The market for natural gas in NW Europe

Despite the rapid increase in LNG[1] trade, the gas market still cannot be regarded as a true world market, due to physical and regulatory differences in gas transportation between regions and countries. Generally we distinguish between the Asian, the American and the European gas markets. Total annual global consumption of gas was 2750 bcm in 2005. Natural gas provides 23% of global primary energy needs and 25% of energy needs in the EU.

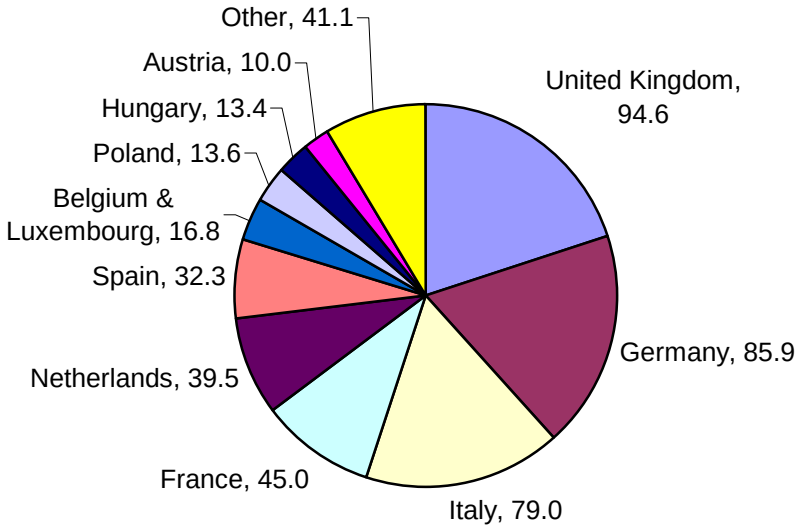

Figure 1: EU gas consumption by country – bcm in 2005 (source: BP Statistical Review 2006)

Supply and demand developments

Substantial gas marketing in Europe only developed in the 1960's after the discovery and exploration of the Dutch and British gas reserves. Subsequently, demand for gas has steadily grown. Over the period 1995-2005, total EU25 demand increased by 38%. Even in a gas-saturated country as the Netherlands, demand has grown by 4.5% over the last decade. The main demand for gas is from the power sector but gas is also used in industrial processes and in

[1] Liquified Natural Gas, which can be shipped by dedicated tankers over long distances.

domestic and commercial applications for heating and cooking, see Figure 2.

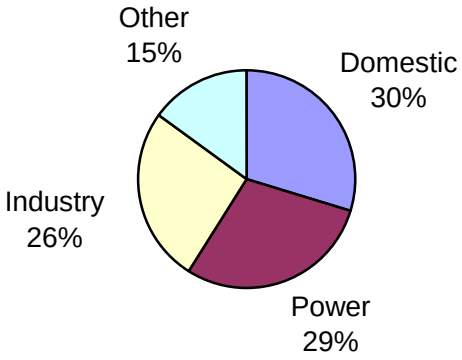

Figure 2: European gas consumption by sector (source: IEA, Natural Gas Information 2005)

EU gas demand is expected to increase over the next decade driven by demand from the power sector. The main drivers for gas-fired power generation are as follows.

- Increasing electricity demand
- Majority of the current generation fleet were built in the 1970's and 80's most of these stations are coming to the end of their expected life
- Environmental policies likely to restrict new entry from conventional coal fired generation
- Nuclear phase out

The low specific carbon emissions compared to other fuels, shorter construction times and lower capital costs make gas the preferred fuel for power generation.

Gas supply has traditionally been met by a combination of domestic production and imports. This is shown in the graph below. However, indigenous production is beginning to decline, which will make Europe more dependant on imports to meet the expected increase in gas demand. Incremental imports are likely to be met by a combination of pipeline gas from Russia and Norway and LNG imports from Algeria and the Middle East.

