

# Quarterly Report on European Gas Markets

- MARKET OBSERVATORY FOR ENERGY

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Directorate-General  
for Energy  
and Transport



**ANDRIS PIEBALGS**

MEMBER OF THE EUROPEAN COMMISSION

Dear readers,

It is my great pleasure to present to you the first issue of the *Quarterly Report on European Gas Markets*, prepared by the *Market Observatory for Energy* of the European Commission. This report complements the increasingly popular series on European Electricity Markets which are published since last year.

The new series will monitor and analyze, quarter by quarter, the main drivers behind price and volume evolutions, on both wholesale and retail markets of natural gas across Europe. We will also follow closely the interactions between countries and regions since we expect that as the internal market matures, it will spur more commercial cross-border transactions.

We hope that our *Quarterly Report* will present an accurate picture of the European gas markets. We will aim to follow also how market developments are influenced by our initiatives and policy measures.

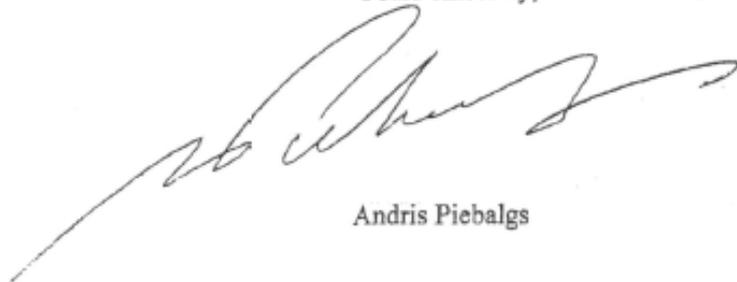
Our first report covers the period from October to December 2008 in which the economic downturn started to be sensed. We will soon return and present to you the report for the first quarter of 2009 during which parts of Europe were hit by a severe gas supply crisis due to the interruption of flows from the Russian Federation through Ukraine to the European Union.

Data availability in the gas sector being limited, the *Market Observatory for Energy* will be delighted to establish cooperation with those willing to share their data for reproduction in this new series of reports. This approach has proven effective and, over time, has led to the expansion of the scope of the electricity market reports. Do not hesitate to contact the editorial team by sending an e-mail to [TREN-EMOS@ec.europa.eu](mailto:TREN-EMOS@ec.europa.eu). Any other feedback you wish to provide on this new publication will be received with great interest, too.

In case you are interested in other publications of the Market Observatory for Energy or if you want to retrieve previous issues of quarterly market reports, please visit their website:  
<http://ec.europa.eu/energy/observatory>

I hope that you will find this new publication interesting and helpful.

Yours sincerely,



Andris Piebalgs

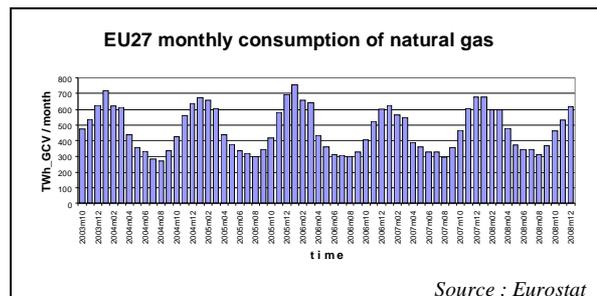
## QUARTERLY REPORT ON EUROPEAN GAS MARKETS

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### A. Recent developments in the gas markets across Europe

#### A.1 Wholesale markets

During the last quarter of 2008 the consumption of natural gas across Europe was, on average, lower than over the same period in 2007. Year on year, EU27 consumption eased down 1% in October, then the drop accelerated in November and December to  $-12,4\%$  and  $-9,1\%$  respectively.



The relatively mild weather in Q4 and slowing economic growth were among the factors that reduced gas consumption.

As indicated in the next graph, the number of heating degree days (HDDs)<sup>1</sup> for the months from October to December 2008

<sup>1</sup> Heating degree days express the severity of the cold in a specific time period taking into consideration outdoor and room temperatures.

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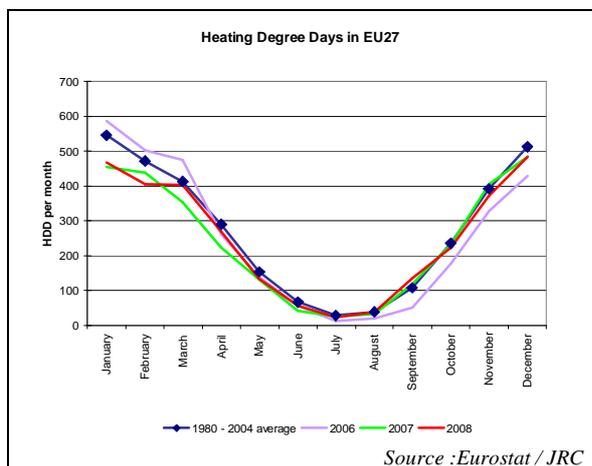
This report prepared by the Market Observatory for Energy of the European Commission aims at enhancing public access to information about prices of natural gas in the Members States of the European Union. Our goal is to keep this information timely and accurate. If errors are brought to our attention, we will try to correct them. However the Commission accepts no responsibility or liability whatsoever with regard to the information contained in this publication.

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was lower than the number of HDDs for the same period of 2007 and higher than the HDDs for the final quarter of 2006. The demand from domestic consumers that use natural gas for heating has reacted accordingly: increasing from Q4 2006 to Q4 2007 before going down in Q4 2008.

Whereas the October 2008 import volumes were comparable to the ones 12 months before, on a year-on-year basis November and December 2008 levels were more than 12% lower than the corresponding period in 2007.

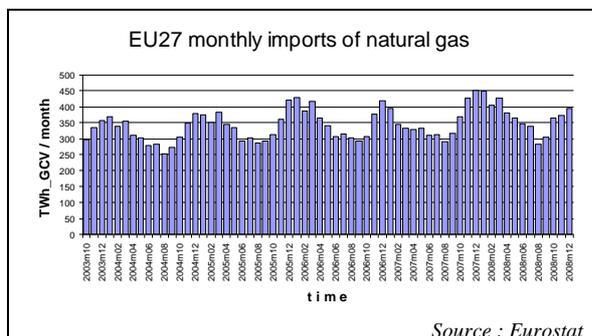
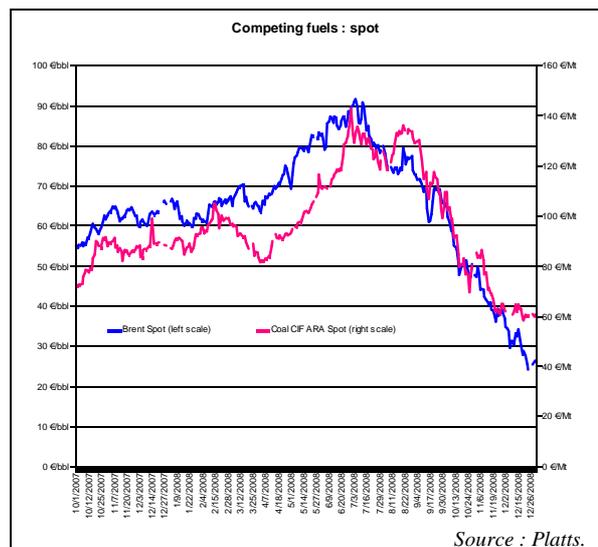


### A.1.1 Spot markets

In a similar manner to the prices of other energy commodities, natural gas prices were also affected by declining economic activity.

