Quarterly Report on European Gas Markets

Directorate-General for Energy

EUROPEAN COMMISSION

- MARKET OBSERVATORY FOR ENERGY

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EUROPEAN COMMISSION

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Dear readers,

Colder than usual weather conditions in Q1 2010 put on test the ability of the existing infrastructure, especially storages and LNG terminals, to cope with demand peaks. I am pleased to see that the responses of the operators ensured supply to all customers. This also confirms that the Commission's policy focused on appropriate gas infrastructure is correct.

Nevertheless, it seems that for some interconnections cross-border flows do not always respond to price signals. Cross-hub comparison of wholesale price spreads and interconnector utilisation rates, a new feature in this report, shows that sometimes physical flows did not follow price signals. This is an issue that needs closer attention.

I am pleased to see that, as of January 2010, our report covers developments in the Central European Gas Hub (CEGH) in Baumgarten. The Member States in Central Europe are essential for the integration of the gas markets. Moreover, they offer many opportunities for trading and are the vital link in the European security of supply.

The price developments on the retail markets show that households benefited from falling prices on the wholesale markets. This is an encouraging signal, because the purpose of the market liberalisation is to create benefits for European consumers.

HIGHLIGHTS

- EU natural gas consumption and import in the first quarter of 2010 were higher than in the same quarter of 2009 and remained close to their three-year record set in December 2009. Winter weather conditions were harsher than in the same period of 2009.

- Crude oil and coal spot prices increased while the decoupling of month-ahead prices for oil and gas continued in Q1 2010. Spot gas prices fell after a very cold winter. In the UK a series of gas alerts was issued in January as low temperatures interrupted deliveries of Norwegian gas.

- Year-ahead prices of coal and gas declined while prices for crude oil remained stable. Year-ahead prices on the European hubs decreased.

- Household and industrial customer prices fell in the second half of 2009. Domestic consumers in selected European capitals faced very different price evolution from September 2009 to March 2010. According to data from *E-Control* and *VaasaETT*, in some capitals (Athens, Dublin and London) gas prices fell by 10 – 20 % while in others (Stockholm, Brussels, Copenhagen) they increased as much.

- Storage inventory values higher than in the same period of 2009.

- Imported volumes of LNG and pipeline gas (German border) remained close to record high levels.

NEW FEATURES IN THIS REPORT

- The Central European Gas Hub (CEGH) in Baumgarten included in the report.

- Introduction of hub price differentials and utilisation rates for some of the main European interconnectors.

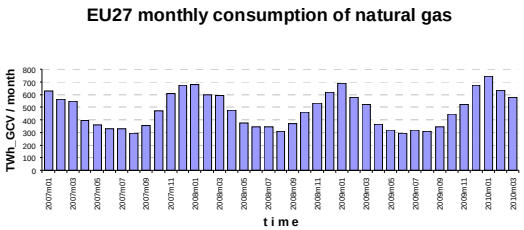
QUARTERLY REPORT ON EUROPEAN GAS MARKETS

CONTENTS *Page*

A. Recent developments in the gas markets across Europe

A.1 Wholesale markets

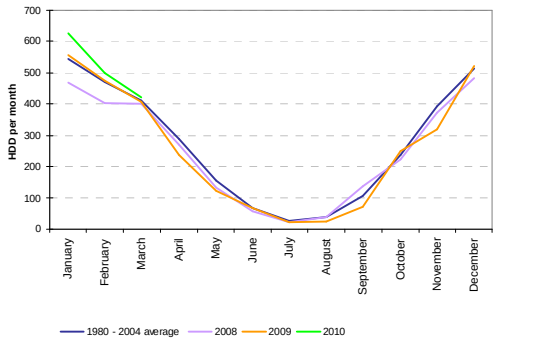
The evolution of the EU-27 monthly gas consumption during the first three months of 2010 followed the usual pattern that could be observed during the last couple of years; after reaching a three year record high peak measured in January (742 TWh) the monthly consumption began to decline. However, if the monthly consumption is compared to that of the same month of 2009 a clearly visible growth occurs within a range of 8-12% in each month.



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

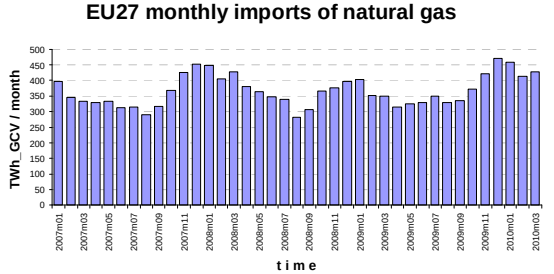
This strongly coincides with the evolution of the EU-27 level Heating Degree Days values that also showed a considerable increase in the first three months of the year. HDD values were higher in January, February and March of 2010 by 12.3%, 4.9% and 3.8% respectively, primarily owing to the impact of the colder weather than in the previous year. The beginning of

economic recovery in Europe might also have contributed to higher gas consumption in the first quarter of 2010.



Source: Eurostat / JRC

The biggest increase in year-on-year gas consumption in the first quarter of 2010 could be observed in Sweden (43.8%), partly due to the colder weather than in the first quarter of 2009, whereas in the Czech Republic consumption grew only by 4%. The average EU-27 level gas consumption growth was 9.6% in the first quarter of 2010 compared to that of a year earlier.



Source: Eurostat
Monthly imports for Portugal (January – March 2010) is estimated based on GDP data for the first quarter of 2010 from Eurostat's Principal European Economic Indicators.

The evolution of the monthly import of natural gas followed a similar trend as what could be observed for gas consumption. However, the import of natural gas in the first quarter of 2010 increased by 18% compared to the same period of 2009, surpassing the less than 10% increase in gas consumption over the same period. This was in parallel with declining indigenous gas production in the EU-27.

A.1.1 Spot markets

The trend of growing Brent spot price continued in Q1 2010. At the end of the quarter it reached 60 €/bbl, a level last seen in October 2008. The average monthly price grew by 76 % from January 2009 to March 2010. The average quarterly price grew by 9 % from Q4 2009 to Q1 2010.

Coal prices also continued growing, (a trend that began in the middle of 2009) but this trend appears to be less strong when compared to Brent. This could be related to the high level of coal stocks currently in Europe.

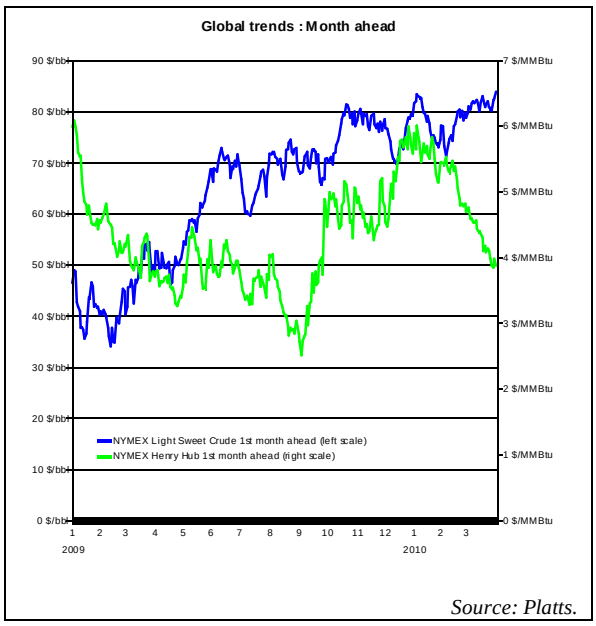
In the beginning of January the CIF ARA price[1] peaked at 66.7 €/Mt, but this was short-lived and coincided with the cold snap.

The average quarterly CIF ARA price was in Q1 2010 3 % higher than in Q1 2009.

[1] 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.

Source: Platts.

As the Brent spot price, the forward price for light sweet crude on the *New York Mercantile Exchange* shows a continuous growth trend throughout the whole period presented in the chart below. The average monthly price grew by 94 % from January 2009 to March 2010. In 2010 the month-ahead price was above 80 $/bbl for most of the month.



Source: Platts.

The month-ahead price of gas at Henry Hub in the first quarter of 2010 showed similar developments as the European hubs. After peaking in January (more than 6 $/MMBtu), the price levelled off, falling below 4 $/MMBtu. Hence the decoupling of oil and gas prices observed in 2009 appears to have continued in 2010.

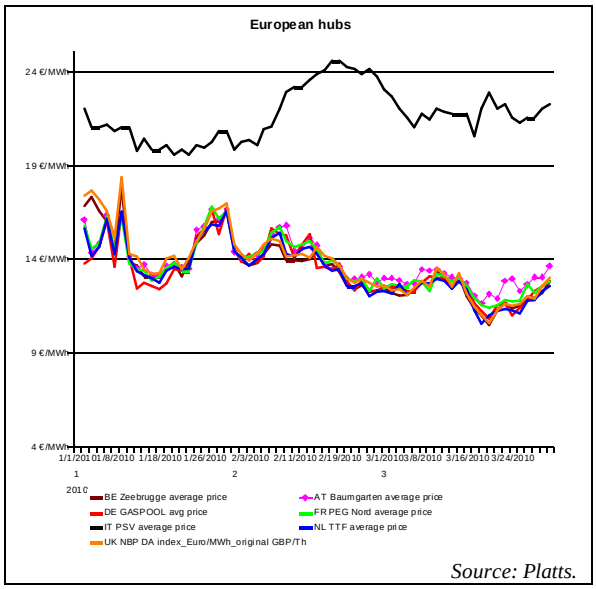
A.1.1.1 European hubs

In common across European hubs were increasing prices in January and afterwards a gradual drop until the end of the quarter. As often the price on the Italian PSV developed differently than on the other European hubs and this discrepancy is visible especially in February (please refer to the section on PSV for further analysis).

January was characterised by very low temperatures which increased demand on the one hand and caused outages in Norwegian supplies on the other hand[2]. Consequently the average monthly prices in January increased by between 24 % (Gaspool) and 29 % (Zeebrugge).

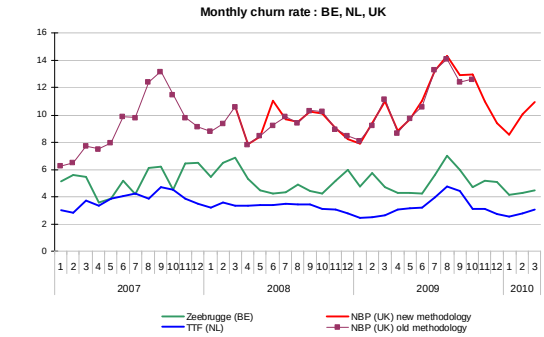
February prices decreased slightly, as gas demand in February is normally lower. Although temperatures were still low, fewer problems with Norwegian supplies allowed the February prices to drop further.

