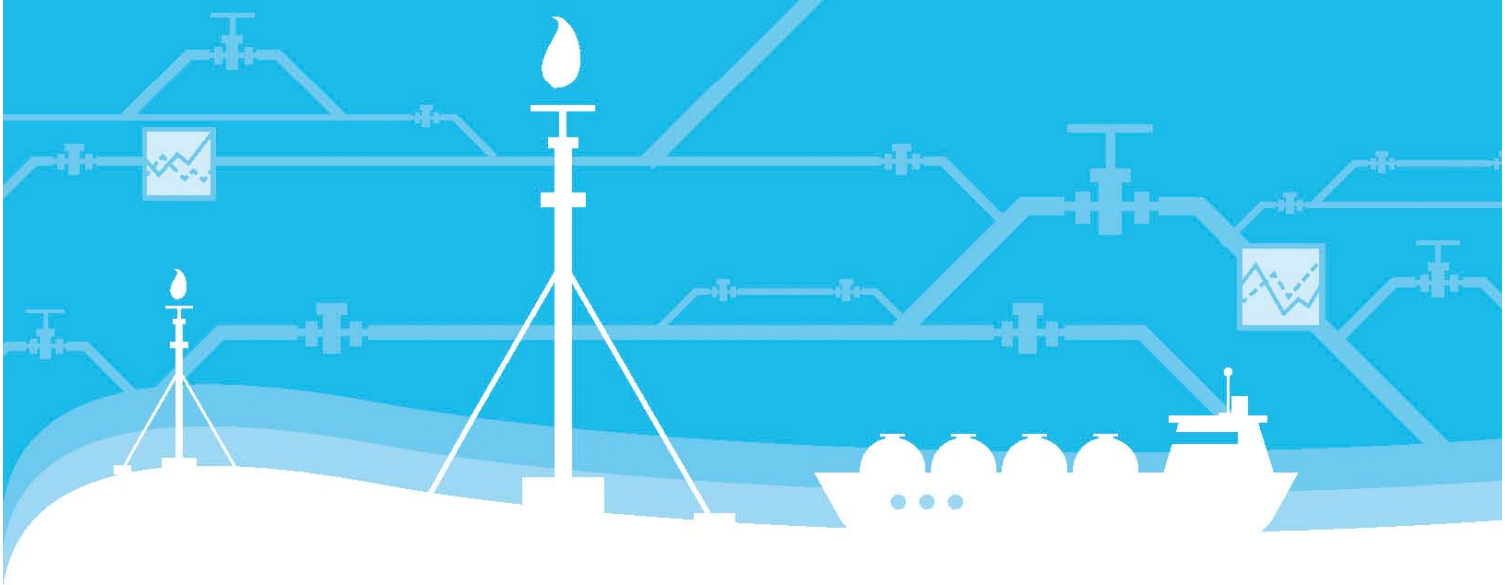
Quarterly Report on European Gas Markets



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DIRECTORATE C - Security of supply and energy markets
The Director

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HH D(2010) 53106

Dear readers,

It seems that the third quarter of 2009 was a period of stabilization in the markets of natural gas across Europe. Unlike the first half of 2009, steadier supply and demand conditions in Q3 resulted in wholesale gas prices evolving in a range of 1-2 € / MWh around the average values of the respective hubs.

However, it may be still too early to speak about recovery. Even with the increased demand from storage operators, who were catching up on their filling schedule as a result of the January gas crisis, the EU recorded its lowest level of gas consumption for the month of July since 2004. August and September 2009 were also below the corresponding EU monthly average.

The relatively low spot prices, along with take or pay obligations from the long term contracts contributed to restore gas inventories and by the end of November 2009 most of the underground storage facilities in Europe were almost full. As a result, the market operators were facing relatively well supplied markets at the beginning of the next gas season.

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QUARTERLY REPORT ON EUROPEAN GAS MARKETS

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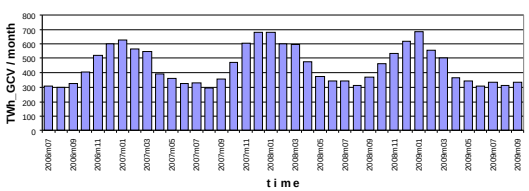
A. Recent developments in the gas markets across Europe

A.1 Wholesale markets

During the third quarter of 2009 the European gas markets entered the summer period which is usually associated with reduced amounts of consumption and imports of gas.

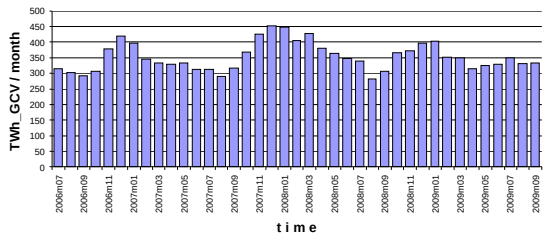
EU gas consumption in Q3 2009 was 4 % lower than in the same period of the previous year. For the same interval of time the GDP of the EU area was reduced by 4.3 % according to Eurostat figures, implying a strong relation between economic growth and gas consumption.



Source : Eurostat
Values for Portugal from May 2009 are estimations based on previous consumption, GDP growth and Heating Degree Days

Contrary to consumption, the EU imports of natural gas increased by 9 % over the same period as storage operators were preparing for the next winter season by filling up inventories (see page 16 of the

current report). Among the Member States that registered some the biggest increases with respect to Q3 2008 were Slovakia (+ 120%), Belgium (+ 45%), Sweden (+ 34%), the Czech Republic (+ 30%) and Germany (+ 26%).



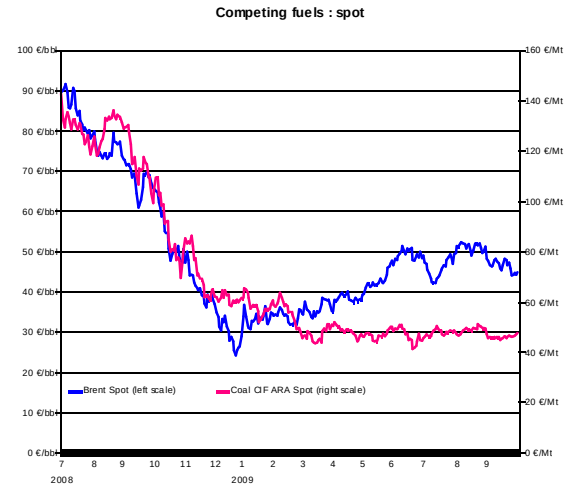
Source : Eurostat
Values for Portugal from May 2009 are estimations based on previous consumption, GDP growth and Heating Degree Days

The increased amounts of gas imports contributed to a well supplied market which, together with weaker demand, put downward pressure on prices (shown later in the current report).

Storage operators accelerated the pumping of gas into the underground facilities, possibly taking advantage of low prices. It can be assumed that some of them also acted under the influence of last winter's gas crisis, when supplies of Russian gas through Ukraine were interrupted.

A.1.1 Spot markets

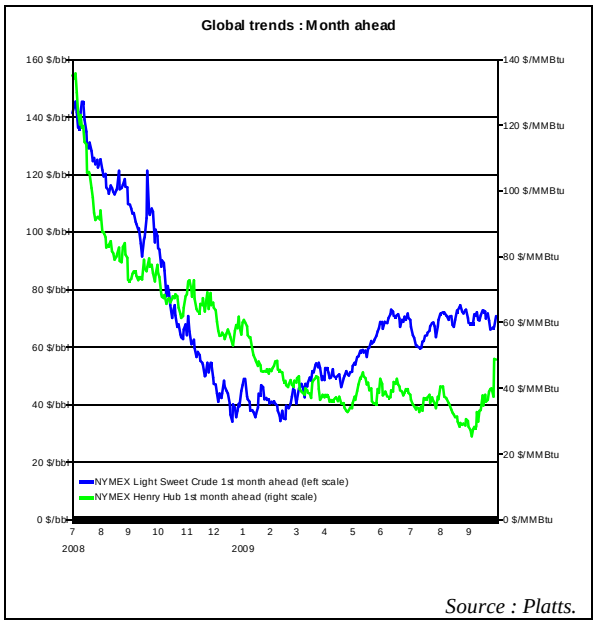
It seems that after a long period of decreasing global energy demand, prices found a stable level by the mid-spring of 2009 and this situation lasted throughout the summer. Prices for oil and coal continued to show somewhat different trends in the third quarter.



