

A picture of the European gas trading market in 2005 by Nigel Harris and Mary Jackson

The European gas industry is going through a period of major change as traditional monopoly structures are gradually transformed into open, competitive markets. Major consumers, who want to be free to choose their own suppliers, have led the pressure for market reform. The European Commission (EC) is committed to the establishment of a single market throughout Europe and many national governments are also keen to foster free market development to improve efficiency. But the road to reform has been bumpy, requiring extensive legislation and regulation.

Under the terms of the 2003 EC gas directive, all European Union (EU) member states, unless specifically exempt from the liberalization requirements, now have a similar level of market opening – all non-household gas consumers have been able to choose their supplier since July 2004. Full gas market opening across Europe is scheduled for July 2007.

Overall, at the end of 2004, at least 86% of gas consumed in Europe was supplied to end-users who were legally able to choose their supplier. But the amount of real competition between suppliers - and the degree of real choice offered to consumers - varies greatly between countries. The EC is aware of the issues and in May 2005 its competition directorate launched an investigation into the functioning of the gas and power market. Like many market participants, the EC believes a lot still needs to be done to kick-start the development of real competition in the energy markets.

Gas Supply and Infrastructure

Europe has only 4% of the world's gas reserves, but accounted for 12% of global gas production in 2004. The relatively large production from its small reserves reflects the high level of gas demand. Three countries - the UK, Norway and the Netherlands - together produce 78% of European gas.

In most European countries gas production will decline significantly over the next decade, as existing gas fields are mature and new discoveries are generally small. Europe's declining gas production means it is increasingly dependent on imports from outside the region. Almost all countries in Europe are net importers of gas and many, including major consumers such as France and Spain, are almost totally dependent on gas imports. Norway is Europe's only major gas exporter, supplying around 14% of European gas consumption.

Russia supplies over 60% of the gas imported into Europe. It is the only source of gas for many Baltic, central and south-east European countries and is a major supplier to north-western Europe. With its enormous gas reserves and established pipeline links to northern Europe, Russia is expected to remain Europe's largest external supplier. Algeria supplies over 25% of the gas imported into Europe, by pipeline to southern Europe and as LNG to several countries including France, Belgium, Greece and Portugal.

Europe's gas importers are keen to diversify their sources of supply and LNG provides a way to do this. LNG imports currently comprise around 11% of total imports into the region, and this figure is set to grow with many existing LNG terminals being expanded and new terminals planned or under construction. LNG importers into Europe include Algeria, the Gulf countries (Oman, Qatar and UAE), Libya, Nigeria, and Trinidad & Tobago. Nigeria is Europe's second largest LNG provider after Algeria and is expected to continue to expand its LNG export capacity, competing with Europe's North African LNG suppliers. Qatar is also set to grow its LNG exports to Europe significantly in the next few years and Egypt has also begun exports, following the commissioning of its first LNG plant at the end of 2004.

In the longer term, Europe may obtain gas supplies from the Caspian Sea region, including Azerbaijan, Iran, Turkmenistan and Iraq, although the pipeline infrastructure to allow this to happen is not yet in place.

Gas Demand Drivers

High population density, extensive urbanization and the local availability of gas production have contributed to the development of intensive gas use within western Europe. Environmental concerns have also prompted many European countries to favor the use of gas over coal or oil, further strengthening the role of gas in Europe's energy economy. As a result, in 2004, Europe accounted for 19% of the world's gas consumption. The highest per-capita rates of gas consumption occur in the Benelux countries and the UK. Two-thirds of European gas consumption occurs in just five countries – the UK, Germany, Italy, France and the Netherlands.

Overall, natural gas is the fastest growing source of primary energy in Europe, with an average growth in consumption of 3% per year over the past five years. In most countries, this growth is set to continue as gas networks are expanded and new CCGTs are built. Power generation is expected to be the strongest driver for gas demand growth in the period to 2020. The use of conventional thermal power plants is expected to decline very rapidly, which, coupled with the possible decommissioning of many nuclear plants, will continue to fuel growth in gas-fired generation.

Fuel switching from coal and oil products in the industrial, residential and commercial sectors is expected to continue, albeit at a slower pace after 2010. After 2020 gas is expected to start shedding market share in favor of renewable energy sources (wind, waste and other biomass) and advanced, clean coal and lignite plants.

The Development of Competition

Although a large number of gas consumers in Europe are now able to choose their supplier and many steps have been taken towards the harmonization of national legislation as a result of the EU gas directives, barriers to competition still remain. These primarily relate to market structure, national attitudes towards liberalization, access to gas supplies and access to key infrastructure facilities.

The upstream gas market in Europe is dominated by major oil and gas companies, including Statoil, ExxonMobil, Shell and BP. In contrast, wholesale gas sales are dominated by an entirely different group of players, including former national monopoly gas suppliers such as Eni, Gasunie, Gaz de France, Centrica, Distrigas and Gas Natural, as well as major German energy companies, E.ON Ruhrgas, RWE and Wintershall.

Although the former monopoly gas companies are still dominant in many countries, their market shares have declined since competition was introduced. To compensate for this, many companies have looked to other European markets for growth, which they have achieved through acquisitions, particularly in central and eastern European countries.

Many gas companies have also diversified into the sale of electricity and other utility products such as water and telecoms. At the same time power companies now play an important role in the European gas market, particularly in Italy, Spain and the UK. For power companies, entering the gas market gives them a chance to optimize gas purchases for their generation units and/or to expand into other markets.

Gas Markets and Trading

As the European gas markets open, trading is developing around specific delivery points or market "hubs". The prices established in hub trading have begun to be used as the pricing basis for gas supply contracts, leading to the development of markets where gas is priced according to gas-to-gas competition, rather than indexed to the price of alternative fuels such as gasoil, fuel oil and coal, as has traditionally been the case. Gas-to-gas competition is well established in the UK and is beginning to get a foothold in continental Europe – particularly in the Netherlands, Belgium, France, Italy and Spain.

The UK is the most competitive, liquid and transparent gas market in Europe, with active over-the-counter (OTC) and exchange-based trading. The OTC market trades spot and forward physical gas and capacity contracts, based primarily on the National Balancing Point

(NBP), a virtual balancing point for the UK's transmission network. Gas is also traded through organized exchanges, including the London-based International Petroleum Exchange (IPE), which provides a futures contract for natural gas delivered at the NBP.

In continental Europe, the most active gas trading hub has been Zeebrugge in Belgium. Zeebrugge is a physical hub, with gas pipelines from France, Germany, Norway, the Netherlands and the UK, and an LNG terminal. However, in the last year, trading volumes at Zeebrugge have been eclipsed by strong growth in trading at the Dutch network's virtual balancing point – the Title Transfer Facility (TTF). TTF has become the focus for Dutch trading activities and the dominant reference point in the region.

Another key physical hub lies in the region of Emden, Bunde and Oude Statenzijl, where the German and Dutch transmission networks connect. Trading has also begun to develop in Italy, around the virtual balancing point of Punto di Scambio Virtuale (PSV) and in France around the virtual title transfer points for the five zones of the transmission network, although volumes remain small.

European gas prices remain tied to oil prices through indexation in long-term contracts, while the price of UK gas is set more by local supply and demand. With the expansion of LNG imports, we may see the start of a more global gas market, with Europe competing with the USA for Atlantic basin LNG supplies.

*Nigel Harris and Mary Jackson are the authors of **European Gas Trading 2005**, a comprehensive 217-page report published by Prospex Research (www.prospex.co.uk).*