[2] Low temperatures and icing interrupted the production on the Troll and Ormen Lange fields as well as in the important Karsto gas processing plant.



Source: Platts.

On average, prices continued dropping also in March in spite of another disruption affecting production on the Norwegian Ormen Lange field in the beginning of the month. Then, there was another increase in prices shortly before the end of the quarter. This appears to have been driven by lower aniticipated Norwegian and Dutch deliveries pushing prices at the NBP upwards[3].



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.

The three observed churn rates[4] decreased in January this year as they did in Q4 2009. However, on the three hubs the traded and physical volumes increased in January. The decrease in the churn rates is therefore related to a comparatively larger increase in physical volumes than in traded volumes.

In February and March the churn rates increased across all three hubs.

Comparing the churn rates of January and March 2010, i.e. two months with the same number of days, the changes in the volumes are the following:

	NBP	TTF	Zee
Traded volumes	11.8	-2.7	14.7
Physical volumes	-12.3	-18.0	6.1

On NBP the traded volumes increased and the physical volumes decreased pushing the churn rate up. This provides some

[3] The 31st of March marks the end of the winter gas season which lasts for six months. On the 1st of April the summer gas season begins along with the summer gas contracts. Consequently, gas flows from Norway and the Netherlands to the UK decrease.

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

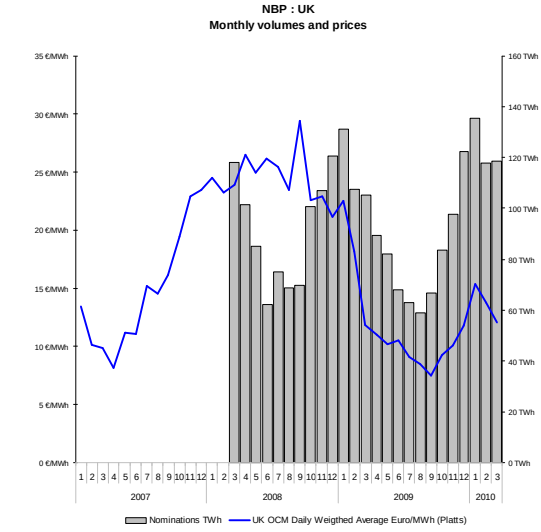
explanation why the NBP curve in the chart is the steepest one in Q1 2010.

UK: National balancing point (NBP)

The UK market entered Q1 2010 with a combination of low temperatures, gas alerts and interruptions in Norwegian deliveries.

The daily weighted average price increased the most in the first week of January exceeding 24.6 €/MWh[5]. This was a result of high demand due to low temperatures and a series of gas alerts issued within one week.[6] As the disruptions ended, the pressure on prices decreased and by mid-January the weighted average price fell below 13 €/MWh. The network was also successfully balanced owing to LNG supplies.

However, by the end of January the price exceeded 16 €/MWh, because of reduced storage levels which were not re-filled during the Christmas period. Rough storage, the most important British gas storage facility, fell to record low stock levels[7]. Nevertheless, steady supplies including LNG arrivals, making use also of two new LNG terminals which became operational in 2009, stabilised the price in February. From around 14 €/MWh in mid-February it dropped to around 12 €/MWh by the end of March. In mid-March, it even fell under 11 €/MWh as the market responded to mild temperatures, lower demand and additional LNG supplies.



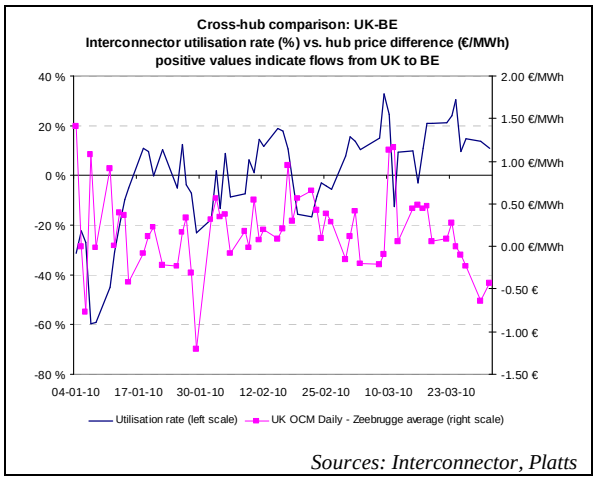
Sources: National Grid (UK), Platts. Following a change in the volume categories reported by National Grid nominations are used to present the monthly volumes instead of physically delivered trades.

The quarterly nominated volumes in Q1 2010 increased by 8 % compared to Q1 2009. Similarly to Q1 2009, the highest volumes were reached in January (135 TWh), with February and March volumes being at almost the same level (around 118 TWh).

[5] Daily exchange rates are used for the conversion.

[6] According to the UK National Grid the purpose of the Gas Balancing Alert (GBA) is to signal to the market that reduced demand or additional supply may be required in order to avoid an emergency situation. In order to issue a GBA the trigger level is set using the anticipated available non-storage supply plus storage delivery capability. When the forecast day-ahead demand (D-1) is above the trigger level a GBA will be issued.
The GBAs issued at the beginning of January were mainly a result of the interruptions in Norwegian supplies.

[7] Rough is operated by Centrica Storage and has a working capacity of 3 bcm.
The Rough reservoir was naturally shaped 200 million years ago. Gas is contained in sandstones found 3 km under the North Sea bed, 29 km off the east coast of Yorkshire (Source: Centrica Storage).
Platts reports that the storage level fell to 278 mcm on March 18th, being the emptiest it had ever been in what was to be one of the coldest winter in the last 30 years.



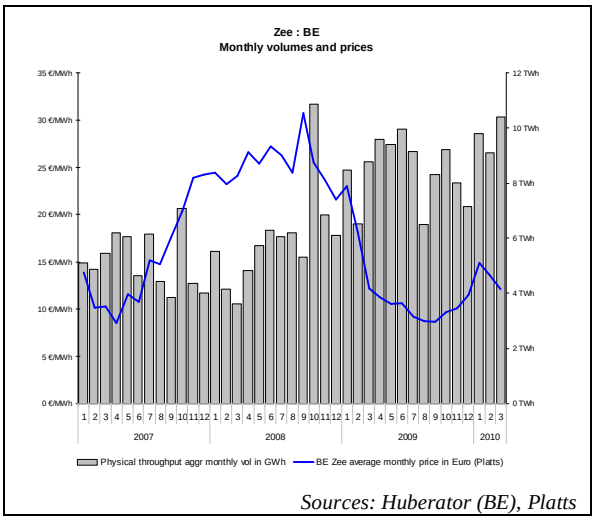
Sources: Interconnector, Platts

Compared to Q4 2009 Interconnector flows were more dynamic, as the flow direction changed several times. It seems that the flow direction does not only depend on the BE-UK spread, but also on other markets. For example in the second half of March it is possible that the high German NetConnect price had an influence on the flow directions rather than just the BE-UK spread.

Belgium: Zeebrugge

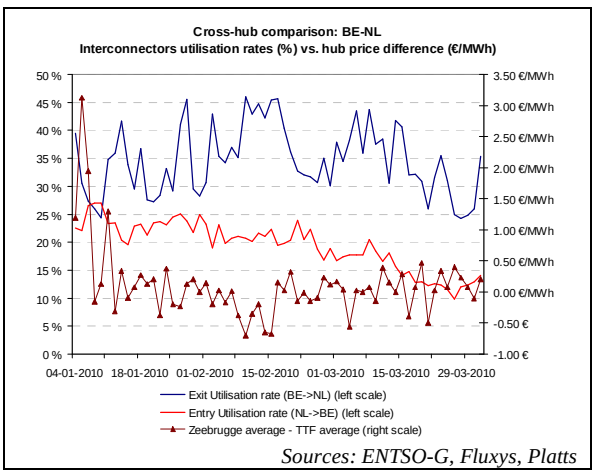
The price at Zeebrugge closely followed the NBP price. Both reached their peak value in the first half of January, mainly as a result of the outage of Ormen Lange gas field in Norway.

Another peak took place at the end of January, when the Zeebrugge day-ahead price reached 16.5 €/MWh. This was again related to the price increase on NBP and the gas storage issues described above. After that the price experienced a decreasing trend throughout the rest of the quarter.



Sources: Huberator (BE), Platts

The cumulative physical throughput in Q1 2010 was 23 % higher than in Q1 2009. As last year, the highest volume in the quarter was reached in March. In addition, March 2010 volumes were 18 % higher than in 2009.



Sources: ENTSO-G, Fluxys, Platts

The exit utilisation rate was fluctuating between 25 and 45 % during most of the quarter. In comparison, the entry utilisation rate, hence the flows from Netherlands to Belgium, were declining. From above 25 % at the beginning of the quarter, the entry utilisation rate fell to under 15 % in March. The price difference between the

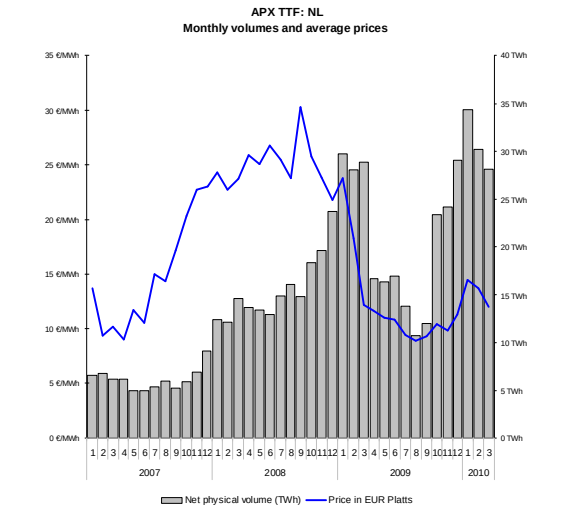
two hubs were moving in the band of +/- 0.5 €/MWh.

Netherlands: Title transfer facility (TTF)

On TTF the new quarter began with rising prices. The average January price was 28 % higher than the average price in December 2009. It was also higher than the average prices in the months to follow: 5 % compared to February and 21 % compared to March.

