

## LNG – Prospects for the Future

The prospect that LNG could become a major global energy source is one of the most keenly debated issues in the sector. This was reflected in this quarter's survey, conducted by *Moffatt Associates*, which produced a wide range of views from panel members, and although there is a general consensus that LNG will grow in importance over the next few years, it is still not clear how much it will contribute towards Europe's energy portfolio in the future.

In 2004, LNG supplied 9% of Europe's gas demand, while LNG trade to Europe rose by 5.4% on the previous year, a smaller increase than in 2002/2003.

Table 1 shows total imports of LNG to Europe in 2004 by country.

Table 1 Trade movements 2004 – LNG (Bcm)

Importing countries	Exporting countries							Total imports
	Oman	Qatar	U.A.E.	Algeria	Libya	Nigeria	Malaysia	
Belgium				2.85				2.85
France	0.08			6.72		0.83		7.63
Greece				0.55				0.55
Italy				2.10		3.80		5.90
Portugal						1.31		1.31
Spain	1.20	3.91	0.20	6.58	0.63	4.81	0.81	17.51

NB: Flows are on a contractual basis and may not correspond to physical gas flows in all cases.

Panel members agreed that the current contribution of LNG to the European energy market is relatively small, but growing. A number of new terminals are planned and LNG use is expected to rise slightly within the next 2 years, and more substantially in 5 years and beyond. At present, it is estimated that by 2015 LNG will supply 12% of EU gas demand, but this figure could rise.

The growing importance of gas for European power generation is one of the driving forces behind the greater use of LNG as a

supply source, as is the increased importance of security of supply. Environmental concerns are also driving interest in LNG, while technological improvements are helping to reduce the costs of delivering LNG. ►



### UK identified as key market for future

Respondents agree that Belgium, France, Italy, Spain and the UK were the European countries most likely to be most affected by LNG in the future. As the table above shows, Spain is currently the main market for LNG, followed by France. After Japan and South Korea, Spain is the third largest importer of LNG in the world, and LNG represents over 60% of total gas demand. Spanish gas demand is growing substantially: in 2004 it rose by 20%.


The country's gas pipeline infrastructure is still relatively limited, with only restricted potential for natural gas imports, and for this reason LNG has become increasingly important in meeting demand. Although Spain imports competitively-priced piped gas through the GME pipeline from North Africa, and the Medgaz project now under construction will increase capacity when it is completed from 2007 onwards, LNG shipments are expected to continue to play a crucial role in meeting demand.

Spain has four of the EU-15's 10 LNG terminals and more are planned, with Spanish power companies keen to invest in new terminals as part of their strategy to expand gas-fired generation. The three largest electricity companies (Endesa, Iberdrola and Unión Fenosa) are building a terminal near Valencia and will use the gas to feed their gas-fired power plants in the region. Iberdrola and Unión Fenosa are planning to build new power stations near the terminal, while Endesa and Unión Fenosa are involved in construction of another terminal in north-west Spain.

The rise in demand for gas as a power station feedstock is also leading some power companies to invest abroad in liquefaction export terminals, for example Unión Fenosa is investing in the Damietta LNG export terminal in Egypt, in collaboration with the Italian oil and gas group ENI.

There are also plans for new terminals in Belgium, France, Italy, Portugal and the UK. France, which has two LNG terminals, and Italy, which has one, both use LNG to supplement piped gas supplies, and with demand for gas also growing in these markets, the importance of LNG will continue to rise.

Despite the existence of gas pipelines between southern Europe and North Africa, physically transporting gas on to France remains difficult because of a lack of infrastructure, with new cross-border pipelines not expected to be in place until about 2012. For this reason, France is expected to continue to import nearly all its Algerian gas in LNG form. LNG covers about 25% of gas demand, and Gaz de France is constructing a new, offshore LNG terminal at Fos Cavaou, the site of an existing terminal on the Mediterranean coast. ExxonMobil has also proposed building an LNG import terminal near Fos Cavaou by 2009.

Panel members identified the UK as a key target market for LNG, and the country has probably the most ambitious expansion plans for LNG in Europe. Increasing gas demand, largely for power generation, has combined with the gradual decline in North Sea gas to encourage renewed interest in LNG. 

The UK stopped importing LNG in the 1980s when its own indigenous gas fields more than covered UK demand. However, on July 4 2005 the first LNG imports for 20 years docked at a new terminal on the Isle of Grain near London, heralding the start of a new era. The shipment came from Algeria, and BP and the Algerian gas company Sonatrach own all the import capacity in the first phase of the terminal. Centrica has bought some of the expansion capacity for the terminal in the second phase and is talking to producers in the Middle East and Africa.

Two more import terminals will be built by 2007 at Milford Haven in South Wales, importing gas from countries such as Egypt and Qatar. In all, LNG could cover about 20-25% of the UK's gas demand by 2008-2009, and as much as 30-40% by 2012 as North Sea production continues to decline.