Source : Platts.

Similar to Q2 2009 the spot price for Brent remained above the level of 40 €/bbl. However, more instances of increased volatility were experienced in the third quarter. In mid-July prices were below 42 €/bbl, by the second week of August they reached 52 €/bbl, before registering a fall to 44 €/bbl by the end of September.

The decrease in price of coal delivered to the Amsterdam-Rotterdam-Antwerp area continued until April 2009 when it stabilized at around 47 € per metric ton.



Source : Platts.

Market developments on the *New York Mercantile Exchange* were similar. Just as the Brent price, the price for light sweet crude oil experienced a decrease in mid-July, falling below 60 $/bbl. In September the average price was around 70 $/bbl.

The month-ahead price for gas delivered at Henry Hub saw a lot of volatility in Q3 2009. In September the contract registered both the lowest and highest price levels (25 $/MMBtu and 48 $/MMBtu respectively).

A.1.1.1 European hubs

A common feature of the European wholesale markets in the third quarter was a general reversal of the direction of prices for natural gas. After a prolonged period of downward movements, prices began to recover starting from mid-summer. Some markets finished the quarter with higher prices than those observed at the beginning of July[1].

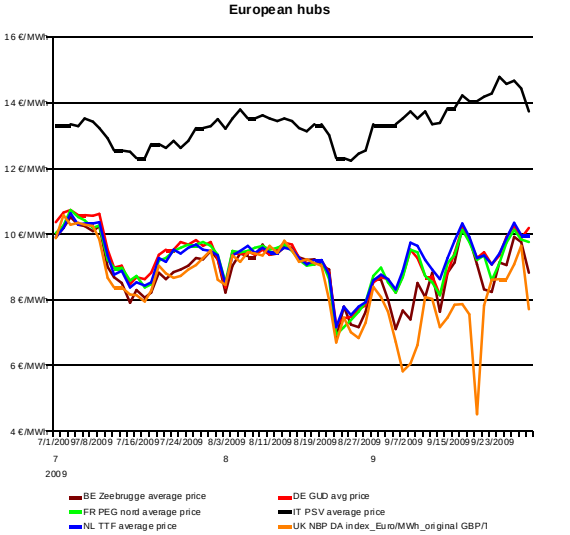
In the middle of the period, however, some of the European hubs reached even lower values than those in the second quarter of 2007, which was another period of low prices.

Q3 20009 was also characterised by high supply of gas. This situation was additionally strengthened by increased LNG supplies in July and August, strong gas flows from Norway and reduced volumes of gas consumption[2].

Under these conditions the maintenance works which are typical for the summer months did not prevent the price decreases. The exception was the outage of the UK-Zeebrugge Interconnector in September[3]. The chart on page 5 of the current report shows that the outage had some influence on the continental prices. At least at the beginning it created upward price pressure in Belgium and France, but market participants were able to deal quickly with the shortage. The consequence in the UK was completely the opposite. Due to the

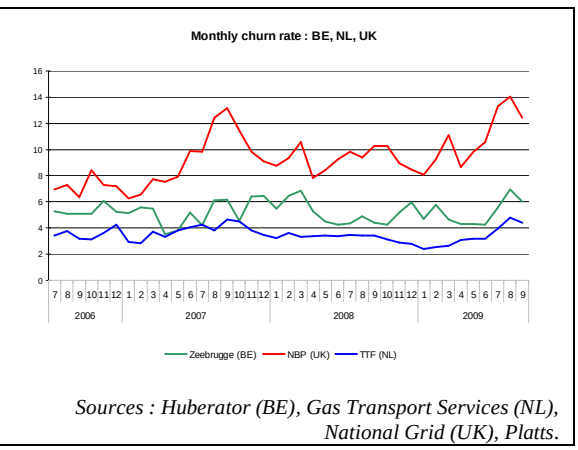
[1] For example, the Italian and the Dutch wholesale markets.
[2] See also the comment on NBP.
[3] The maintenance lasted from the 8th till the 21st of September.

outage the gas was "locked" on the island creating additional supply and a downward pressure on prices.



Source : Platts.

It seems that the Italian market was, on the whole, less volatile than other EU markets. This may be related to the relatively modest levels of liquidity on PSV, making this market less responsive to changes of price drivers that impact other European hubs.



Sources : Huberator (BE), Gas Transport Services (NL), National Grid (UK), Platts.

While churn rates[4] reached higher levels in August, traded volumes fell in most of the EU hubs[5]. The reason for the rise of the churn was that the fall in physically delivered volumes was bigger than the decrease in traded volumes. The percentage changes in the volumes in August compared to July are presented in the next table.

	NBP	TTF	Zee
Traded volumes	0.9	-5.5	-11.1
Physical volumes	-4.8	-22.1	-28.8

UK: National balancing point (NBP)

The prices on the UK on-the-day commodity market (OCM) continued their decline in the third quarter, which started at the beginning of this year. The OCM weighted average daily price fell below the lowest value in the observed period, i.e. from 8.18 €/MWh in April 2007 to 7.22 €/MWh in September 2009.

As well as the ongoing global economic crisis there were other events in the UK market that contributed to price decreases. At the beginning of the third quarter LNG supply increased, in part due to the opening of the new Dragon LNG terminal[6]. Also, a number of LNG cargoes arrived in August, causing increased supply. Stable deliveries from Norway and lower levels

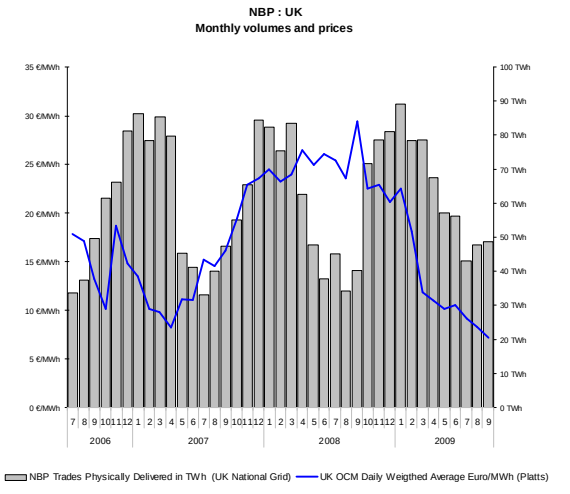
[4] The churn rate is an indicator for the liquidity of a market / hub. It measures the ratio between traded and physically delivered volumes.

[5] The UK market was the only exception to that development.

[6] The first cargo to the Dragon LNG terminal (located in Milford Haven, West Wales, with 6 bcm of annual capacity) arrived on July 14th and it became commercially operational at the beginning of September.

of demand created favourable balancing conditions which exerted downward pressure on prices.

There were some instances during which prices increased temporarily. For example, in the final days of August prices moved upwards as a result of increasing demand in continental Europe, maintenance works in the North Sea and lower flows into LNG terminals. However, prices reached another low, in part provoked by the maintenance works on the Interconnector between the UK and Belgium, which kept gas on the island.



Sources : National Grid (UK), Platts.

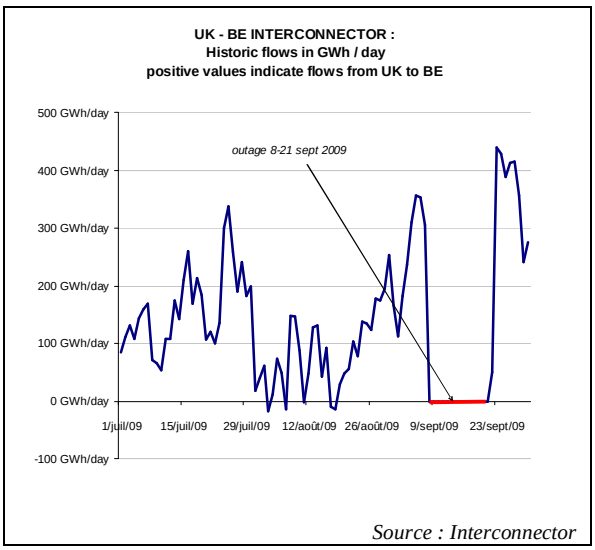
Strong prices on the US Henry Hub at the end of September and increased exports to the continent offered some support to prices.