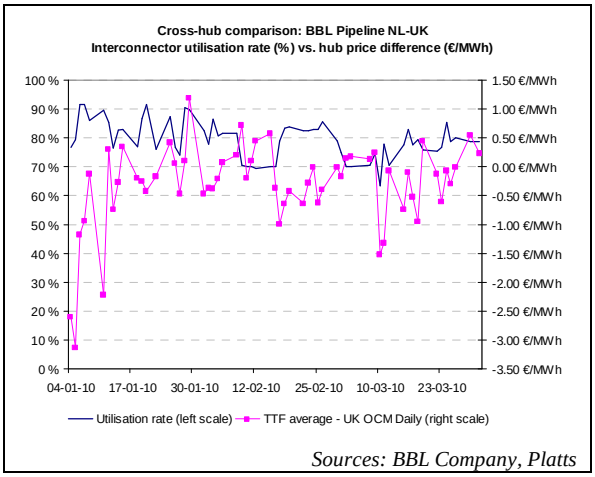
It appears that January prices were pushed up due to severe weather conditions, disturbances in Norwegian deliveries and trends on the NBP. Most likely these factors also led to some big day-to-day price differences, such as in the second week of January, when the TTF average increased by 2.2 €/MWh from one trading day to another.

The opposite happened at the beginning of February, when the price fell by the same amount. This coincided with rapid changes in temperature. The lowest value of the TTF average price in the observed quarter was reached in mid-March, when it dropped under 10.5 €/MWh.



Sources: Gas Transport Services (NL)[8]*, Platts.*

The net physical volumes peaked in January, exceeding 34 TWh. This is 15 % more than the volumes in January 2009. Overall, Q1 2010 volumes were 7 % higher than in Q1 2009.



Sources: BBL Company, Platts

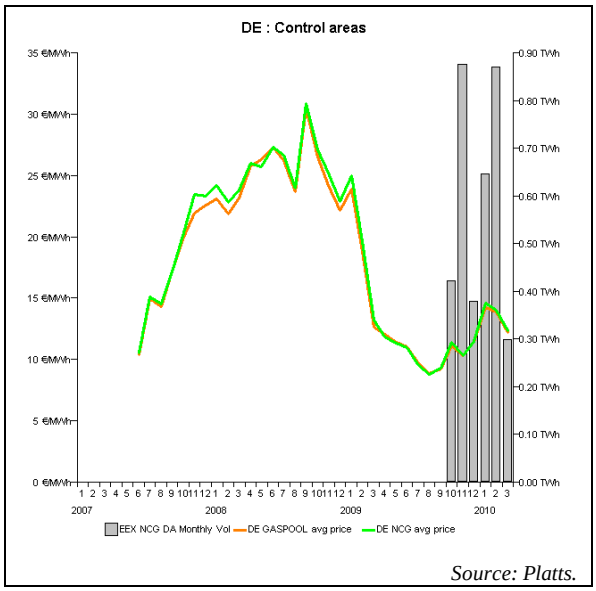
The utilisation rate of the BBL pipeline shows that there was an intense flow of gas from Netherlands to the UK. Note that the price spread between the two markets has less influence on the flows which can be

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

explained by the fact that the BBL pipeline is unidirectional, meaning the gas can flow only from Netherlands to the UK.

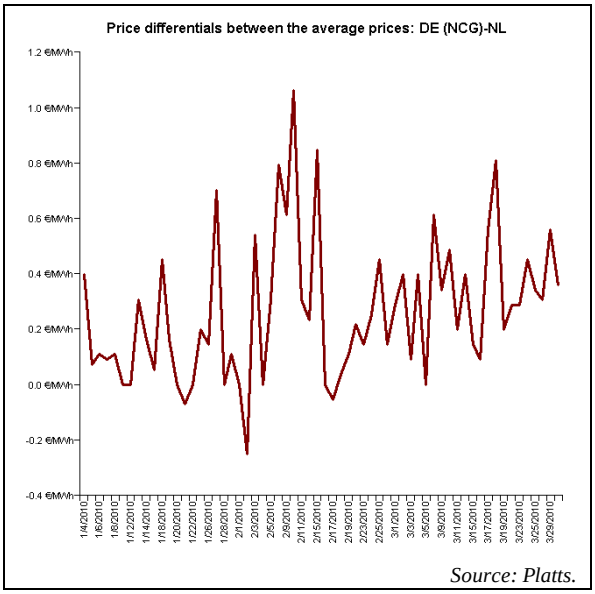
Germany: NetConnect (NCG)[9], Gaspool[10]

The influence of TTF can be seen on the German prices, which showed a development close to the TTF average price. In the beginning of January both German hubs reached a price of almost 16.5 €/MWh and this level was again reached at the end of the month. As a result, the January average price reached 14.6 €/MWh at NCG and 14.2 €/MWh at Gaspool.



Source: Platts.

Gas at Gaspool was sold at a discount relative to NCG almost throughout the whole quarter. The discount was largest on the first trading day of 2010, when it increased to 2.3 €/MWh[11].



Source: Platts.

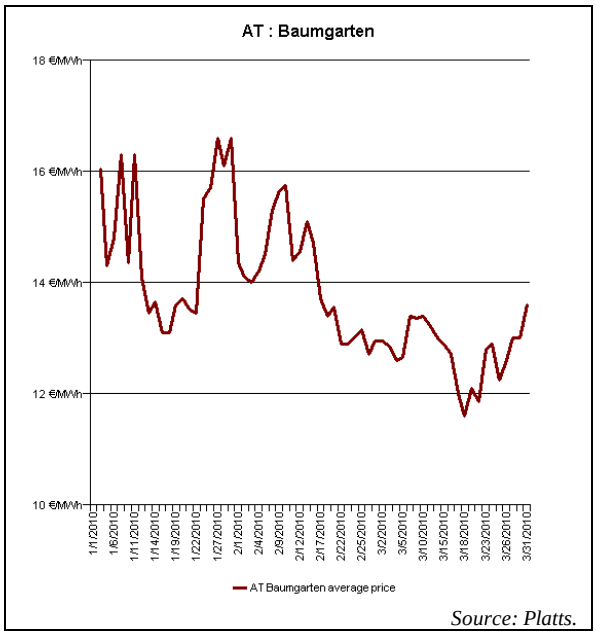
As the chart above shows, the NCG price was sold at a premium to the TTF price for most of the quarter. The discount in the beginning of February and the high premium which followed coincided with a period of changing temperatures and changing weather forecasts.

Austria: Baumgarten

The hub in Baumgarten experienced a lot of volatility in January. The first week with very low temperatures brought a series of price spikes when the price exceeded 16 €/MWh. This was in line with the movements on other hubs, such as TTF and NetConnect.

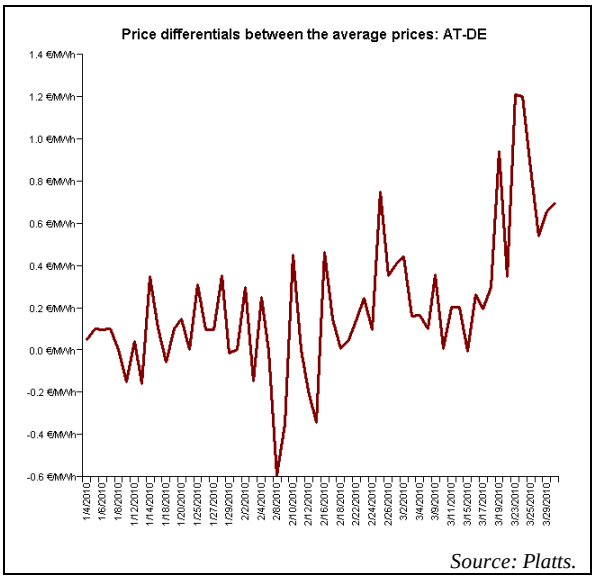
[9] NCG is formerly known as *E.ON Gastransport (EGT)*.
[10] Gaspool is formerly known as BEB. The new market area started on the 1st of October 2009.
[11] It seems the discount on GASPOOL is often seen as a result of its favourable gas storage infrastructure, which facilitates the response to demand.

At the end of January the price exceeded again the level of 16 €/MWh. Consequently January was the month with the highest average price at 14.7 €/MWh which fell in February to 14.1 €/MWh and in March to 12.8 €/MWh.



Source: Platts.

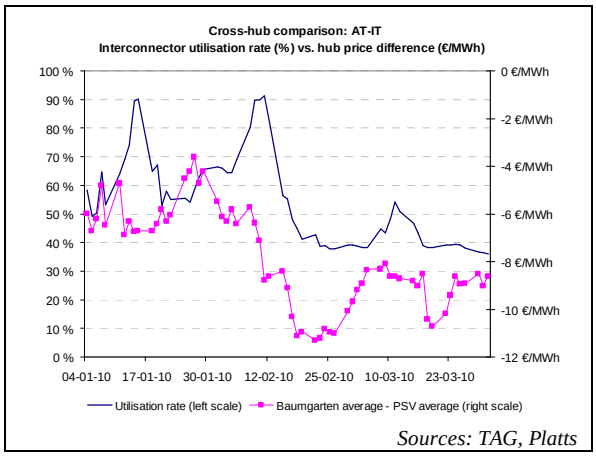
When compared to the NetConnect price, the spread was quite stable throughout the first half of the quarter, evolving in the band between -0.2 €/MWh and 0.4 €/MWh. Later in February and especially in March the spread increased, and the maximum premium of the gas traded at Baumgarten reached 1.2 €/MWh.



Source: Platts.

It appears the spread was smaller during the period of low temperatures and began increasing with milder weather[12]. The same development can also be observed between the Baumgarten and PSV average in the chart below.

[12] According to analysts the spread during winter is smaller because gas is more easily shipped between Austria and Germany. Due to high demand for gas, the utilisation rate of the pipelines is high, owing to flows of Russian gas from Austria to Germany under long-term arrangements. This gas is often swapped with German gas at NCG by simply cancelling a part of the flows from Austria to Germany. By doing so it is easier for traders to virtually transport gas from Germany to Austria, keeping the spread low, using the pipelines at full capacity but still avoiding bottlenecks. In the summer, flows from Germany to Austria are physical, but the available pipeline capacity is limited, potentially allowing the markets to disconnect and follow different fundamentals.

