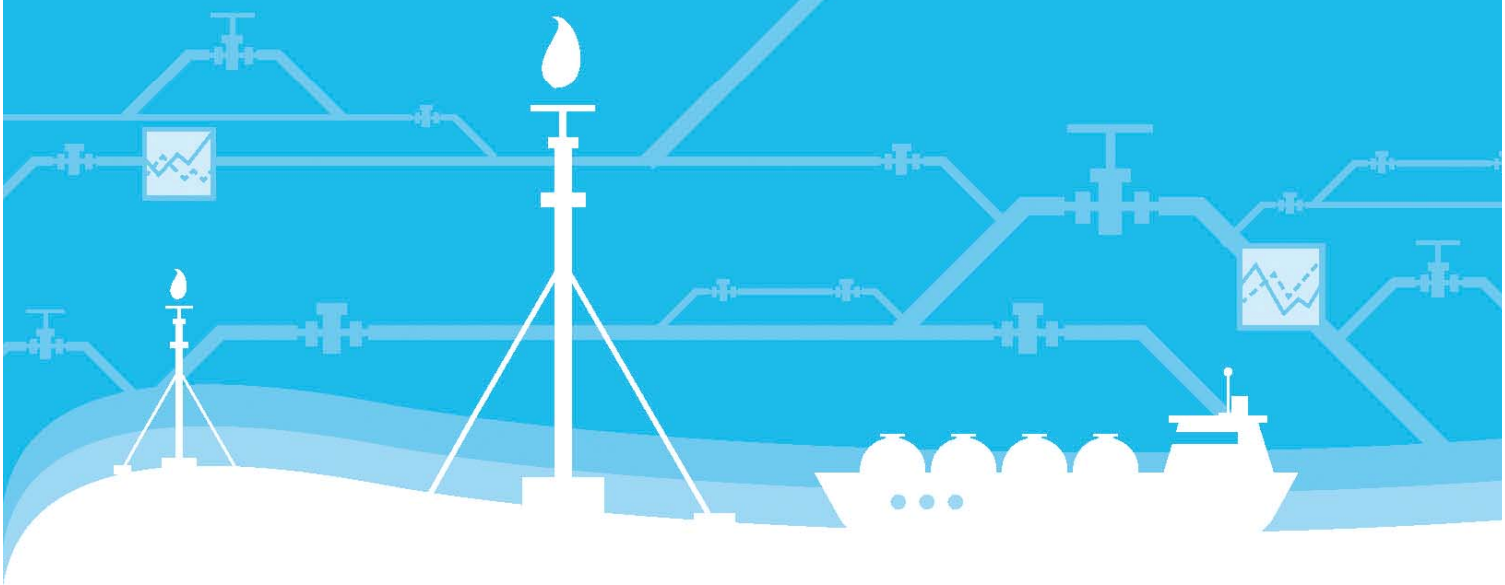
Quarterly Report on European Gas Markets



Directorate-General for Energy

EUROPEAN COMMISSION

- MARKET OBSERVATORY FOR ENERGY

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EUROPEAN COMMISSION

Günther H. Oettinger

Dear readers,

During the second quarter of 2010 wholesale prices of natural gas registered robust increases across the EU hubs. Cold weather conditions, supply disruptions in Norway and demand from storage operators were among the elements putting upward pressure on prices. As a result, the spread between the prices of spot gas and gas delivered under long term contracts decreased significantly.

The UK contracts for gas were traded at a discount with respect to the other hubs in Western Europe in Q2 2010, supporting commercial flows from UK to the continent. Another interesting occurrence during the observed period was the gradual alignment of Central European wholesale prices, as reported by the Baumgarten hub, with those of the Italian market. These developments illustrate the importance of cross–border infrastructure for the good functioning of the internal market.

The short-lived gas dispute between the Russian Federation and Belarus that unfolded in June 2010 did not appear to provoke difficulties in the neighboring Member States. However, it reminded us why issues related to the security of supply are high on the political agenda. In that respect, I am happy to note that the Regulation on measures to safeguard security of gas supply was approved by the Council and the European Parliament.

The "focus on" topic of the current report covers biogas, an important domestic renewable energy resource which may bring interesting solutions not only for security of supply but also for our policies to fight the effects of climates change.

HIGHLIGHTS

- Q2 2010 spot gas prices recorded significant increases on both a quarterly and yearly basis and ending at levels closer to long-term oil price indexed gas contracts, thereby lessening the incentive of European utilities to favour spot gas purchases over long-term contracts. This represents a reversal of the situation in 2009 when long-term contract prices had at times been twice as high as spot prices, leading European utility companies to seek to break away from their traditional pricing structures in long-term contracts.

- There were many reasons for the increases in gas prices observed on European hubs in Q2 2010, among which: unseasonably cold weather at a time of the year when the gas season switches from winter to summer - with corresponding production cuts in anticipation of lower demand; Norwegian supply disruptions; and gas storage refills, common for that time of year.

- The impact of a number of Norwegian supply disruptions on European gas prices during a time of year when demand decreases as the weather becomes milder highlighted the importance and dependence of gas supplies from Norway to the EU markets.

- Higher prices on hubs in mainland Europe compared to the UK represented a continued incentive over the course of the quarter for UK gas exports to the continent through the Interconnector pipeline. This illustrated well the significance and attractiveness of well-connected and efficient gas markets.

QUARTERLY REPORT ON EUROPEAN GAS MARKETS

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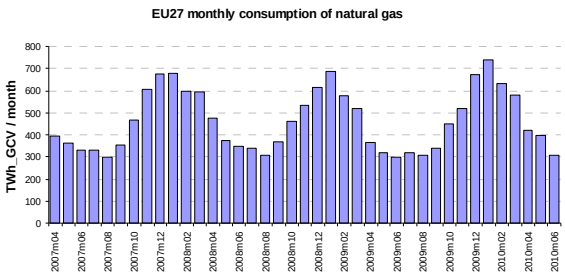
A. Recent developments in the gas markets across Europe

A.1 Wholesale markets

2010 Second quarter consumption of gas in the EU totalled 1,125 Twh, exceeding the level recorded for the same quarter of the previous year (977 Twh) while running slightly below Q2 2008 levels (of 1,197 Twh).

On a yearly basis, the quarter therefore recorded 15% in growth, with the levels during the months of April and May registering respective increases of 16% and 25% on the equivalent months in 2009.

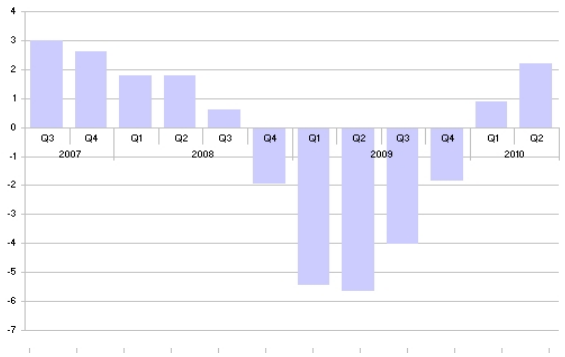


Source: Eurostat
Monthly consumption for Portugal (April – June 2010) is estimated based on GDP data for the second quarter of 2010 from Eurostat's Principal European Economic Indicators.

Compared to the previous quarter, the onset of spring meant that monthly levels followed the usual downward trend which reaches its lowest volume during one of the summer months: typically August.

Q2 2010 represented the second quarter of a return to positive GDP growth for the EU

27 after five successive quarters of negative growth. On a yearly basis, 2010 second quarter GDP growth slightly exceeded Q1 2009 GDP growth. This most certainly contributed to the growth in gas consumption in the second quarter.



Source : Eurostat.
Selected Principal European Economic Indicators
** Gross domestic product (GDP) at market prices is the final result of the production activity of resident producer units. It is defined as the value of all goods and services produced less the value of any goods or services used in their creation. Data are calculated as chain-linked volumes (i.e. data at previous year's prices, linked over the years via appropriate growth rates). Growth rates with respect to the same quarter of the previous year (Q/Q-4) are calculated from raw data.*

The particularly high rates of growth in gas consumption for April and May were likely explicable by the unseasonably cold weather during these two months, in particular in May.

Data on heating degree days (HDD)[1] reveals that compared to equivalent months of previous years, while temperatures for the month of June 2010 were on the whole fairly mild, those for April and May 2010 were somewhat cooler. This drove demand for gas which in turn exerted an influence on European wholesale gas prices, as highlighted further in this publication.

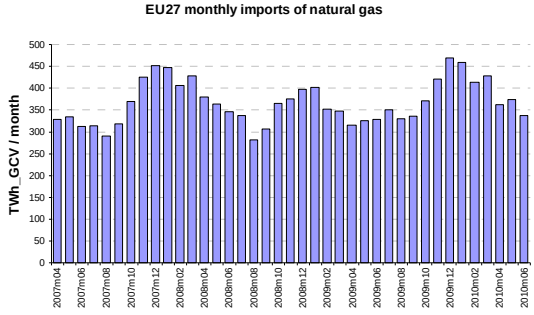
EU 27 Heating Degree Days in Q2 2010
Values for 2008, 2009, 2010 and 1980 – 2004 average

	April	May	June
2008	270.34	133.90	56.89
2009	238.64	123.95	67.55
2010	248.26	153.20	58.24
LT avg.	289.25	154.04	66.55

Source : Eurostat / JRC

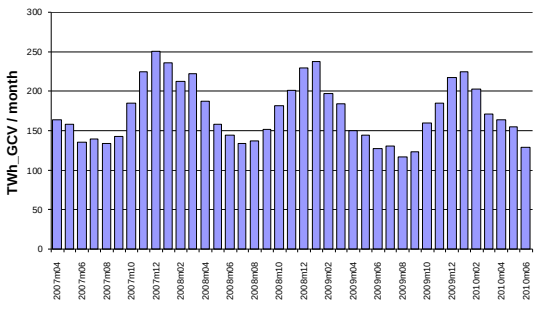
Generally, the level of imports of natural gas into the EU is also affected by temperature, though as the chart below reveals, the seasonal trend is not as clearly defined as for consumption. Compared to previous years, the EU imported more gas in Q2 2010 compared to Q2 2009 (by 11%) but less than Q2 2008. Higher consumption, driven by the economic recovery and colder weather would have contributed to a higher level of imports.

In contrast, indigenous production grew by 6% year on year.

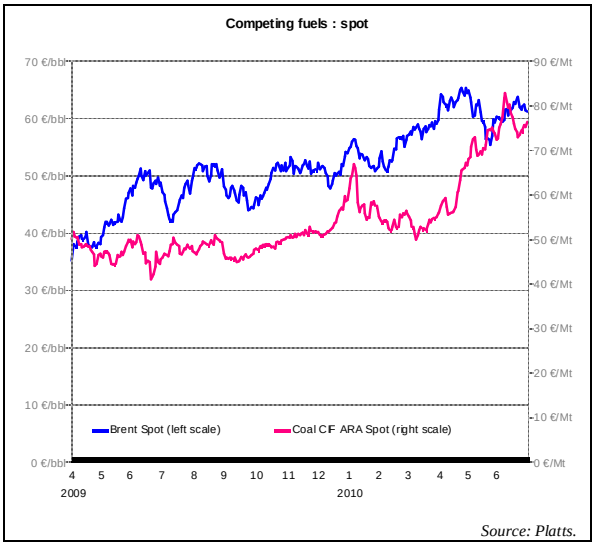


Source: Eurostat
Monthly imports for Portugal (April – June 2010) are estimated based on GDP data for the second quarter of 2010 from Eurostat's Principal European Economic Indicators.

