

Point 7 of the latest version of the draft conclusions of the European Council meeting to be held on 22 May 2013 states:

*7) The impact of high **energy prices and costs** must be addressed, bearing in mind the primary role of the market and tariffs in financing investment. The European Council calls for work to be taken forward on the following aspects:*

...

d) the issue of the contractual linkage of gas and oil prices also needs to be looked at in this context;

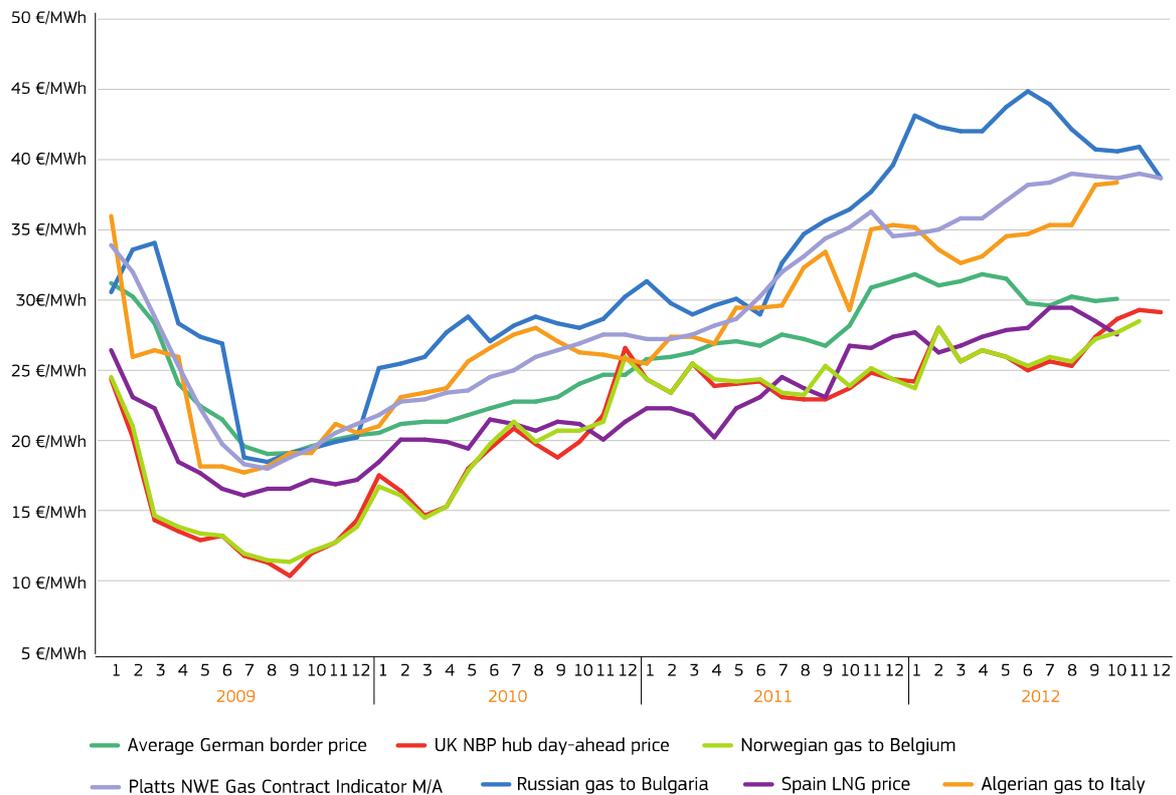
Although this may have a major impact on Russian supplies of gas to the EU, it seems that Statoil has foreseen this shift and taken steps to pre-empt this decision.

Norway is a major supplier of piped gas to the EU. Formerly, Norwegian gas was supplied to the EU on oil-indexed terms, which generally raises the price of the gas compared with spot traded gas. According to a recent EU report,¹ however, Statoil is actively moving away from oil-indexation in its gas contracts, which it has been renegotiating with many European utilities. The company has announced that it now sells just under half of its gas at oil-indexed prices, compared with around 70% in 2009, and that it projects that proportion to fall to under a quarter by 2015. This will have contributed to increased gas sales to Europe in 2012 of 10% for the company, despite falling demand in the EU.