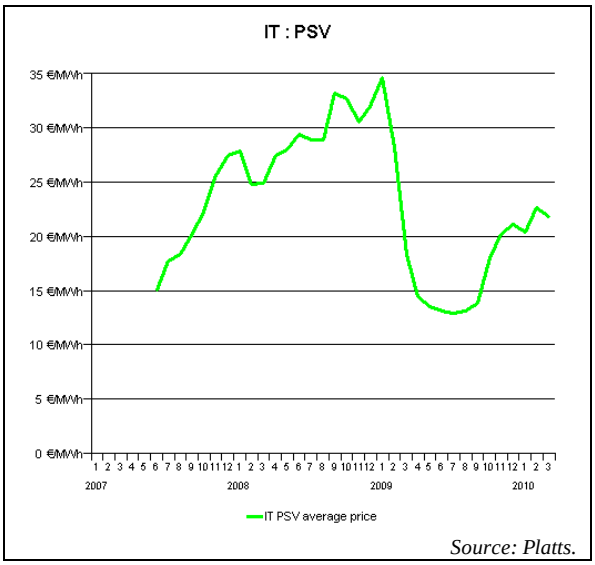


Sources: TAG, Platts

Furthermore, the utilisation rate of the pipeline (from Austria to Italy) decreased by the end of the quarter. It could be that it follows more closely the shifts in demand as a result of changes in temperature than the actual price spread.

Italy: Punto di Scambio Virtuale (PSV)

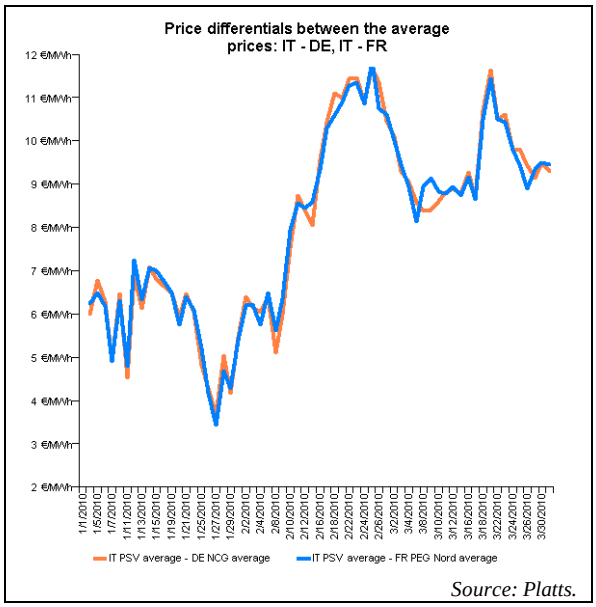
The first quarter in 2010 began with a drop in the average monthly price on PSV. This drop was unusual as average prices on the other European hubs in January increased in comparison to the prices in December. It seems that in this case it meant less sensitivity of the Italian hub to the supply concerns which influenced the other hubs (interruptions in Norwegian deliveries, gas alerts in the UK). Additionally, the storages were providing an uninterrupted supply and also the availability of two operational LNG terminals might have had a positive effect. As a result the average January price dropped by 3.4 %.



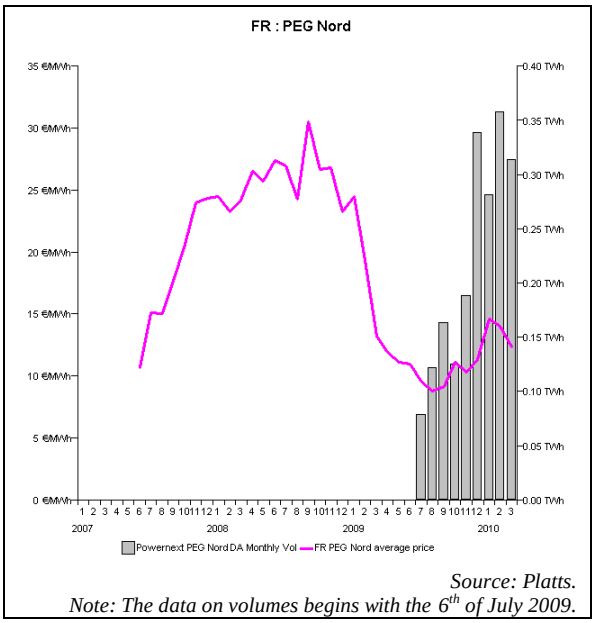
Source: Platts.

As the withdrawals from storages continued to widely exceed the injections (a situation that changed in mid-March), it appears that this started putting pressure on the price which increased considerably. In mid-February it reached 24.5 €/MWh, its highest value in the observed quarter.

The average monthly price increased in February by 11 % to 22.7 €/MWh and dropped in March by 3.8 % to 21.8 €/MWh. With the January average at 20.4 €/MWh, PSV ended the quarter with a higher price, a development not seen on the other hubs.



Source: Platts.



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

The price differentials reflect the aforementioned developments. In January this difference was the lowest, whereas in February it exceeded 11 €/MWh. The second peak in March is another example of PSV developing on its own, with the falling prices on the other hubs on the one hand and growing prices on PSV on the other.

The highest price in the observed quarter was reached at the end of January, exceeding 16.7 €/MWh. This increase followed a series of cold weather forecasts, but as the temperatures increased, the price decreased step by step, for a while falling even below 12 €/MWh in the second half of March. By the end of March however, it was close to 13 €/MWh. The price increase at the end of March was a common event on the other hubs as well.

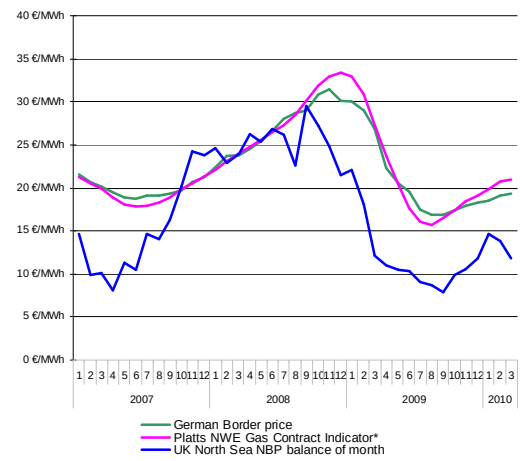
France: Point d'Echange de Gaz (PEG)

As on the other hubs the prices on the French hub in 2010 Q1 were significantly lower than in 2009 Q1. The average price in 2010 Q1 was 13.6 €/MWh, while in the same quarter one year earlier it was 18.9 €/MWh (whereas in 2008 it was 24 €/MWh). This amounts to an annual decrease of 28%.

The January average, i.e. 14.6 €/MWh, was even 40 % lower than the January average in 2009. For February the year-on-year decrease was 27 % and for March it was 6.5 %.

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

The German border price and the UK North Sea NBP balance of month developed in two different directions. In January the spread narrowed to less than 4 €/MWh. This coincided with high spot prices on NBP in January. As the spot prices decreased later in the quarter, this spread increased to 7.60 €/MWh.



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*

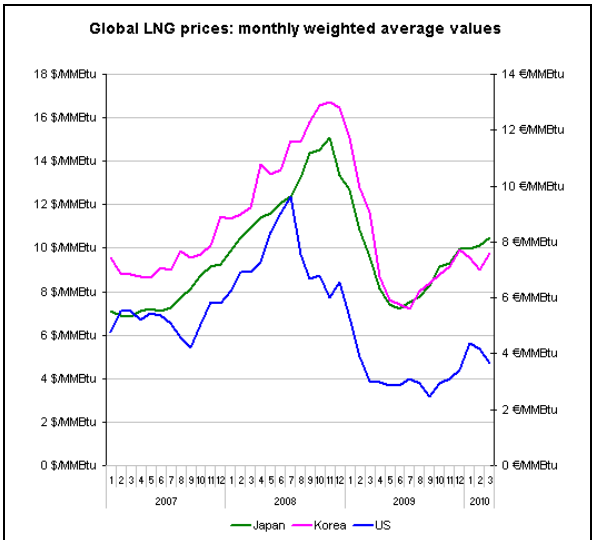
The monthly averages of the German border price and the *Platts Gas Contract Indicator* were growing continuously during Q1 2010, with respective growth rates of 4.6 % and 5.6 % from January to March. This is also in line with the growing trend of oil prices as presented in section A.1.1 (which however influenced the oil-indexed long-term contracts with a time lag).

As a consequence it can be reasonably assumed that the changes in the spread were mostly temperature driven through the NBP price.

A.1.1.3 Reported prices for LNG deliveries

North America and Asia

LNG prices developed quite differently on the three observed markets. Whereas in the US and Japan January average prices increased, in Korea the peak was already reached in December of last year. Furthermore, in February Korean buyers paid considerably less for LNG supplies than Japanese buyers, but the spread narrowed in March to 0.5 €/MMBtu.



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 the averages will be weighted by the monthly LNG deliveries of each supplier.

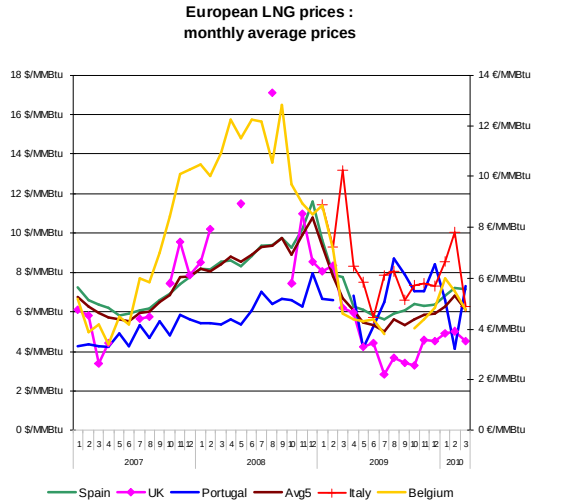
Asian prices seem to have been largely weather driven, with low temperatures in January and some milder weather in February. To date, there is still much

uncertainty on the extent of an eventual economic recovery, although prices were supported by rising demand in March.

Korea continued importing LNG from Yemen, where production began in the previous quarter. LNG from Yemen was sold to Korea during all three months of Q1 2010, and also to the US in February and March.

Europe

The average price of LNG imported by five EU countries increased from an average of 4.4 €/MMBtu in January to 5.0 €/MMBtu in February, whereas in March it fell to 4.5 €/MMBtu. The countries where the prices followed most closely this development were the UK and Italy with similar ∩-shaped curves. Italian prices were above the average (6.0 €/MMBtu, 7.3 €/MMBtu and 4.6 €/MMBtu) during the whole quarter.