[1] Heating degree days (HDDs) express the severity of a meteorological condition for a given area and in a specific time period. HDDs are defined relative to the outdoor temperature and to what is considered as comfortable room temperature. The colder the weather, the higher the number of HDDs. The 'long term average' is the average HDD value for the years between 1980 and 2004. These quantitative indices are designed to reflect the demand for energy needed to heat a building. Cooling degree days (CDDs) are defined in a similar manner.



Source: Eurostat
Monthly imports for Portugal (April – June 2010) are estimated based on GDP data for the second quarter of 2010 from Eurostat's Principal European Economic Indicators.



Source: Platts.

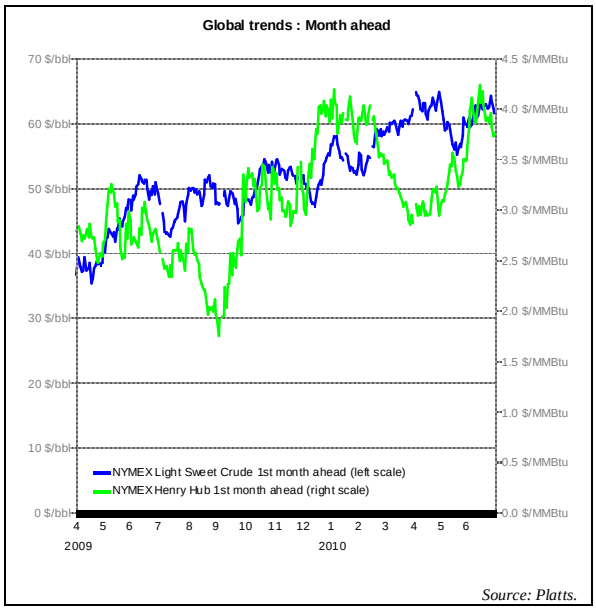
A.1.1 Spot markets

The trend of increasing spot price of Brent continued from the last quarter until the month of May, during which it experienced a fall back down to February levels. It then picked up again to end the three month period at a similar level as the end of the first quarter, i.e: at around the €60/bbl mark. Priced in US dollars, the barrel of Brent in fact fell over the period (from 80.3 $/bbl measured on the 1st April to 72.1 $/bbl on 30th June), but the value of the Euro against the US Dollar over the course of the period fell by an amount which resulted in relatively stable prices of Brent in Euros.

Coal CIF ARA price[2] also initially further extended gains from the preceding quarter, to then also experience a correction though later than oil, and ending the quarter (at €76/Mt) at a much increased level than at the end of the preceding quarter (€53/Mt) or that of Q2 2009 (which averaged at €47/Mt).

Looking at Q2 developments in NYMEX month-ahead crude and natural gas prices, it is interesting to note that the situation changed completely from the previous quarter, when gas prices fell as crude rose, with prices in both commodities by and large following the same initial upward trend and both ending the period with a slight correction. Hence this last quarter witnessed a reversal of the decoupling that could be observed in 2009 and in the first quarter of 2010.

[2] Price for a metric tonne of coal (calorific value of 6,000 kcal / kg) delivered at the Amsterdam-Rotterdam-Antwerp area with cost, insurance and freight covered.



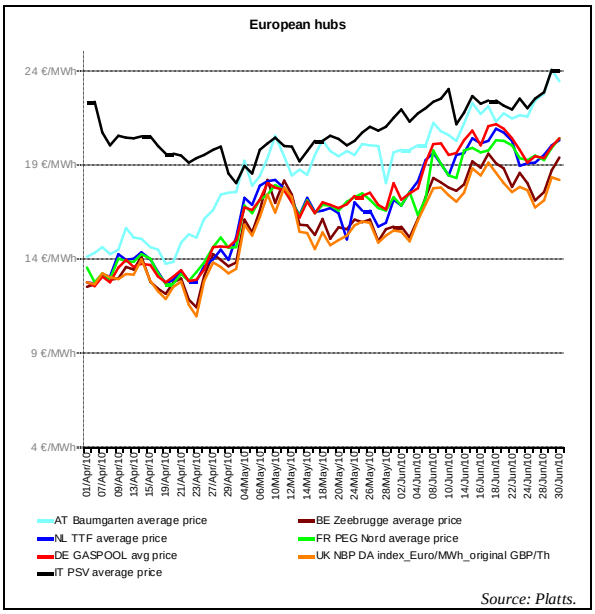
A.1.1.1 European hubs

The general trend for the second quarter across European hubs was one of increasing spot prices in gas. This represented a reversal of the trend observed in the previous quarter.

As the graph below reveals, French, German, Dutch, UK and Belgian spot prices evolved closely together, continuing an upward trend that began already at the end of the first quarter - finishing the quarter at between €13 and €14/MWh – and recording end of Q2 prices in a range between €17 and €20/MWh. Note however the decoupling at the end of the second quarter between the UK and Belgian markets on the one hand, and the German, Dutch and French hubs on the other.

Other observations include a tighter gap between the Italian hub prices and other European hubs and a decoupling of the Austrian hub prices from the other hubs, towards a trend more closely approximating the Italian market.

Year on year growth in prices was also high across all European hubs, as general – including gas - demand progressively picked up, lending support to spot gas prices.



Weather was an important driver of prices in May as cooler than usual temperatures were reported across most Northwest European markets during that month, keeping overall high demand for gas at continental European gas markets.

This coincided with the time of year which represents a switch in gas seasons from winter to summer when production is reduced in expectation of lower demand. Thus, higher than expected demand in May will have coincided with already implemented production cuts, providing further support to prices.

As a result, May 2010 prices were significantly higher than April 2010 prices

across most European hubs, which was the reverse of the usual situation: with prices normally trending lower as the weather gets warmer, reflecting falling demand for gas due to lower heating demand.

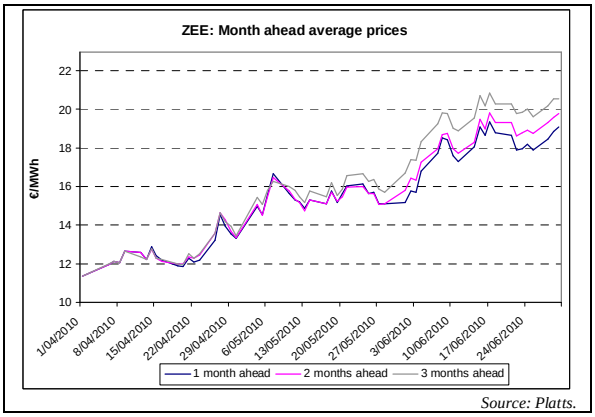
In comparison, the temperature in the UK was relatively milder, which contributed to the UK spot price trading at a discount to continental European prices throughout the quarter. Higher continental prices represented a continued incentive over the course of the quarter for UK gas exports to the continent through the Interconnector pipeline.

European gas prices were also pushed higher due to a series of maintenance problems at Norwegian gas terminals throughout the quarter, limiting Norwegian flows to the UK and mainland Europe.

Average European prices in June trended further upwards, both in comparison to May 2010 prices and on a yearly basis. Other than Norwegian maintenance problems, gas-storage refills, common for that time of year, were significant following a particularly cold winter season, lending further support to European gas prices (see more on storage on page 22). Q2 is a key storage injection period, in between Q1, when demand for gas is at its highest and storage levels fall to their lowest, and Q3, which is the typical maintenance period when substantial maintenance is carried out which greatly reduces import pipeline capacity.

Another aspect identified by participants as an important demand driver helping to keep continental European prices high relative to the UK was shippers reducing off take volumes under long-term gas contracts and sourcing on the spot market instead (see section A.1.1.2. on page 15).

However fundamentals did not provide all the explanations for the high increase in prices in the second quarter of 2010. Certain market participants conjectured that bank-led short-covering activities were at times also responsible for driving prices higher, with unusually high levels of demand brought into the market by financial participants leading month-ahead prices to move into contango[3] (see graph below, with the example of month-ahead prices on the Belgium hub). This in turn prompted participants to buy injection gas sooner rather than later.



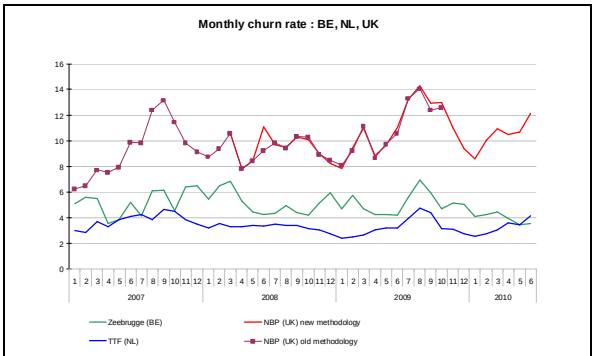
Source: Platts.

This led to the opposite of the usual situation for this time of year, as month-ahead prices in the second quarter usually trade in backwardation, in line with warming temperatures and lower demand.

[3] The situation of *contango* arises when the closer to maturity contract has a lower price than the contract which is longer to maturity on the forward curve. The situation of *backwardation* arises when the closer to maturity contract has a higher price than the contract which is longer to maturity on the forward curve.

In terms of developments in liquidity, the churn rates[4] for the three markets which are regularly reported in this publication (namely, the UK, Belgian and Dutch hubs) evolved in different directions. Thus, the UK experienced an increasing churn rate as traded volumes exceeded physical volumes by a multiple of 12 in June, in comparison to an average of less than 10 in the previous quarter. This is edging towards the highest churn rate recorded in the UK of 14 in august 2009. The increase in churn rate since the last quarter came about as a result of the fact that traded volumes, sustained by the relative attractiveness of UK prices, reduced by much less than physical volumes.

The Dutch market also experienced a growing trend, recording a churn rate of 4.2 compared to a seven year historical high of 4.8 recorded in 2009. In contrast, the Belgian market suffered decreasing liquidity (recording a Q2 high of 3.5 compared to 4.4 the previous quarter and a historical high of close to 7 recorded in 2008). The comparative magnitudes between the three most liquid European hubs continue to provide a clear contrast between the UK on the one hand – which is by far the most liquid hub – and the two other markets.



Sources: Huberator (BE), Gas Transport Services (NL), National Grid (UK), Platts. The definition of the UK churn rate was modified as from November 2009. Following a change in the volume categories reported by National Grid, the new churn formula uses daily nominations instead of throughput. For comparison both churn rates are reported in this issue.

UK: National balancing point (NBP)

Q2 volumes on the UK's NBP hub fell by 27% compared to the previous quarter and increased by 13% on a yearly basis.

In spite of these reductions in volume, the spot price for gas on the NBP rose significantly in the second quarter. To recall, after hitting a historical low in September 2009, average monthly prices rose every month to reach €15.4/MWh in January 2010, after which prices fell again during the remainder of the first quarter, to reach a monthly average value of €12.1/MWh in March 2010. Since then, prices followed an upward trend to reach an average value of €16.9/MWh in June 2010.

High one day gains were registered in the UK market on a number of occasions. For instance, on the 26th of April 2010, UK day-ahead gas increased by 17%, driven by a combination of unusually high continental exports and strong demand for storage injections. Such gains were replicated on the 4th of May, with the UK NBP recording growth of 16.6% in spot and 13% in June contracts, on the back of strong weather related demand.

[4] The churn rate is an indicator for the liquidity of a market / hub. It measures the ratio between traded and physically delivered volumes.

As reported above, one important driver of gas prices of note in the second quarter across European hubs was the numerous Norwegian gas supply outages. This was particularly relevant for the UK.

Norwegian gas flows to the UK through the Langeled line were severely reduced over the course of a number of days at different times during the quarter.