The economic slowdown was affecting industrial consumers of natural gas but also power generators as electricity demand was also going down.

As a result of the weaker domestic and industrial demand, the imports of natural gas to the European Union have registered a significant reduction – with respect to the last quarter of 2007, the volumes were down approximately 10 % in the October – December 2008 period.

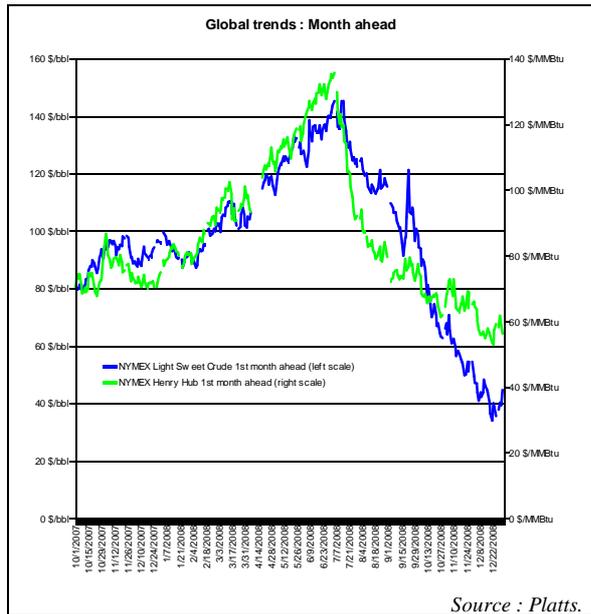


Since the end of June / beginning of July 2008, energy prices have significantly decreased. By the end of December 2008, the coal CIF ARA spot contract had lost more than 56% of its value. The December average price for the dated Brent was down by more than €60 per barrel from its peak. During the June 2008 – December 2008 period, the price of natural gas has followed similar developments. The month

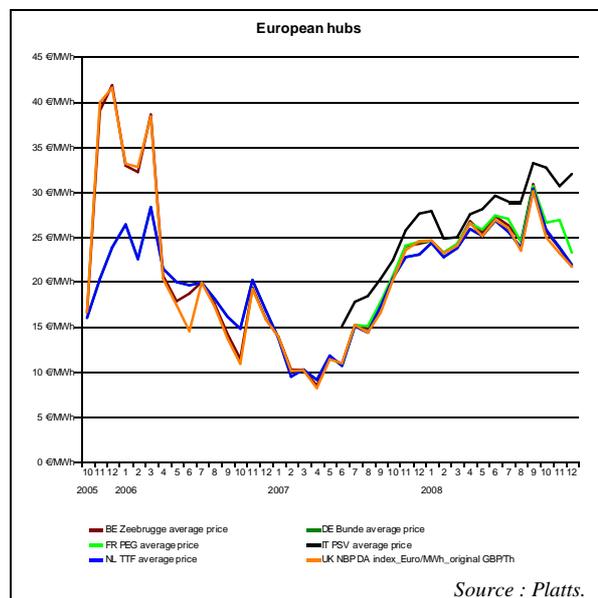
ahead NYMEX contract on Henry Hub tumbled down from \$ 135,77 / MMBTU to \$ 56,22 / MMBTU.

### A.1.1.1 European hubs

The spot prices of natural gas traded across the European platforms followed a similar pattern, with the exception of the Italian balancing point PSV.



As prices were decreasing, the market operators were worrying on the prospects of energy companies having to cope with more difficult access to credit and on the effects of recession on energy demand in all regions of the globe.

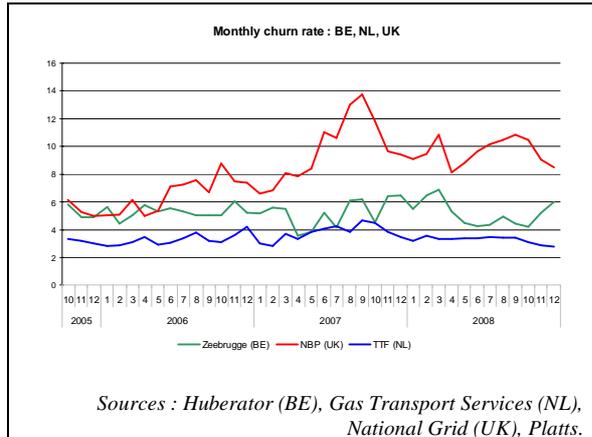


Liquidity of the NBP market slightly decreased, the churn rate going from more than 10 in October to 8,8 in December<sup>2</sup>. Similar developments were observed on the TTF hub.

On the hub in Zeebrugge, liquidity has picked up, with market operators being active on both sides of the Interconnector pipeline.

<sup>2</sup> The churn rate is an indicator for the liquidity of a market / hub. It measures the ratio between traded and physically delivered volumes.

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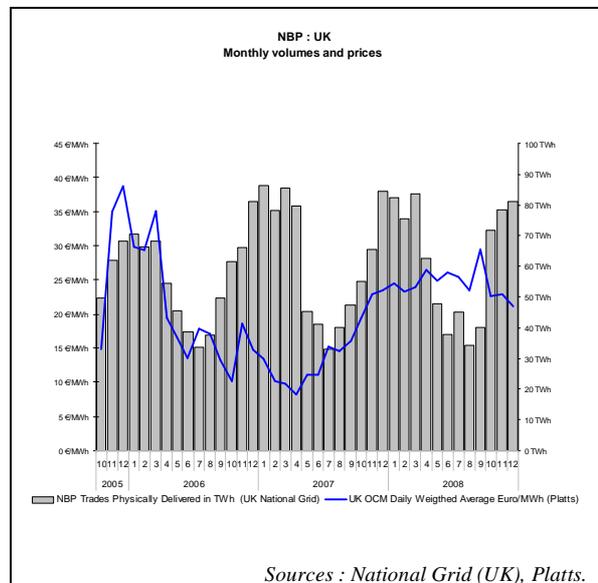
stable, registering a small drop of 6% between October and December. On a daily basis prices were less stable falling from 73.5p/therm at the end of September to 42p/therm on 17 October, then recovering again to 73p/therm by the end of October. These price movements were important for the UK market, giving signals to market participants on the use of gas in storage, on the bringing in of spot LNG cargoes, or on the importing of gas through the IUK interconnector.

The near term forward curve was in backwardation suggesting that market operators were expecting further decreases of the wholesale price for gas in 2009.