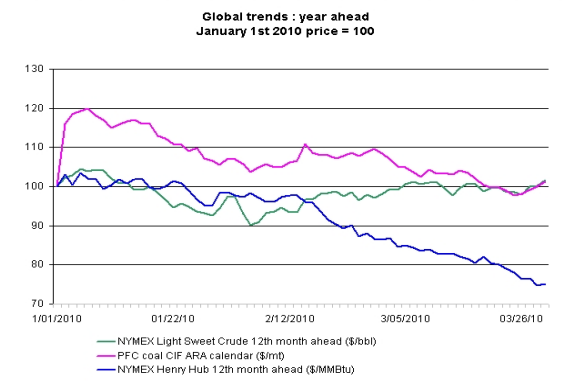
Source: Eurostat COMEXT
LNG data for France is confidential.
LNG data for Greece is not available.

Portugal experienced a significant price drop in February, recording the lowest price of 3.0 €/MMBtu among the observed countries. Average prices for exports to Belgium dropped continously after reaching a peak in January, however at the end of the quarter the UK price was the lowest, with the March average of 3.3 €/MMBtu.

The curve for Spain continued increasing throughout the whole quarter, a trend that began in mid-2009. In February the monthly average price grew by 10 % and again slightly in March by 0.3 %.

A.1.2 Forward markets

In the first quarter of 2010 energy prices on the forwards markets showed strong signals of decoupling from each other and a higher volatility than in the previous quarter. Coal prices (CIF ARA calendar prices) began to decline after their peak in early January, while Henry hub twelve-month-ahead gas prices showed a declining trend throughout the whole quarter. In contrast, NYMEX light sweet crude oil prices remained relatively stable if prices at the beginning and the end of this period are compared.

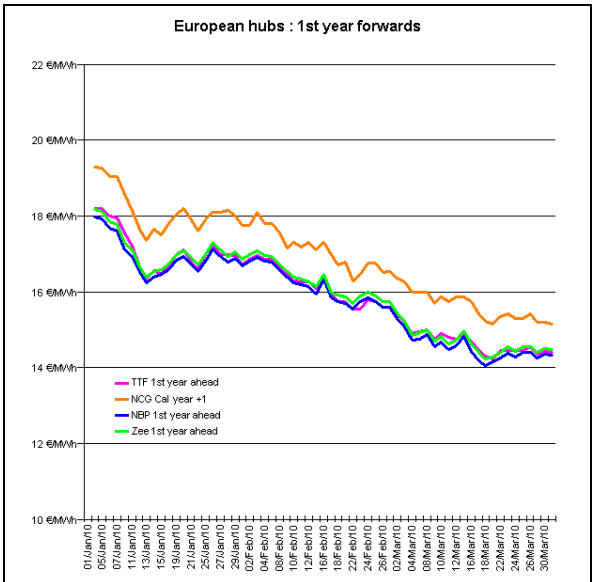


Source: Platts.

Forward coal calendar prices showed similar movements to those of spot prices: in early January they reached a peak at 105 metric tons/USD, and after a continuous decline, reached their lowest point at 85 mt/USD by the end of March.

The Henry hub forwards prices showed a significant decrease during this quarter (nearly 25%); declining gradually from a 7 USD/MMBtu value measured in early January to 5.08 USD/MMBtu on the last trading day of the first quarter of 2010. This price evolution was in line with a similar decrease observed in the case of one-month-ahead prices (see page 3).

The next chart shows the evolution of one-year forward prices[13] of some major European hubs. Similarly to the spot market, forward prices fell in Q1 2010, but the extent of the fall exceeded that of the spot market. This might have to do with weather conditions which were harsher than normal in Western Europe during that period, prompting a slower spot price decline ahead of the spring period.

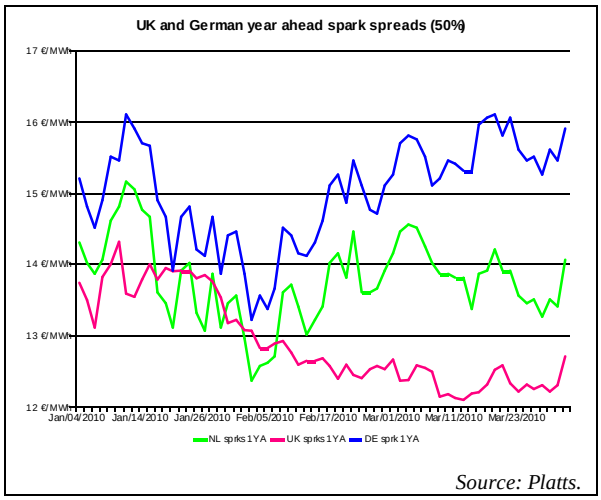


Source: Platts.

German year-ahead spark spreads[14] were again more volatile during Q1 2010 than those of the UK market, primary owing to the fact that the correlation between German gas and electricity prices is lower than that of the UK. The Dutch year-ahead spark spread values were usually between those of the UK and German values, and the shape of the Dutch curve seems to be closer to that of the German curve, reflecting strong inter-connection between the German and Dutch market for both electricity and gas.

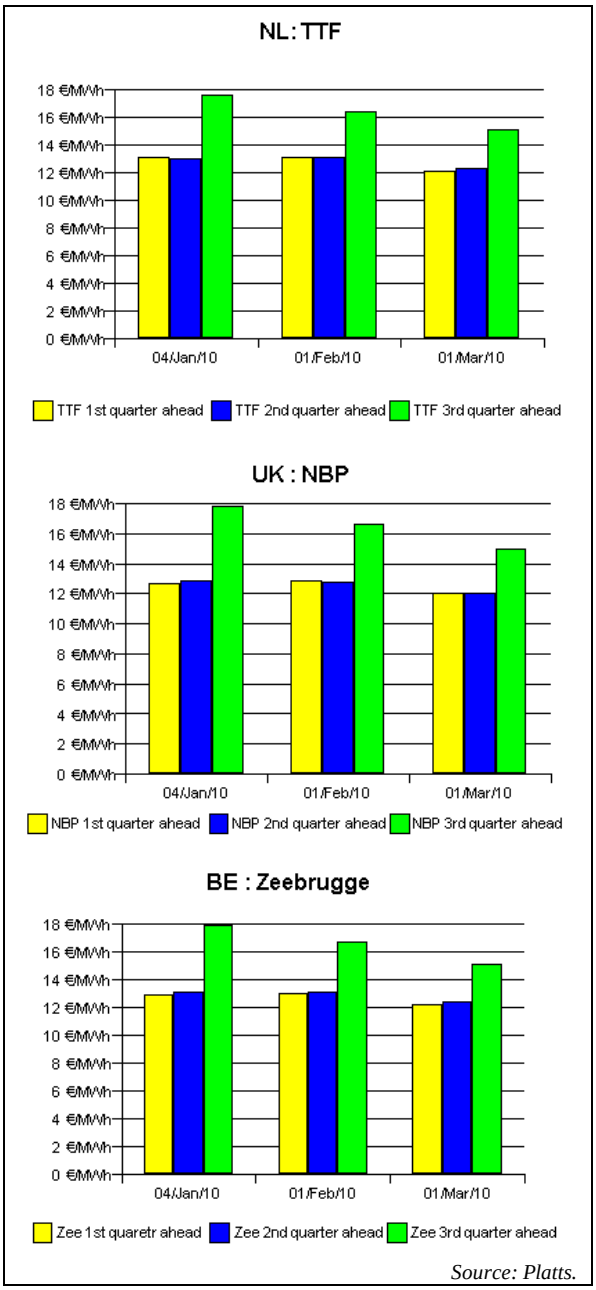
[13] Similarly to spot prices, the *NCG* German contract is traded at premium with respect to the other three other EU hubs on the chart.

[14] 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 a **calendar year** gas contracts.



Source: Platts.

On the following chart the development of the forward prices[15] on the Dutch TTF, the UK's NBP and the Belgian Zeebrugge hubs can be observed. The price structure in time shows a strong contango[16] in the case of all three hubs, reflecting the seasonal effects, as the third-quarter-ahead period from the beginning of the year denotes the autumn period, the beginning of the heating season.



Source: Platts.

It is also worth noting that the spread between the third quarter ahead prices and those of shorter maturities was declining from January to March, probably due to falling price trends observed on both spot and future markets.

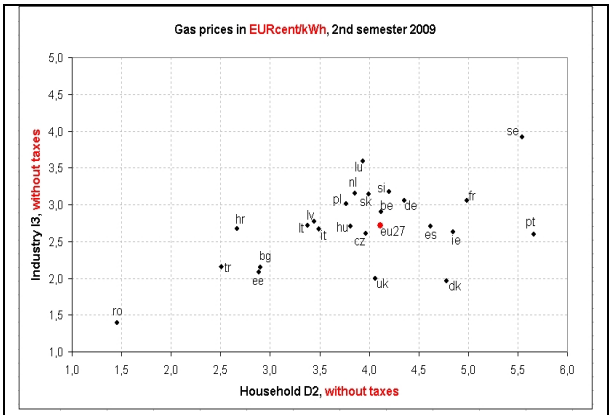
[15] Pricing information is only available for the first three quarters ahead.

[16] 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.

A.2 Retail markets

A.2.1 Prices by Member State[17]

The next two charts show the evolution of prices of natural gas paid by households and industrial customers in the second half of 2009. For both household and industrial customers the prices of median-level annual consumption bands (household consumption band D_2 and industrial consumption band I_3) were chosen. The first chart shows the gas prices without taxes (net prices) in EU Member States, Croatia and Turkey. The second chart shows the prices including all taxes (gross prices).



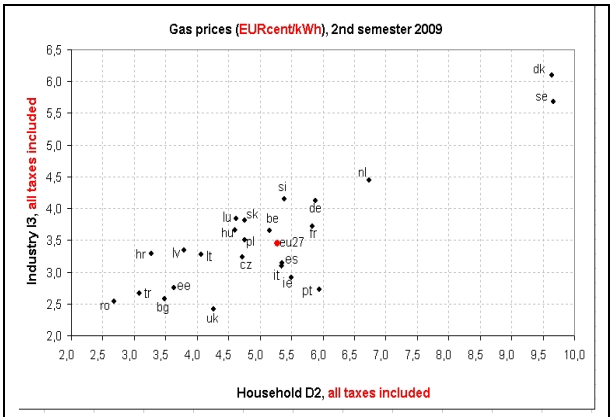
Source: Eurostat

Range for annual consumption of :
Household group D2 : [5,56 MWh – 55,6 MWh] ;
Industry group I3 : [2,77 GWh – 27,77 GWh]
Note. Data for Austria, Cyprus, Greece, Finland and Malta are not available

In the second half of 2009 significant price falls could be observed in net prices of both household and industrial customers. The EU-27 average price level of households declined by 9.8% while the average of industrial prices went down by 19.6% compared to the first half of 2009. This price evolution was broadly in line with the price movements on the European wholesale markets in the same period.