In the first week of April, the Norwegian Kollsnes gas-processing plant, which feeds gas into the UK-bound Langeled pipeline, was shut down due to technical problems, reducing flows into the UK as well as other continental European market zones (Kollsnes also feeds capacity into Continent-bound gas pipelines).

In May, on two occasions, the Kollsnes terminal again experienced technical problems. In early May, a compressor fault forced export capacity to be reduced at one point to a day low equivalent to half of the pipeline's maximum capacity. This led the UK spot price to rise 11% on the day. Again on the 21st of May, the UK gas market saw gains on both the prompt and the curve as uncertainty increased with regard to Langeled gas flows as a result of a gas leak at Kollsnes.

Then on the 1st of June, UK spot prices increased as a gas leak at Norway's Karsto gas terminal triggered an emergency evacuation and shutdown of the processing plant.

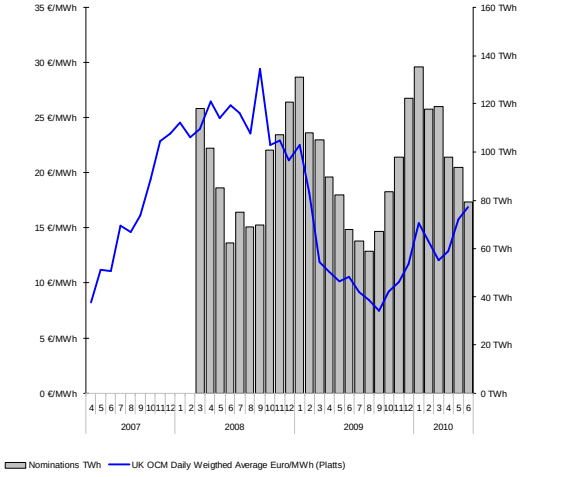
UK-Netherlands virtual gas flows

The gas line operator BBL Company announced earlier this year that it plans to auction interruptible capacity to reverse flow gas from the UK to the Netherlands, so that it could function more like the UK-Belgium Interconnector pipeline.

While gas can currently be exported via the BBL pipeline from the Netherlands to the UK, physical reverse flow is not possible due to pressure differences and the lack of compression at the UK end.

However virtual transfer of gas from the UK NBP trading hub to the Dutch TTF trading hub could be enabled in the future. This would be achieved by cancelling out physical flows from the Netherlands to the UK through the BBL pipeline.

It can also be expected that UK NBP and TTF prices will converge more if a second interconnector link should be established allowing interruptible reverse flow capacity between the two markets.



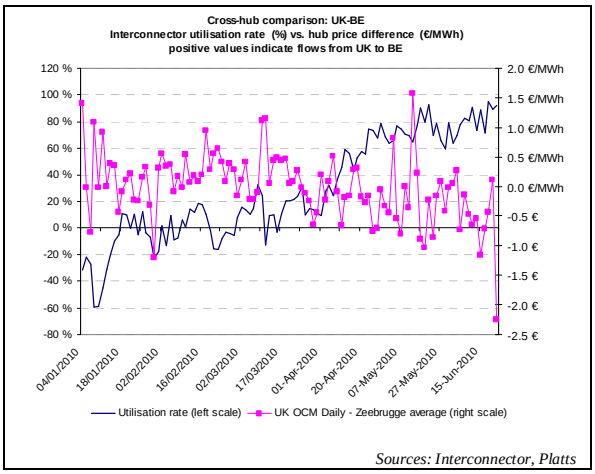
Sources: National Grid (UK), Platts.
Following a change in the volume categories reported by National Grid nominations are used to present the monthly volumes instead of physically delivered trades.

High UK exports of gas

As highlighted above, relatively lower prices at the UK NBP hub compared to other European hubs during the second quarter of 2010 led to high levels of gas exports out of the UK into continental Europe.

Q2 exports of gas from the UK to Belgium were running at higher than average levels between May and June 2010. This led to an increase in the Interconnector utilisation rate which by the end of the quarter reached highs of 90%.

As long as UK spot gas prices continue to be less than alternative supplies priced at long-term, oil-indexed contracts, there should be an incentive to purchase gas on the UK hub.

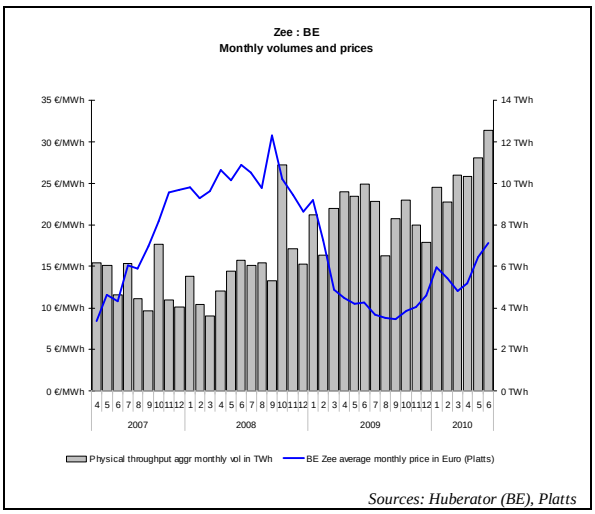


Sources: Interconnector, Platts

Belgium: Zeebrugge

Gas flows through the Interconnector pipeline supported volumes at the Belgian hub, which increased by 16% since Q1 2010 and by 18% on a yearly basis. In June 2010, the aggregate physical throughput equalled 12.5 TWh: the largest monthly volume ever recorded on the Belgian exchange.

Prices at the Belgian hub increased from an average monthly value of €12.05/MWh at the end of March to €17.8/MWh at the end of June: an increase of 48%.



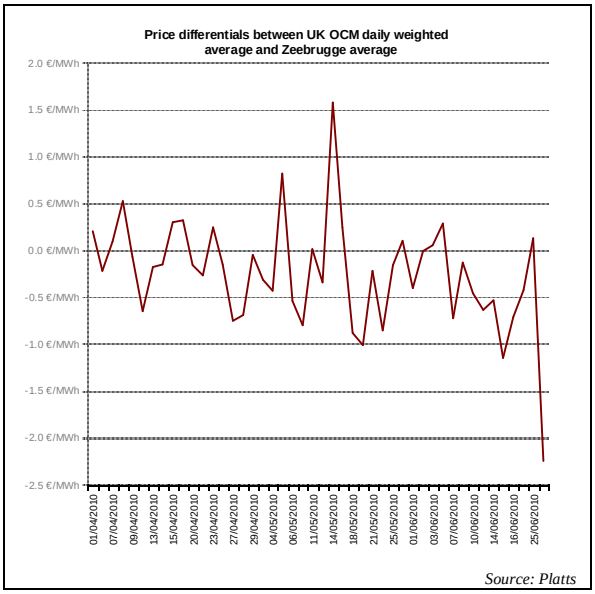
Sources: Huberator (BE), Platts

The correlation between the UK NBP price movements and those on the Belgian exchange was at times very high, which is not unusual. To give examples, on the days during the quarter when the UK NBP recorded particularly high gains (see section on NBP), price increases on the Belgian hub were very close to those experienced on the UK market.

There are exceptions however, such as on the 12th April, when Belgian hub prices firmed on both the prompt and forward curve as the UK hub recorded a fall in spot prices. Belgian prices were instead increasing in line with other mainland hubs whereas the UK softened on the back of returning Norwegian supplies following an unplanned partial outage affecting one of its gas processing plants. The additional gas volumes put downward pressure on prices, but European gas zones were unaffected by this change.

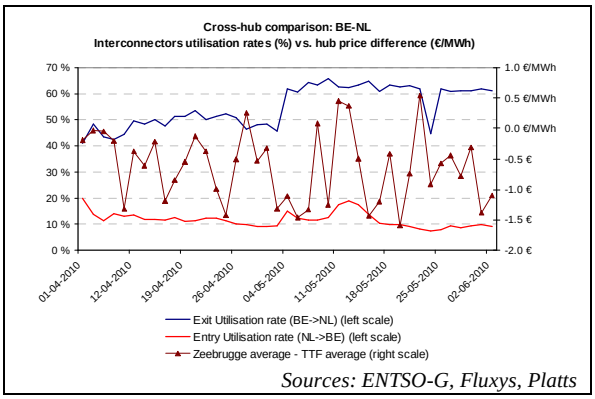
Belgian gas prices were trading at a premium to UK prices during most of the second quarter, by an average of 50 eurocents, incentivizing strong exports from the UK to the Continent through the UK-Belgium Interconnector pipeline, as explained above.

At the beginning of June, the disruption in Norwegian gas exports towards Europe further widened the spread between UK and Belgian gas prices.



Source: Platts

A cross-hub comparison between the Belgian and Dutch gas markets reveals that the interconnector utilisation rate between Belgium and the Netherlands gradually increased during the course of the quarter, possibly as UK exports to Belgium were forwarded to the Netherlands. Whereas previously a comparison between UK and Dutch prices revealed that gas on the Belgian hub traded at a consistent premium to UK gas, the difference between the Belgian and the Dutch hub was more erratic though the latter tended to trade at a premium to the former, which explains the increasing utilisation rate.

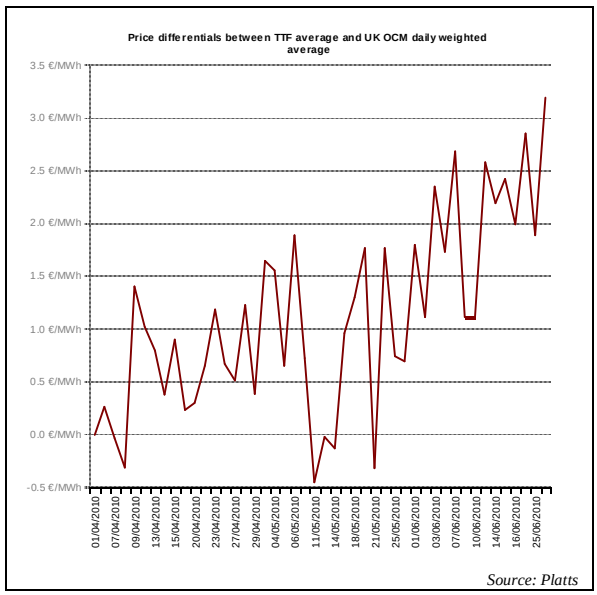


Sources: ENTSO-G, Fluxys, Platts

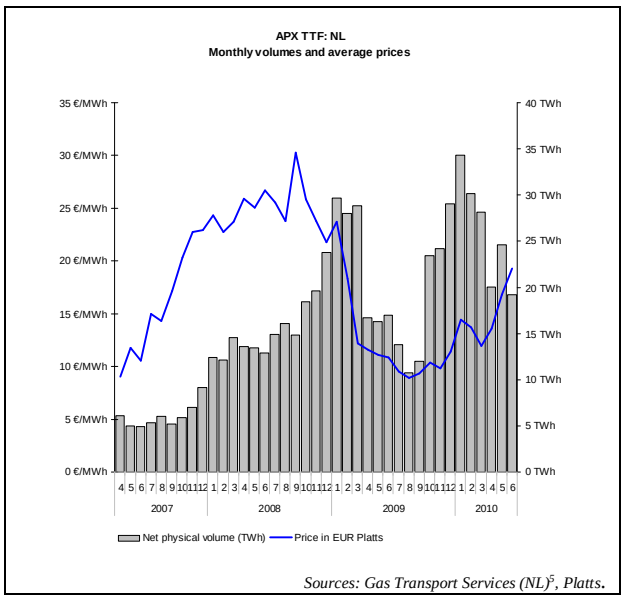
Netherlands: Title transfer facility (TTF)

Volumes on the Dutch TTF exchange fell significantly (-30%) in the second quarter of 2010 compared to the previous quarter, but represented 28% more than volumes for the equivalent quarter of 2009.