The pattern in the traded and physically delivered volumes had already been seen in the past years – the volumes in July were low, but in August and September they started increasing. Compared to the last three years when third quarter volumes were around 120 TWh, this year they reached 140 TWh.

Belgium: Zeebrugge

Prices in Zeebrugge tend to move in line with those at NBP, as demonstrated by market developments of the third quarter of 2009. The lowest average monthly price in Belgium remained the one from April 2007 (8.45 €/MWh) closely followed by the price from September 2009 (8.65 €/MWh).

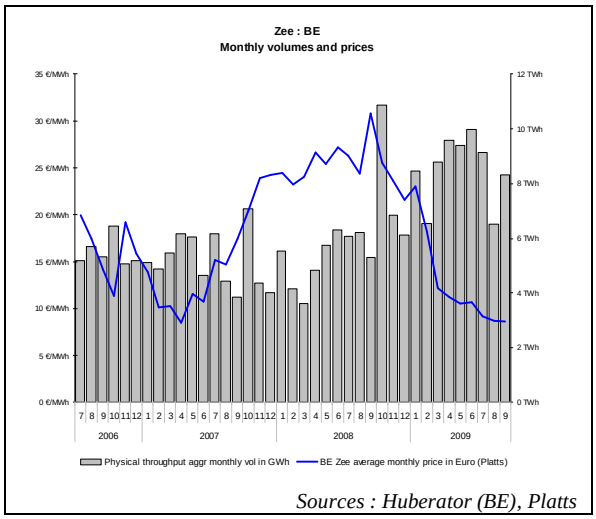
The average day-ahead price at Zeebrugge slipped under the average NBP price several times in July. However as can be seen in the next chart the Interconnector did not flip and the gas kept on flowing from the UK to the continent. In the summer the continental storages tend to be filled up which can be a reason why the Interconnector's operation mode did not change[7].



Source : Interconnector

[7] Whereas the gas storages in the NBP were in the middle of June more than 90 % full, some continental storages such as those in the PEG and TTF region were less than 70 % full.

The flip took place in August[8], whereas in September, apart from one day, the average price at Zeebrugge was constantly higher than the one at NBP. This was however mostly related to the high levels of supply in the UK market and the outage of the Interconnector. The highest spread occurred on 21st of September, the last day of the Interconnector maintenance[9], when the average Zeebrugge day-ahead price per MWh was € 4.57 higher.

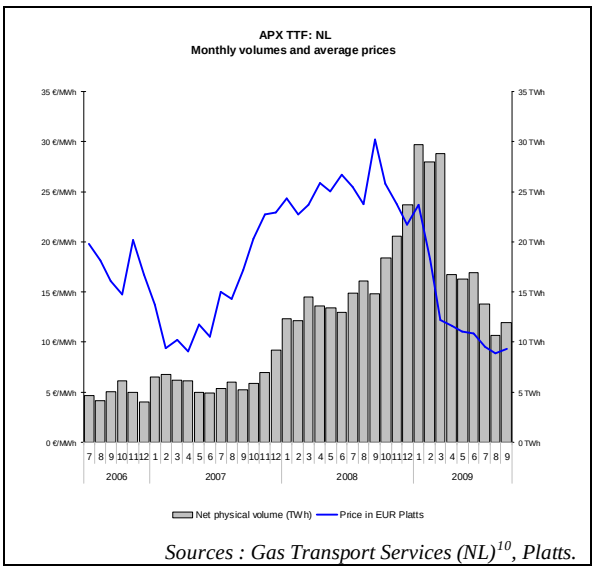


Sources : Huberator (BE), Platts

The monthly physical throughput increased considerably when compared to the third quarters of the previous three years. Whereas in 2006, 2007 and 2008 the physical throughput in the third quarter was between 14 and 18 TWh, it reached almost 24 TWh in Q3 2009.

Netherlands: Title transfer facility (TTF)

Compared to the previous month, the average price at TTF fell by 13 % in July, 6% in August and 5 % in September. In mid-July the price fell below 10 €/MWh, owing to low demand and large amounts of gas available on the market. With some additional LNG cargo coming in to the UK the price slipped quickly to under 9 €/MWh.



Sources : Gas Transport Services (NL)[10], Platts.

Net volumes kept on decreasing, in line with a trend that began in the previous quarter. In Q2 2009 the cumulative value of quarterly net physical volumes dropped by 42 % when compared to the first quarter and the third quarter they fell by additional 27 %.

The decrease in net physical volumes could be attributed to lower household demand and the economic crisis, but interestingly enough the churn rate has

[8] According to the Interconnector the UK was net importer from Zeebrugge on the 3rd, 7th, 11th, 17th and 18th of August.

[9] The maintenance lasted from the 8th till the 21st of September.

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

increased in the observed period. At the end of the previous quarter the monthly churn rate reached 3.2, but in September it stood at 4.4. This was because net physical volumes in September were 29 % lower than in June, whereas traded volumes were only 2 % lower. When comparing cumulative quarterly values, net physical volumes were 27 % lower in Q3 than in Q2, but traded volumes were actually 1 % higher.

Germany: NetConnect (NCG)[11], Gasunie transport services (GUD)[12]

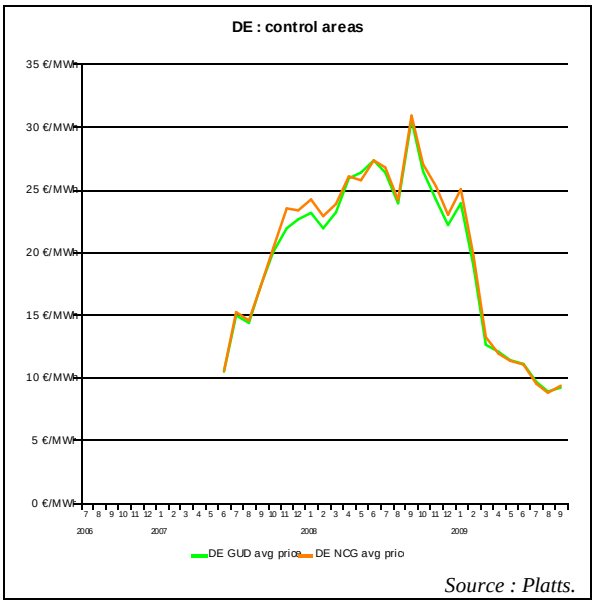
The shapes of the German curves are in general quite similar to that of the Dutch TTF and this quarter was no exception.

However, an interesting observation in this quarter was that after more than one year, the German spot markets started to sell natural gas at a discount compared to TTF. It seems that this development could be explained by the level of flexibility of both markets and by the fact that the Netherlands is an important gas producer whereas Germany is predominantly tied to long-term contracts on Russian gas.

German buyers with long term contracts (and associated take or pay obligations) have limited flexibility to turn to the spot market where prices are currently more competitive. This situation created a relative low level of demand on the spot market.

In a liquid spot market the demand response in Germany may have been stronger and the prices higher. On the other hand, in Netherlands the supply can be regulated more easily through production in the domestic fields and it can also be better absorbed through a much larger share of power plants running on gas.

The lower gas prices also indicate that it has been much more profitable for German power producers to burn gas than coal, but many of them have not been in the position to operate a switch[13].



Source : Platts.

As a consequence, the prices in this quarter were much lower than the previous quarter. The GUD price lost an additional 20 % and the NCG price fell by 19 %.

[11] NCG is formerly known as *E.ON Gastransport (EGT)*.
[12] GUD is formerly known as BEB.