However, in some countries net prices went up in the same period. Households had to pay more in Poland (18.3%), Sweden (10.1%), Denmark (7.1%) and France (6.5%). In Sweden and Poland industrial customers also faced higher net prices (17.0% and 8.1%, respectively).

On the other hand, there were some countries where either household or industrial customers experienced steeper price falls than that of the EU-27 average. Net gas prices for household customers fell very sharply in Latvia (27.5%), Bulgaria (26.4%) and the Netherlands (25.8%). Net gas prices for industrial customers reduced significantly in the UK (30.8%), Italy (28.8%), Portugal (26.7%) and Denmark (26.1%).



Source: Eurostat

Range for annual consumption of :
Household group D2 : [5,56 MWh – 55,6 MWh] ;
Industry group I3 : [2,77 GWh – 27,77 GWh]

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

Prices including all taxes (gross prices) showed similar movements to those of net

[17] 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.

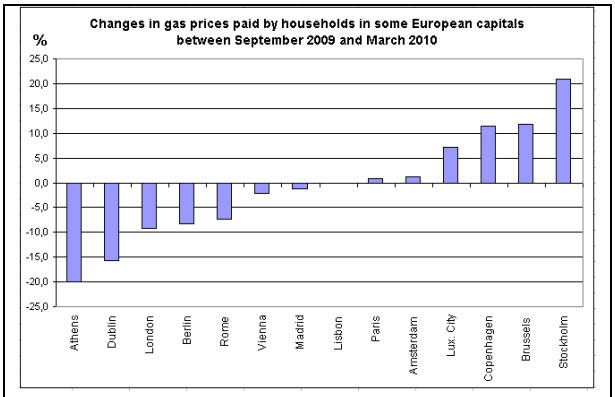
prices. In some countries however, there were significant differences between gross and net price changes of either household or industrial customers, implying changes in taxation.

Household customers in Romania experienced the smallest decline in final prices relative to the decrease in net prices (23.3% decrease in net prices vs. 8.9% decrease in gross prices, compared to the first half of 2009). This difference points towards increasing impact of indirect taxes. Similar differences could be observed regarding the relation between net and gross price decrease in the Netherlands (25.8% vs. 19.2%) and Hungary (5.0% vs. 1.1%).

Also in some countries industrial customers could not fully benefit from the decline of the net prices: in Romania net prices went down by 24.0% while gross prices decreased only by 8.5%. This significant net/gross price decrease difference could also be observed in Denmark (26.1% vs. 12.1%) and Estonia (21.0% vs. 13.4%).

In contrast, in Sweden, where both household and industrial prices went up, the increase of gross prices was lagging behind that of net prices by 2% for both types of customers, incurring a lowering impact from tax changes.

The next chart that provides an outlook of household gas price evolutions in some selected European capitals. During the six month' period between September 2009 and March 2010 the steepest gas price falls could be observed in Athens (20.0%), Dublin (15.7%) and London (9.2%) while prices rose significantly in Stockholm (21.0%), Brussels (11.8%) and Copenhagen (11.5%).



Source: HEPI

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

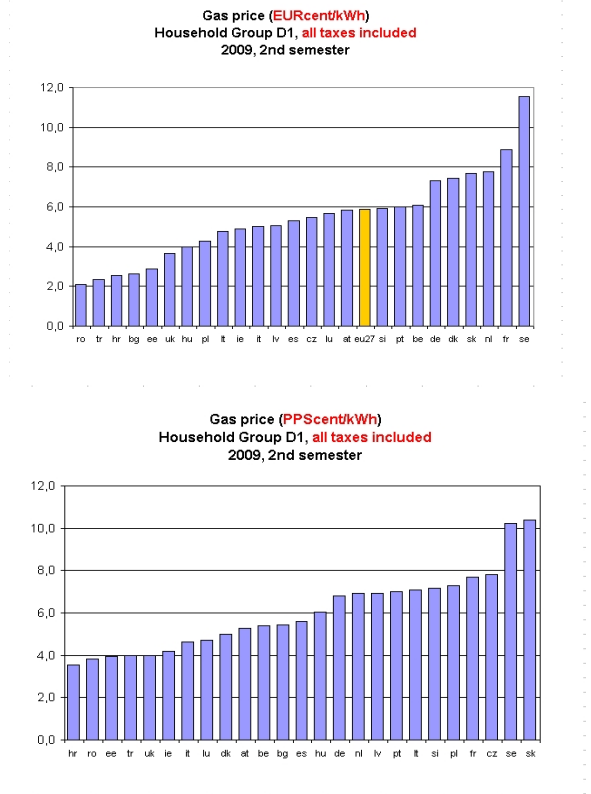
In March 2010 the highest household gas price could be observed in Stockholm (17.6 EURcents/kWh) while the cheapest city was Dublin with a price of 4.9 EURcent/kWh. Eurostat data also show that Sweden was the most expensive country regarding D_2 consumption band gas prices in the second half of 2009 (see the chart on the previous page). Although Ireland was ranked as the sixth cheapest country, Dublin price developments suggest that prices might have gone down in the whole country in the first half of 2010.

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

In the next two charts the prices of the lowest annual household consumption band (D_1 - including all taxes) can be observed for the second half of 2009. The first chart shows the prices in eurocents in the member states of the EU, Croatia and Turkey while the second chart shows the

prices measured in Purchasing Power Standards (PPS).

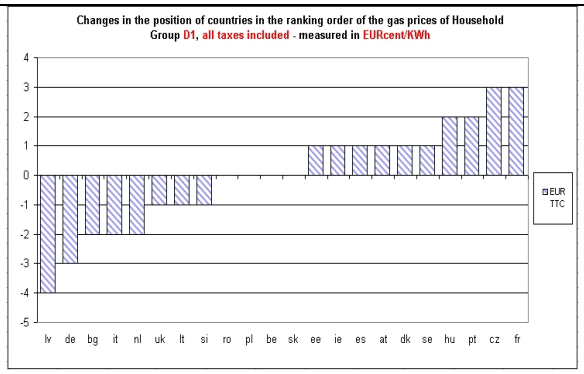
Similarly to the previous semester those countries that joined the EU in the last couple of years can be found in the lower end of the ranking order of the prices and below the EU-27 average (with the exception of Slovenia and Slovakia). The price ratio of the most expensive country (Sweden) and the cheapest one (Romania) was higher than in the first half of 2009 (5.5 vs. 3.9) reflecting increases in Swedish gas prices while Romanian prices declined compared to the previous semester.



Household group D1 : [0 MWh – 5,56 MWh]
Data for Cyprus, Malta, Finland, Greece are not available
Source: Eurostat

Prices measured in PPS show least dispersion compared to those measured in eurocents. Similarly to the first half of 2009, Slovakian gas prices proved to be the highest after the PPS correction, while Romania and Estonia were among the cheapest countries again. The price ratio of the most expensive and the cheapest EU Member States (Slovakia and Romania) were around 3, which was less than the ratio of prices measured in eurocents but was nearly the same as the PPS price ratio in the first half of 2009.

Taking a look at the next chart the changes in the position (number of places) of each country in the price ranking order can be observed between the first and the second half of 2009. Some countries like Latvia, Germany, Bulgaria, Italy and the Netherlands moved downwards in the ranking order, suggesting that the price evolution of these countries was lagging behind the EU average. In contrast, Sweden, Hungary, Portugal, the Czech Republic and France moved to the more expensive end of the scale.
It is worth noting that there are more changes in the number of places in the PPS ranking order than in the ranking order of prices measured in eurocents.



Notes
1) Data for Cyprus, Greece, Finland, Luxembourg 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 (first half of 2009)

Source: Eurostat

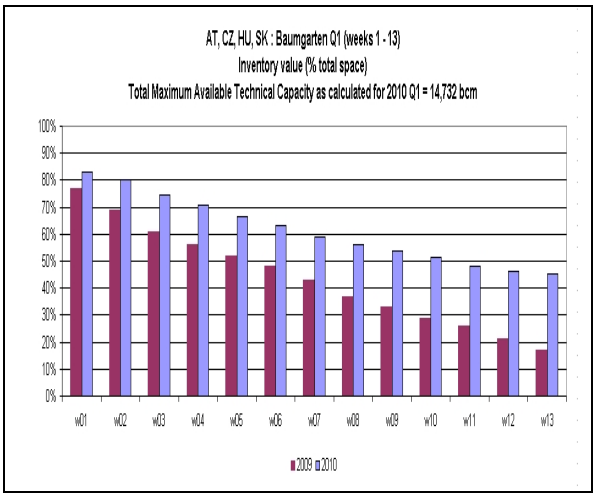
One possible explanation might be that changes in prices measured in eurocents and PPS for a given country are always close to each other and the same amount of price change triggers more serious changes in a ranking order where the two extreme values (cheapest and the most expensive country) are closer to each other, as is the case for the PPS ranking order.

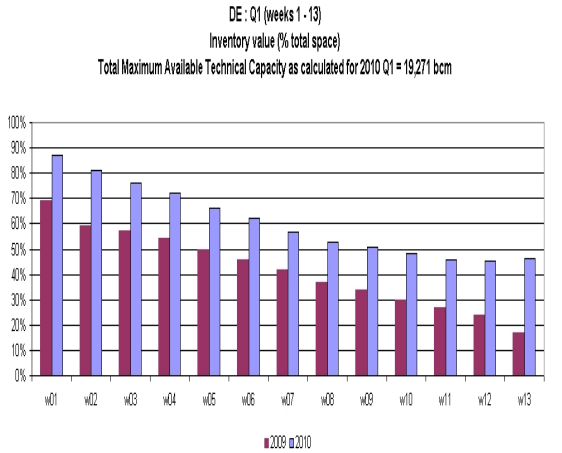
B. Midstream flows

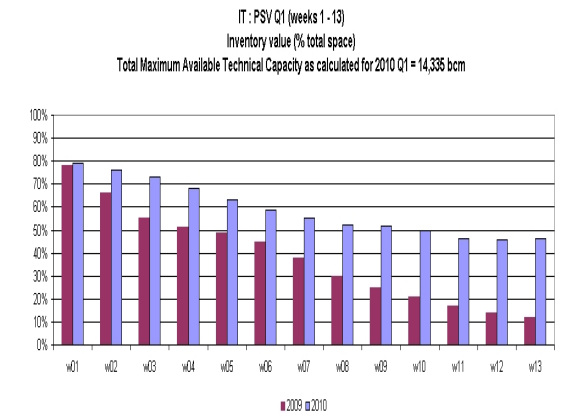
B.1 Storage

The first quarter of the year traditionally denotes the peak of the heating season. This seasonality, as a common feature for all observed European hubs, is also reflected in the decreasing inventories for consecutive weeks that reach their lowest values in the second half of March. On the next charts the weekly comparison of gas storage inventory levels can be followed for the first quarter of 2010 and the same period of 2009.