### UK: National balancing point (NBP)

In October 2008, the spot market price for gas dropped on average €7 / MWh with respect to the previous month as market operators appeared to be stepping back from September forecasts of a colder than usual winter and insufficient levels of production.

Even though the temperatures in the UK during the months of October to December 2008 were on average below the normal levels<sup>3</sup>, increasing volumes of pipe and LNG deliveries came into the grid and kept supply and demand in balance. As a result, the average monthly OCM<sup>4</sup> price remained



Year-on-year, October 2008 prices were 16% higher than the corresponding 2007 levels; by December however, gas prices had dropped 10%, possibly due to weaker industrial demand.

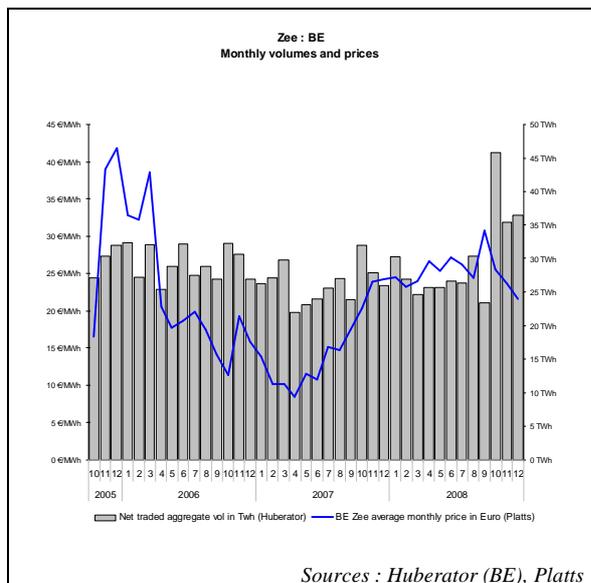
<sup>3</sup> In the UK, there were 20 HDDs above the normal level in October, 2 in November and 30 in December.

<sup>4</sup> On-the-day commodity market (OCM).

## Belgium: Zeebrugge

Active basis trading has kept the prices of the Belgian and UK hubs closely related as operators are normally able to flow gas from the lower to the higher price area using the Interconnector pipeline.

The meteorological conditions in Belgium were colder than normal in the fourth quarter of 2008, so the gas demand for heating from residential consumers was strong, especially in the months of October and December<sup>5</sup>.



During Q4 2008 the average monthly price has decreased by more than 15%, from € 25,53 / MWh to € 21,61 / MWh. Once again, a similar pattern was observed for the evolution of the spot price: compared

<sup>5</sup> In Belgium, the temperature was below the average for October and December (17 and 41 HDDs higher than the normal level).

to the level of the corresponding month in 2007, the average October price was higher (by almost 25%) while the average December price was lower (by 10%).

Storage capacities in the UK – Belgium area were at normal levels (see section B.1).

## Netherlands: Title transfer facility (TTF)

On average, Dutch wholesale prices of gas dropped € 9 / MWh during the months from September to December 2008.

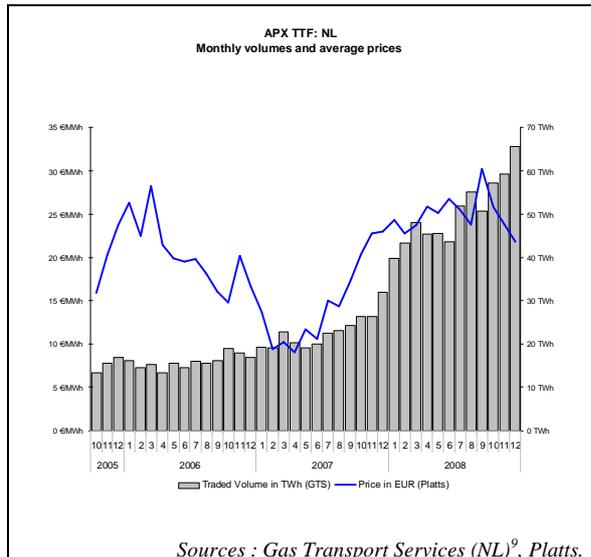
While temperatures stayed below the normal averages in Q4 2008<sup>6</sup>, it seems that in September market participants have overestimated the expected demand increase of the residential consumers. As more indications of moderate household gas consumption became available, prices started to slide. The slowing industrial demand also supported this development.

Wholesale prices in the Netherlands followed a similar evolution to that observed in the United Kingdom and Belgium. Despite the worsening economic prospects, market operators seemed to be expecting high prices in October<sup>7</sup>. However, this was not matched by events, with average prices falling back in the

<sup>6</sup> The October and December 2008 HHD levels were respectively 13 and 38 degree days above the long term averages. However, in November, there were 13 HDD less than normal.

<sup>7</sup> As a result, the year-on-year level was 25% higher in 2008 than in 2007.

months of November and December 2008 by 15%<sup>8</sup>.



### Germany: NetConnect (NCG)<sup>10</sup>, Gasunie transport services (GUD)<sup>11</sup>, Bunde

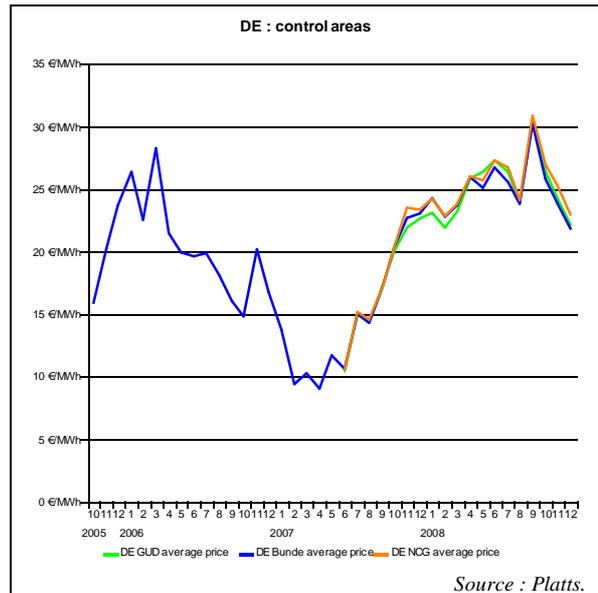
During the fourth quarter of 2008 weather conditions in Germany were milder than the seasonal average. As a result residential demand for heating was low, putting downward pressure on the prices of the German hubs.

<sup>8</sup> Gas prices were increasing during the corresponding months of 2007.

<sup>9</sup> For a specific period, the traded volume is the sum of the nominated volumes on TTF made by shippers and confirmed by GTS.

<sup>10</sup> NCG is formerly known as *E.ON Gastransport (EGT)*.

<sup>11</sup> GUD is formerly known as BEB.



Other factors that influenced market operators were the price developments in neighbouring hubs and the level of gas in the storage facilities<sup>12</sup>.