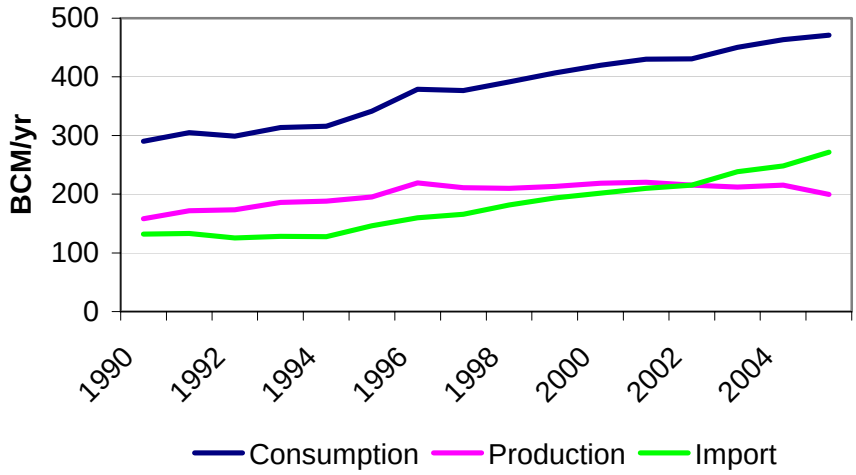

Figure 3: EU25 gas supply/demand balance (source: BP Statistical Review 2006)

LNG

Currently approx. 15% of EU gas imports are met from LNG. With technology improvements in the transportation, liquefaction and reprocessing of gas, LNG has become increasingly competitive with pipeline gas for transportation of gas over long distances. LNG is expected to play an increasing role in meet the future demand requirements in the EU. Spain, Italy and France are the main locations for LNG demand and import in Europe and LNG demand in the UK will grow significantly. LNG will serve to the regional gas markets of America, Europe and Asia as price could be the main determinant of the destination of spot LNG cargoes.

Long term gas contracting vs. hub trading

The development of gas infrastructure to harness gas resources is very capital intensive. Long term supply contracts are a mean to secure this supply and investment. Also buyers prefer long term contracts for at least part of their gas needs due to security of supply considerations.

Historically, the gas price has been closely linked to alternative fuel, mainly heavy fuel oil, light fuel oil and gas oil, prices. Gas could only penetrate into the market as long as its price was structurally lower than the fuel oil price. At the same time, the highest margins for gas companies were reached when the gas price was close to the oil price. As a result the long term supply contracts were priced with reference either directly to oil or indirectly via oil derivative

products. Although the gas market is currently significantly more developed, producers still favour the oil as the main price reference for long term contracts. This results in a strong link between gas and oil prices see Figure 4.