Looking at the different storage facilities, several different groups can be distinguished: those markets that were considerably affected by the January 2009 gas crisis (Central and Eastern European Region - Baumgarten, Germany, PSV-Italy, which latter was also affected by shipment fall-outs from other sources in early 2009), could be characterized by higher inventory values in the first quarter of 2010. On these three markets the percentage inventory level was between 10 and 20% at the end of March 2009, while at the end of the first quarter of 2010 the respective values were between 40% and 50%.

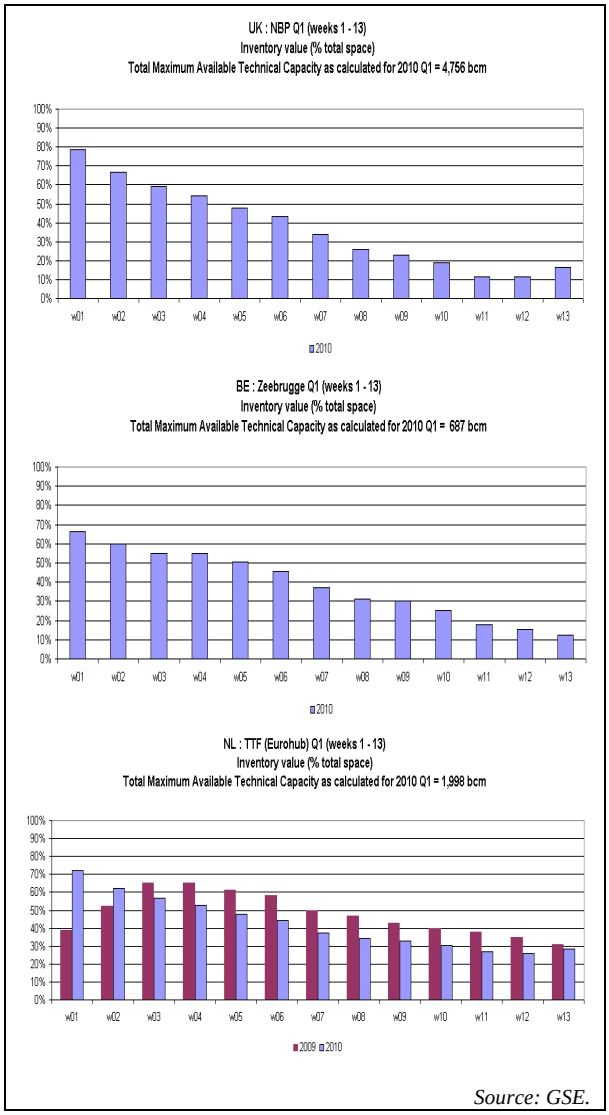






Source: GSE

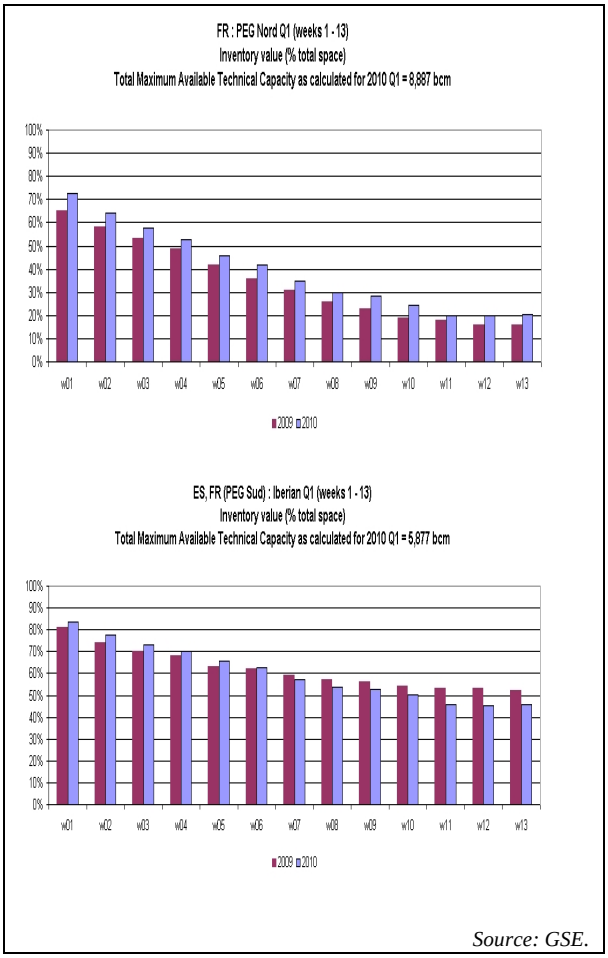
In the UK (NBP) and Belgium (Zeebrugge) a very intensive depletion of inventories could be observed: in both countries the percentage inventory level which stood at 70-80% in the first week of 2010 went down to a range of between 10 and 20% by the end of the quarter. This might have been due to harsh winter conditions in these countries during the observed period. In the Netherlands, (TTF) the pace of inventory depletion was not so rapid, but contrary to most of the other observed markets the percentage values were lower than in the same week of the last year. This could be a signal of increased gas consumption which, besides weather conditions, might be revealing of an economic rebound.



Source: GSE.

In the case of the French storage facility (PEG Nord), the weekly percentage inventory values were 5-10% higher than those of the respective weekly values measured in the first quarter of 2009, showing similar depletion patterns in two consecutive years.

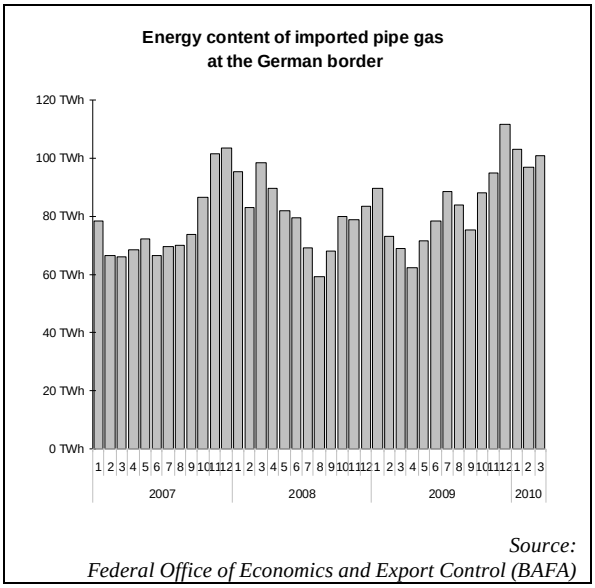
The Iberian (PEG Sud) inventory values seemed to show more rapid depletion during the first quarter of 2010 than in the same quarter of 2009. This might be in relation with the colder weather on the Iberian-peninsula in February and March of 2010.



Source: GSE.

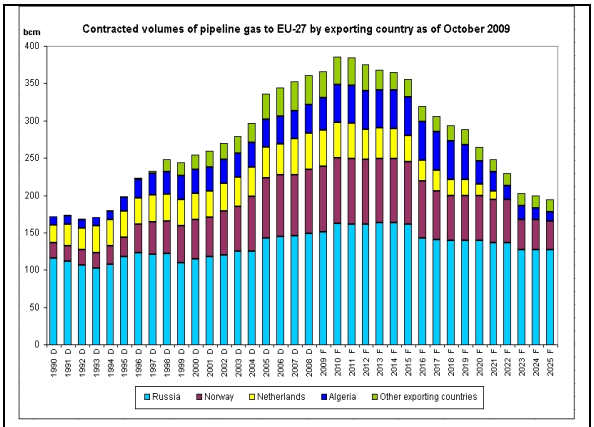
B.2 Pipeline

In the first quarter of 2010 the value of the energy content of imported pipeline gas at the German border continued to grow and was about 2% higher than that of the last quarter of 2009. However, the monthly values seemed to stabilize at a level which was lower than the outstanding value measured in December 2009. Comparing to the first quarter of 2009, growth of nearly 30% could be observed, partly due to very low base-period values measured at the beginning of the economic crisis.



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

The monthly average value in the first quarter of this year exceeded 100 TWhs for the first time in the three year observed period. This might signal the impacts of the economic rebound (and related increased gas consumption) in Europe's largest economy, but it may also be related to the take or pay obligations stemming from the long-term contracts for natural gas.

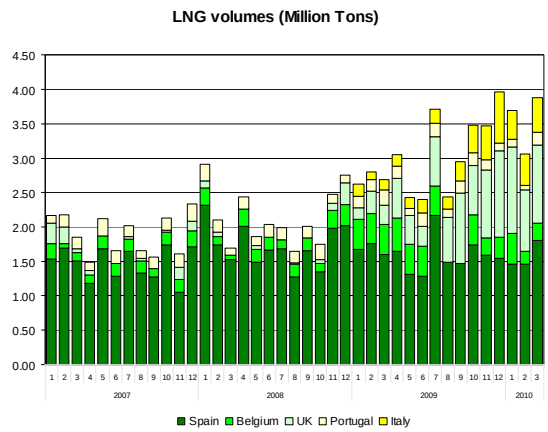


Source : Gas Strategies.

Regarding the forecast for contracted volumes of pipeline gas the two most important sources are Russia and Norway, which will probably retain their shares in long term contracts in the forthcoming decade.

B.3 LNG

Looking at the combined imported volumes[18] of LNG in the selected five countries on the following chart, it can be seen that in the first quarter of 2010 LNG volumes remained close to their record high values registered in the last quarter of 2009.