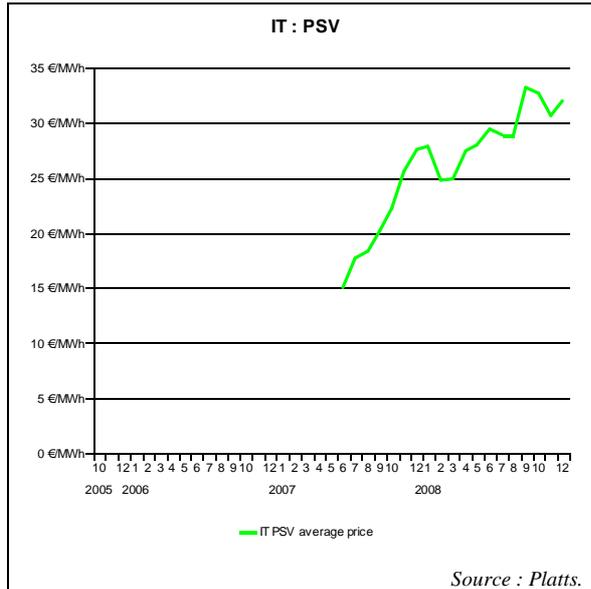
The prices in the reported control areas have moved in parallel in Q4 2008, registering a drop of approximately 15%. However, in contrast to other hubs, the German wholesale prices of gas stayed above the corresponding Q4 2007 levels.

### Italy: Punto di Scambio Virtuale (PSV)

The average monthly price in Italy lost approximately €2 / MWh from October to November and then recovered € 1,5 / MWh in December.

<sup>12</sup> See part B.1 of this report.

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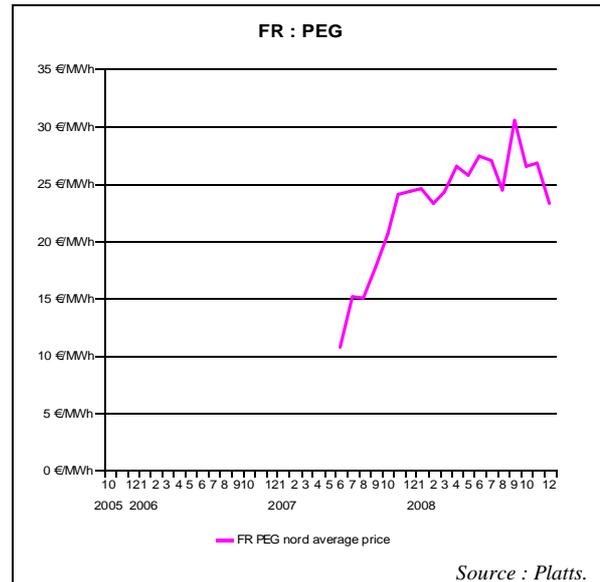


Prices stayed stable despite the milder than average meteorological conditions<sup>13</sup> and despite the fact that storages remained almost full well into November. Year-on-year, PSV prices were 46% up in October and about 20% higher in November and December 2008 than the corresponding months of 2007.

### France: Point d'Echange de Gaz (PEG)

Contrary to Italy, in France the October to December winter period was colder than normal<sup>14</sup>. The prices in PEG Nord followed similar developments to those of Belgium and the UK. In Q4 2008 gas

prices have lost about 12% of their values, returning to the levels of December 2008.



By the end of the observed period storage levels were lower than those of the same quarter in 2007 which, together with the colder winter conditions have compensated for easing down of industrial demand.

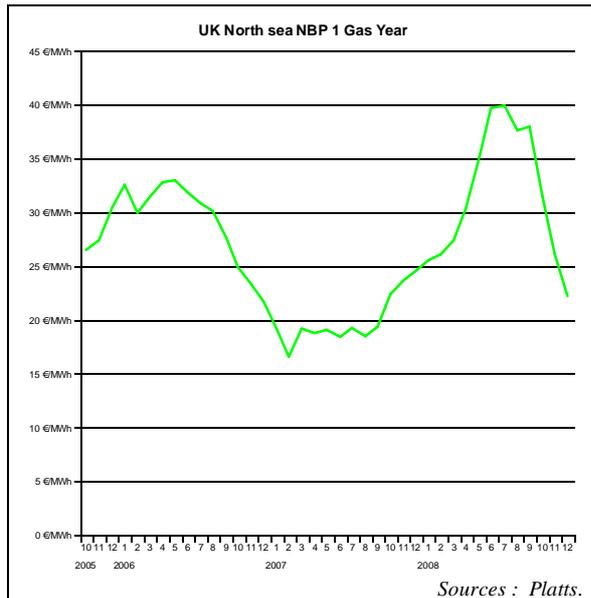
#### *A.1.1.2 Reported border prices on long term contracts for pipe gas*

The average price for pipe gas coming from the North Sea<sup>15</sup> fell down by € 10 / MWh during Q4 2008. The price moved closer to the NBP spot as market operators in the UK are increasingly using gas-to-gas pricing mechanisms for the long term deliveries.

<sup>13</sup> In October, November and December 2008 HDDs were below the long term average (respectively by 40, 25 and 3 degree days).

<sup>14</sup> Compared to the average figures, HDDs in France were higher by 18, 2 and 40 degree days in the period October – December 2008.

<sup>15</sup> To be delivered to the UK in the next year.



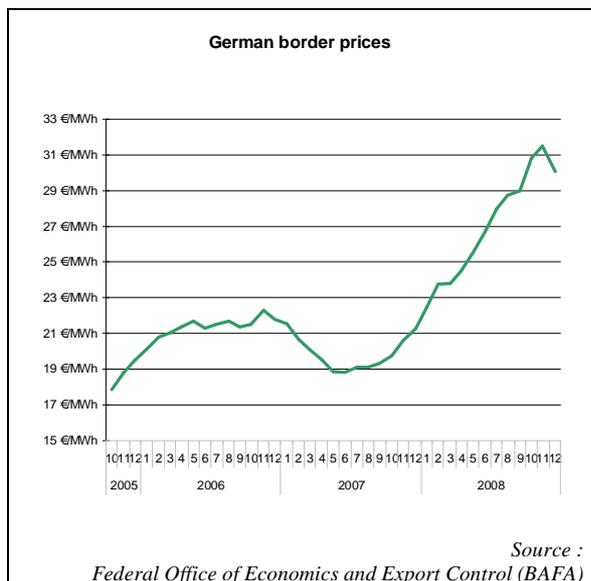
As German long term contracts are indexed to oil prices with a lag of some months, the June oil peak seems to correspond here to the high point in November. Hence, one could expect the price of imported pipe gas in Germany to go down in the beginning of 2009, as the lower oil prices feed through.

