

Quarterly Report on European Electricity Markets



● MARKET OBSERVATORY FOR ENERGY

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Dear readers,

It is with great pleasure that I present to you the first issue of the *Quarterly Report on European Electricity Markets*, prepared by the Market Observatory for Energy of the Commission.

As you know, the European Commission is fully committed to fostering a functioning and competitive energy market within the European Union. We are convinced that the achievement of this goal will contribute to the policy response required to fight climate change and to secure our energy future.

The new series will monitor and analyze, quarter by quarter, the main drivers behind price and volume evolutions, on both wholesale and retail electricity markets 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 commercial cross-border transactions.

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

The Market Observatory for Energy is interested to learn about your impressions and your expectations for this report. I invite you to send your feedback to TREN-EMOS@ec.europa.eu. You may wish to look at the enclosed leaflet describing the mission of the Market Observatory.

I would like to take this opportunity to thank the team behind this report for their outstanding efforts in producing this new publication and I hope that you, the reader, find it helpful.

Yours sincerely,



Andris Piebalgs

QUARTERLY REPORT ON EUROPEAN ELECTRICITY MARKETS

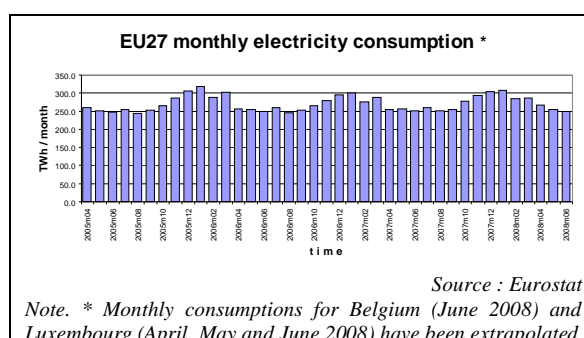
<i>CONTENTS</i>	<i>Page</i>
A. Recent developments in the electricity markets across Europe	1
<u>A.1 Wholesale markets</u>	1
A.1.1 Day ahead	2
EU wholesale markets	2
Regional markets	4
Central Western Europe	4
Northern Europe	7
Apennine peninsula	7
Iberian peninsula	8
Central Eastern Europe	8
British isles	9
A.1.2 Forward markets	10
<u>A.2 Retail markets</u>	12
A.2.1 Prices by Member state	12
A.2.2 Cross-panel data on household electricity consumption	13
B. Building the internal market for electricity : cross border trade	14
C. "Focus on ...power exchanges"	15

A. Recent developments in the electricity markets across Europe

A.1 Wholesale markets

During the second quarter of 2008, wholesale electricity prices have continued their upward movement across the different European market places.

Factors that could explain this trend were primarily supply side factors, coupled with electricity consumption which stayed strong despite the prospects of an economic slowdown in the Euro area.



Disclaimer

This report prepared by the Market Observatory for Energy of the European Commission aims at enhancing public access to information about electricity prices within 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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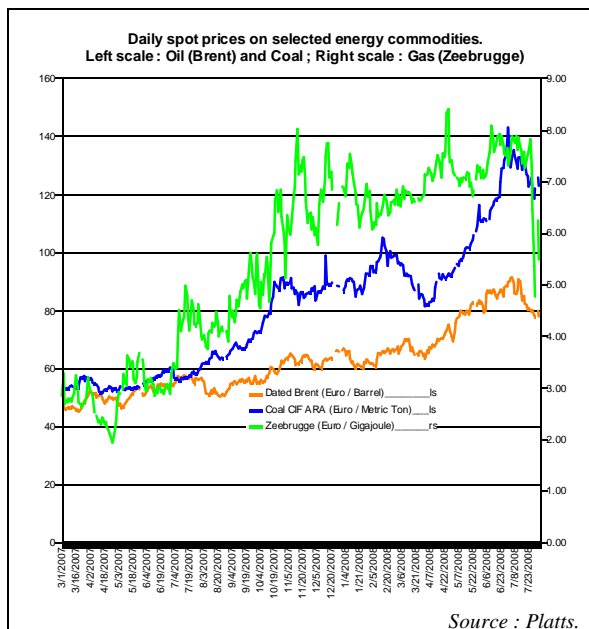
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As shown by the Chart below, marginal producers of electricity¹ have experienced a steep increase in the price of input fuels.

As of the end of June, the prompt price of a metric ton of coal² delivered in the Amsterdam-Rotterdam-Antwerp area (ARA) has jumped more than 60 % since the beginning of the year. Coal prices were slow to follow the general trend set by rising oil prices which could explain the recent rush. But even the "moderate" increase of 10 % of gas prices since the start of 2008 looks substantial and almost certain to put more upward pressure on the current price of electricity.



¹ The marginal producer is the most expensive generator necessary to fulfill the demand for a given period.

² Calorific value of 6 000 kcal / kg.

A.1.1 Day ahead

EU wholesale markets

In June 2008 the Platts Pan European Power index³ reached an average level of € 82,89 / MWh, a new high for this 9 year old index.

Along with underlying factors such as the increase of prices of input fuels and the higher than average temperature (which put strains on the cooling of nuclear reactors), day-ahead prices were influenced by the real-time constraints of the high voltage grids throughout Europe. The latter tend to cause price differences on both sides of congested interconnections.

On some occasions, the low quality of forecasts on available generation capacity has also influenced the prices and volumes, both on the over-the-counter and on the power exchange parts of the day-ahead market.

The total volume traded on the day-ahead segment of the selected countries⁴ eased

³ Platts Pan European Power (PEP index is a demand weighted average of the mid-points of Platts' day-ahead assessments on the day. The PEP includes all European power markets (UK, Spain, Germany, France, Belgium, the Netherlands, Switzerland and Austria). In the case of Spain, as there is no day-ahead assessment the last week-ahead assessment of the previous week is used instead.