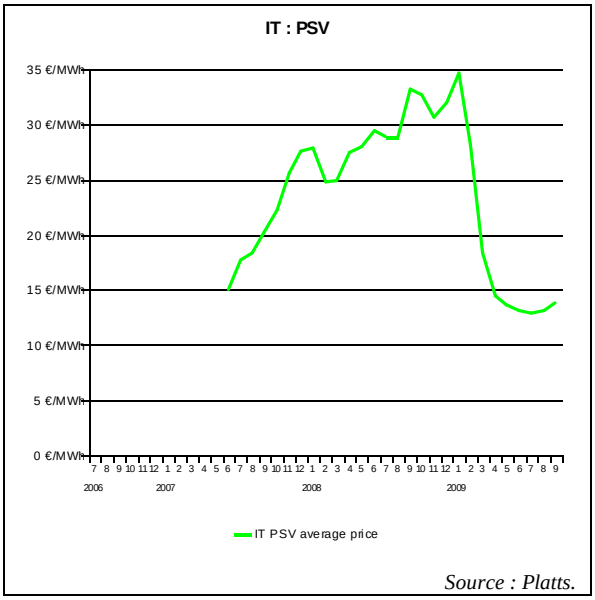
[13] See also the *Quarterly Report on European Electricity Markets* for Q3 2009.

Italy: Punto di Scambio Virtuale (PSV)

In Q3 2009 the trading activity in Italy was reduced as many market participants took their time off during the public holiday period. An important event in this quarter was the opening of the new Adriatic LNG terminal, which received its first commissioning cargo on the 10th of August and is expected to reach full operational capacity by the end of 2009. The effects of this terminal on the Italian and Central Eastern European gas market remain to be seen.

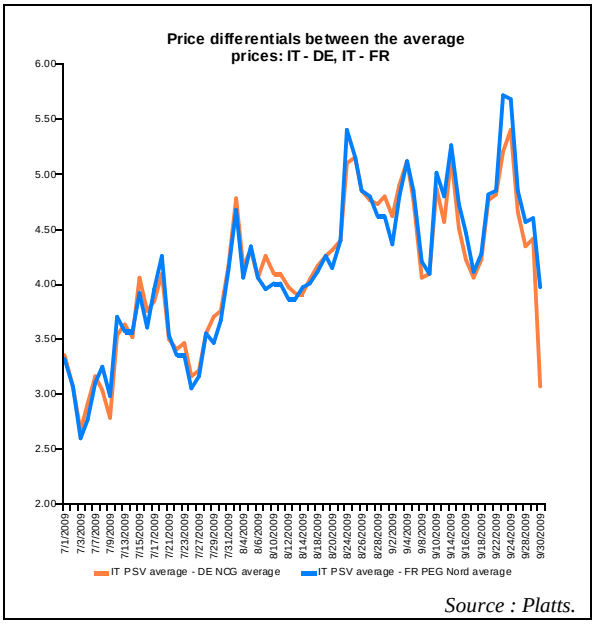
In July the price slipped under 13 €/MWh. The slide was stimulated by the general trend in Europe, but it was to some extent counterbalanced by the use of gas in power production for cooling needs due to unusually high temperatures.

As the prices in the neighbouring hubs gained some momentum at the end of July/beginning of August, the Italian price climbed over the 13 €/MWh threshold and did not drop under it until the last week of August. This happened again in line with the developments on the other hubs, such as TTF and those in Germany. The correlation was also important at the end of September, when the Italian price climbed above 14 €/MWh.



Source : Platts.

The third quarter of this year saw the lowest monthly average prices. For example, the monthly average price for gas was almost a third lower in July 2009 than during the same month of 2007[14].



Source : Platts.

[14] The respective July 2007 and July 2009 average monthly prices were € 17.71 / MWh and € 12.93 / MWh.

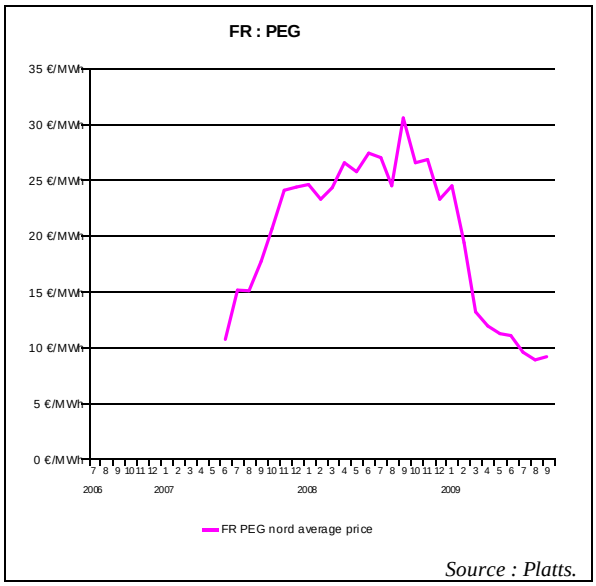
The gas at PSV is in general sold at a premium when compared to other hubs. The third quarter was no exception and the price differences were higher in the second half of the quarter. This corresponds to the period of recovering gas prices on the European hubs.

France: Point d'Echange de Gaz (PEG)

France also experienced a period of lower prices in Q3 2009. While the average monthly prices in the third quarter of the previous two years were in the 16 – 27 €/MWh range, this year they were close to 9 €/MWh.

On the whole, the trend of falling prices prevailed until September when the outage of the Interconnector constrained the supplies from the UK to the continent.

During the outage the price was quite volatile. At some point it climbed above 10 €/MWh, but also fell close to 8 €/MWh, as market participants adapted to the outage and mild weather reduced the need for gas.



Source : Platts.

The general trend upwards was maintained during the rest of the quarter. At the end of September the price stayed close to 10 €/MWh, which had to do with increased demand for storage pumping. According to GSE the storages at this time were 94 % full and the percentage continued increasing.

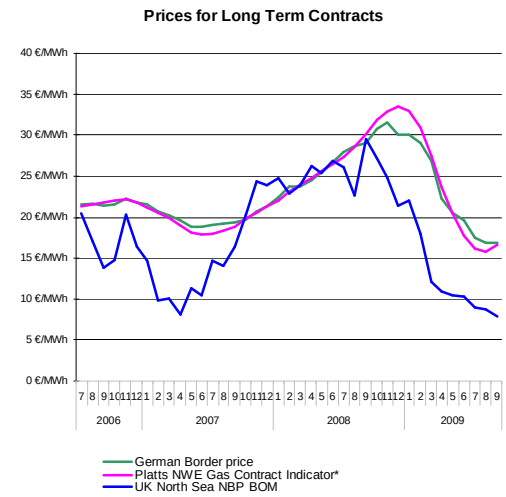
A.1.1.2 Reported border prices on long term contracts for pipe gas

During the third quarter the prices for gas delivered on long-term sales contracts continued to fall in Germany. This was in line with the period of decreasing oil prices, which began in the autumn last year. It was transposed to the German long term contracts with a time lag of around six months.

The slight upturn in the German border price at the end of the third quarter seems to correspond to developments on the oil market which occurred a few months ago. As shown in the graph on page 3 of the current report, the *Brent* spot curve reached a bottom at the beginning of this year. It may be the case that we are witnessing a similar development in the price of gas in the oil-indexed long-term contracts.[15].

The oil prices have slightly increased in the mean-time and similar developments can logically be expected for long-term gas.

[15] In August 2009 the average monthly price for imported gas at the German border was 16.84 €/MWh. In June 2007 it was 18.82 €/MWh. Prices were even lower in some other periods. For example during the first five months of 2005 they were under € 15/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 table below summarizes how prices on long term contracts for gas in the Western European area changed in the course of the last 12 months.

	DE Border	NWE GCI	N. Sea BOM
Jul09-Sep09	-3.4 %	-3.0 %	-13.3 %
Jul08-Jul09	-37.5 %	-40.8 %	-65.5 %
Aug08-Aug09	-41.4 %	-44.5 %	-61.6 %
Sep08-Sep09	-41.8 %	-44.6 %	-73.6 %

It is important to note that while German long-term gas prices were lower than the recent past, spot prices were even lower in the same period, at some point trading under 9 €/MWh. Buyers with less flexibility in their long-term contracts could therefore not fully benefit from falling prices. In contrast to Germany, the role of the spot market is stronger in the UK and the hub-price indexation more common.