### ***A.1.1.3 Reported prices for LNG deliveries***

#### **North America and Asia**

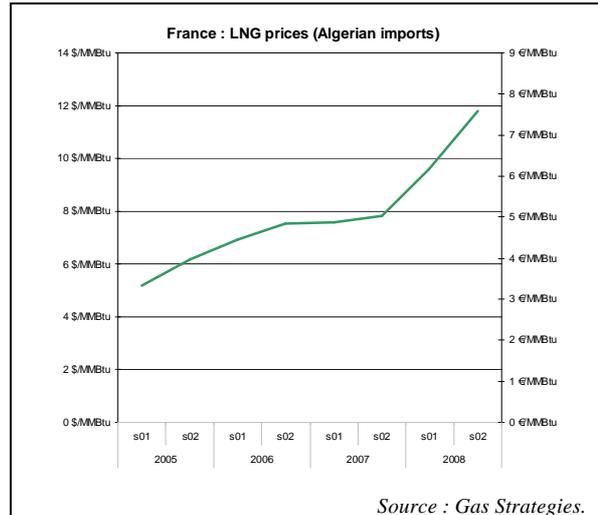
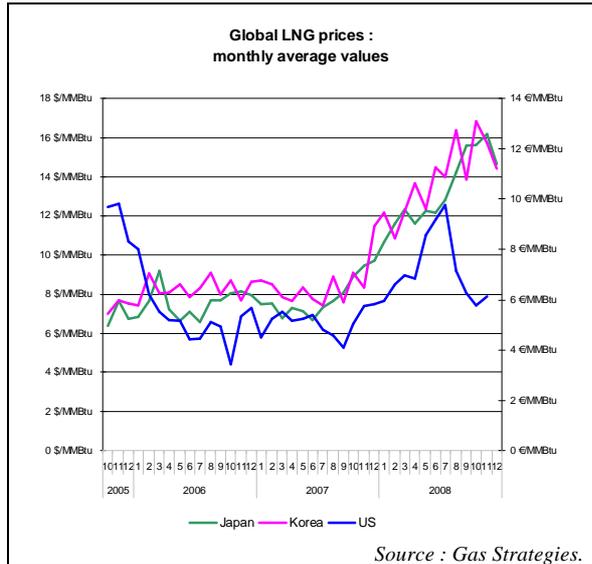
The average price for imported pipe gas at the German border remained at historically high levels. In November the price gained €0,50 / MWh before easing down a bit in December but steadying above € 30 / MWh. For the 18 months between June 2007 and November 2008 the average price increased by more than 65%.

Starting from the middle of 2007, LNG prices in Japan and South Korea have been consistently higher than the ones observed in the US and in Europe. This development appears to have prompted some outflow of LNG from the Atlantic basin to Asian Pacific markets.



From July 2008 until the end of Q4 2008, the US LNG monthly average price decreased around \$ 4 / MMBTU. The LNG imports remained the swing element in the US natural gas mix, with deliveries being influenced by domestic gas production, the state of the US economy and, of course, meteorological conditions.

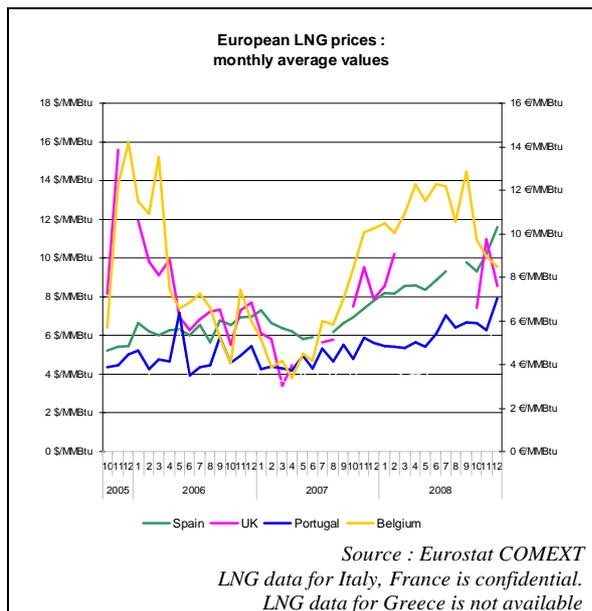
At the same time, prices in Asian markets continued to increase until October, before stabilising..



## Europe

As new terminals are scheduled to come onstream from 2009 on both sides of the Atlantic basin<sup>16</sup>, the LNG markets are becoming more flexible.

Factors that influenced LNG prices in Europe in Q4 2008 include the relative positions of the near term forward curves on Henry hub and NBP and the shipping price differentials between Europe and North America.



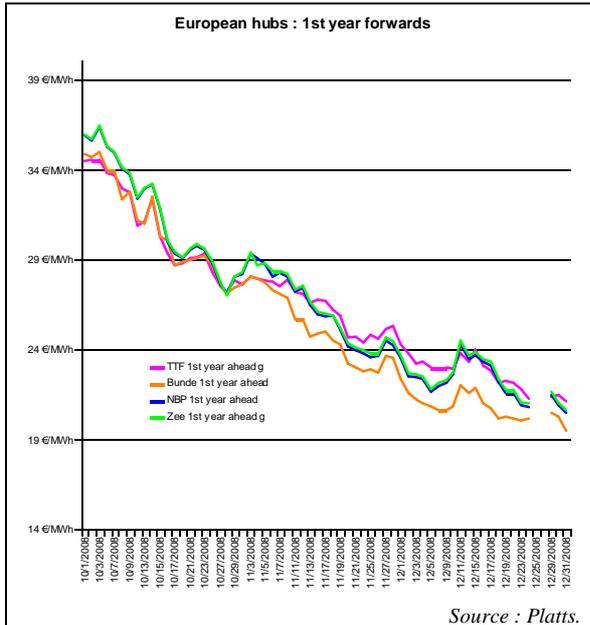
### A.1.2 Forward markets

In the fourth quarter of 2008 natural gas prices for future deliveries in Europe decreased, as market participants appeared to factor in a worsening global economy.

By the end of 2008, the year-ahead contracts in Belgium, the Netherlands, Germany and UK had lost about 40% of their value at the beginning of October.

<sup>16</sup> Italy and France, but also Brazil, Argentina, Canada and the US.

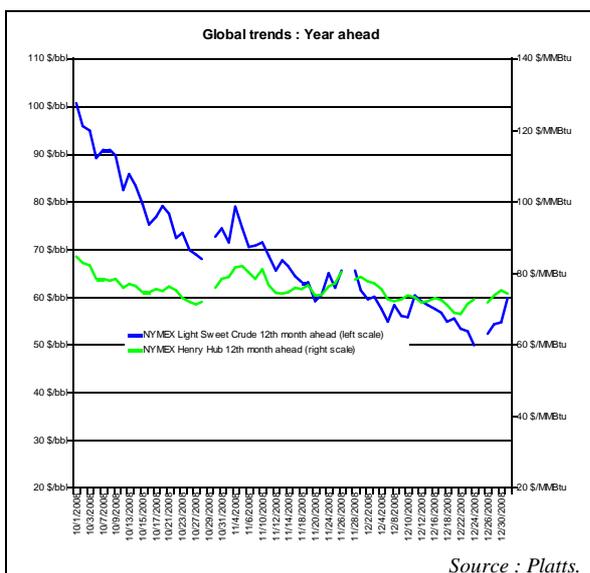
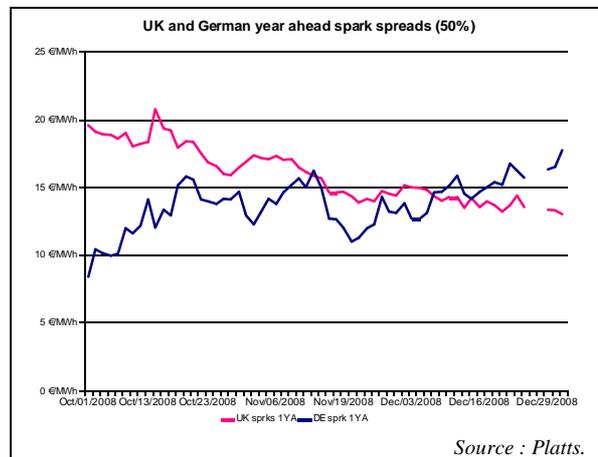
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In the UK, forward gas prices have contracted quicker than electricity prices, as indicated by the downward sloping spark spreads<sup>17</sup>. Tight spare capacity margins might explain the sticky power prices.