Meanwhile, TTF prices increased significantly, as at other European hubs. Average monthly prices for the month of June amounted to 19.3 Euros/Mwh, compared to 12 Euros/Mwh at the beginning of the quarter.



Source: Platts



Sources: Gas Transport Services (NL)[5], Platts.

As in the case of the Belgian hub, a premium in TTF prices over NBP prices meant that gas buyers favoured the purchase of UK gas for sale on the Dutch market.

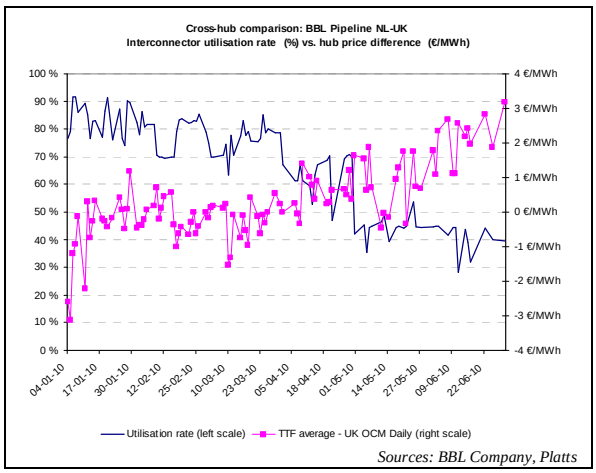
Though price increases on the Dutch exchange in the second quarter could frequently be explained by similar drivers as other European exchanges – such as cooler weather driving demand and Norwegian supply disruptions – there were a number of instances throughout the period when price increases could be observed with no evident explanations.

For instance, weak fundamentals such as mild weather at the end of April did not prevent prices on both the prompt and the curve from rising. Certain participants conjectured that banks on the buying side had been pushing prices higher.

Also at the beginning of June, both the prompt and the curve on the Dutch hub saw gains despite the continuation of warmer weather and the resumption of full flows from Norway's Langeled pipeline into the UK, with no additional maintenance scheduled for the foreseeable future.

[5] For a specific period, the traded volume is the sum of the nominated volumes on TTF made by shippers and confirmed by GTS.

A cross-hub comparison between the Dutch and UK markets shows the much diminished flows between the Netherlands and the UK as UK gas was instead being exported to the continent. The growing premium of Dutch prices over UK prices can also clearly be seen.



Sources: BBL Company, Platts

Germany: NetConnect (NCG)[6], Gaspool[7]

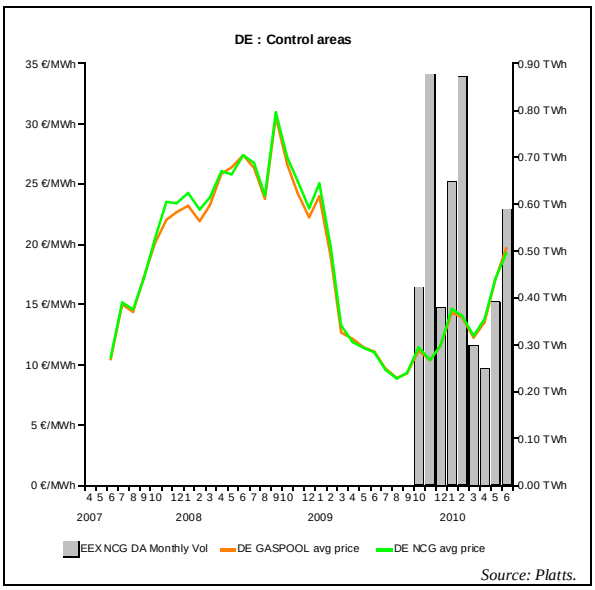
German spot prices in both hubs recorded second quarter highs in excess of 20 Euros/Mwh, still some way below the 30 Euros/Mwh reached in 2008, but improving further on the maximas observed since German spot gas prices began their recovery in the second half of 2009.

As other hubs, a number of drivers provided support for German prices including cooler weather, Norwegian supply problems as well as (cheaper) spot gas buying in replacement for long terms gas, following renegotiations of long-term contracts earlier in the year.

On numerous occasions, movements on German markets were linked to movements on the neighbouring Dutch TTF hub.

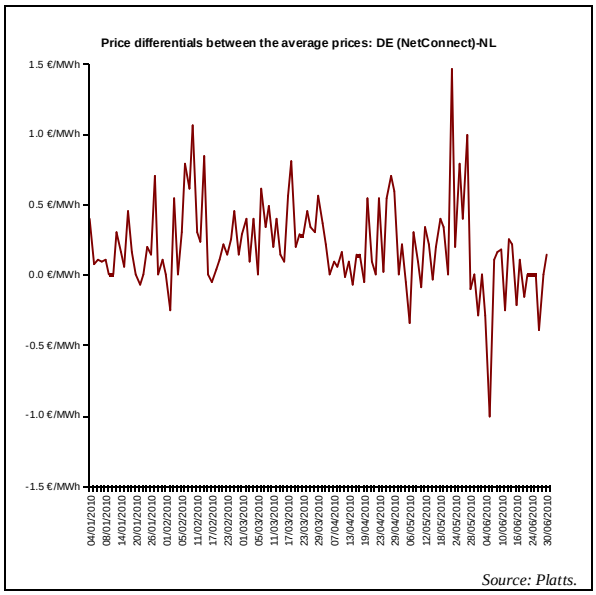
Frequently and throughout the quarter, increases in German prices were explained by the purchase of gas volumes for injection into storage (see section on storage on page 22).

Comparing the two German hubs, Gaspool typically trades at a discount to NCG as the market zone's high number of storage facilities allows shippers to act quickly in times of high demand. However on a number of occasions during the quarter, Gaspool could be seen trading at a premium to NCG, indicating that participants were buying gas mainly for injection into storage.



Source: Platts.

[6] NCG is formerly known as *E.ON Gastransport (EGT)*.
[7] Gaspool is formerly known as BEB. The new market area started on the 1st of October 2009.



Source: Platts.

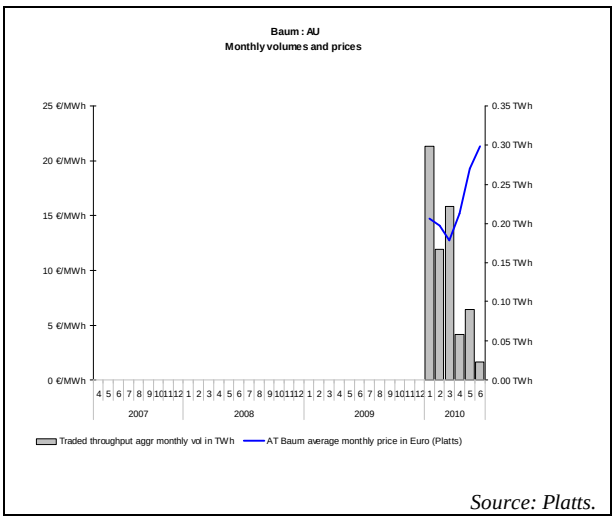
Austria: Baumgarten

Compared to the previous quarter, gas volumes traded on Austria's Baumgarten exchange fell considerably, to a monthly level of 0.02 TWh in comparison to a Q1 high of 0.30 TWh reached in January.

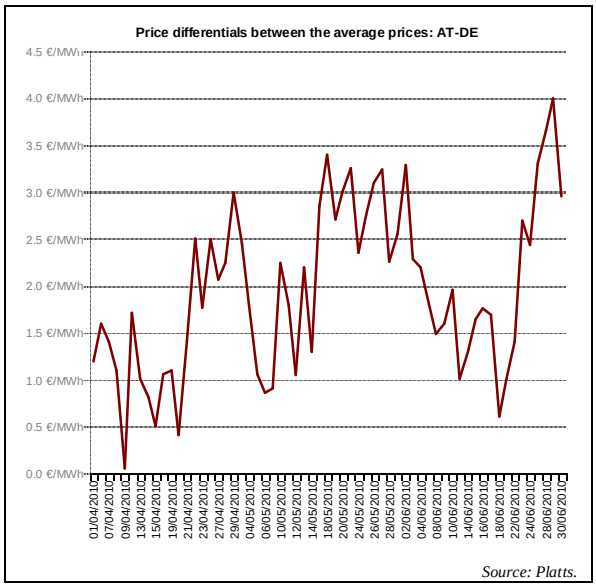
Throughout the second quarter, Baumgarten gas traded at ever higher prices, going from a monthly average at the end of the first quarter of less than €13 Euros/MWh to a June monthly average of upwards of €20/MWh.

Austrian prices traded at an increasing premium to German prices over the course of the second quarter. This is expected for this time of year. During the winter season, physical gas is typically sold from Austria to Germany under long-term, oil-indexed contracts. During that time of year, any surges in Austrian gas demand can be relatively easily met via virtual transport of gas from Germany to Austria, i.e: by cancelling out some of the pipe-line flow from Austria to Germany. Thus in the winter, gas prices in both countries' hubs tend to be close.

The situation is reversed from the start of the storage replenishing season which begins in the second quarter. Then, prices start to diverge with Austrian spot usually trading at a premium to German prices as the flow situation is reversed, and gas is typically transported from Germany to Austria throughout the milder months. Virtual reverse flow from NCG to Baumgarten is not possible, thus preventing the use of such a technique to move extra gas into Austria, and thus limiting the flexibility of gas flows towards the country.

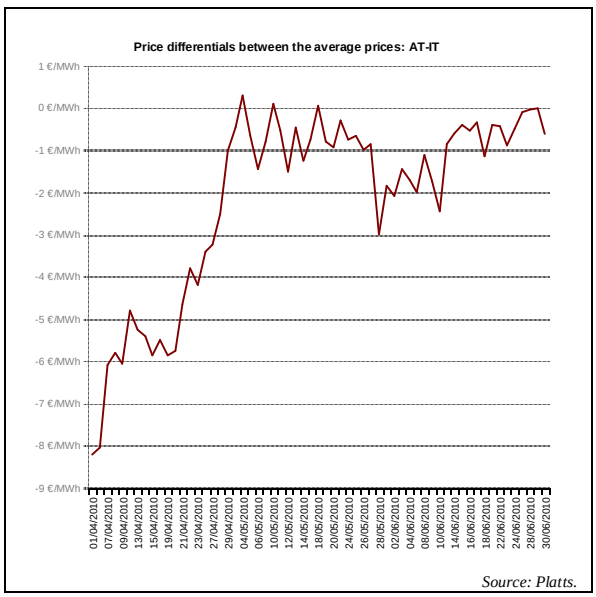


Source: Platts.



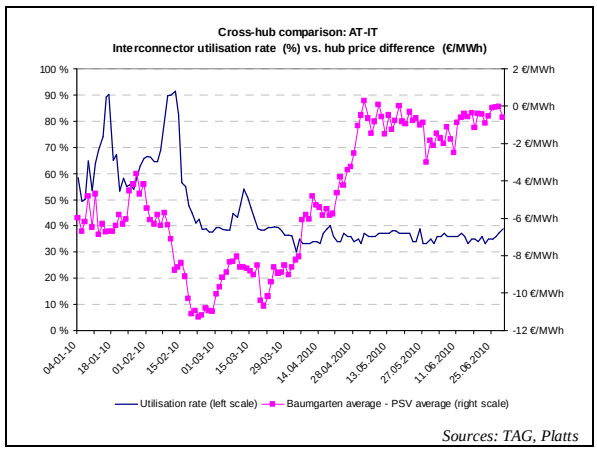
Source: Platts.