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

This reflects the competitive level of LNG prices compared to those of long term price contracts, a situation which may prevail in the near future regarding the abundant supply of LNG on the world market and the evolution of the prices of energy products that exert influence on long term contract prices of natural gas.

[18] Italy is not taken into account in the annual comparison because of lack of data for 2008

C. *"Focus on LNG"*

By cooling down the temperature to below -160 C°, natural gas shrinks in volume[19] and liquefies. This conversion in a liquefaction plant significantly facilitates the transportation of gas. LNG vessels are suitable for long distance transportation but they can also represent a good alternative to undersea pipelines[20]. In so-called regasification terminals, the LNG is then reconverted into natural gas.

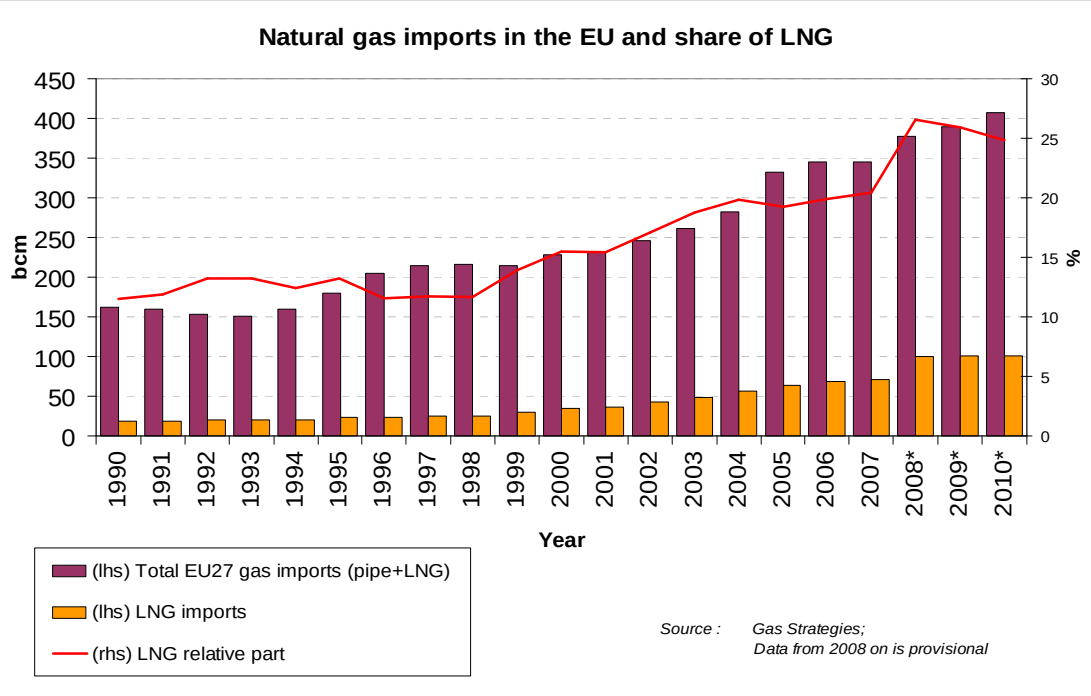
Through diversification of gas supply and delivery routes, LNG contributes to EU's security of supply. On a global scale, there are more LNG producing countries than countries from which gas can be delivered to the EU by pipelines. Next to this external relations aspect, the higher flexibility in LNG supply compared to pipeline transportation offers a possibility to respond to short term supply and demand variations.

According to the International Group of Liquefied Natural Gas Importers (GIIGNL) report of 2009, the leading LNG exporting country in 2009 was Qatar, exporting a total of 49 bcm, followed by Malaysia (29 bcm) and Indonesia (25 bcm). According to Gas Strategies, total global liquefaction capacity under construction amounts to 83 bcm, with a quarter of this being built in Qatar. All these projects are expected to be commissioned by 2014, increasing Qatar's share of global LNG liquefaction capacity to 26 % (105 bcm). The major importing countries of LNG in 2009 were Japan (85 bcm), South Korea (33 bcm) and Spain (27 bcm)[21]. In total, Europe imported 68 bcm in 2009.

According to the World Energy Outlook 2009, the investment projects currently undertaken will trigger an increase of the LNG share in global gas trade from 34 % in 2007 up to 38 % in 2015. In terms of volume, the amount of LNG traded will rise by almost one third by 2015, whereas the growth of pipeline trade will increase by only 5 %. However, the increased build-up in capacity in a context of diminishing gas demand due to the economic crisis will lead to a decrease in capacity utilisation. Currently, only 88 % of the worldwide LNG liquefaction capacity is being used. Projections for 2015 appoint to a further decrease of the utilisation rate down to 73 %[22]. In comparison, the yearly LNG terminal load factor in Europe is much lower: the average utilisation rate of regasification capacity for Europe in 2009 was estimated by Gas LNG Europe (GLE) to

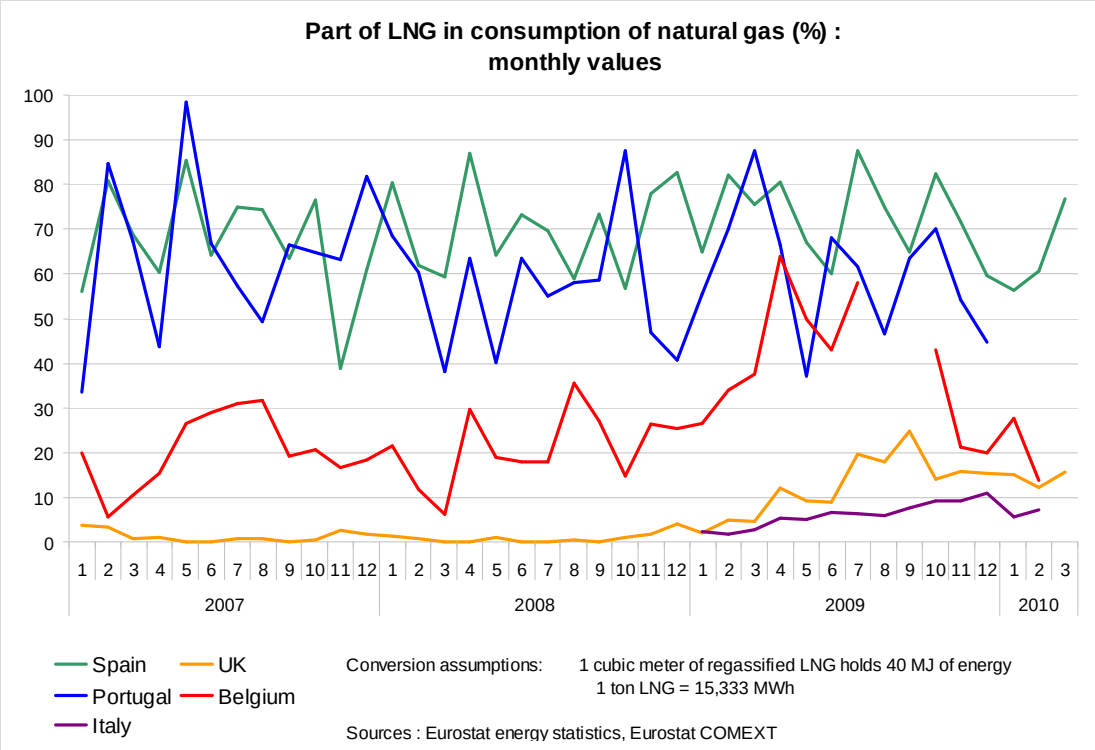
[19] To about 1/600th of its initial volume.
[20] Compressed natural gas (CNG) is another alternative when it comes to short distance maritime crossing. CNG is produced by compressing natural gas to a volume of 1 % of its initial amount. Under high pressure, it is stored in specific containers. Additionally, CNG is used as motor fuel.
[21] Report 2009, International Group of Liquefied Natural Gas Importers
[22] World Energy Outlook 2009

be around 45 %.



In Europe, increasing LNG imports have raised the LNG share in total natural gas imports to around 25% in recent years. More than one third of the LNG imports are into Spain. Hence, six out of the 17 existing regasification terminals in Europe are located in Spain[23]. In total, Europe possesses regasification capacity of more than 152 bcm per year in seven different countries (BE, EL, ES, FR, IT, PT, UK). Four projects of new terminals are currently under construction and will add 23 bcm of capacity (in ES, NL, IT, SW)[24]. Over the next decade, a capacity build-up of more than 300 bcm is anticipated, relying on the data of more than 50 projected plans of further regasification terminals as well as extensions of existing terminals in Europe.

[23] Report 2009, International Group of Liquefied Natural Gas Importers
[24] Gas Strategies
[25] The World Energy Outlook 2009 calculated the transportation costs for natural gas per 1000km of pipeline distance to be $0.30/MBtu to $1.20/MBtu, depending on on/offshore location, pipe capacity etc. Total costs for LNG, including liquefaction, transport and regasification, are estimated to lie between $3.10/MBtu and $4.70/MBtu, depending on installation size and transport distances.
[26] Directive 2009/73/EC



The graph above shows the different uses of LNG in Europe. In Spain and Portugal, LNG is used as a major supply source. Despite fluctuations on a monthly basis, the percentage of LNG in consumption of natural gas in these countries stays within predefined boundaries of 70 – 80 %.

In contrast, the United Kingdom and Belgium take advantage of the flexibility of LNG supply by using LNG to balance their natural gas supply and inject LNG into the system whenever market conditions are suitable. As a result, the relative part of LNG shows significant fluctuations, varying from less than 10 % up to 70 %.

Since 2004, investment costs of LNG increased, showing a reversed movement to a long lasting downward cost trend over the preceding decade. From 2004 until 2008, average costs of a liquefaction plant almost doubled to reach $830 per tonne/year of capacity. Regasification plant costs showed a similar development, but to a lesser extent.

The relatively high costs of production as well as the high storage costs have had a dampening effect on the global success of LNG so far. However, the relative cost advantage in transportation of the gas over long distances is significant: The usage of LNG on distances of more than 4000 km is more profitable than using a 20 bcm/year pipeline.[25]

In the EU, the importance of LNG has grown not solely due to these cost advantages but also with regard to security of supply and

external energy relations. The third internal energy market package[26] builds the basis for the EU to promote competition in the European LNG market. The EU aims at a harmonization of contractual terms, conditions, and services. Additionally, more transparency on services offered, conditions applied, technical information, contracted and available capacities should facilitate the consumer's choice.