In Germany, spark spreads have actually increased in Q4 2008 as wind power and lower industrial demand were in play. As a result, electricity prices fell over the period.

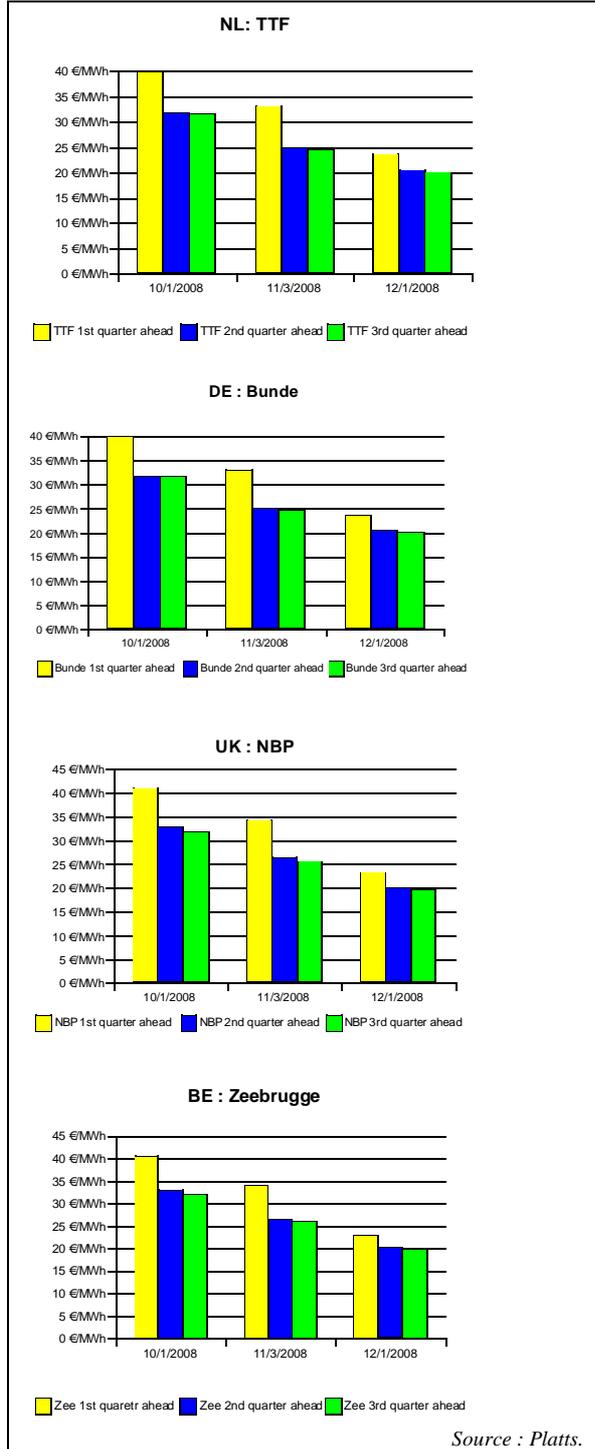
The market players were watching closely the prices of global energy products such as the NYMEX *Light Sweet Crude* but also the Henry Hub gas contract for direction about future supply and demand trends.



The near term forward curve was in backwardation<sup>18</sup> suggesting that market operators were expecting further decreases of the wholesale price for gas in 2009.

<sup>17</sup> 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.

<sup>18</sup> The term *backwardation* describes a situation where the future price is *lower* than the spot price.

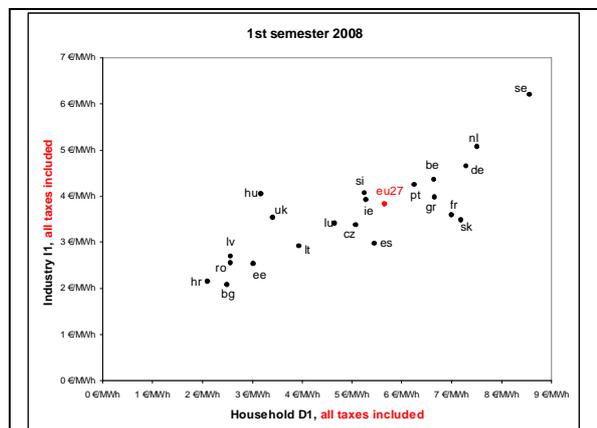


## A.2 Retail markets

In 2007, retail customers – households, services and small and medium industries – represented almost half (48%) of the gross inland consumption of natural gas in the European Union. If one also considers that heat and electricity generated by the use of gas is also consumed by retail customers, the importance of this consumer group is made clear.

### A.2.1 Prices by Member State

The most recent data from Eurostat reveals that similar categories of end consumers of natural gas are experiencing very different sets of retail prices (VAT and non deductible taxes included).

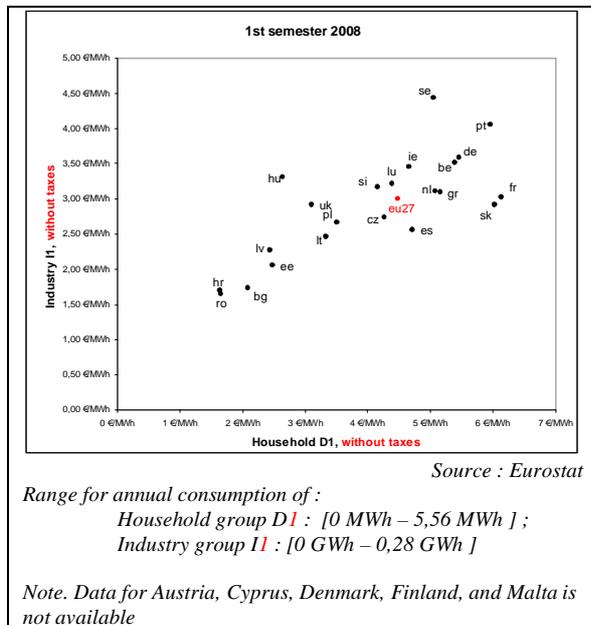


Range for annual consumption of:  
Household group D1 : [0 MWh – 5,56 MWh ] ;  
Industry group I1 : [0 GWh – 0,28 GWh ]

Note. Data for Austria, Cyprus, Denmark, Finland, and Malta is not available

The plot in the previous column compares the end prices paid by the smallest consumers of gas in the household and industry categories for each Member State<sup>19</sup>.