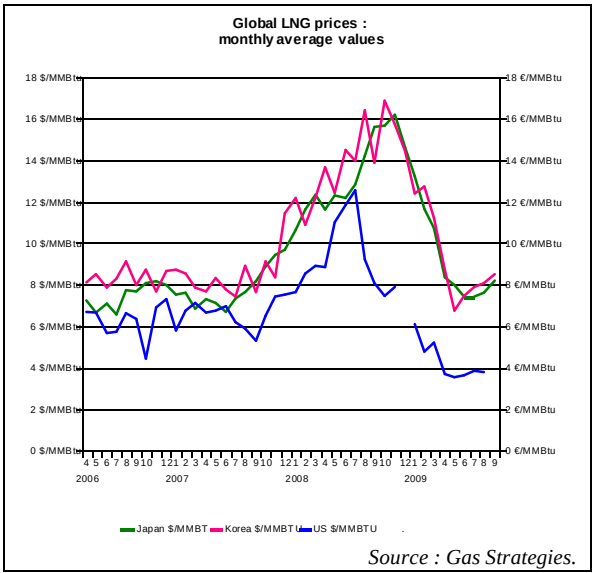
A.1.1.3 Reported prices for LNG deliveries

North America and Asia

The global LNG prices showed a similar pattern of recovery as the prices on EU hubs. The prices gained ground both as a result of increased demand and reduced production.

In the Pacific basin, Japan was buying large volumes of LNG. Apart from recovering demand, the earthquake on 11th of August decreased domestic nuclear power generation for the rest of the quarter (the earthquake led to the shut-down of some reactors).

On the supply side, technical difficulties prevented one of the two Sakhalin II trains to return from maintenance before mid-August. The supply was additionally reduced due to an outage in one of Indonesia's LNG terminals.



Source : Gas Strategies.

As a result, the average Korean and Japanese prices in September 2009 were 14 % and 10 % higher than in June 2009.

India is becoming an important player in the Pacific LNG market. As some recurring technical problems reduced domestic production, Indian demand for LNG increased in Q3 2009[16].

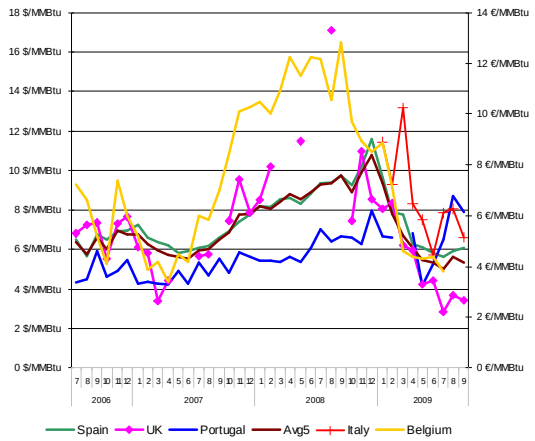
Europe

Contrary to Asia the demand for LNG in Europe was less dynamic. Pipeline gas was flowing steadily which made it possible for the stocks to be filled up without interruption.

In Europe LNG was sold at a discount to the Asia. Some parallels can be drawn with regard to the Asian market. August saw a considerable increase in prices compared to July (the average price of the five countries combined grew by 11.6 %). The later drop in September occurred when Japan stopped buying LNG in the spot market and when Korean demand turned out to be weaker than expected. Furthermore, in September European gas storages were almost full.

The influx of LNG was higher than in August and it seems this created additional downward pressure on prices.

European LNG prices : monthly average prices



Source : Eurostat COMEXT
LNG data for France is confidential.
LNG data for Greece is not available.
At the time of writing the report data for Belgium was available only until July 2009.

Just as the calculated average European LNG price hit its lowest value since 2006, the French LNG price continued its slide towards ever lower levels.

France : LNG prices

Source : Gas Strategies.

Compared to the previous quarter the French price lost an additional 33 % in the observed quarter. Compared to the third quarter in 2008 and 2007 the prices fell by 47 % and 20 % respectively.

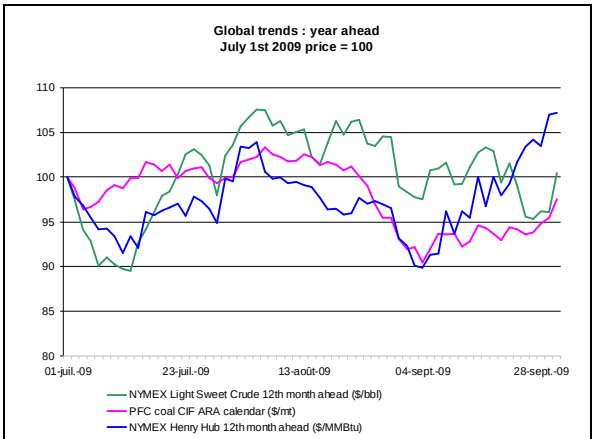
[16] The Panna Mukta – Tapti oil and gas fields were producing at a limited rate also the previous summer due to an explosion (Source : *Platts European Gas Daily, Aug. 10 2009, Nb 153*).

A.1.2 Forward markets

In Q2 2009, energy prices on the forward markets showed signs of decoupling. This trend was even stronger in the current quarter. For example, the forward curve on coal prices developed independently from oil throughout the Q3 2009. Curves representing the forward prices on gas and oil decoupled on several trading days as well, especially in the second half of the quarter. Decoupling could also be observed on the global spot energy commodity markets (see page 3 of the current report).

During the third quarter energy forward prices showed a high volatility. Oil and coal curves reached their highest values in the middle of the quarter (80.57 $/bbl and 87.35 $/mt respectively) and ended at prices close to those at the beginning. On the 1st of July NYMEX Light Sweet Crude was traded at 74.93 $/bbl and on the 30th of September at 75.29 $/bbl. For PFC coal the respective values were 84.60 $/mt and 82.50 $/mt.

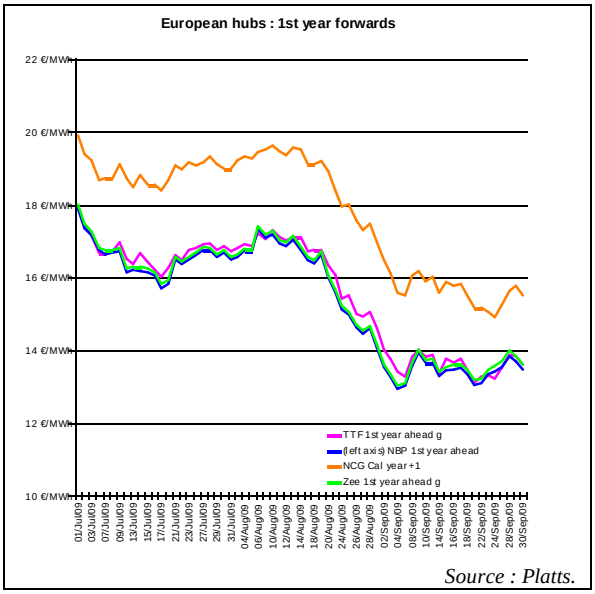
The forward curve for gas showed different development, with the highest value on the 30th of September (6.40 $/MMBtu vs. 5.97 $/MMBtu on 1st of July).



Source : Platts.

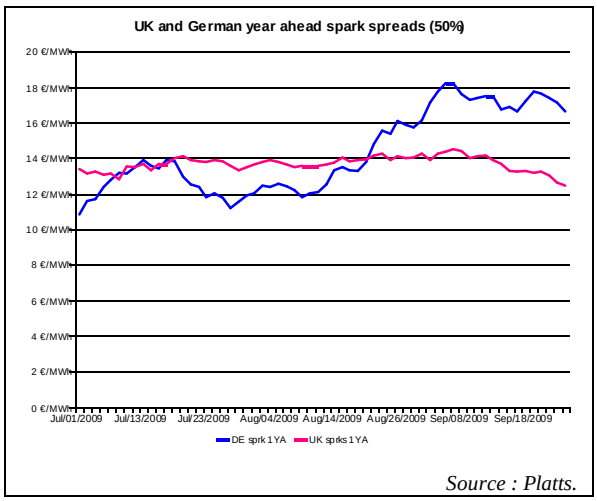
Similar to spot markets, forward markets on the European hubs reached a two-year low in Q3 2009.