As the premium between Baumgarten and the German hubs extended, the Austrian price reached highs in the latter part of the quarter more in line with Italy's PSV.



Source: Platts.

In parallel to prices between the two hubs becoming comparable, cross-border flows between Austria to Italy became much less erratic than previous quarters, remaining stable at around 35 to 40% throughout the second quarter.



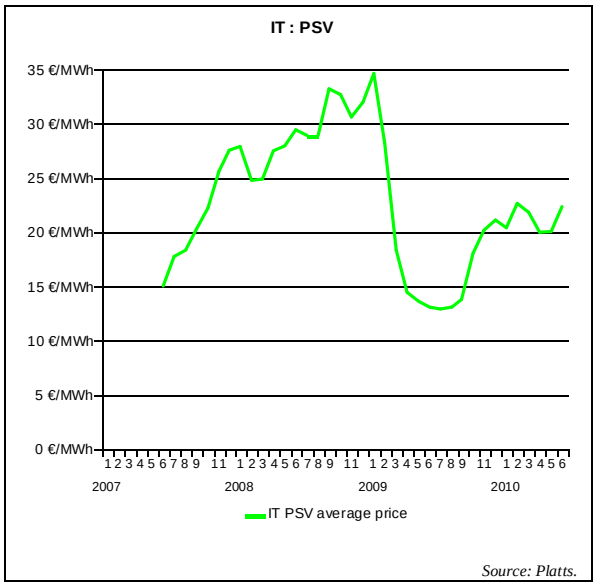
Sources: TAG, Platts

Italy: Punto di Scambio Virtuale (PSV)

Italy's PSV hub experienced more subdued price developments than other European hubs over the course of the second quarter, with monthly prices over the course of the quarter being observed in a range of between 20 and 22 Euros/Mwh, which was the same in Q1 of 2010.

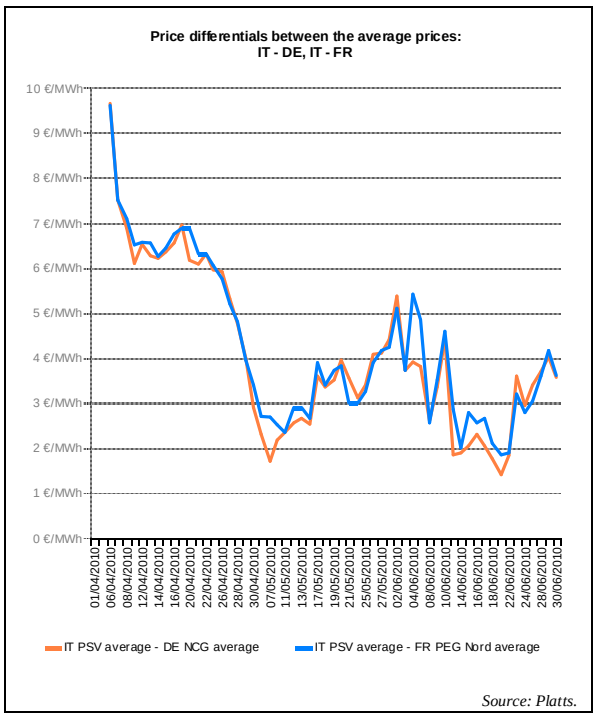
PSV prices usually follow their own fundamentals, being less often affected by price movements on other European hubs. Liquidity is also very low, with churn rates much below other hubs such as the UK's NBP, the TTF and Zeebrugge in Belgium.

According to Platts Gas Daily, the Italian churn rate in April 2010 was 1.8, in line with the churn rate recorded every month between November 2009 and February 2010 while April physical volumes traded totalled 1.75 million cubic meters, the lowest apart from October 2009. The total gas volume bought and sold through the hub, both physical and traded, was 3.169 million cu m in April 2010. This was also the lowest apart from October 2009.



Source: Platts.

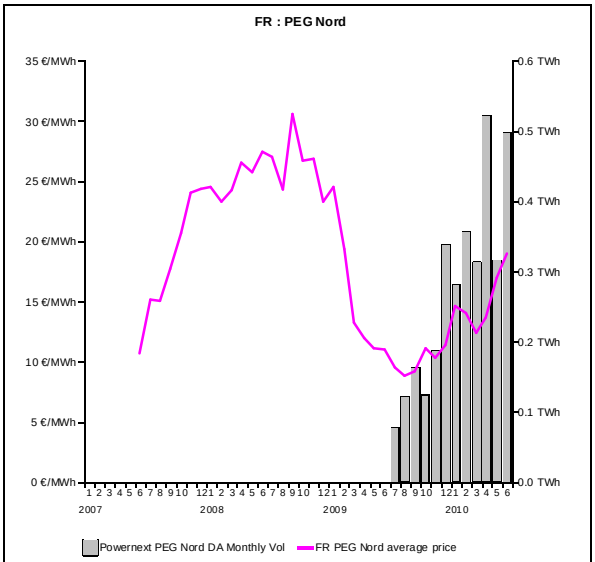
As the graph below shows, the high premium of the Italian market decreased considerably over the course of the quarter, in comparison to prices on the German and French hubs for the same period, which saw significant increases.



Source: Platts.

France: Point d'Echange de Gaz (PEG)

Prompt prices on the French hub increased over the course of the second quarter, as at other European hubs, registering an average monthly price high of just below 19 Euros/Mwh (in June), compared to a previous high in Q1 of 14.6/Mwh. This means that prices were almost level with those recorded in February 2009, after which French prices suffered a large correction to a 2009 low of 8.8 Euros/Mwh.

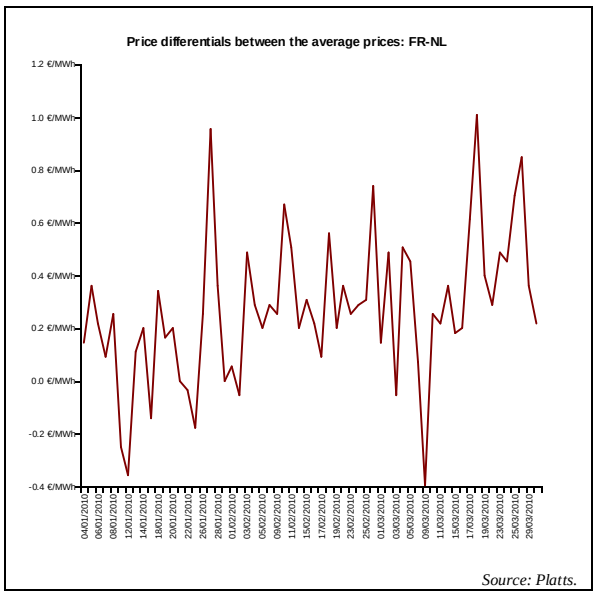


Source: Platts.
Note: The data on volumes begins from the 6th of July 2009.

French prices typically trade in line with Europe's other main hubs. Taking monthly average prices into account, PEG Nord had been trading at a premium to TTF in April and May, but traded at a discount to TTF in June. Maintenance work at a number of French nuclear plants as well as at the Montoir LNG import terminal (between the 17th and 26th of May) could explain premiums during parts of the month of May.

French prices were also sensitive to Norwegian supply disruptions over the course of the quarter.

In June, the continued strength of the French prompt and near curve contracts was attributed to strong buying for storage.



New interconnection point

In May, French and Belgian energy regulators provided support to the construction of a new physical gas interconnection between France and Belgium. Currently, gas only flows from Belgium to France.

A new entry point just inside Belgium would directly connect non-odorized gas coming into Dunkirk with the Belgian grid.

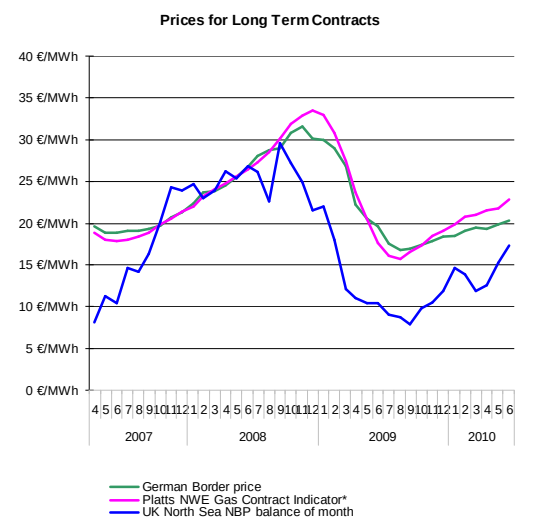
According to Platts Gas Daily, the link would increase France to Belgium capacity by 1-1.5 million cu m/hour and could enter into service late 2014 or early 2015.

A.1.1.2 Reported border prices on long term contracts for pipe gas

After falling significantly in the first few months of 2009, and then following an upward trend in late 2009 and early 2010, prices for long term gas contracts, further increased in the second quarter of 2010.

By the end of the second quarter, the Platts NWE Gas Contract Indicator averaged €22.80/MWh (for the month of June), up from a March 2010 monthly price of €21/MWh, while the German border price averaged €20.3/MWh in June compared to €19.4/MWh in March.

However, even greater increases during the course of the second quarter in spot prices across European hubs meant that the spread between spot and LTC gas prices has reduced. End Q2 levels in spot gas prices of close to or upwards of 20 Euros/MWh at a number of European hubs (see individual hub sections above), will have reduced the incentive of gas buyers to favour spot gas purchases over long-term contracts.



Sources: Federal Office of Economics and Export Control (BAFA); Platts
**Note. For dates prior to May 2009, the Gas Contract Indicator values are calculated retrospectively using gasoline cargoes (CIF) to North West Europe with 0.1% and 0.2% sulphur content*

Indeed, as was highlighted above, one of the likely drivers of spot gas prices in the second quarter in particular in Germany and the UK were gas buyers reducing their long-term take-or-pay obligations to source volumes through the cheaper spot market.

Q2's high increase in prices led to a situation which was very different from that a year ago when long-term contract prices had at times been twice as high as spot prices.

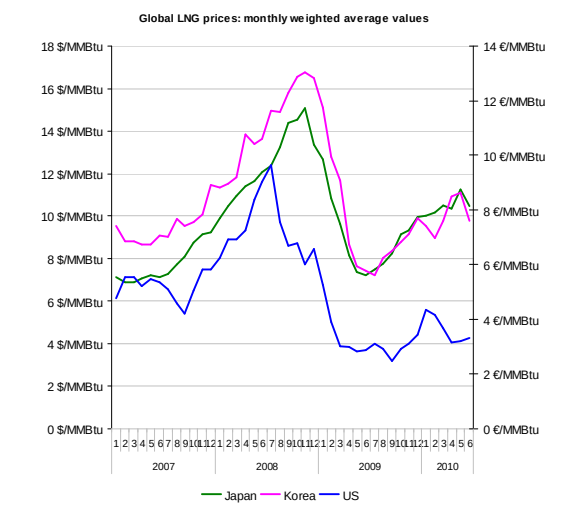
As was highlighted above, companies in mainland Europe, where oil-indexed gas pricing is common, were especially drawn to relatively cheap UK spot prices in the second quarter, which explained the volumes of exports out of the UK to the continent.

A.1.1.3 Reported prices for LNG deliveries

North America and Asia

2010 Q2 LNG prices in Japan and Korea first increased and then fell, with the consequence that by the end of the quarter prices had fallen back to the level recorded at the beginning of the quarter. In terms of average prices for the quarter however, both markets recorded increases on the previous quarter, and, significant increases compared to 2009 Q2 of respectively, 41% and 34%.