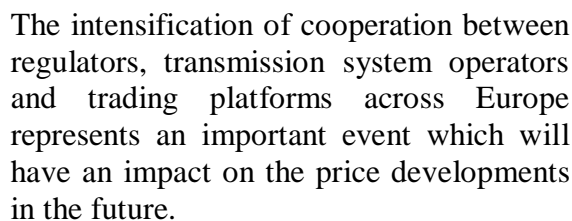
⁴ These are for the time being: Sweden (SE), Finland (FI), Denmark (DK), Germany (DE), the Netherlands (NL), France (FR), Belgium (BE), Austria (AT), Italy (IT), Spain (ES), Poland (PL) and the United Kingdom (UK) and Norway (NO).

the Nordic region to the Central Western European region (CWE), a new initiative was announced during the second quarter of 2008.

The cooperation involves two trading platforms (*Powernext* and *EEX*) and 4 countries from CWE (France, Germany, Austria and Switzerland) which together represent more than a third of European electricity consumption.

The signing parties announced plans to merge their spot and future power activities into dedicated exchanges with the potential of creating a leading pan-European trading platform. They aim to set up a common mechanism for wholesale price formation⁶, together with standardised processes for trading and clearing in order to increase liquidity and attract new market participants.

The observed surge in merger and acquisition activities in the sector of trading platforms represents an important consolidating step to create an integrated and well-functioning electricity market across Europe. The relevance of Markets in Financial Instruments Directive (MIFID) and the Market Abuse Directive (MAD) is currently being assessed by European securities and energy regulators.



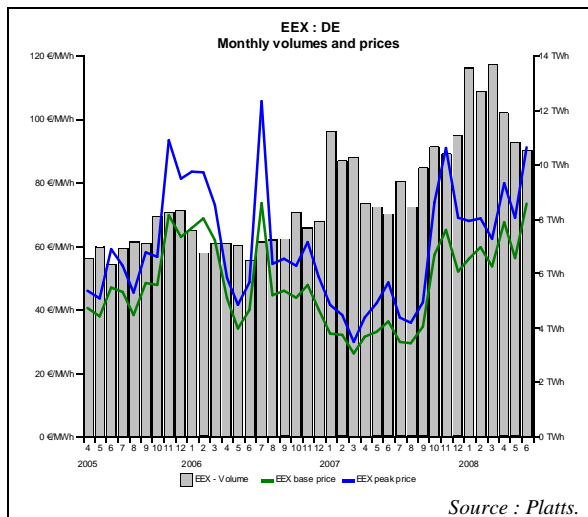
⁵ 260,9 TWh. Source : *Eurostat*.

⁶ The price mechanism is the *flow-based market coupling* which uses a single model to coordinate the allocation of cross-border capacity and traded power. The model presupposes a close cooperation between TSOs and the power exchanges.

Regional markets

Central Western Europe

Germany

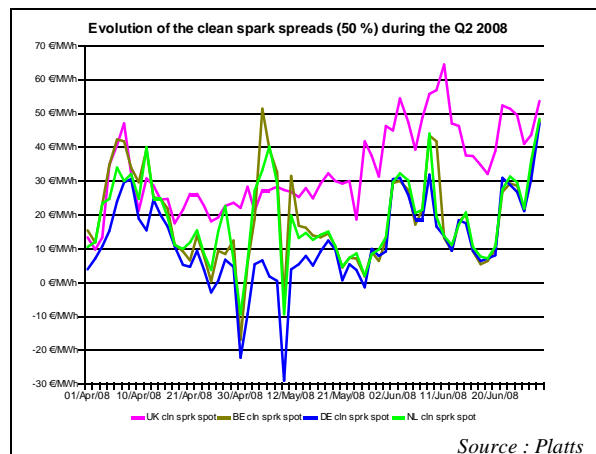


Against the general trend of rising production costs resulting from higher fuel prices, the day-ahead electricity price in Germany stayed in the €50 / MWh – €70 / MWh range during the first quarter of 2008, comparable to the levels reached in the end of 2007. The principal factors behind this development were the strong output from the wind-generated electricity complex (wind feed-in) as well as milder-than-normal temperatures.

Starting from April however, prices have resumed their upward movement. The average spot price for the base product almost doubled in comparison to the previous year. Factors that could explain these different levels were: 1) the increase in the price of CO₂ allowances, causing a significant rise in the marginal costs of

fossil-fuelled power stations⁷. As shown by the next figure, during the month of May 2008, there were several occasions when the clean spark spreads⁸ were even negative for the countries of Central West Europe; 2) the increase in the price of coal, oil and gas⁹; 3) the low level of nuclear power station availability in France and 4) the relatively low level of wind energy feed-in.

The occurrence of periods with negative spreads suggests that the marginal costs are only a subset of all the elements that affect production decisions.



⁷ The forward market price for CO₂ allowances for 2008 averaged €25.66/t CO₂ in the second quarter. The corresponding price in 2007 was on average at €0.41/t CO₂ over the comparative period.

⁸ Spark spreads are indicative prices showing the daily margin between the cost of gas and the equivalent price of electricity. The spark spreads are calculated for gas-fired plants with standard efficiencies of 50% and 60%. This report uses the 50% efficiency.

The spark spread should provide the revenues to remunerate all costs of gas generators other than fuel costs.

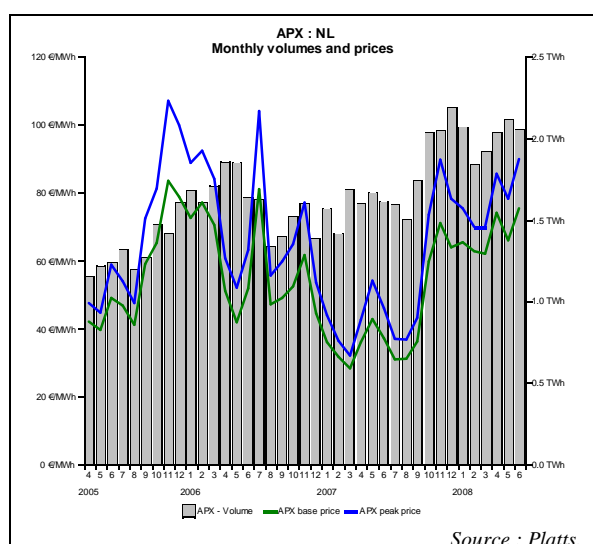
Spreads are quoted for the UK, German and Benelux markets.