For all of the observed curves September was the month with the lowest values. When looking at the historical values for the last two years, similarly low levels were reached only in February 2007. For example the 1st year ahead for TTF in September 2009 was traded on average around 13.6 €/MWh. The lowest price in February 2007 was 15.86 €/MWh.



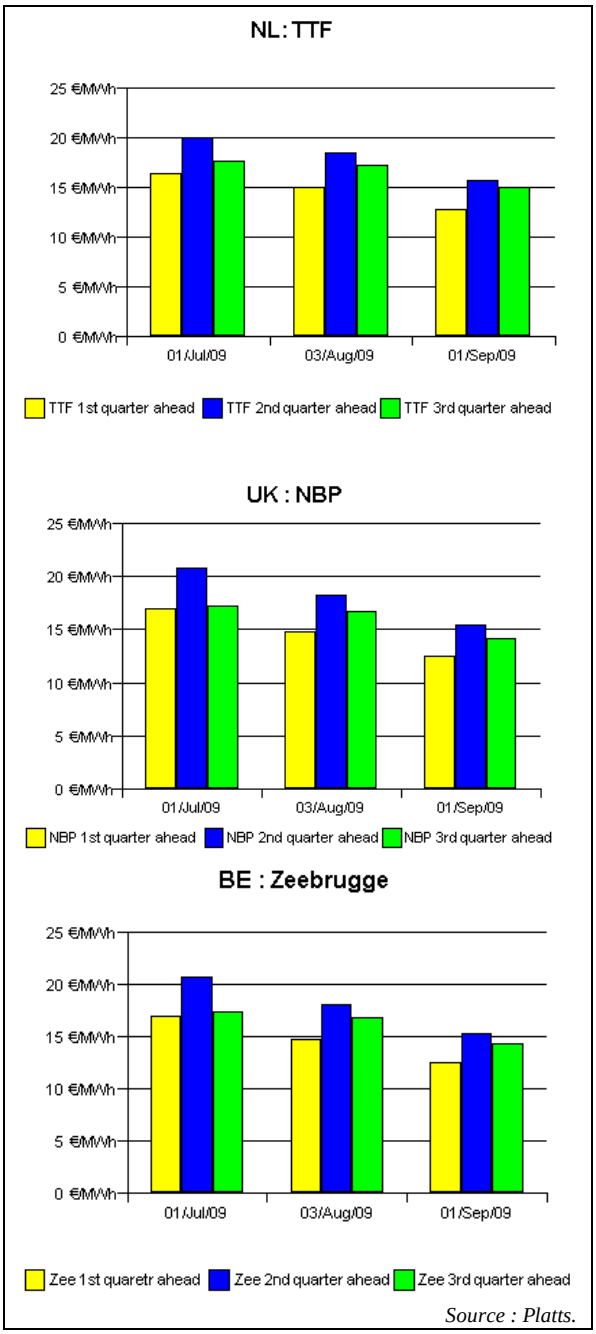
Source : Platts.

German spark spreads[17] were as usual more volatile than those in the UK, because in Germany the power price does not follow the gas price as closely as in the UK[18].



Source : Platts.

The curves for the following quarters show a combination of contango and backwardation[19]. This can be related to the seasonal influence, with the prices being highest in the winter and then dropping in the second quarter of 2010.



Source : Platts.

[17] 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.

[18] See also the *Quarterly Report on European Electricity Markets* for Q3 2009.

[19] The term *contango* describes a situation where the future price is *higher* than the spot price. The term *backwardation* describes a situation where the future price is *lower* than the spot price.

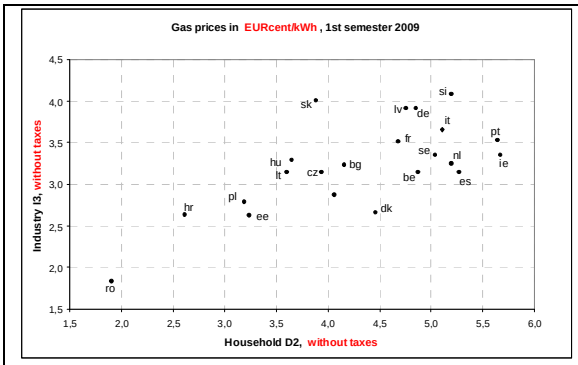
A.2 Retail markets

A.2.1 Prices by Member State

The next two scatter plot charts show the price relation for the EU Member States and other European countries between median level household and industrial consumption prices (consumption band[20] D_2 and I_3).

For the majority of Member States gas prices without taxes paid by household consumers decreased in the first semester of 2009. However, in some countries significant prices hikes occurred with respect to the second semester of 2008[21]. The most pronounced price falls were observed in Poland (24.5%), Sweden (17.4%) and Germany (16.5%).

For industrial consumers the situation was quite similar, Bulgaria and Croatia showed strong price hikes (17.7% and 14.2%); in Portugal prices rose by 6.5% while the respective household prices went down. The highest price decreases were observed in Lithuania (28.1%), Sweden (27.8%), Hungary (20.0%), Romania (19.8%) and Poland (17.1%).



Source : Eurostat

Range for annual consumption of :
Household group D_2 : [5,56 MWh –55,55 MWh] ;
Industry group I_3 : [2,77 GWh –27,77 GWh]
Note. Data are not available for Austria, Cyprus, Finland, Greece, Luxembourg and Malta

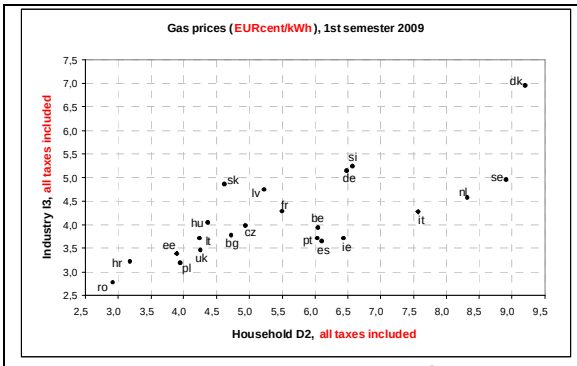
The evolution of gas prices (taxes included) was similar to that described in the previous paragraphs. As a rule, changes in price including all taxes were higher than those for "net prices". This may imply that, during the first semester of 2009, taxation exerted an upward influence on the evolution of retail gas prices in the majority of EU Member States.

In the case of industrial consumers, the largest difference between prices with and without taxes could be observed in Latvia (+4.7 percentage points). Domestic consumers in Denmark faced an after-tax price decrease by 8.7% resulting from the combine effect of a 16.2% fall of net prices and a 7.5 % tax increase.

In Denmark household consumers pay a slightly more than twice that of the level of 'net' prices while industrial consumers pay 2.6 times as much. This reflects the national incentives to promote environmental friendly energy policies.

[20] 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 patterns across the EU.

[21] Bulgaria +21.0%, Lithuania +11.0% and in Croatia +15.0%.



Source : Eurostat

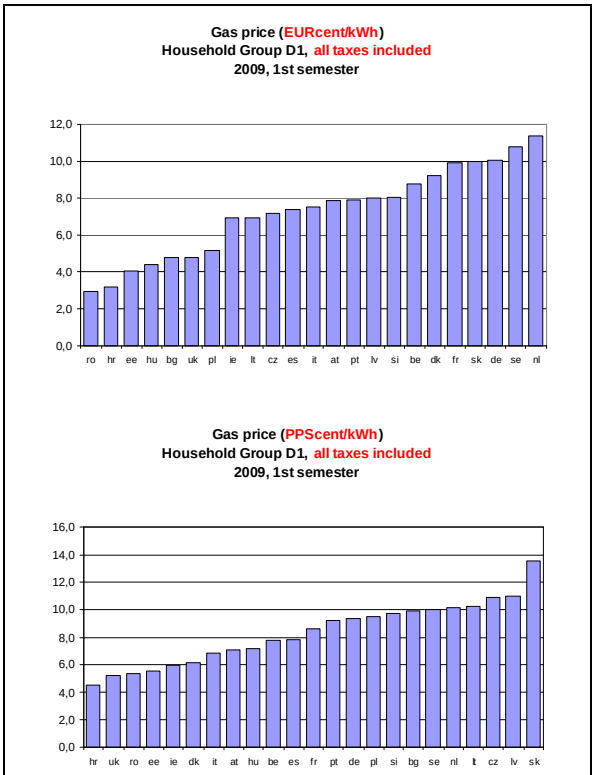
Range for annual consumption of :
Household group D_2 : [5,56 MWh –55,55 MWh] ;
Industry group I_3 : [2,77 GWh –27,77 GWh]
Note. Data are not available for Austria, Cyprus, Finland, Greece, Luxembourg and Malta available

In Sweden and the Netherlands taxes also exert a significant influence on price level (+77% and 60.3%) for household consumers, while industrial clients also perceive higher end-user prices (compared to pre-tax prices) in Romania (51.4%) and in Sweden (47.5%). Portugal was the country where taxes produced the lowest upward effect on prices (+7% for household and 5% for industrial consumer).