In comparison, US LNG prices levelled off after falling by more than 20% in the first quarter. There is thus a disconnect in the evolution of prices between the Atlantic and the Pacific, with subdued pricing in the former likely due to falling imports in LNG due to the boom in natural gas production from shale formations, in comparison to generally rising import prices in the latter.



Source: Gas Strategies.
An important change was introduced in the formula for calculating monthly prices. Previously these prices were an average of prices charged by different suppliers. Starting from Q4 2009 averages are weighted by the monthly LNG deliveries of each supplier.

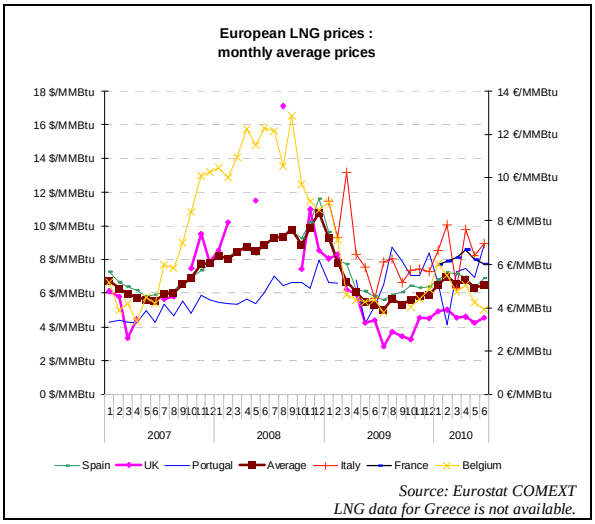
Europe

The weighted average price in Europe for imported LNG in the second quarter of

2010 (taking into account prices paid in Spain, the UK, Portugal, Italy, France and Belgium) was relatively stable between the beginning and the end of the quarter, ranging between 5.02 and 5.38 Euros/MMBtu. This was slightly up on the previous quarter.

While prices rose over the quarter in Spain, the UK and Portugal, these were levelled off somewhat by fairly stable prices in France, Italy and Belgium. Portugal experienced the biggest change in prices, rising from 5.4 to 7.3 Euros/MMBtu.

As has been the case recently, LNG prices in Spain, Portugal, Italy and France were higher than prices paid in the UK and Belgium.

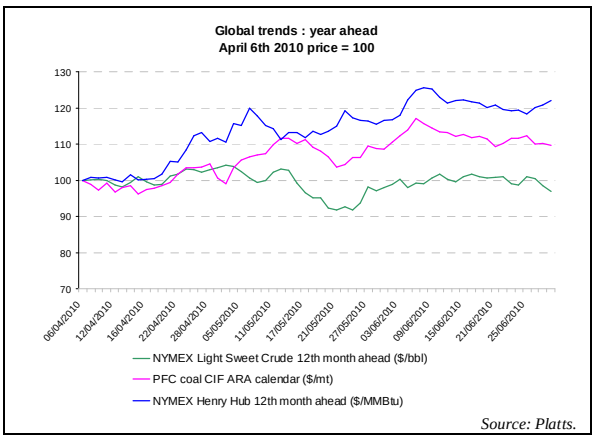


Source: Eurostat COMEXT
LNG data for Greece is not available.

A.1.2 Forward markets

The decoupling of energy prices in the forward markets which could be witnessed during the first quarter of the year was still apparent by the second quarter. To recall, in the first quarter of 2010, 12 month ahead coal prices declined after experiencing a strong but short-lived increase at the beginning of the year and the NYMEX Henry Hub 12 month forward also followed a downward, if more accentuated, trend while the NYMEX 12 month light sweet crude remained relatively stable.

In comparison in the second quarter, crude forward prices continued their relative stability while both gas and coal turned their downward trend into an upward one, with NYMEX forward gas increasing strongly.



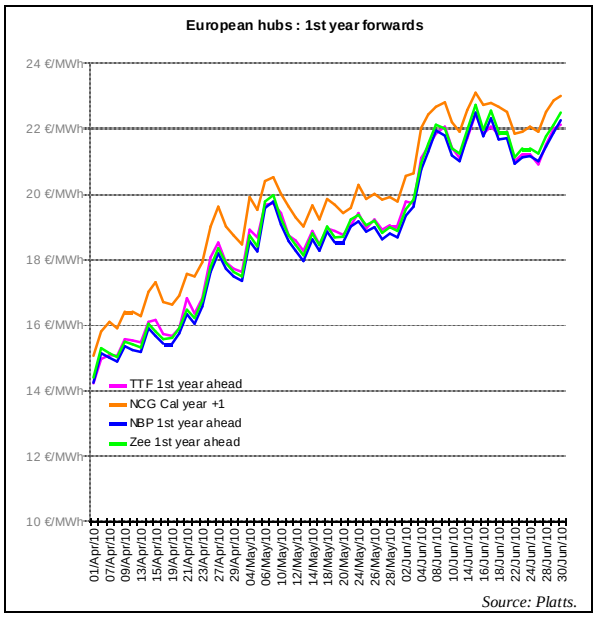
Source: Platts.

Looking at 12 month ahead gas prices on the European hubs, it can be seen that the trend reversal of global energy prices experienced between Q1 and Q2, during which gas prices went from falling to increasing, was very much mirrored at the European level.

If the previously described trend reversal between the first and second quarters in spot gas prices in Europe is taken into account, it can be seen that both spot and forward prices were moving in the same direction in the second quarter.

As commented in the section reporting on the evolution of European spot prices, there were a number of elements that explained the unusual situation of increasing spot prices in the second quarter of the year. Also unusual was the situation of month-ahead prices trading in contango as such contracts typically trade in backwardation in the second quarter, in line with warming temperatures and lower demand, as was said previously (quarter ahead prices do however usually trade in contango at this time of year, and the charts at the end of this section clearly show that this was indeed the case during Q2 2010).

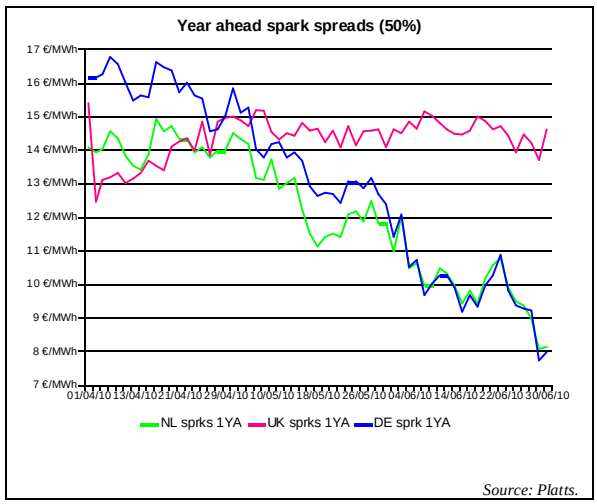
The chart below shows that year-ahead gas prices were also trading in contango.



Source: Platts.

The strong increases in European gas prices in the second quarter, combined with a rather small increase in power prices, led to a reduction in the theoretical margins of gas-fired power-plants. This could be observed most clearly in mainland European countries such as Germany and the Netherlands, which experienced significant declines in year-ahead spark spreads[8] during the second quarter while UK spark spreads remained relatively stable.

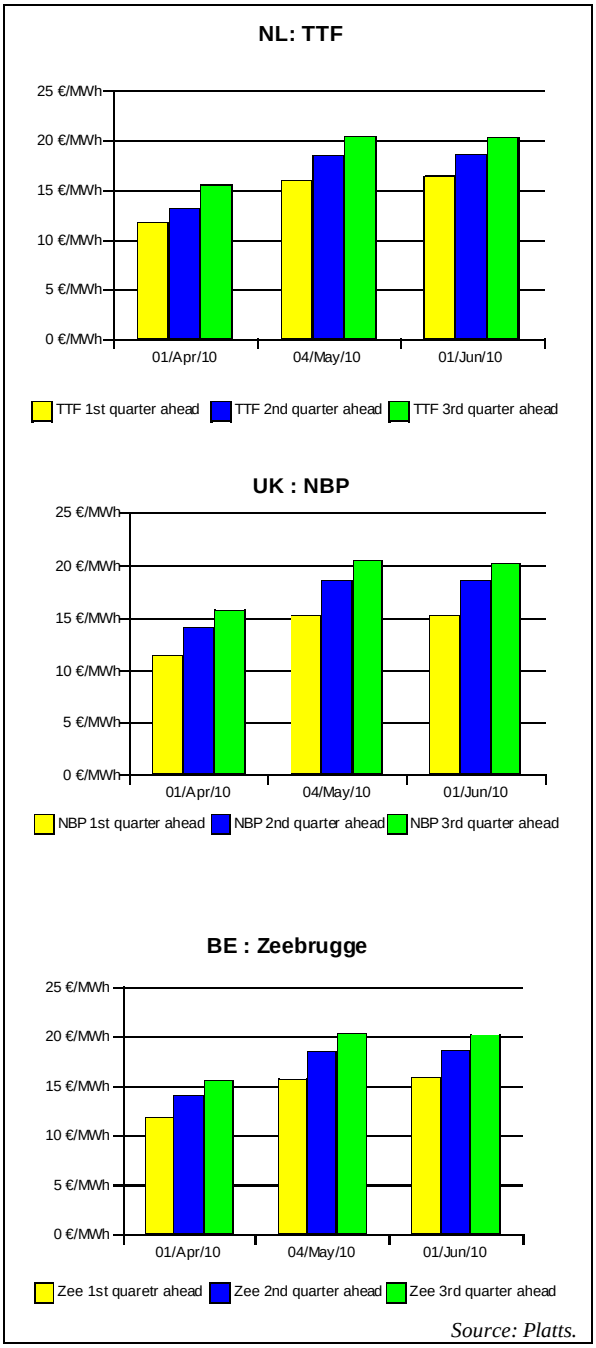
April declines in near term Dutch and German spark spreads as a result of increasing gas prices were further accentuated on the demand side as coal-fired power plants were taken offline for planned maintenance in Germany at the beginning of the second quarter, thereby contributing to increasing demand for gas-fired production.



Source: Platts.

[8] Spark spreads are indicative prices showing the average difference between the cost of gas delivered on the gas transmission system and the power price. As such, they do not include operation, maintenance or transport costs. The spark spreads are calculated for gas-fired plants with standard efficiencies of 50% and 60%. This report uses the 50% efficiency. Spark spreads are calculated using calendar year gas contracts.

At the beginning of May, month-ahead profit margins for both coal-fired and gas-fired power plants in Germany and the Netherlands (as well as the rest of continental Europe) fell significantly as fuel-based commodities moved higher. The EU carbon price is also said to have had an influence on month-ahead spark spreads as April EU allowances for 2010, 2011 and 2012 delivery increased by upwards of 20%.

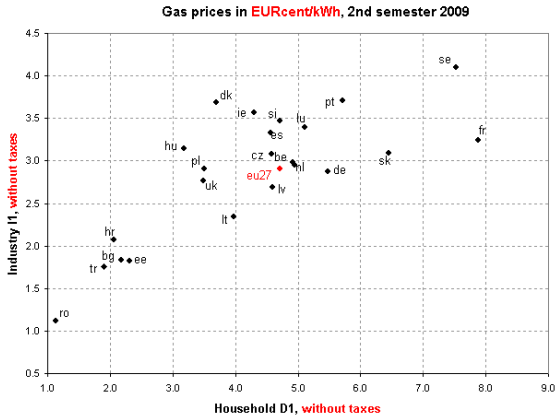


Source: Platts.

A.2 Retail markets

A.2.1 Prices by Member State[9]

In the following charts the prices paid by the European households and industry are compared against the EU average.