Clean spark spreads are defined as the average difference between the cost of gas and emissions, and the equivalent price of electricity.

⁹ Please see Section A.1.2, page 10.

All these developments led to higher electricity prices on the spot market. The short term outlook remains bullish as the level of clean dark spreads in Germany remains below €10 / MWh¹⁰.

The Netherlands

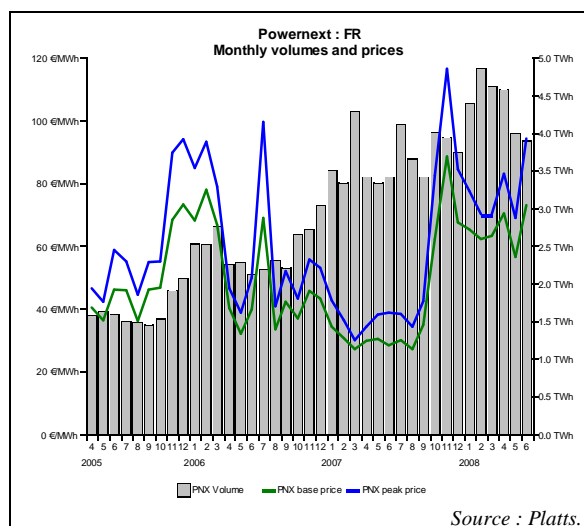


In the Netherlands, wholesale day-ahead prices during the 2nd quarter of 2008 were on average higher than the previous quarter. Higher CO₂ prices, resulting from the start of ETS phase 2 and higher fuel prices put an upward pressure on the price. German wind production and French

nuclear remained strong drivers for the Dutch price.

The low levels of dark spreads during the months of February and March 2008 have placed the coal power plants to the right of the gas power plants on the merit order¹¹. Starting from April and despite the rises of coal and carbon prices (see page 2), the gas power plants were resettled as the marginal producers. As a result, correlation between the Netherlands Title Transfer Facility (TTF) gas prices with wholesale electricity prices has increased.

France



After an exceptional rally that almost tripled the value of baseload from August 2007 to November 2007, electricity prices settled down during the first quarter of 2008 before resuming the general upward trend started back 15 months ago.

Since November 2007, there were no events of recurrent shortages of nuclear capacity that put the French power system

¹⁰ Dark spreads are reported as indicative prices giving the difference between the coal and the power price. Spreads are defined for a coal-fired plant with 35 % efficiency.

Dark spreads are given for UK and Germany, with the coal and power reference price as reported by Platts.

Clean dark spreads are defined as the margin between the price of coal and carbon emission, and the equivalent price of electricity.

The evolution of dark spreads is represented on page 10.

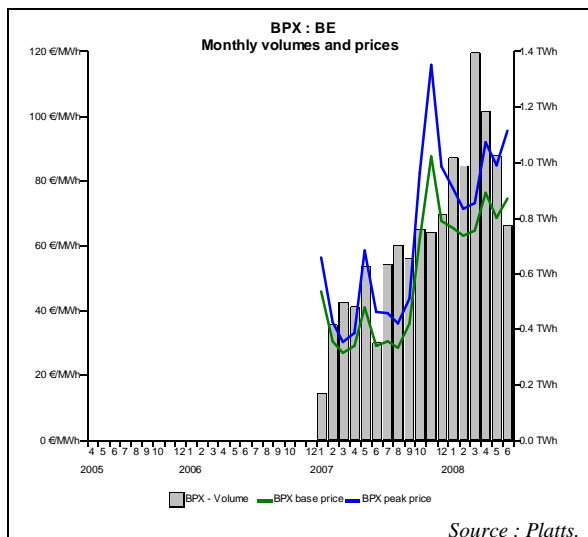
¹¹ Please see Section A.1.2, pp. 10 – 12

into importing position. French day-ahead stayed close to the German, trading at a premium in the €3 – €5 range.

Factors that contributed to the easing of the prices were milder temperature and rising hydro reservoir levels in France and in the neighbouring countries.

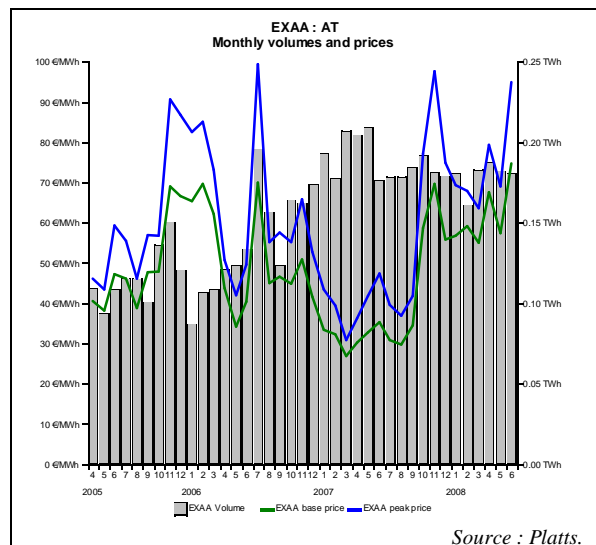
Market participants were on alert as revisions on the day-on-day nuclear availability influenced strongly the day-ahead price during this quarter. The French grid operator RTE publishes a daily availability forecast for the week ahead based on data from electricity producers. During the month of June 2008, there were several episodes of reducing the forecast for availability by more than 1 Gigawatt. It provoked jumps in the day-ahead price as big as €20 / MWh. Operators reduced significantly the liquidity of the market as they seemed to have doubts regarding RTE's forecasts and EDF's data.

