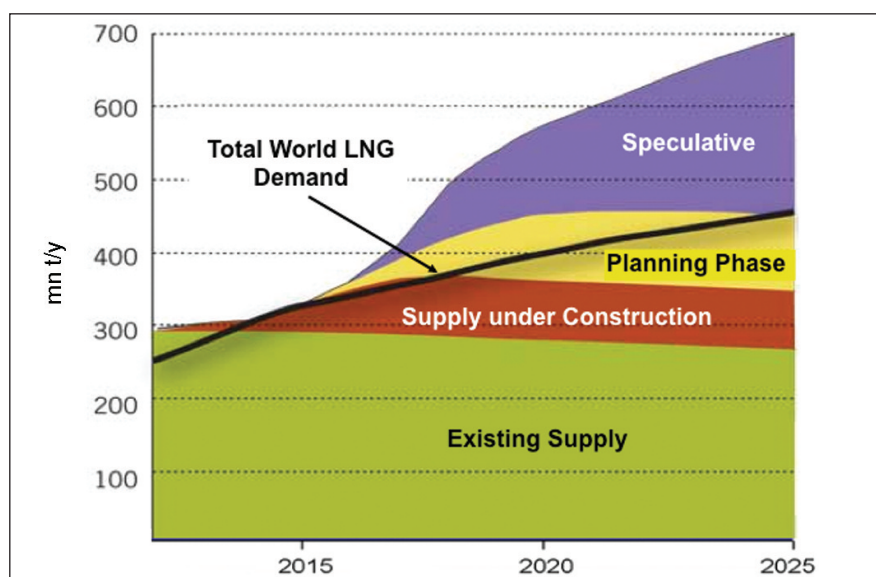


Figure 2: World LNG supply and demand outlook
 Source: Alboran, E&Y, Poten & Partners, and energy agencies

construction can meet global LNG demand until 2018. Meanwhile, Europe and Asia still compete for new LNG supply contracts for the period after 2018. If all proposed liquefaction terminals are built in the next decade, the demand for LNG in both Europe and Asia can be covered, but the risk of a volatile demand outlook may jeopardise the financing of new facilities.

Australia and Papua New Guinea are the prime producers of LNG over the next two years, with a capacity of over 100mn t/y under construction and with possibly as much as another 150mn t/y at the project stage some three to five years away. Much of the Australasian LNG is destined for Japan, still suffering from its nuclear power industry shutdown, and is unlikely to reach Europe. However, there are signs that Japan's newly elected government is starting to recommission its nuclear power plants. The price of importing LNG and a lack of an internal gas pipeline network is hampering the country's economic development.

The other major export market for Australasian LNG is seen as China, but the long-term future of exporting LNG to China may need re-examination. This is because the country is seen as the major Asian shale gas growth area in the next 10 years, as it harnesses significant shale gas resources. If successfully

and speedily exploited, a Chinese shale gas revolution could materially alter the global gas trade and supply balance, which will impinge on its future LNG market. The first stage in this development has already been seen, with Sinopec taking stakes in US shale gas properties owned by Devon Energy and Chesapeake. Sinopec's US holdings present an important knowledge transfer incentive to help develop Chinese shale gas extraction technology.

Beyond 2017 is the potential for substantial new African LNG volumes from Nigeria and Mozambique, which could be destined for Europe. Additional Middle East LNG supplies from conventional gas fields will depend on the degree of political stability to allow increased production and export of gas by either pipeline or LNG from Iraq, Kurdistan and Iran. The instability in the region shows no sign of abating. Iraq's future production figures appear overly optimistic, with the political situation for the future of Kurdistan undecided. Meanwhile, Iran is starved of funds under international sanctions and, as such, appears unable to develop its large gas fields.

Implications for Europe

Europe is set to import over 80% of its natural gas by 2035, which makes it the

largest global gas importation market for the next two decades. Europe's gas policy is betting on an improved liquidity in global gas trading. At present it is highly uncertain whether such liquidity implies ample supply or a gas shortage.

The inevitable conclusion for Europe in the short term is that polluting coal is likely to gain market share as the cheapest and surest fuel supply for new power stations – a firm slap in the face for the European Union's green energy ambitions. ●

* Also advisor to PPHB LP. ** Also at Delft University of Technology.

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