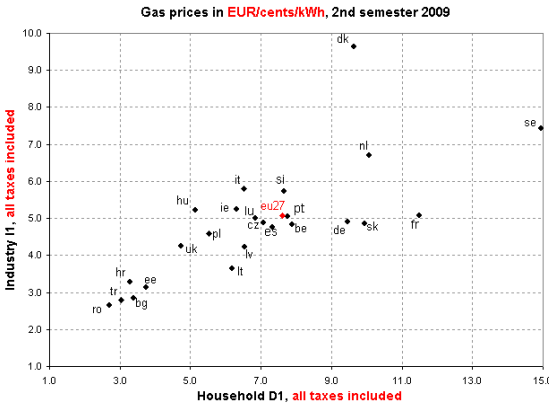
Source: Eurostat

Range for annual consumption of :
Household group D1 : [0 MWh – 5,56 MWh] ;
Industry group I1 : [0 GWh – 0,28 GWh]
Note. Data for Austria, Cyprus, Greece, Finland and Malta are not available

The lowest prices for both the industry consumers (category I1) and household consumers (category D1) can be found in South-Eastern Europe. However, also the Baltic countries are below the average.

When applying taxes, the most notable changes in the prices of households were visible in Sweden (€cent 7.4/kWh) and Denmark (€cent 5.9/kWh). The calculation shows the lowest taxes for the group D1 in Bulgaria (€cent 1.2/kWh) and the United Kingdom (€cent 1.3/kWh).

For the industry group I1 the highest taxes were noted in Denmark (€cent 5.9/kWh) and the Netherlands (€cent 3.7/kWh), and the lowest in Bulgaria (€cent 1.0/kWh) and Latvia (€cent 1.3/kWh).



Source: Eurostat

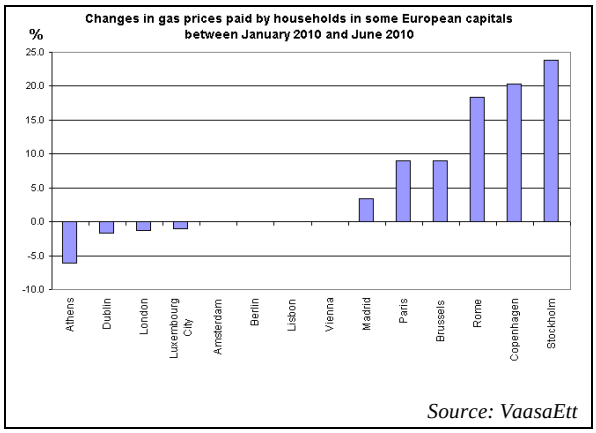
Range for annual consumption of :
Household group D1 : [0 MWh – 5,56 MWh] ;
Industry group I1 : [0 GWh – 0,28 GWh]

Note. Data for Austria, Cyprus, Greece, Finland and Malta are not available

Analysing the HEPI[10] gas price index for the first semester of 2010, the chart shows again the northern Member States on the top of the scale.

[9] It should be noted that the indicative Eurostat categories of household and industry consumers are not necessarily representative of the average customer for a given Member State due to different consumption patters across the EU.

[10] HEPI gas price index was developed by the Austrian energy market regulator E-control and VaasaEtt Global Energy Think Tank, providing monthly information about the evolution of the final gas consumer prices in some selected capital cities of EU countries.

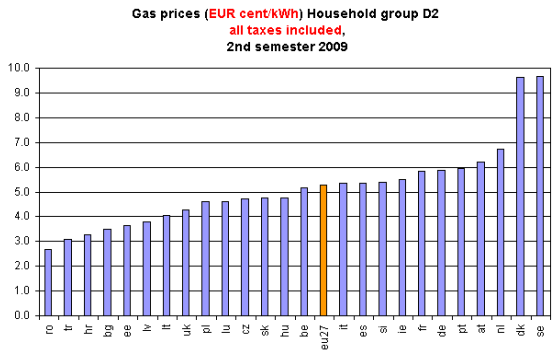


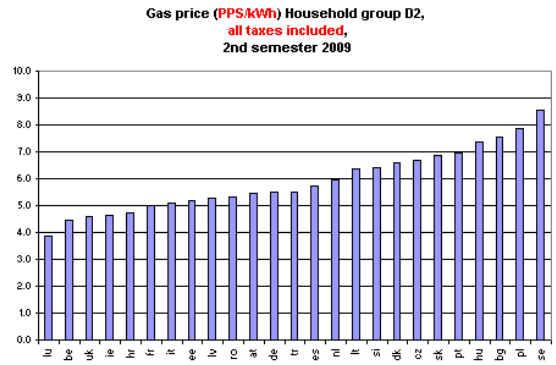
Source: VaasaEtt

In Stockholm the change in consumer prices was almost 25%, increasing from €cent 14.6/kWh in January 2010 to €cent 18.1/kWh in June 2010. At the lower end of the chart residents in Dublin and London paid lower prices than six months earlier. This is close to the analysis in the scattered charts, where prices for Irish and British households were observed below the European average.

A.2.2 Cross–panel data on natural gas prices of households

Similar to the previous section, the highest prices can again be noted in the Nordic countries, while the lowest prices were registered in the South-Eastern Europe and the Baltic countries. The difference between the Swedish and the Romanian prices is consequently almost 7 cents per kWh. Slovenia is the only new Member State above the EU27 average.





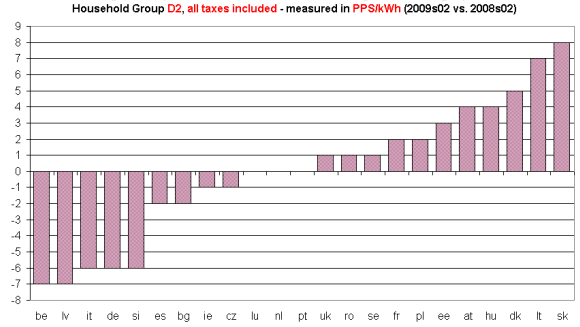
Source: Eurostat

Household group D2 : [5,56 MWh – 55,6 MWh]
Data for Cyprus, Malta, Finland, Greece are not available

When applying purchasing power parities, Sweden is still on the far right of the chart, however, followed by several new Member States: Poland, Bulgaria and Hungary.

Actually, seven out of the ten new Member States presented here were in the upper half, although some of them changed their positions considerably, like the chart below shows. For example Slovenia had the third highest prices in PPS in 2008s02 among the presented countries, but remained in 2009s02 in the upper half of the chart although it changed six places in the ranking order. Slovakia on the other hand, was in 2008s02 in the lower half. But with a considerable increase in prices relative to the other countries it was in 2009s02

among the six most expensive Member States in the analysed consumer group.



Source: Eurostat

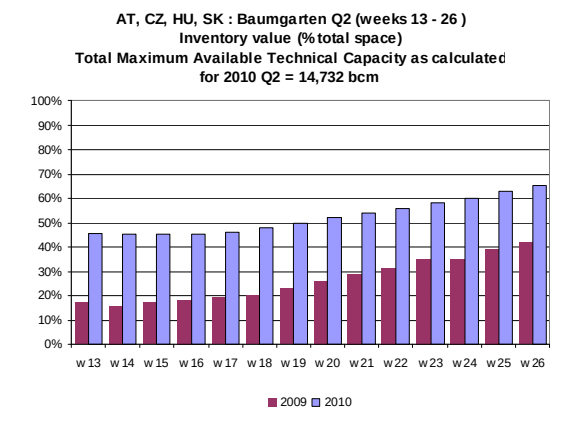
Notes
1) Data for Cyprus, Greece, Finland and Malta are missing
2) Only EU Member States are taken into account
3) Positive values designate higher position in the price ranking order, meaning that the given country's prices rose faster (or decreased less) than the average of the EU-27, otherwise said the given country became more expensive compared to the other ones, as measured against the previous semester (second half of 2008).

B. Midstream flows

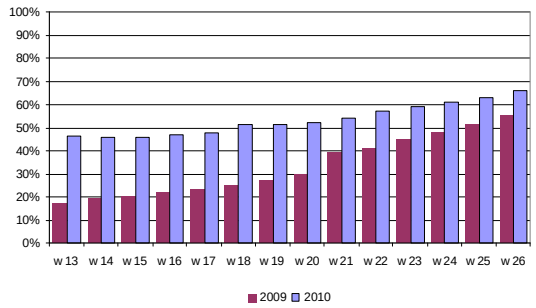
B.1 Storage

Storage levels in the second quarter of 2010 in a number of European countries were a great deal higher than the equivalent quarter of 2009, which had been affected by the January gas crisis, and during which storage operators played an important role in alleviating the effects of the disruption in many countries of Central and Eastern Europe.

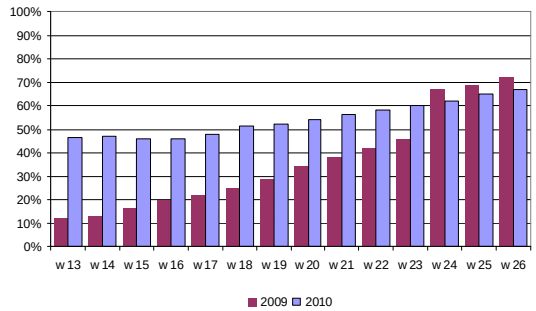
Even so, storage levels were by and large not very high for that time of year due to a very harsh winter (the coldest for 30 years) during which extra demand needed to be fulfilled by relying on higher storage withdrawals. This situation was one of the various contributing factors to higher gas prices in Q2, due to the need to re-inject high levels of gas into storage.



DE : Q2 (weeks 13 - 26)
Inventory value (% total space)
Total Maximum Available Technical Capacity as calculated for 2010 Q2 = 19,470 bcm

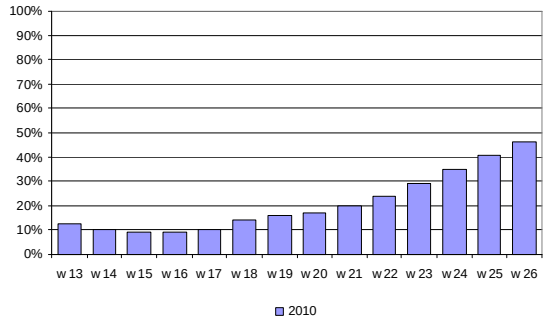


IT : PSV Q2 (weeks 13 - 26)
Inventory value (% total space)
Total Maximum Available Technical Capacity as calculated for 2010 Q2 = 14,937 bcm

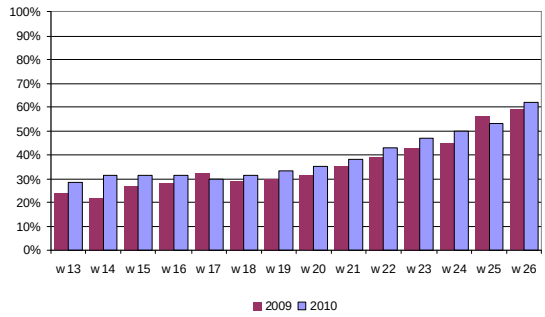


Source: Gas Infrastructure Europe

BE : Zeebrugge Q2 (weeks 13 - 26)
Inventory value (% total space)
Total Maximum Available Technical Capacity as calculated for 2010 Q2 = 687 bcm