Belgium



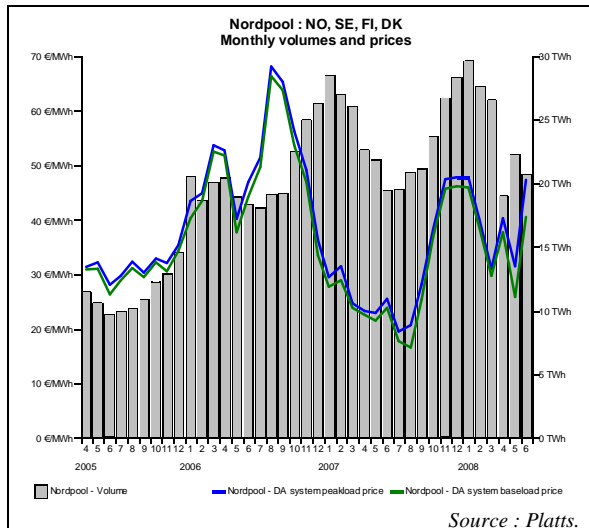
Developments in the Belgian market were influenced as usual by the situation on the wholesale day-ahead markets in France and the Netherlands. The three countries operate a trilateral market coupling (TMC) mechanism and day-ahead prices tend to move in the same direction when interconnection lines are not congested.

Austria



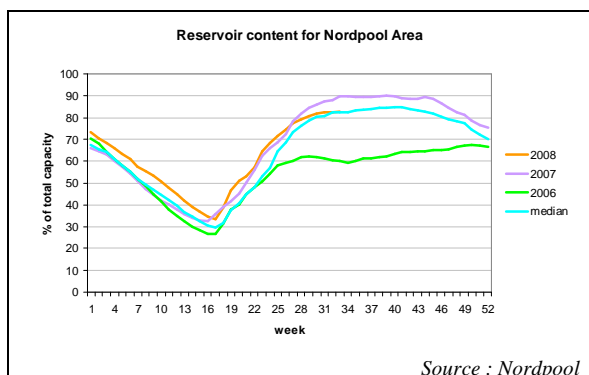
During the second quarter of 2008 Austrian day-ahead electricity prices continued to follow closely those of Germany. The volume traded remained modest as market operators have also the possibility to trade on the German exchange EEX spot deliveries within the Austrian power grid.

Northern Europe



The Nordic countries are enjoying one of the lowest prices throughout Europe. For the observed period, system day-ahead prices stayed mostly in the €30 / MWh – €50 / MWh range.

Price increases due to supply factors were slow to materialize as hydroelectric generators are less exposed to fuel spikes. As a result of a mild temperature and satisfactory levels of reservoir capacity, Nordic prices remained most competitive in Europe.

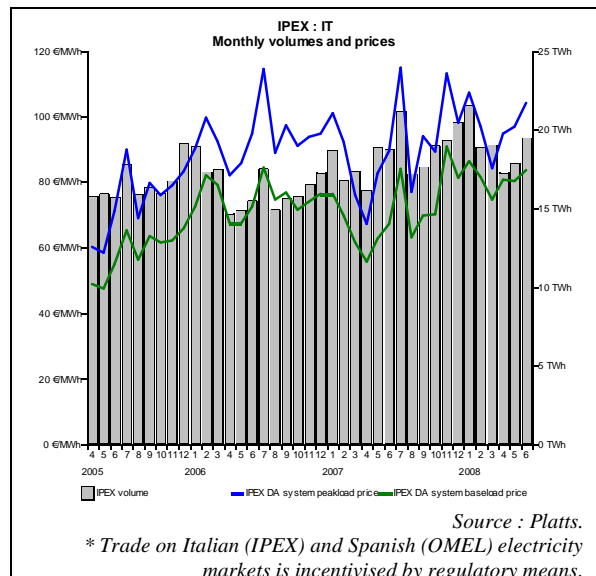


Interconnecting the Nordic area with the Central Western Europe area via market

coupling¹² and via high voltage direct current link¹³ is expected to result in promising developments allowing for more opportunities of arbitrage trading between the price zones.

Apennine peninsula

Italy *



The Italian market represents a relatively closed area of the European electricity market. Its dynamics are rarely influenced by drivers that are common in other areas – like the dark or spark spreads.

The large spread between base and peak prices reflects the tight situation on the supply side and the fact that relatively more expensive marginal power plants from Italy participate in the merit order during peak hours.

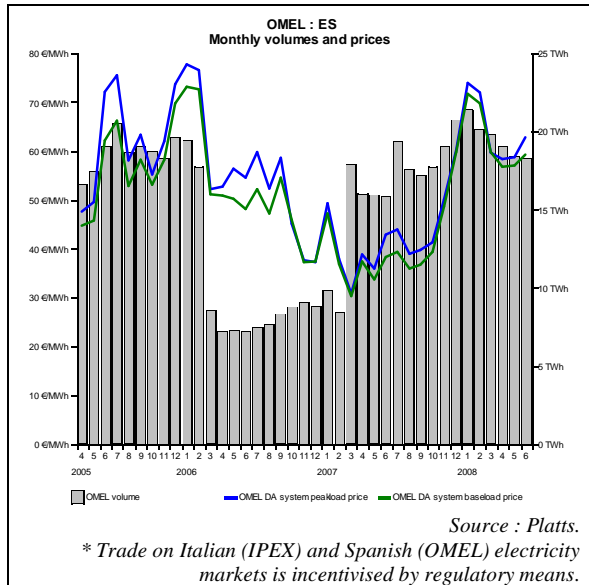
¹² Denmark – Germany.

¹³ The NorNed HVDC seabed cable.

The volumes traded on the IPEX exchange look impressive – almost 20 TWh for the single month of June 2008 which represents about 67% of the monthly consumption. Approximately half of the volume corresponds to the purchases of a single buyer functioning on a quasi obligatory regime – the **Acquirente Unico** (AU). The AU procures electricity to cover the demand of regulated Captive Customers. It applies a single national tariff to final customers. To do so, AU may purchase electricity in the Power Exchange or through Bilateral Contracts.