This is reflected in the recent EU chart below. It shows that although oil-indexed piped gas supplies to countries like Germany, Italy and Bulgaria are significantly more expensive than UK spot-priced gas, the piped gas Norway supplies to Belgium closely reflects the spot market price of the UK NBP.

¹ Quarterly Report on European Gas Markets, 2012 Q4,
http://ec.europa.eu/energy/observatory/gas/doc/quarterly_report_on_eu_gas_markets_q4_2012.pdf.

Figure 1: Comparison of EU Wholesale Gas Prices²



Source: Eurostat COMEXT, European Commission estimations.

Even though Statoil has moved towards the spot price of gas recently, there are a number of factors that could significantly lower the spot price of gas in Europe in the coming years. These include:

- 1) A move away from oil-indexation in central and Eastern European markets. Spot (LNG) gas prices are high in the EU in part because it is pulled up by high priced oil-indexed gas. 75% of EU gas imports come in via pipeline, and the majority of the EU's pipeline-imported gas remains indexed to the price of oil. Should oil-indexation end, the indirect effect would be significantly lower spot prices, too.
- 2) A move away from oil-indexation in Asian markets. In 2011, Asia consumed over 60% of all LNG and Asia buys almost all LNG on oil-indexed terms. Because the EU is in direct competition for LNG cargoes with Asia, a fall in Asian gas prices would also lower EU spot gas prices.

² Quarterly Report on European Gas Markets, 2012 Q4, http://ec.europa.eu/energy/observatory/gas/doc/quarterly_report_on_eu_gas_markets_q4_2012.pdf.

- 3) Significant new gas exports from the United States. This would increase the global supply of LNG and put downward pressure on spot gas prices everywhere.
- 4) Further development of unconventional gas resources throughout the globe. Our best estimate is that the EU has around 16 tcm of shale gas – equivalent to around 30 years of current EU-27 consumption. Globally, that figure stands at just over 200 tcm. Should these resources be developed, gas prices can be expected to fall.

Background: Oil-Indexation vs. Spot Pricing

Gas prices are set via two principal mechanisms in the EU. Oil-product linkage was established in the 1970s on the principle that the price of gas should generally be competitive with the prices of alternative (non-gas) fuels. The economic logic of this 'market value principle' or 'netback' pricing mechanism was that end-users had a real choice between burning gas and oil products, and would switch to the latter if given a price incentive to do so.³

To this day, the majority of the EU's pipeline-imported gas remains indexed to the price of oil or oil products through long-term take-or-pay contracts whose terms are confidential to the buyers and sellers of that gas.⁴ The continuing rationale of oil-indexation, however, is being increasingly questioned because of the virtual elimination of oil products from modern stationary energy sectors. Whereas oil is still the fuel of choice in the transportation sector, less than 3% of the electricity generated in OECD Europe comes from oil, a figure that has halved over the period 2000 to 2009.⁵

Alternatively, gas prices may be set freely by the forces of supply and demand for natural gas itself – not oil – in a paradigm known as spot trading or gas-to-gas competition. Spot trading has the theoretical advantage of allocating resources and setting prices more efficiently than oil-indexation. This does not necessarily mean that consumer prices will always be cheaper,⁶ but by allowing the price mechanism to more directly incentivise gas production, dampen consumption and reallocate physical supplies when supplies get tighter, spot pricing helps to ensure stable and sustainable prices for both consumers and producers of natural gas.

³ Kanai, 'Decoupling Oil and Gas Prices', 2; Jonathan Stern, 'Continental European Long-Term Gas Contracts: is a transition away from oil product-linked pricing inevitable and imminent?', (Oxford: Oxford Institute for Energy Studies, 2009); Jonathan Stern, 'Is there a rationale for the continuing link to oil product prices in Continental European long-term gas contracts?', (Oxford: Oxford Institute for Energy Studies, 2007); Stern and Rogers, 'Transition to Hub-Based Pricing', 2.