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

The next two graphs represent the prices (all taxes included) paid in different member states in the EU for the lowest annual consumption band (D_1), given in eurocents (the chart on the top) and after purchasing power parity correction (PPS - chart in the bottom).

For the prices expressed in Euro, the new Member States are traditionally found on the lower end of the price ranking order (among the five countries with the lowest gas prices there are four new member states and Croatia), the only exception being Slovakia which is among the five most expensive countries.



Household group D_1 : [0 MWh – 5,55 MWh]
Data for Cyprus, Finland, Greece, Luxembourg, Malta are not available

Source : Eurostat

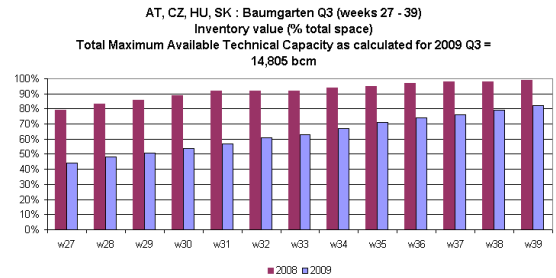
Among the ten countries with highest price level (measured by purchasing power parities) only three old member states can be found. This implies that PPS prices are effective in filtering the impact of overall price level differences between new and old Member States.

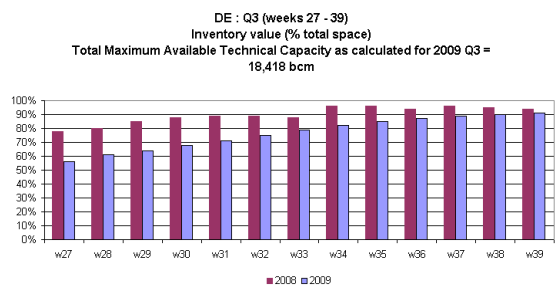
B. Midstream flows

B.1 Storage

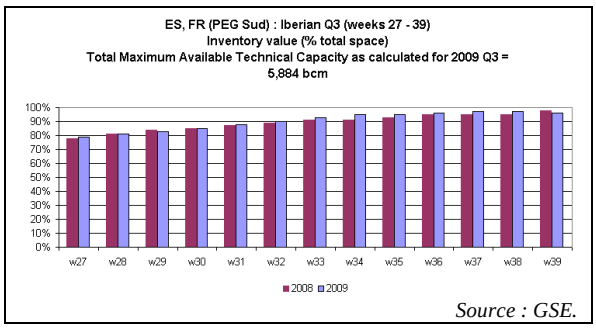
The following charts show the different levels of gas inventory values in the third quarter of 2009 in different regions. The common feature in all charts is the increasing weekly trend of inventory values expressed in percentage of total space, reflecting the usual practice of filling up inventories before the winter season.

However, there were significant regional differences regarding the inventory value deviations between weekly values of 2009 compared to the same week of 2008. The largest difference was observed in the Central and Eastern European Region (Baumgarten) which could be linked back to the January 2009 gas crisis. Countries in this region were among the most affected from the supply cut of Russian gas and had no other choice than to use up their own inventories.



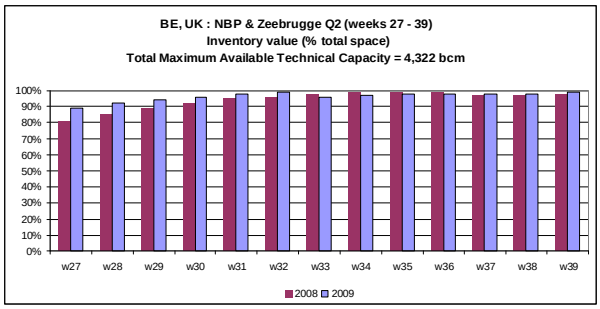


Source : GSE.

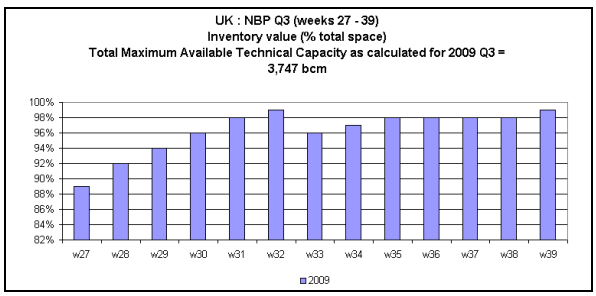


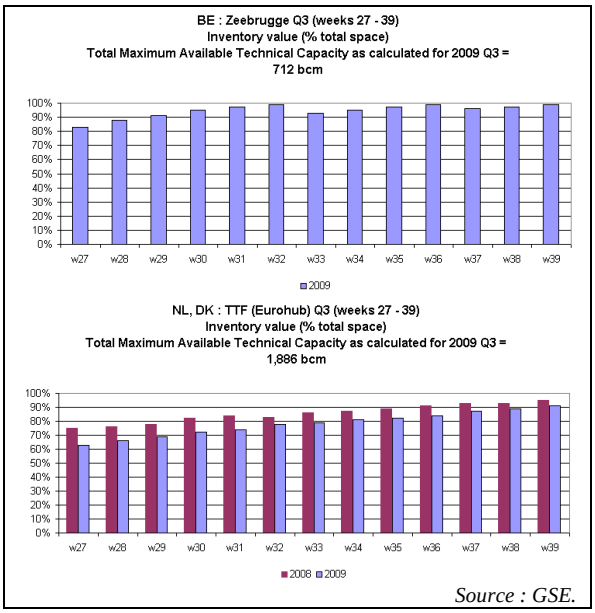
Source : GSE.

On the other hand, in markets less exposed to Russian gas supplies transiting Ukraine like PEG Sud, only minor differences were observed between weekly data of Q3 2009 and Q3 2008.



Starting from Q3 2009, a separate inventory data is available for UK and Belgium. The *Quarterly Report on European Gas Markets* will continue publishing the joint and separate stock inventories until Q3 2010 for comparison purposes.





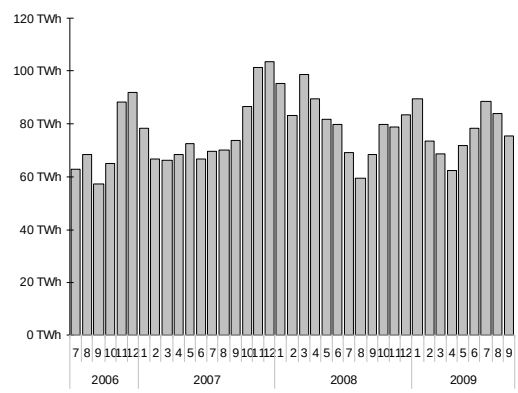
Source : GSE.

Source : GSE.

B.2 Pipeline

The next chart shows the energy content of imported gas on the German border, giving a good proxy for imported volumes. Having registered strong volume gains in the second quarter, imported volumes

began to decline again after July's peak. However, if we use the third quarter of 2008 as the reference period, strong increases occurred in each month of Q3 2009 (28%, 42% and 10%, respectively). Beside the improved prospects of economic recovery this was due to the combined effect of increased demand from storage operators (who had to fill up inventories as mentioned in previous paragraphs) and the reduced demand response from German industrial consumers (related to take or pay obligations).