Iberian peninsula

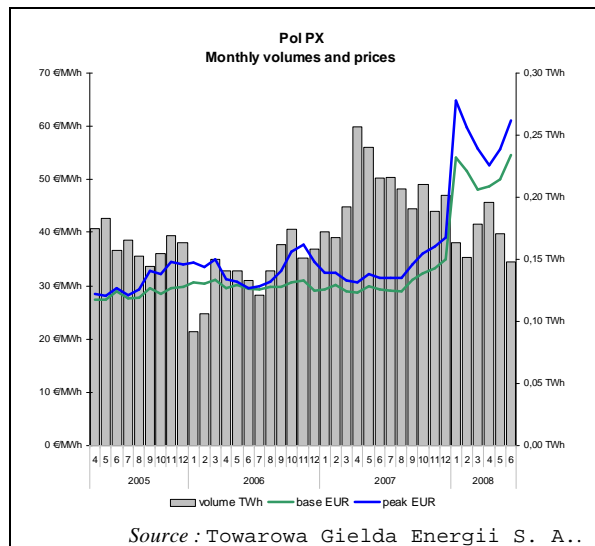
Spain *



Spanish day-ahead prices on the obligatory pool stabilised in the €60 / MWh – €70 / MWh region. It seemed that fears about a possible slowdown of GDP growth outweighed the upward pressure of fuel inputs. Rising hydro stocks and increased availability of French nuclear power were additional factors favouring stable prices.

Central Eastern Europe

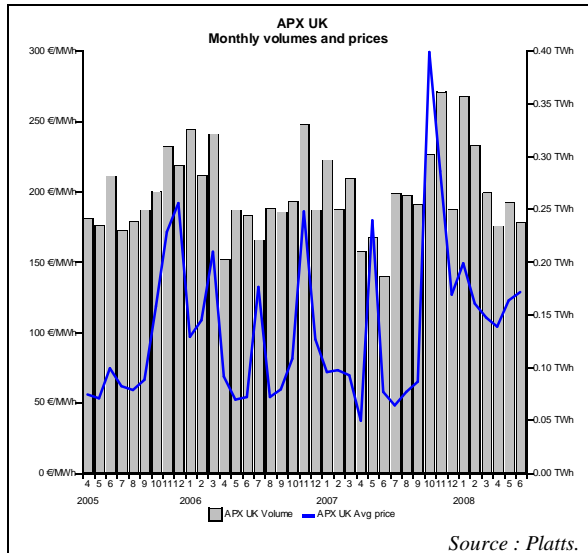
Poland



For the observed period, Polish wholesale prices kept trading at levels similar to the record highs of January and February 2008. Factors that could explain such developments are the appreciation of the Polish zloty with respect to the euro and the rising price of coal and carbon. In the near term, market operators see the Polish market more and more integrated with the German market. On certain occasions, the Polish power system is suffering under loop flows originating from the German grid.

British isles

UK



After the exceptional peak of €300 / MWh in November 2007 (caused in part by the shortage of French exporting nuclear capacity), wholesale electricity prices stabilized around the €150 / MWh level.

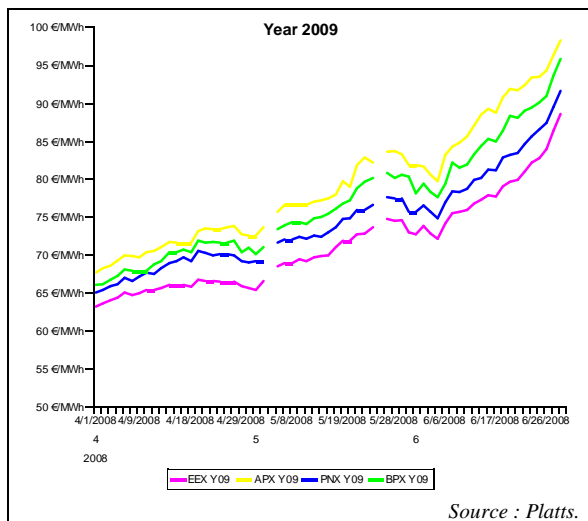
The monthly volumes remained under 0,5 TWh which is hardly representative for the UK day ahead market. The small volumes could also explain the high volatility of the system price.

In March 2008 UK clean dark spreads reached a level below €10 before rising up again.

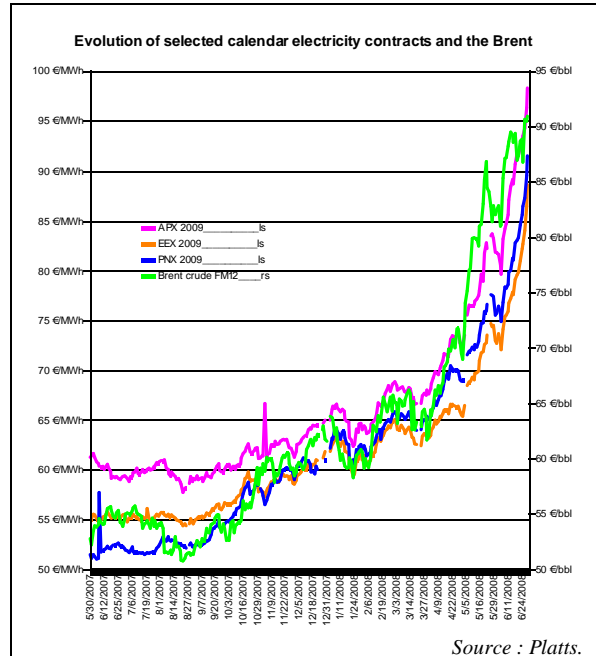
As seen from the Figure on page 4, gas-fired generators have profited from recent market developments. The clean spark spreads in UK have remained above €20 throughout the second quarter of 2008, reaching levels close to €50 at the end of this period.