⁴ In spite of this confidentiality, publicly available border price data has allowed the key variables of these contracts to be inferred over time.

⁵ IEA, 'WEO 2011', 345.

⁶ 'If a general and durable transition to more spot indexed prices were to occur, the result is likely to be lower gas prices on average in Europe in the near to medium term, (at least for some types of consumers) while spare supply capacity exists in the European market. But in the long term, gas prices could actually turn out to be higher at certain times than they would otherwise have been; for example, strong demand during cold winters or through a surge in gas-fired power demand could see prices rise steeply.' Ibid., 76.

Spot pricing has become prevalent in an increasing number of liberalised markets the world over, including North America, the United Kingdom and Australia. The IEA estimates that one-third of the world's gas may be priced in gas-to-gas competition. In spite of recent efforts to liberalise the EU gas market, however, just one quarter of continental European gas is spot traded.

Hold-out advocates of oil-indexation maintain that a continuing lack of liquidity and depth on certain EU gas trading hubs may lead to excessive volatility and the risk of price manipulation. Oil-indexation, by this view, constrains volatility through averaging provisions and by providing a link to the deep, liquid and global market for oil.⁷

However many believe that the prospect of rising oil prices are the true motivation for a desire to maintain oil-indexation. For example, the table below shows that spot gas prices on the Dutch TTF trading hub were an average of 25% lower than oil-indexed gas prices for North West Europe over 2010 and January 2011.⁸

Table 1: European spot gas prices as a percentage of oil-indexed gas prices in €/MWh⁹

	TTF average	NWE GCI	TTF/GCI
January 2011	22.24	25.84	86%
December 2010	24.15	26.13	92%
November 2010	19.50	25.98	75%
October 2010	18.56	25.54	73%
September 2010	18.95	25.07	76%
August 2010	18.12	24.21	75%
July 2010	19.52	23.55	83%
June 2010	19.28	22.62	85%
May 2010	16.78	21.80	77%
April 2010	13.53	21.56	63%
March 2010	11.99	21.00	57%
February 2010	13.72	20.74	66%
January 2010	14.48	20.02	72%
Average 2010	17.38	23.19	75%

Until recently, discussion of the merits and demerits of oil-indexation in Europe was, to some extent, an academic exercise. The market power of many sellers of pipeline-imported gas meant that they were largely able to decide the terms of its sale and these sellers preferred oil-

⁷ Ibid., 72-75.

⁸ For an in-depth overview, see also European Commission, '2009-2010 Report on progress in creating the internal gas and electricity market', ed. Directorate-General for Energy (Luxembourg: Office for Official Publications of the European Communities, 2011).

⁹ Note: the Table shows TTF day-ahead prices compared with the Platts North West Europe Gas Contract indicator (NWE GCI), which indicates a typical price for long-term oil-indexed supplies. The final column shows TTF as a percentage of NWE GCI. Source: Stern and Rogers, 'Transition to Hub-Based Pricing', 5.

indexation. However, this situation changed as the gradual process of liberalisation impacted on gas market structures in continental Europe. The advent of competition and third-party access means that customers have increasing access to alternatives to the oil-linked supplies once forced upon them by their traditional utility providers. This may explain International Gas Union data showing that the relative share of spot pricing in European wholesale gas price formation increased from 15.5% to more than 28% between 2005 and 2009, whereas oil indexation decreased from 79.1% to 67% in the same period.¹⁰

Background: The Shale Gas Revolution

When US net imports of natural gas fell by 30% between 2007 and 2010 because of the shale gas revolution, rapidly increasing LNG capacity in receiving terminals in North-West Europe allowed the EU to absorb cargoes originally destined for the US market. This strengthened the link between the UK and US gas hub prices between 2009 and 2010, enabling many EU Member States to benefit from the cheap spot-traded gas partially resulting from increased unconventional gas production in the USA.

With gradually disappearing legal and technical barriers to spot-trading of gas in the EU, the sharp fall in spot prices witnessed in 2009 placed pressure on utilities locked into buying gas on oil-indexed, take or pay, terms as they were gradually priced out of the market by competitors able to source cheaper gas from LNG terminals or the EU hubs. Caught between their long-term contractual obligations and pressure from (principally industrial) customers to supply cheaper gas, these utilities in turn pressed their suppliers for contract renegotiations on price and volumes.