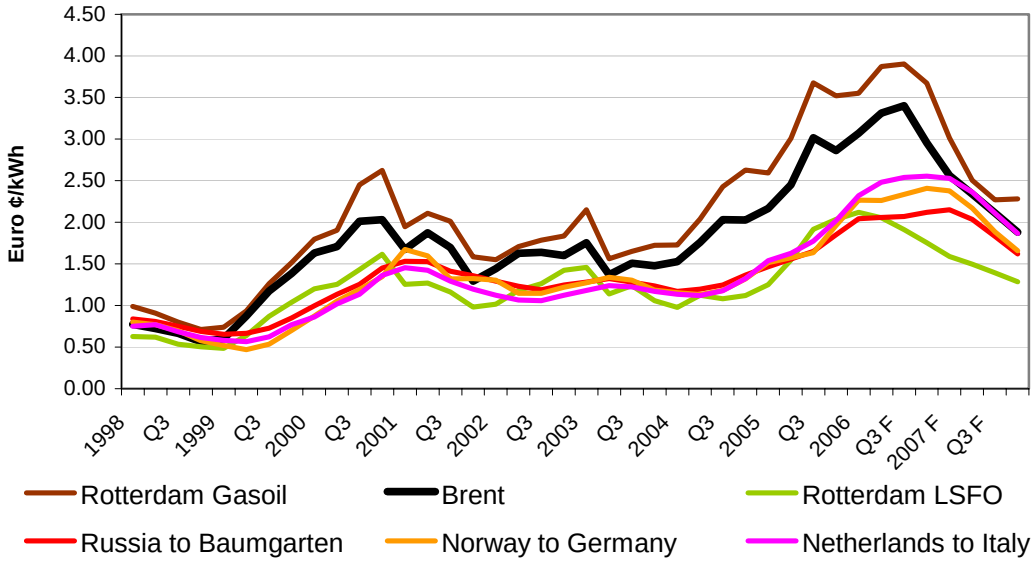

Figure 4: Contract gas vs. oil prices (source: Gas Strategies, August 2006)

While the majority of gas is traded bilaterally from producers to incumbent wholesale players via long term contracts to a specified point of delivery (usually some border point), more and more gas is traded short term and on the spot through hubs. A well-working hub facilitates reliable and timely information on the gas market. Hubs are more or less organized markets that provide a price formation mechanism that reflects demand and supply, and therefore create price signals for investment. Moreover, they enable traders to take advantage of short-term price differentials (arbitrage) keeping the market efficient and integrating geographic markets.

The NBP (National Balancing Point) in the UK is the most important and liquid hub in Europe. On the Continent, Zeebrugge hub in Belgium and TTF (Title Transfer Facility) in the Netherlands are the most heavily traded hubs. In other countries (PSV in Italy, PEG in France) and at major import locations, such as Baumgarten

(Austria) and Emden (Germany) hub activity is developing. In the wake of hub trading, also trading of gas forward contracts and financial derivatives is developing.

Figure 5 shows average quarterly prices of some long-term contracts and hubs. It clearly illustrates that the hub price reflects the fundamentals of gas supply and demand resulting in a summer-winter spread, while the contract price takes no account of such effects. The figure also shows that the hub prices follow the general trend of the oil-linked contract pricing. Apparently there still is an indirect link between gas hub prices and oil prices, which is due to the relative volumes traded via hubs and long term contracts respectively.