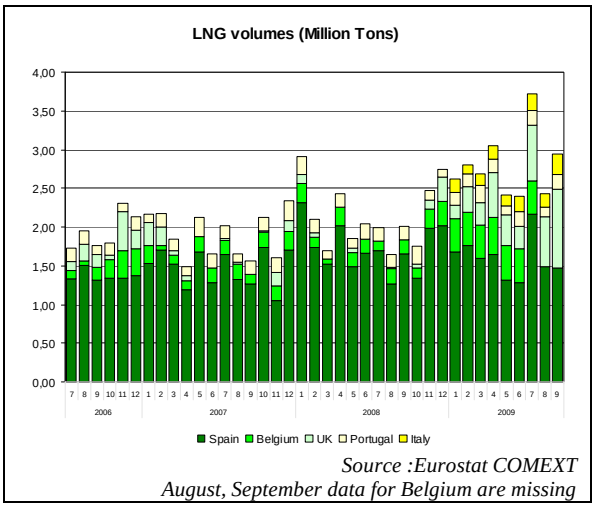


Source :
Federal Office of Economics and Export Control (BAFA)

B.3 LNG

In July 2009 there was a significant jump in overall LNG volumes; mainly as a consequence of increases in Spanish and UK imports.

In Spain the rise in gas consumption might be related to electricity generators facing an increased power demand from households (air- conditioning). The jump in UK imports might have been in connection with the installation of the new South Hook LNG terminal in Milford Haven.



Source :Eurostat COMEXT
August, September data for Belgium are missing

Spanish imports fell back in August to the level observed in the previous months. In the UK volumes remained at historical highs.

C. *"Focus on gas storage"*

Natural gas, unlike electricity, can be stored for later consumption. Natural gas storage has basically two uses: meeting seasonal demand requirements, and insuring against unforeseen supply disruptions.

Traditionally, natural gas has been a seasonal fuel, mainly used for heating purposes. Due to the recent increasing trends in natural gas fired electric generation, there is a growing summer peak demand on natural gas which is linked to air conditioning

Gas storage is widely used to meet seasonal load variations, ensuring the balance between supply and demand in different periods. It is also very useful in the context of gas transport, since it provides the within-day flexibility needed to smooth the supply-demand gap. In recent years, gas storage has also played a key role in managing security of supply risk. In 2006 and 2007 partial reductions of external gas deliveries, and particularly the gas crisis in January 2009. With gas spot and forward markets becoming more and more consolidated, market operators have also begun to use gas storage as a strategic instrument for realizing temporal arbitrages (summer/winter, weekend, etc.). Furthermore, gas storage has become increasingly important as the level of EU import dependency has increased. Additionally, the role played by gas storage could increase further with improvements in the network connections between European hubs and better possibilities to reverse flows.

Baseload storage facilities must be capable of holding enough natural gas to satisfy long term seasonal demand requirements, and they are characterized by low turnover and delivery rates. On the other hand, peakload storage facilities are designed to have high-deliverability for short periods of time (few days or weeks), and they have high turnover rates.

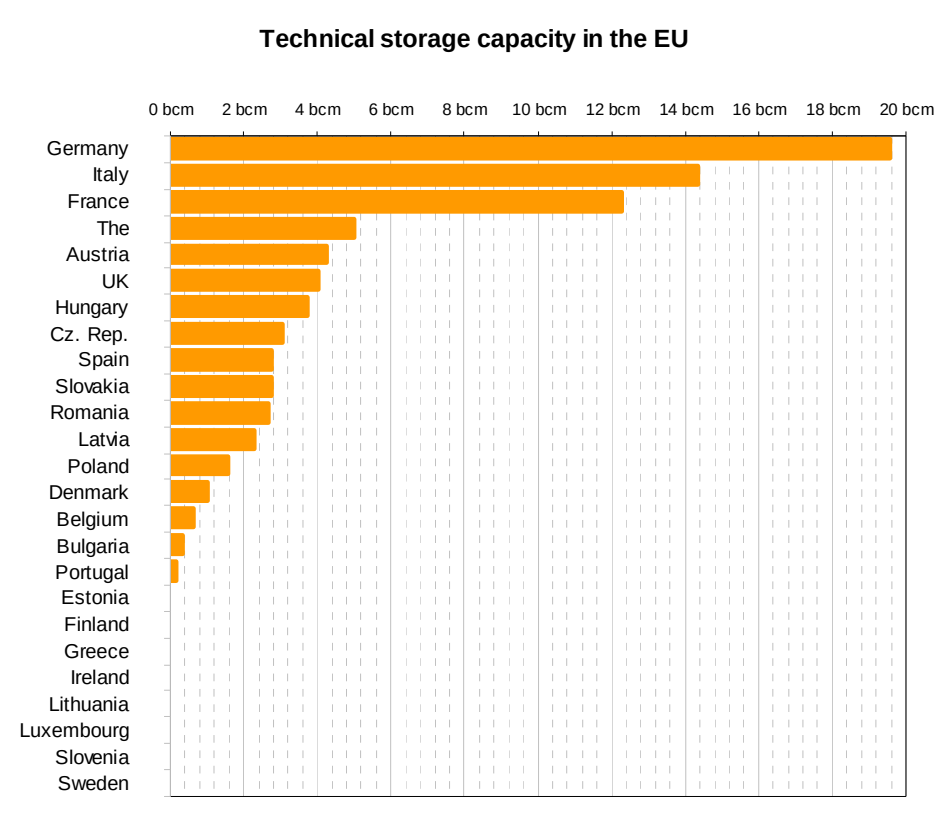
Natural gas is most commonly held in inventory underground, using three types of storage facilities, namely depleted reservoirs in oil or gas fields, aquifers, and salt cavern formations. Depleted gas reservoirs provide a prolonged, steady supply of natural gas but their delivery rates are relatively low. They are the most common type of baseload storage facility. Salt caverns can quickly deliver smaller amounts of gas, and can also be replenished in a shorter amount of time than baseload facilities. For these reasons, they are the most common type of peakload storage facility. Aquifers may be used to meet these demands as well.

In a market increasingly dependent on storage both for seasonality and daily trading, ensuring transparent and non-discriminatory third party access (TPA) to storage capacity is crucial.

The rules and recommendations for TPA are outlined in the Gas

Directive[22], and further described in the Guidelines for Good TPA Practice for Storage System Operators (GGPSSO). Also the Third Energy Package proposes a series of initiatives intended to ease the access to storages. According to the Gas Directive, TPA on the EU gas storage market can be provided through regulated access and negotiated access, both under the jurisdiction of the Member States.

The part of gas storage in gas demand changes widely in time and between different European countries. The available storage withdrawal capacities at EU level amounted to around 800 mcm/day (in comparison, during the January 2009 crisis the gas shortfall was 300 mcm per day)[23]. As can be observed in the following table, Germany, France and Italy together hold more than 70% of the EU technical underground storage capacity[24]. In comparison, Ukraine has 31.1 bcm of storage, more than double of the Italian value.



Source : Gas Infrastructure Europe, Latvijas G•ze

[22] EU Directive 2003/55/EC concerning common rules for the internal market in natural gas and repealing Directive 98/30/EC.

[23] SEC(2009) 977 final "The January 2009 gas supply disruption to the EU: an assessment".

[24] The term "technical storage capacity" is used in the meaning of GGPSSO and it indicates the maximum capacity that can be offered to storage users excluding capacity for SSO operational needs.

During the January 2009 gas dispute, European storage operators delivered significant volumes of commercial gas stocks as the main mitigation measure. As evidenced by Gas Storage Europe (GSE)[25], commercial gas stocks were drawn down by around 15% across Europe between 5th January 2009 and 19th January 2009. In the previous quarters the average stocks withdrawal was 2.5% per week. The important role commercial storage plays in the functioning of both the internal and regional gas markets was confirmed by the movement of stored gas across country borders.

Following the January 2009 crisis, all Member States took measures to increase their preparedness for a gas disruption. By the end of November 2009 gas storage facilities where almost full in the majority of European hubs. Other factors, such as the decrease in consumption as a consequence of the economic crisis and very low spot-gas prices, have contributed to restore very high storage levels.

[25] http://transparency.gie.eu.com/weekly_storage.html.