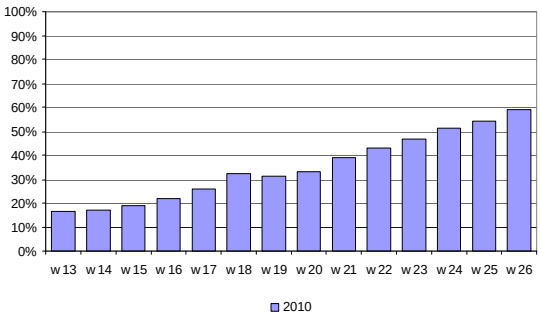


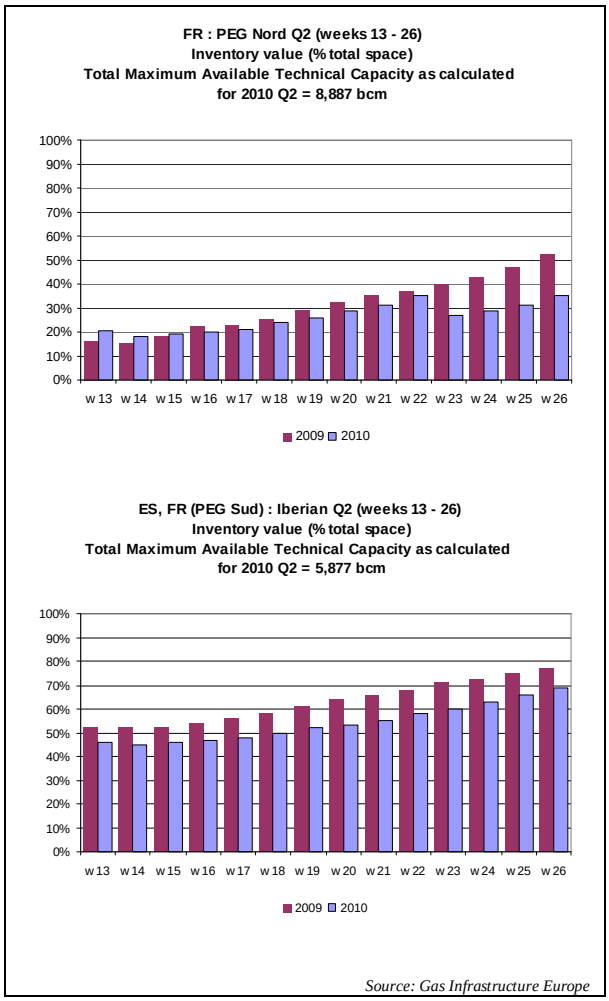
NL : TTF (Eurohub) Q2 (weeks 13 - 26)
Inventory value (% total space)
Total Maximum Available Technical Capacity as calculated for 2010 Q2 = 1,998 bcm



Source: Gas Infrastructure Europe

UK : NBP Q2 (weeks 13 - 26)
Inventory value (% total space)
Total Maximum Available Technical Capacity as calculated for 2010 Q2 = 4,756 bcm

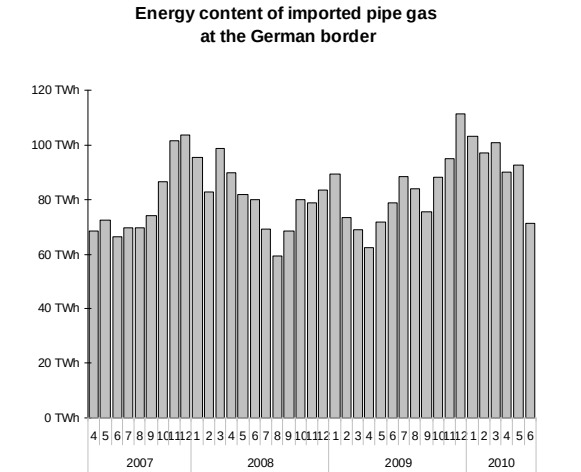




Source: Gas Infrastructure Europe

B.2 Pipeline

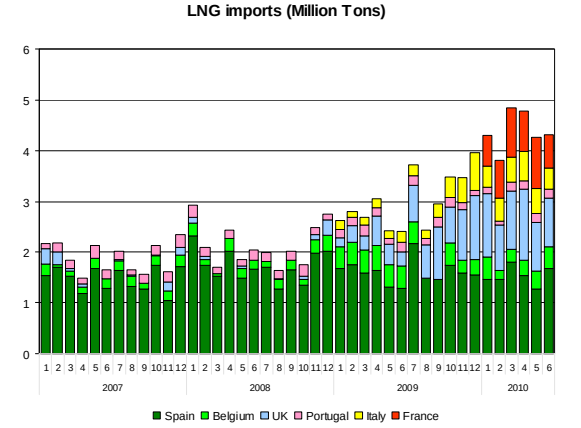
In the second quarter of 2010, the energy content of imported pipe gas at the German border was less than in the previous quarter. This is in line with seasonal trends which can be observed for previous years in the graph below, whereby pipe gas imports peak at the beginning and end of the year and are at their lowest around the middle of the year.



Source:
Federal Office of Economics and Export Control (BAFA)

B.3 LNG

LNG imports in the second quarter of 2010 in the six countries observed were relatively stable compared to the previous quarter and has confirmed the UK as a growing destination for LNG exports to the EU; Italy has also quite significantly extended its imports of LNG since 2009.



Source: Eurostat COMEXT
August and September 2009 data for Belgium are missing.
Italian data reported from January 2009.
French data reported from January 2010.

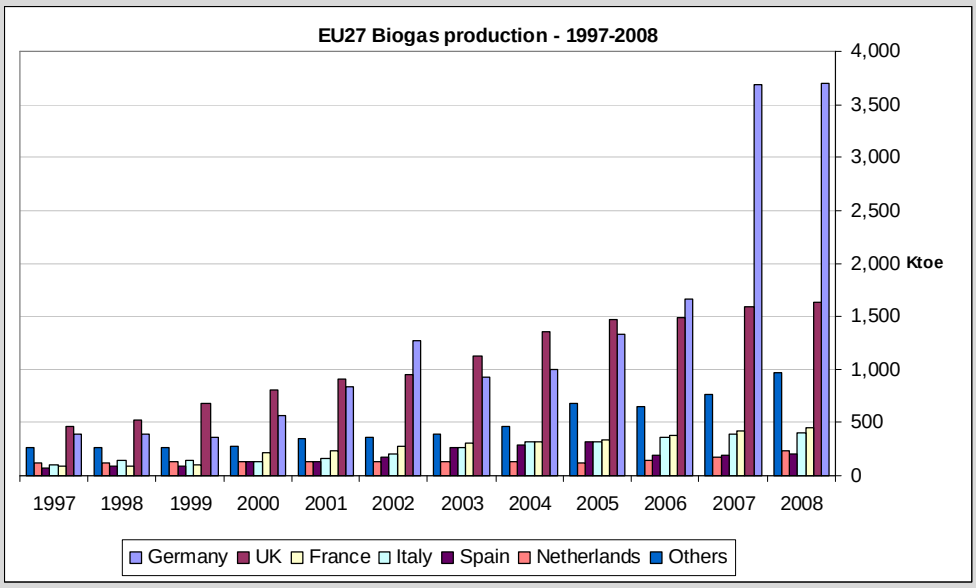
C. *"Focus on biogas"*

Biogas is a gas composed principally of methane and carbon dioxide produced by anaerobic digestion[11] of biomass. Biogas can be used as a low-cost fuel form of heating, and can also be used in waste management facilities to run any type of heat engine in order to generate either mechanical or electrical power. Additionally, biogas can be compressed, much like natural gas, and used to power motor vehicles

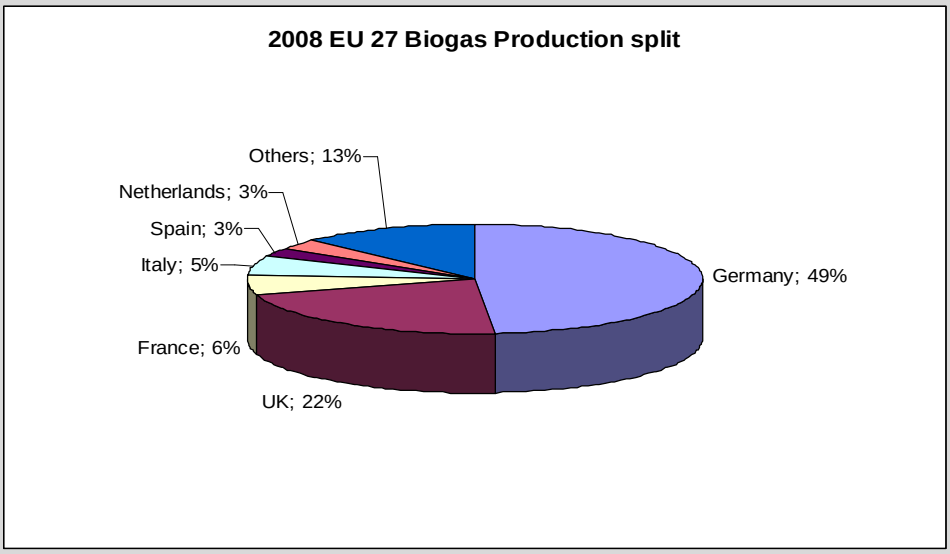
Biogas comprises landfill gas (formed by the digestion/methanisation of landfilled wastes), sewage sludge gas (produced from the anaerobic fermentation of sewage sludge) and other biogases such as biogas produced from the anaerobic fermentation of animal slurries and of wastes in abattoirs, breweries and agro-food industries[12].

European production of primary energy from biogas was 7.6 million toe in 2008. In 2007, 49% of EU27 biogas was from decentralised agricultural plants, municipal solid waste methanisation plants or centralised Combined Heat and Power plants; 39% was landfill biogas and 13% was biogas from waste treatment plants (sewage sludge gas).

Germany is the EU's main producer of biogas (49% in 2008), largely through the major development of its small farm methanisation plants. The UK is the second largest producer of biogas in the EU, mainly from landfill sites.



[11] The breaking down of organic matter in oxygen free conditions.
[12] Joint IEA/ESTAT/UN annual questionnaire on renewables and wastes



The EU's Renewables (RES) Directive[13] includes landfill gas, sewage treatment plant gas and biogases as forms of energy from renewable sources and it highlights the use of agricultural material such as manure, slurry and other animal and organic waste for biogas production as having, in view of the high greenhouse gas emission saving potential, significant environmental advantages in terms of heat and power production and its use as biofuel. It also recognises that biogas installations can, as a result of their decentralised nature and the regional investment structure, contribute significantly to sustainable development in rural areas and offer farmers new income opportunities.

A number of requirements set by the EU's RES Directive also have direct relevance for the development of biogas, namely the requirements that Member States shall:

- Ensure that the charging of transmission and distribution tariffs does not discriminate against gas from renewable energy sources;
- Assess the need to extend existing gas network infrastructure to facilitate the integration of gas from renewable energy sources;
- Require transmission and distribution system operators to publish the connection tariffs to connect renewable gas sources based on transparent and non-discriminatory criteria.

In addition, for the purposes of meeting the 10% renewable transport fuel target by 2020, the RES Directive considers that the contribution made by biofuels produced from wastes, residues, non-food cellulosic material, and ligno-cellulosic material shall be twice that made by other biofuels.

[13] Directive 2009/28/EC.
[14] The potential for renewable gas in the UK, January 2009.

In a 2009 paper by the UK's National Grid[14], the potential of biogas in helping the UK meet its renewable energy and carbon reduction targets in 2020 is highlighted, with the prediction that in the longer term, renewable gas could potentially meet up to 50% of UK residential gas demand.

Another advantage of using biogas is that unlike other options such as district heating and heat pumps, it utilises existing heat infrastructure (i.e. gas grids) already largely paid for by the consumer and thus that it does not require consumers to find the money for new heating installations in the home and also avoids the disruptive road works that would be required to build more network infrastructure.