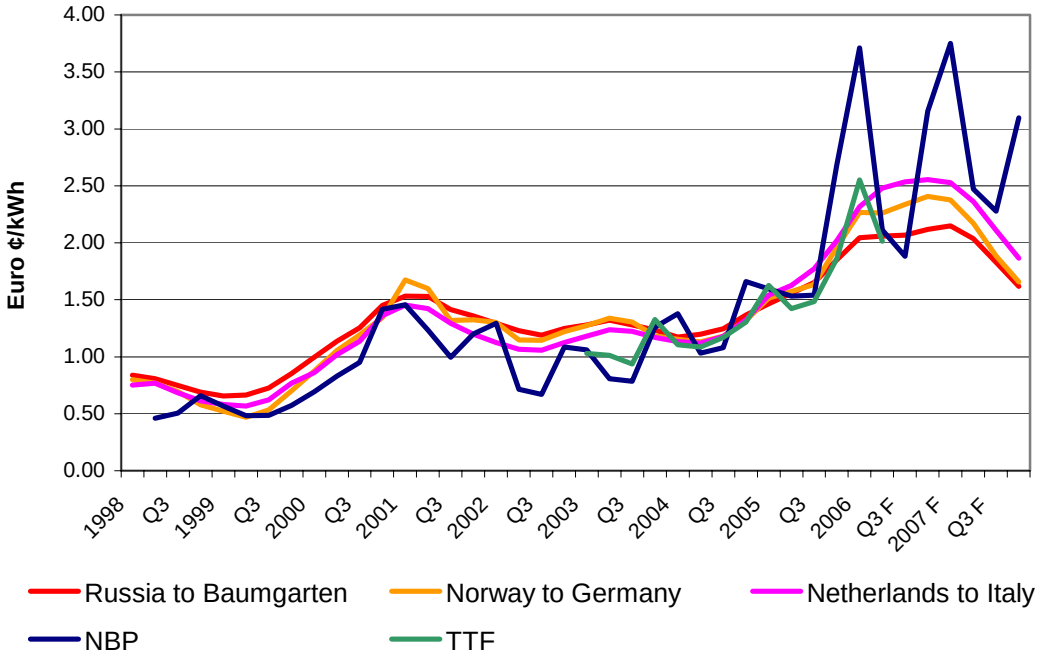

Figure 4: Contract gas vs. hub prices

The role of interconnectivity

Since October 1998, the UK gas market is physically connected with the Continental market by a pipeline running from Bacton (UK) to Zeebrugge (Belgium). Originally this so-called Interconnector was designed to export gas from the UK to Belgium (forward flow). However, with UK's decreasing production and increasing need for import, investments have been made to the Interconnector so that gas can flow in reverse from Belgium to the UK.

Figure 6 illustrates the importance of interconnectivity and arbitrage between gas markets. The figure compares NBP and Zeebrugge prices and shows the effect when the Interconnector is out of order due to maintenance. It clearly shows that prices on both sides are closely related as an effect of arbitrage between both markets. But in times of maintenance when the markets are physically detached and arbitrage is not possible, the price in both markets immediately diverge.

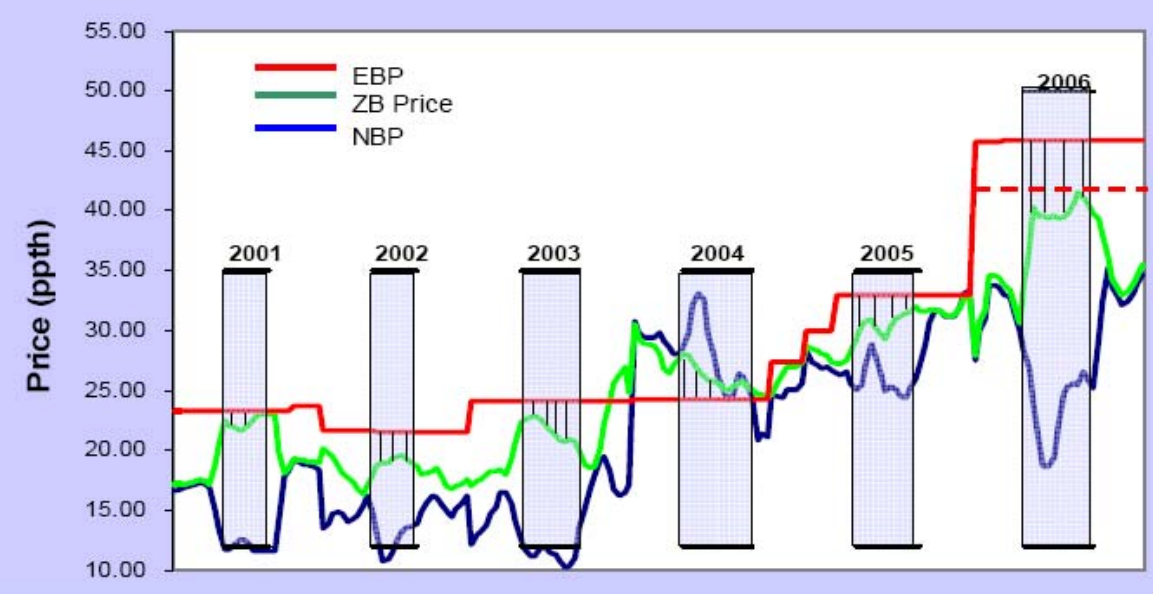

Figure 5: Interconnector maintenance and price development (source: Eclipse, Market Commentary August 2006)

Conclusion

We expect that the influence of the oil market on natural gas prices will persist in the long term. However, the nature of the dependence between both markets will presumably shift from a direct to a more indirect link as gas market interconnectivity and hub trading increase. In papers to follow in this series we will further discuss and analyse price drives and dynamics in the market for natural gas.