A.1.2 Forward markets

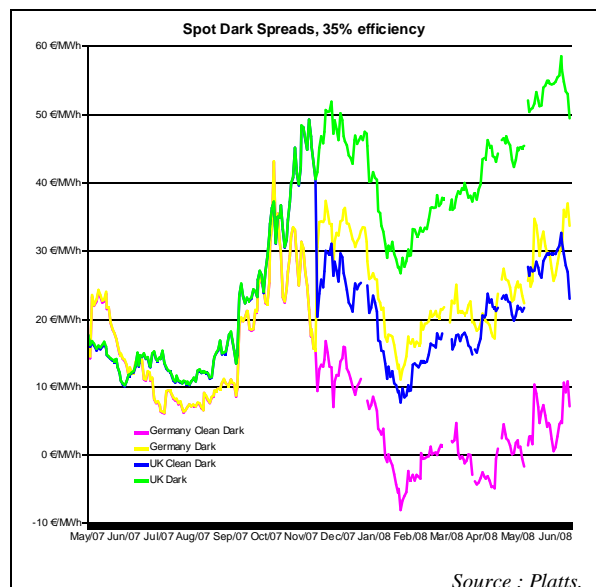
Electricity prices for near term deliveries have increased significantly throughout the second quarter of 2008. In the early days of April, the power exchanges in Central Western Europe were trading a MWh of the calendar 2009 baseload contract in the range of €63 – €68; at the end of June, the exchanges were quoting the same contract at €85 – €95. Similar developments were observed for the future contracts on monthly and quarterly basis.



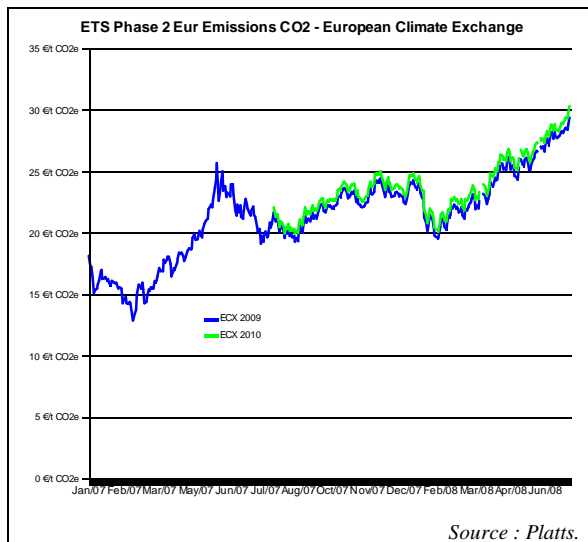
The strong bull run on the electricity contracts could be tracked back to the recent rally on Brent crude oil. As seen from the next Chart, the baseload for calendar year 2009 traded on the French, German and Dutch power exchanges followed closely the evolution of the 12 month ahead Brent for the last year.



The take off of the coal prices was somewhat slower in comparison to other energy commodity prices. For this reason, the dark spreads were in free fall during the first part of 2008 (see the next Chart). The German ones flirted even with negative levels.



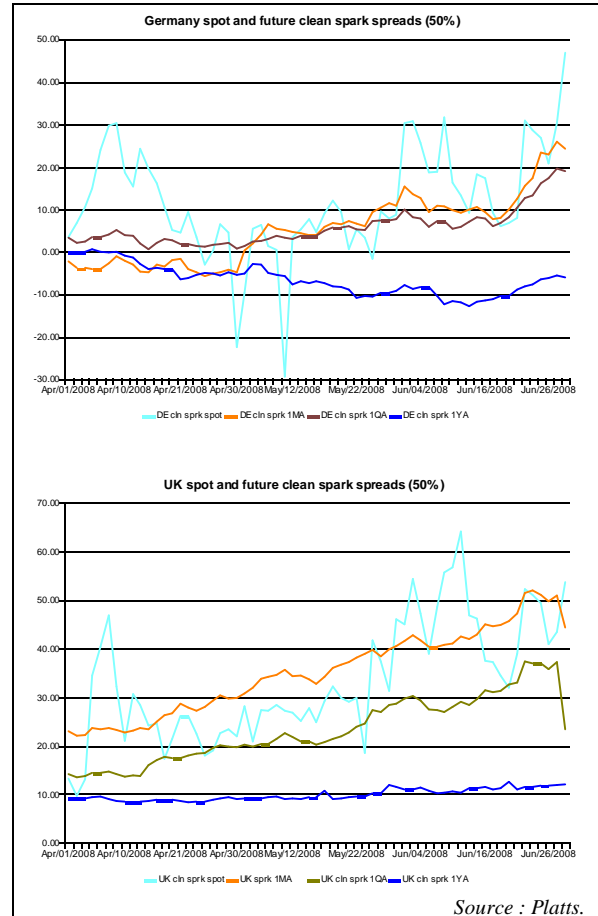
However, starting from March 2008, the dark spreads regained ground to reach more acceptable levels, allowing profits for marginal electricity producers. This upward trend coincided with a rise of the price of the emissions contracts for 2009 and 2010 (see Chart below).



The forward clean spark spreads stayed mostly in backwardation throughout the second quarter of 2008 (the exception being the German month and quarter ahead contracts staring from May 2008).

The price of this spread stayed practically constant at a level of € 10 / MWh, suggesting that market operators are probably marking up the yearly electricity contract with the corresponding gas contract.

In Germany the yearly gas contract, net of emissions, was priced below the corresponding electricity contract (negative clean spark spread), indicating that market operators are expecting the coal-fired generators to remain the predominant marginal producers.