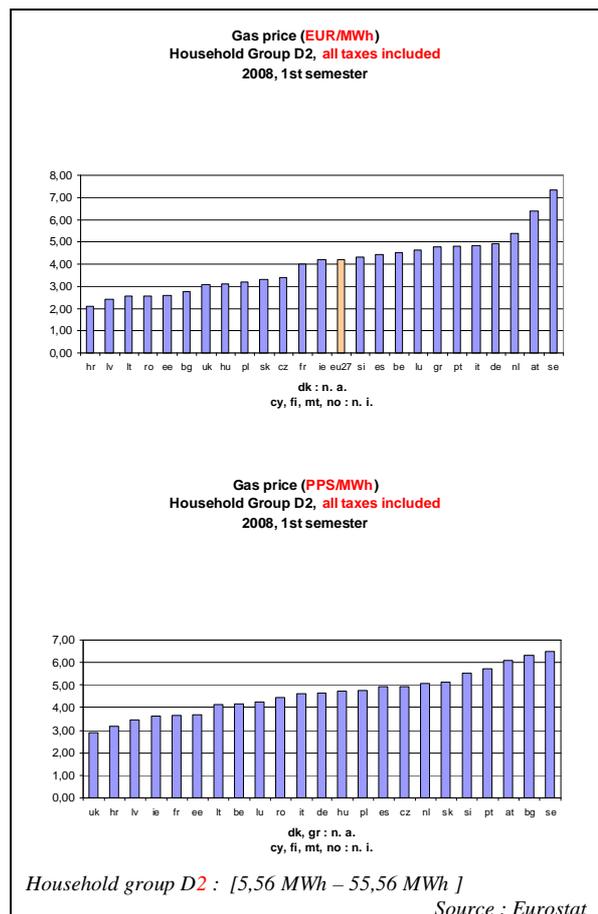
Factoring out the taxes from the final price seems to have negligible effect on the diversity of retail price sets across Member States.



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

The ranking of Member states by the price of 1 MWh of gas for domestic users differs substantially with respect to the counting unit.

Expressed in Euros, the gas bills paid by household consumers (group D2) from new Member States like Bulgaria, Hungary, Slovakia and the Czech Republic are below the EU27 average.



<sup>19</sup> 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.

Using the Purchasing Power Standard instead pushes up this group of Member States among the top payers. While the part of households in the total gas consumption is modest in Bulgaria<sup>20</sup>, this is not the case for Hungary, Slovakia and the Czech Republic<sup>21</sup>.

Countries moving in the opposite direction (cheaper prices in terms of PPS) include the United Kingdom, France, Ireland, Belgium and Luxembourg.

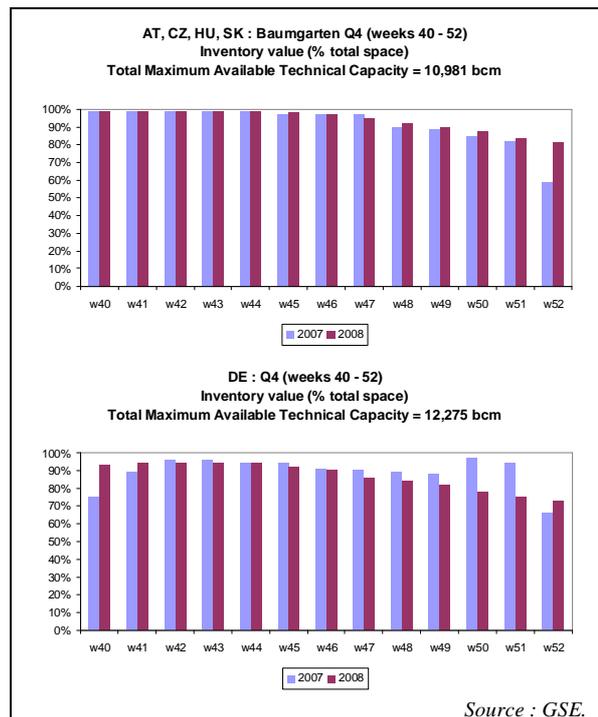
Swedish households account for approximately 4% of the gas consumption of the country. It is not clear how much of these households belong to group D2.

## B. Midstream flows

### B.1 Storage

In the final quarter of 2008 (weeks 40 – 52), the aggregated storage inventory as reported by *Gas Storage Europe* was within the limits of normal operation. Storage operators across Europe were ready for the winter months, filling up gas during the summer.

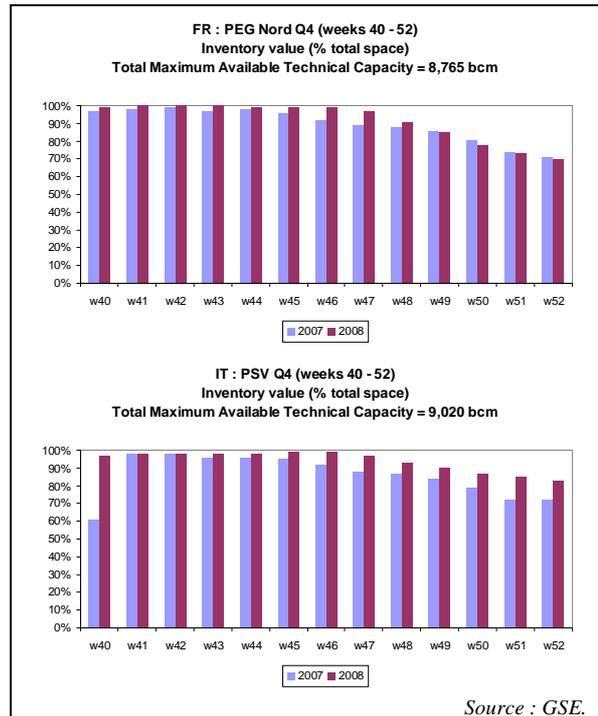
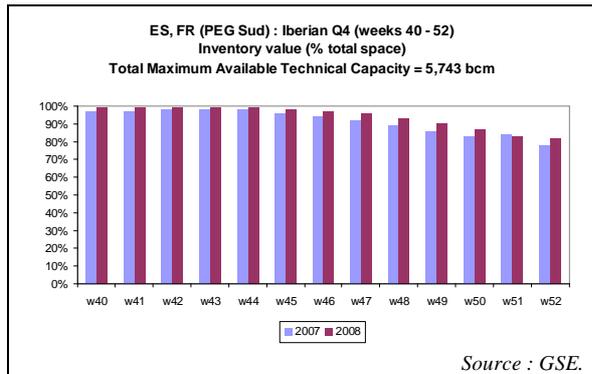
In retrospect, this policy will have proved useful in alleviating the severe shortage problems experienced by some member States during the January gas crisis. The next *Quarterly report* will return to this issue.