In response, suppliers such as GasTerra, Statoil and, in the end, Gazprom made several concessions to their customers. Sources suggest that several companies were allowed to 'roll over' volumes not taken below minimum take-or-pay levels to future years. GDF Suez, Distrigas and Swissgas were granted a partial decoupling from oil-based pricing by GasTerra during their 2009 contract extension negotiations, and Statoil's customers were allowed to link up to 25% of their volumes to spot prices in early 2010. It was only in February 2010 that Gazprom and E.ON Ruhrgas announced that they had agreed on linking 15% of their volumes to spot prices for the following three years.¹¹

The close correlation between the US and EU gas hub prices came to an end between the first and second quarters of 2010 as a result of unforeseen demand-side events, including the Fukushima disaster. However, the current balance of expert opinion suggests that the EU will

¹⁰ Mike Fulwood, 'Trends in Wholesale Gas Price Formation Mechanisms: results on the 2009 IGU Survey', *International Gas Union Magazine* 2011, International Gas Union, 'Wholesale Gas Price Formation: A global review of drivers and regional trends', (Oslo: International Gas Union, 2011).

¹¹ IEA, 'Oil and Gas Markets', 200, Kanai, 'Decoupling Oil and Gas Prices', 3; Stern and Rogers, 'Transition to Hub-Based Pricing', 26.

continue to move slowly away from oil indexation because of the persisting risk of future exposure to discount hub prices.

Background: Liberalizing the EU internal gas market

Also known as deregulation, market liberalisation involves the opening up of markets to competition by reducing the statutory barriers to entry and exit that exist. It is predicated, on the assumption that the traditional form of government monopoly or regulated public utility operation of gas is inefficient, that a system that introduces market competition inherently provides lower prices, more desirable service options for consumers and – on balance – greater security of public service operations. Structural and regulatory reform measures are introduced to facilitate ‘gas-to-gas competition’.¹²

Since the supply of gas is usually geographically removed from its ultimate consumption, the liberalised model also envisions a competitive market for transportation capacity in a system that is subject to open access. A key element is, therefore, ensuring third-party access to the transmission network. Neoclassical economic theory states that the ownership of physical transmission rights (such would be the case under vertical integration) increases the ability of energy suppliers to exercise market power through withholding transmission capacity. When a vertically integrated company becomes unbundled into different companies handling the production, transmission and distribution stages in the value chain separately, this facilitates market entry for new suppliers such as unconventional gas companies, for example. Competition in the market is encouraged and the greater variety of companies can help the market to react to outside shocks more smoothly and flexibly. Additionally, unbundling results in efficiency gains and consumer savings by removing regulatory haze, excess capacity and central planning.¹³

The neoclassical assumptions outlined above are often referred to as the structure-conduct-performance paradigm: The *structure* of markets is considered a crucial driver for the *conduct* of firms and the eventual economic *performance*.¹⁴ After the adoption of the Single European Market objective in 1985, this paradigm became the point of departure for the European Commission, which used it as an instrument to tackle the prevailing intra-communal barriers to trade.¹⁵ When applied to the natural gas market, the paradigm implies that the main objectives for the regulator are:

¹² James T. Jensen, 'The LNG Revolution', *Energy Journal* 24, no 2 (2003): 4.

¹³ P. Joskow and J. Tirole, 'Transmission rights and market power on electric power networks', *RAND Journal of Economics* 31, no 3 (2000).

¹⁴ J. Bain, *Barriers to New Competition: Their Character and Consequences in Manufacturing Industries* (Cambridge, Massachusetts: Harvard University Press, 1956).

¹⁵ Janne Haaland Matlár, *Energy policy in the European Union* (Basingstoke: Palgrave Macmillan 1997).