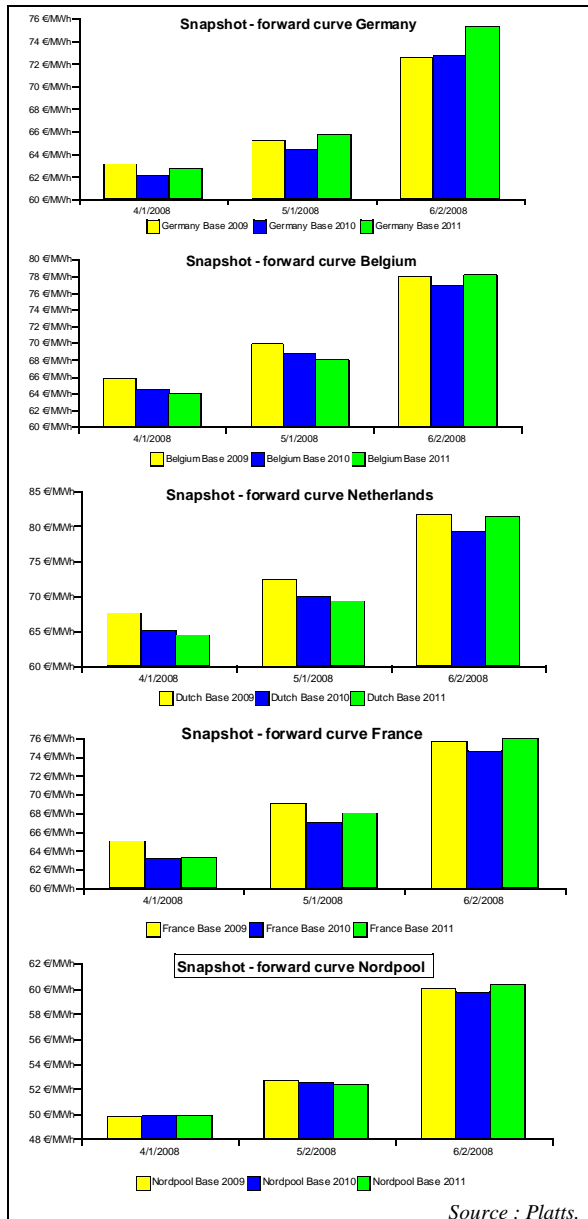


For the bigger part of the observed period, the time structure of the electricity market remained in backwardation¹⁴, implying that the market participants were expecting the current tight situation on the European electricity market to ease off. In three months, prices for delivery of electricity in 2009 have increased by more than €10 – €15, an indication that producers are starting to pass on the price increases of energy inputs.

The upward pressure on electricity markets seems to continue and this may be due to expectations by market participants that spreads need to increase. For the moment,

¹⁴ The biggest exception to this pattern was Germany at the beginning of June 2008.

the spark and dark spreads remain at low levels given that prices for fuel inputs, be it gas or coal have increased more quickly than electricity prices.



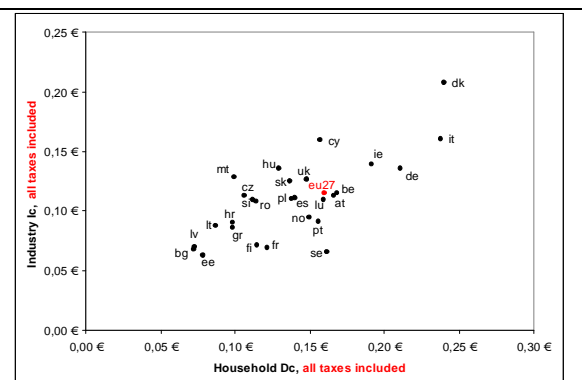
A.2 Retail markets

Retail customers – households and small and medium industries – represent the bulk of electricity consumption in the European Union. Most of them are choosing for the moment the regulated segment of the market, and starting from July 2007 they have had also the possibility to change their supplier in all Member States.

A.2.1 Prices by Member state

The most recent data from Eurostat reveal that similar categories of end consumers of electricity are experiencing very different sets of retail prices.

The next figure illustrates this situation for a particular group of households and industries. It should be noted that these groups are not necessarily representative of the average customer for a given Member State due to different consumption patterns across the EU

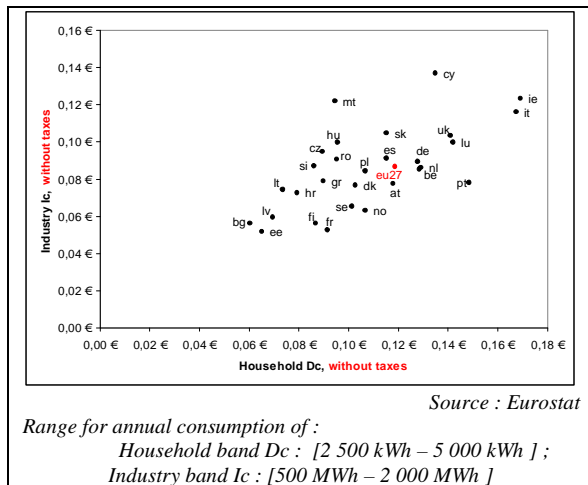


Range for annual consumption of:

Household band Dc : [2 500 kWh – 5 000 kWh] ;

Industry band Ic : [500 MWh – 2 000 MWh]

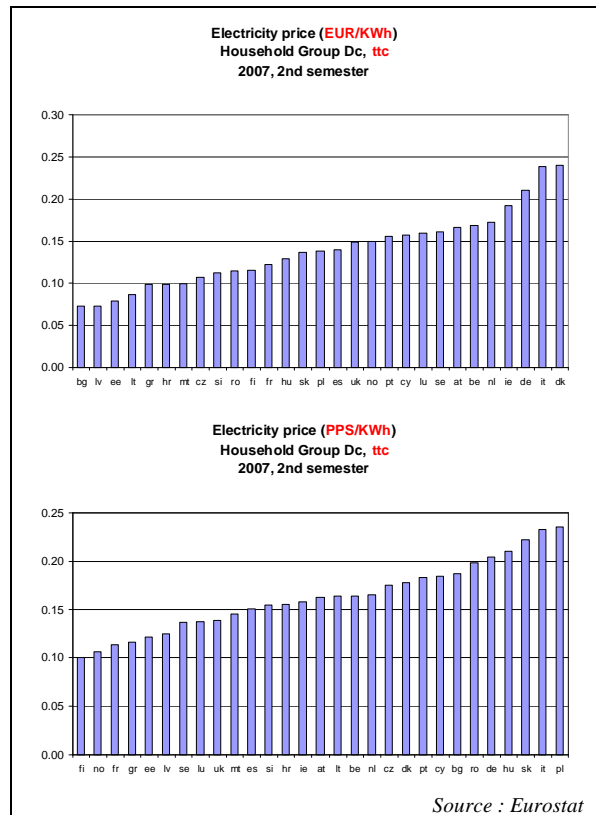
The diversity of retail price sets across Member States remains after factoring out the taxes from the final price.