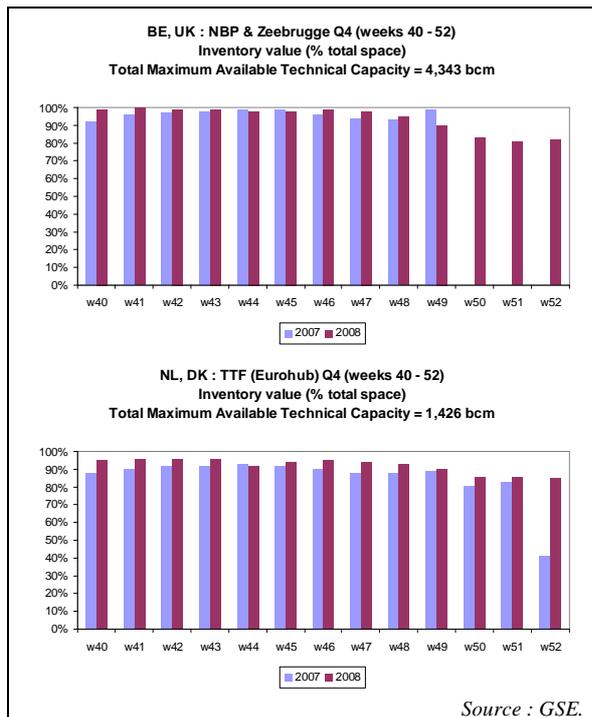
<sup>20</sup> 1% in 2007.

<sup>21</sup> In 2007, households represented 30%, 28% and 22% in the total gas consumption of Hungary, the Czech Republic and Slovakia.

heating was lower and storage levels in these regions were higher in 2008.



Gas outflows from the storage facilities were related to the particular weather conditions in the different GSE regions.



In Germany, the Netherlands and Denmark, October and November were hotter in 2008 than 2007, but a cold spell by the end of 2008 made December 2008 colder than December 2007. So, in weeks 49 – 52 storage operators were withdrawing more gas than during the same period in 2007.

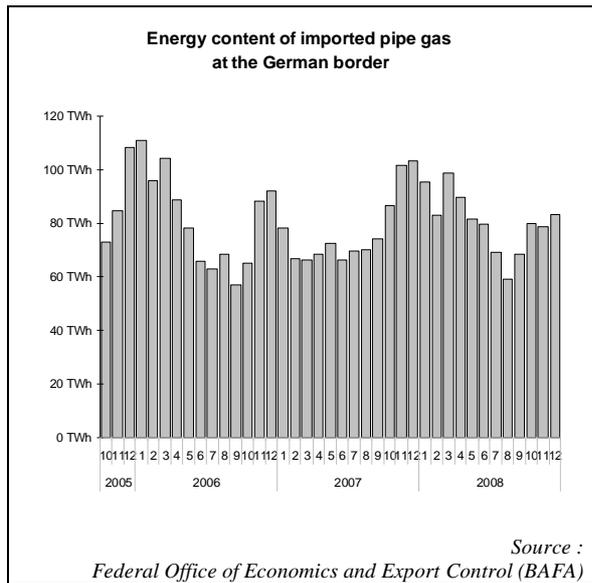
## B.2 Pipeline

For example, all along Q4 2008 the temperature in Central Europe and Italy was milder than the corresponding period in 2007. As a result, the demand for

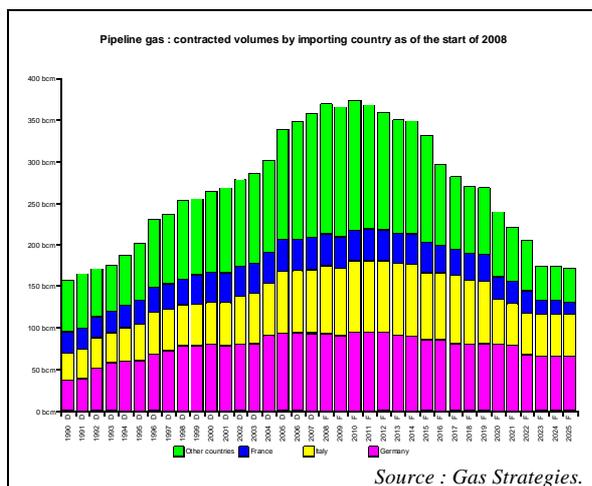
The volumes of imported pipe gas in Germany have picked up from the seasonal lows in August. On a year-on-year basis, they were however much less than in Q4

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2007<sup>22</sup>, suggesting slowing industrial demand.



Judging by the contracted volumes, Germany together with France and Italy remained the biggest importing countries of pipeline gas (as of the end of 2007).



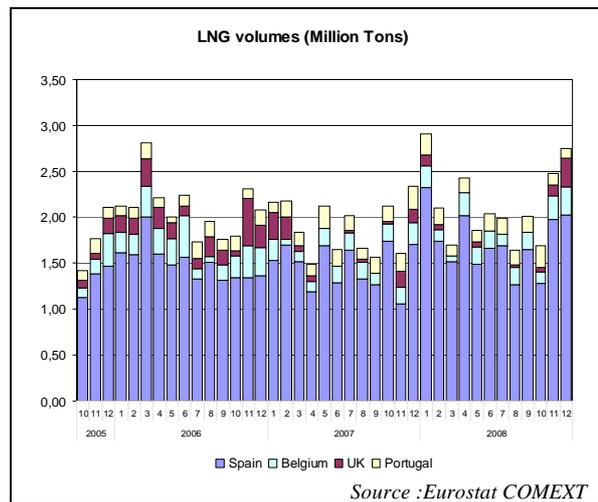
**B.3 LNG**

LNG deliveries were on the rise as Europe has remained the higher pricing area in the Atlantic basin throughout the fourth quarter of 2008.

Trinidad, Norway and Oman were among the suppliers that have increased LNG exports to Spain in Q4 2008. Compared to Q3 2008 levels, the delivered volumes were higher by 0,414 mt, 0,371 mt and 0,126 mt respectively.

Qatari LNG to Belgium has also increased by 0,160 mt during the observed period. Compared to the previous quarter, Nigerian LNG volumes slightly decreased in Portugal.

As the UK market was sufficiently supplied, less spot LNG cargoes were needed in 2008 in comparison with 2007.



On a yearly basis, the volume of French LNG imports decreased slightly (0,2 mtpa) while it remained stable in Greece and Italy.

<sup>22</sup> By an equivalent energy content of 50 TWh.

It remains to be seen if the 2009 volumes will expand. On one side, new LNG capacity will be added in the UK (expansion on the Isle of Grain terminal, South Hook and the Dragon LNG), France (Fos Cavou) and Italy (Rovigo). But on the other, it is not sure if market operators will be willing to fully use the capacity as there could be doubts about the level of demand in Europe.