- 1) full unbundling and maximum entry in the potentially competitive segments of the value chain; and
- 2) market liquidity and effective access and performance regulation in the natural monopoly segments of the value chain.¹⁶

The EU began the liberalisation of the European natural gas sector at the supra-national level in 1998 with the adoption of what has become known as the First Gas Directive.¹⁷ This sought to break monopolies and create an open and competitive market by requiring that integrated companies unbundle their internal accounts and not abuse commercially sensitive information. It also mandated that network operators provide third-party access to their infrastructure and that Member States gradually introduce market opening. The legislation aspired to bring choice to consumers, accessibility for all suppliers and improvement to security of supply through diversity. Several subsequent legal acts have progressively built upon the objectives of the First Gas Directive. The most recent Third Internal Market Package took direct effect on 3 March 2011.¹⁸

It is too early to tell what the long-term effects of the Third Package will be.

On the one hand, there have been encouraging recent developments indicating that liberalisation is gathering pace. A wave of corporate mergers and demergers was occasioned by the reforms, heralding a change in the industrial organisation model in the European utility sector from single product national/regional companies towards a multi-energy pan-European model.¹⁹ On the regulatory front, signs of market integration have been observed, along with price decreases in Member States that have diversified supply. Traded volumes on the three most liquid gas spot markets rose by 4.45% to reach 1 455 terawatt hours (TWh) in 2009.²⁰ And, in combination with the arbitrage possibilities created by the increasingly dense pipeline

¹⁶ Aad Correlje and John Groenewegen, 'The Gas market, transaction costs and efficient regulation', in *Conference on Applied Infrastructure Research* (Berlin: Workgroup for Infrastructure Policy at Berlin University of Technology, 2006), 1-2, 6; Dieter Helm, 'The Assessment: The New Energy Paradigm', *Oxford Review of Economic Policy* 21, no 1 (2005).

¹⁷ European Union, 'Directive 98/30/EC of the European Parliament and of the Council of 22 June 1998 concerning common rules for the internal market in natural gas', (Luxembourg: Office for Official Publications of the European Communities, 1998).

¹⁸ European Union, 'Directive 2009/73/EC of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in natural gas and repealing Directive 2003/55/EC (Text with EEA relevance)', (Luxembourg: Office for Official Publications of the European Communities, 2009); European Union, 'Regulation (EC) No 713/2009 of the European Parliament and of the Council of 13 July 2009 establishing an Agency for the Cooperation of Energy Regulators (Text with EEA relevance)', (Luxembourg: Office for Official Publications of the European Communities, 2009); European Union, 'Regulation (EC) No 715/2009 of the European Parliament and of the Council of 13 July 2009 on conditions for access to the natural gas transmission networks and repealing Regulation (EC) No 1775/2005 (Text with EEA relevance)', (Luxembourg: Office for Official Publications of the European Communities, 2009).

¹⁹ Jonathan Stern and Howard Rogers, 'The Transition to Hub-Based Gas Pricing in Continental Europe', (Oxford: Oxford Institute for Energy Studies, 2011), 20.

²⁰ European Commission, 'Commission Staff Working Document: 2009-2010 Report on progress in creating the internal gas and electricity market', ed. Directorate-General for Energy (2011).

structure²¹, the market liberalisation process in Europe is being credited by some observers for the growth in pressure from EU consumers to revise long-term oil-indexed gas contracts towards market-based pricing.²²

On the other hand, market concentration remains high, changes observed in interregional connectivity have only been modest and the switching rate continues to remain low in most Member States. For these reasons, the latest Commission report on market progress concedes: “a truly single energy market is far from complete.”²³

²¹ By 2013, pipeline interconnections will allow LNG arriving in Greece to be delivered to a range of south and central European countries as far north as Austria; or vice-versa for gas to be delivered from the central European Gas Hub to Greece. Stern and Rogers, 'Transition to Hub-Based Pricing', 16.

²² Miharu Kanai, 'Decoupling the Oil and Gas Prices: Natural Gas Pricing in the Post-Financial Crisis Market ', (Paris, Brussels: Institut français des relations internationales 2011).

²³ European Commission, 'Commission Staff Working Document: 2009-2010 Report on progress in creating the internal gas and electricity market'.