A.2.1 Cross-panel data on household electricity consumption

The next figure classes the expenses of a typical domestic user in a given Member State in increasing order of €/ kWh and in purchasing power standard per kilowatt hour (PPS / kWh).

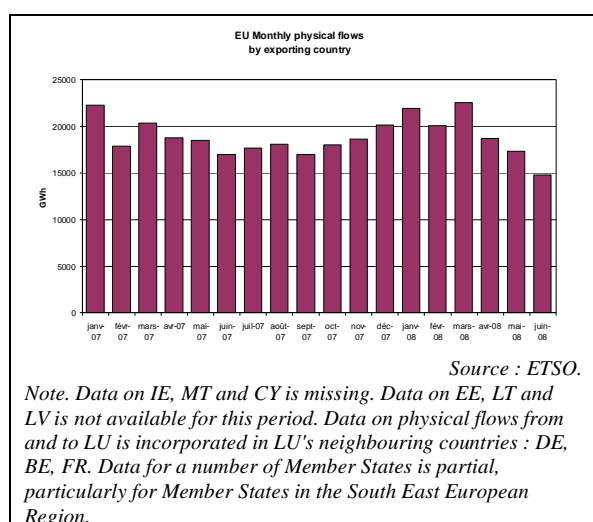
While new Member States are paying one of the lowest prices of a kWh in absolute terms, it appears that many of them are among the most expensive in terms of purchasing power standards. Estonia and Latvia are notable exceptions of this situation.



B. Building the internal market for electricity : cross border trade

During the second quarter of 2008 cross border physical flows of electricity remained at modest levels. While the energy flows in April were comparable to those of the same month in 2007 (a drop of 88 GWh), volumes reduced significantly during May and June 2008. On a year-on-year basis, May flows were down by 6% (more than 1,1 TWh) and those in June by 12 % (more than 2,1 TWh). A part of this drop could be attributed to harsher weather conditions in Central Europe for 2008. For example, Czech exports in May were lower by more than 440 GWh, dropping by a third of their usual levels.

Looking at the broader picture, it seems that for the moment cross border physical flows between Member States are not increasing.

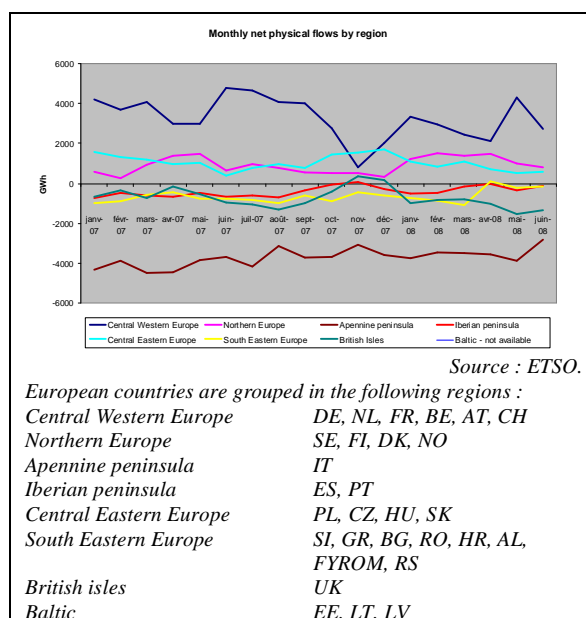


At the same time, significant progress has been made in establishing regional initiatives for trading electricity across the

border. This process should be pursued vigorously in order to bring down prices differentials between Member States. The volume of exchanged energy across the border, along with price differentials, could be used as an element for assessing the level of integration of the wholesale European electricity markets.

The next Figure shows the evolution of net flows by region¹⁵ between January 2007 and June 2008. Traditional surplus countries in the Central Western, the Northern and the Central Eastern regions continued to export electricity – both within and outside their regions.

The drop in the CWE region that occurred in November 2007 seems to be caused by the sharp reduction of French exporting capacity during this period. It can also be noted that Italy is gradually decreasing its import dependency.



¹⁵ As defined in part A of the current report

C. "Focus on ...Power Exchanges"

Electricity power exchanges (PX) are voluntary trading platforms proposing standardised instruments and clearing services to their members. Along with this organised form of trading, there exists a parallel structure for bilateral negotiation, the over-the-counter market (OTC).

OTC offers more flexibility (tailor-made contracts) and brokers' fees tend to be lower than the transactions fees paid by market players on the power exchange. On the other hand, the single counterparty role of the exchange seems to offer more security to its members and the pricing mechanisms are perceived as more transparent. In general, market operators – independent electricity producers, groups of consumers, brokers, traders – are participating both on the OTC and power exchange segment in order to optimize their exposition to risk associated with unfavourable development of energy prices.

The range of the products traded on a power exchange varies from a single hour delivery of electricity on a predefined high voltage grid for the next day (or even the intra day) to an elaborate contract covering periods stretching to a couple of years.

A well functioning power exchange should provide its members with a set of prices that reflect in the best possible manner the most up-to-date information about present and future conditions on the demand and on the supply side of the market. In such a case, the price signal should facilitate the market participant in taking rational decisions.

PX are organised in two interrelated parts – the physical and the forward segments.

The physical segment covers the trade with contracts that are closest to maturity – it could trade day-ahead or even intra-day deliveries of electricity. The physical segment helps PX users to fine tune their generation and load profiles. The segment works in close coordination with the Transmission System Operator who is responsible for the real-time management of the high voltage grid. Price setting is done using two price mechanisms:

- 1) Auction trading where PX members submit bid and ask prices for the 24 hours of the following day. The price results from the intersection of the aggregated supply and demand curves.
- 2) Continuous trading where bids and offers are classed and confronted continuously. This price mechanism is practiced both on the physical and forward segments. It is also used on the markets of other energy carriers such as oil, gas, etc.

The forward segment of the power exchange provides the platform for trading derivative contracts. Members may exchange future contracts or more sophisticated products as options, swaps and so on which are marked to market. As for the physical segment, the exchange also provides clearing services.