### Substantial investment needed in LNG infrastructure


Panel members gave a wide range of responses to the question of what factors are inhibiting the growth of LNG in Europe. The high costs of LNG transportation (it is more difficult to move gas than to move oil), and the need to improve infrastructure were amongst the most frequently expressed reasons.

Over the period to 2010, it is estimated that the industry will be required to invest about 36 billion in LNG liquefaction, shipping and terminal receiving facilities to sustain LNG growth to the European market. Another 10-20 new terminal

projects may be needed to keep up with the growth in demand for LNG. However, with different players becoming involved in the LNG market and gas demand increasing across Europe, there should be no shortage of investors in the future.

Regulation, and access to TPA, are also seen as possible obstacles to the growth of LNG. LNG faces competition from the incumbent gas utilities who own and operate the gas pipelines that take gas from the port to the consumers and who want to control all aspects of the gas chain. Indeed, some of these utilities are also investing in LNG projects to try to acquire this overall control. A number of LNG and piped gas projects are scheduled to be completed in 2008, and both will be chasing the same market. However, piped gas projects will still outnumber LNG schemes.

### Competition from other sources

One key question is whether LNG will be able to compete against other major sources of piped gas. As mentioned, when LNG is landed it enters a competitive market, at least in some countries, and the more restrictive contract terms of current LNG supplies make it difficult for it to compete with piped gas. However, LNG supplies are flexible, and can be diverted from one destination to another if necessary. In addition, with supplies of piped gas increasingly transported longer distances within Europe, the threat of disruption to pipelines is a growing concern. LNG could therefore have intrinsic advantages in terms of security of supply, a growing concern for the EU. 

LNG may also become more competitive in the future. The marginal unit costs of the LNG supply chain are falling and the number of supply sources are rising. The Middle East is the fastest growing source of supply, with Qatar in particular aggressively developing its LNG exports. Abu Dhabi and Oman are stepping up their supplies, while Algeria and Nigeria, already large producers of LNG, will soon be joined by Egypt.

With such a variety of supply sources, and the EU increasingly dependent on imports to meet gas demand, LNG would seem well placed to take off as a major energy source. For a long time it mainly supplied countries such as Japan which could not access natural gas supplies. Now, however, with gas increasingly important for power generation in Europe and elsewhere, and environmental concerns supporting the use of gas instead of coal and oil, the need for additional, more flexible gas resources is growing. By 2010, Europe and the USA are expected to have overtaken the Asia Pacific region as the main consumers of LNG, with Europe seeing the most dramatic increase in terms of gas imports with its dependency growing from 36% in 2001 to 65% in 2020.

Major international oil companies are investing in new tankers and infrastructure to prepare for the expected boom in LNG business. Traditionally, LNG projects in Europe and Asia have been carried out by

a consortium of producers and consumers sharing the profitability and the risk across the value chain in the form of long-term contracts.

Even if significant amounts of LNG continue to be supplied on long-term contracts, however, contracts are likely to become increasingly flexible. In addition, the recent rise in oil prices appears to have encouraged some oil companies to build terminals without gas contracts to back these up, and there seems to be a greater willingness to carry over-capacity if necessary.

There was broad agreement amongst panel members that the current LNG infrastructure in Europe is not adequate to cope with medium-term needs, and that further investment is needed. However this is expensive, and environmental opposition to construction of terminals is also a significant factor. In Italy, for example, plans to build a new LNG terminal at Brindisi have resulted in strong protests. After continuing delays to the project, the power company ENEL has pulled out completely, selling its 50% share to its partner, BG.

Respondents found it difficult to predict how much LNG destined for Europe will be diverted to the US and Asia over the next 5 years. There was a consensus that there will be diversions, but the amount will depend on demand, prices, and the number of import terminals. ►



### Arbitrage opportunities increasing

A global LNG market could develop in the same way as a global oil market. Arbitrage opportunities between the Atlantic Basin and the Pacific are emerging as demand for LNG increases, particularly in the USA, and in recent years there has been diversion of LNG supplies away from countries as a result of price differences. For example shipments from Trinidad or Nigeria have been diverted either to the USA or Spain, depending on price.

The growing number of supply sources, together with a relaxation of the previous rigid industry structure, have enabled price signals to be transmitted between previously isolated regional gas systems, and this trend is likely to continue. However, diversion also depends on excess tanker and terminal capacity being available at the time.

### Summary

Although LNG is becoming increasingly popular in Europe, higher demand in the USA, where traditional gas supply sources are declining, could put pressure on supplies to European markets. The UK and other European markets may have to compete increasingly with the US and the Asia Pacific region for many of the same sources.

The popularity of gas-fired generation and the flexibility of LNG have combined to make this fuel increasingly attractive in Europe. However, significant investment is needed to improve the infrastructure to cope with higher deliveries of LNG, and there are uncertainties about how competitive LNG will be compared to piped gas. Despite these qualifications, however, the importance of LNG for Europe's energy portfolio is likely to grow, especially in the medium-term. ■

*References: Cedigaz, BP, EuroStat, European Commission.*

