

**ACTIVITY REPORT - 2009** 



## Review of 2009

2009 saw the completion of the last phase of the cooperation between Powernext SA and Energy Exchange AG in power trading.

- On 1 January 2009, Powernext SA integrated its power spot market into EPEX Spot SE, which was set up in September 2008 and is jointly held by Powernext SA and EEX AG, each holding 50 percent.
- On 1 April 2009, the derivatives business of Powernext SA was handed over to EEX Power Derivatives AG. Clearing for the French spot and futures market has been transferred to European Commodity Clearing AG
- On 1 September, EEX Power Spot merged into EPEX Spot.

Since then, EPEX Spot has been operating the German/Austrian, French and Swiss Day Ahead and Intraday power spot trading, using a harmonised market model. After the successful launch of EPEX Trading System on the French Auction, the next major step in the integration of the EPEX Spot markets is the setting up of the EPEX Spot Trading System on the German/Austrian and Swiss auctions. EPEX Spot is also working towards the harmonisation of intraday market sectors as well as on plans to set up before the end of 2010 a function that will allow cross-border transactions to be managed in an integrated way.

In 2009, EPEX Spot continued its involvement in market coupling projects. A forum held in Brussels on 9 October brought together key market players in order to present them with the state of progress of the CWE project, the objective of which is the coupling of the German, Belgian, French and Dutch Day Ahead markets. Following the forum, a consultation was held in order to find out the opinion of the stock exchange members involved on a number of important points concerning trading procedures (price limits, Second Auction, fallback procedures etc.). The results of this consultation have allowed the markets to take a step further towards more harmonisation and more efficiency. The technical coupling solution is currently undergoing testing. Periods of simulation involving members of the various markets will take place between 29 June and 7 July and again at the end of August, with a proposed launch date of 7 September.

Moreover, EPEX Spot has been working alongside OMEL and Nord Pool Spot since June 2009 towards the Price Coupling of regions. This project is currently undergoing a test phase across a region representing almost 2/3 of the European power market (Portugal, Spain, France, Germany, Austria, Switzerland, Denmark, Norway, Sweden and Finland). The results of this test phase will be sent to all the market players.



## **1. Market conditions in 2009**

### Meteorological conditions

Globally, 2009 was a hotter year than normal (according to Meteo France, the French weather service). Three countries (Germany, France and Switzerland) recorded a colder than average winter, with the month of January falling largely below seasonal averages, with temperatures of 2.7°C below average in Germany, 1.9°C below average in France and 2.3°C below average in Switzerland.

	France		Germany		Switzerland	
	Recorded temperature in C°	Difference with 30-year average	Recorded temperature in C°	Difference with 30- year average	Recorded temperature in C°	Difference with 30-year average
janv-09	2,40	-1,91	-1,52	-2,67	-1,12	-2,34
feb-09	4,79	-0,55	1,54	-1,18	1,29	-1,48
mar-09	8,09	-0,13	5,49	-0,13	5,43	-0,92
apr-09	12,60	1,95	13,02	3,30	12,32	2,43
may-09	16,05	1,43	14,70	0,68	16,36	1,70
jun-09	18,40	0,50	15,96	-1,10	17,58	-0,45
jul-09	20,61	0,42	19,36	0,14	19,80	0,05
aug-09	21,51	1,51	19,75	0,79	20,68	1,37
sept-09	17,69	0,89	15,94	1,05	16,44	1,40
oct-09	13,20	0,19	9,46	-1,01	10,33	-0,84
nov-09	10,74	2,85	8,26	2,67	7,38	2,02
dec-09	4,83	-0,36	1,15	-0,73	1,67	-0,42

#### Table of temperatures and differences in relation to average temperatures

Source: MetNext



### The production and consumption of electricity

Across all three EPEX markets, 2009 was marked by a net decline in electricity consumption.

### Germany

In Germany, electricity consumption was recorded as 583 TWh in 2009. This figure represents a drop of 5% in relation to 2008 (615 TWh).

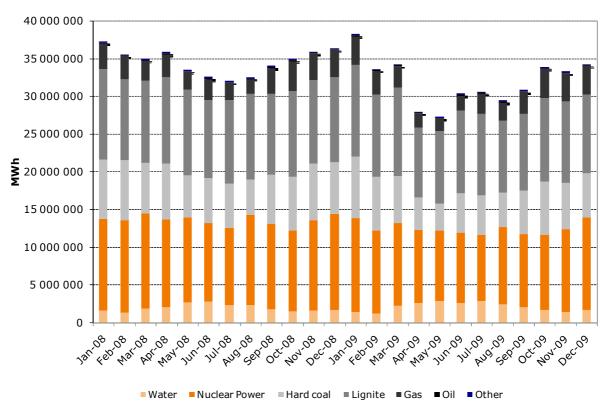
As in 2008, nuclear and coal were the main sources of power production in Germany. According to the BDEW, in 2009 nuclear production was 134.9 TWh (22.6% of total German production), which is 9.3% less than in 2008. Production from coal increased to 255.5 TWh (42.8% of German power production) and 77.0 TWh was produced from natural gas (12.9% of the German energy mix). Installed wind power capacity increased in 2009 from 1,870 MW à 25,780 MW. The production of electricity from wind turbines decreased by 6.9% from 40.6 TWh in 2008 to 37.8 TWh in 2009 due to weaker winds. In addition, 30 TWh was produced from biomass and 6.2 TWh from solar panels. In total, 93 TWh was produced from renewable energy sources (16% of the mix) in Germany in 2009.

Imports were maintained at the 2008 level of 41 TWh, whilst exports decreased from 62.7 in 2008 to 54.8 TWh in 2009.

TWh	2008	2009
Charbon	275,2	255,5
Nucléaire	148,8	134,9
Gaz	86,7	77
Fioul	9,2	12,5
Hydraulique	26,5	24,5
Eolien	40	37,8
Autres	50,3	54,6
Production	637,3	596,8
Imports	40,2	40,5
Exports	62,7	54,8
Consommation	614,8	582,5

Source: BDEW





Production of electricity by type in Germany

#### The chart below shows the evolution of production by type in 2008 and 2009:

Source: EEX Transparency platform

### France

France's gross domestic consumption reached 486 TWh in 2009. According to the RTE (Réseau de Transport de l'Electricité or Electricity Transport Network), domestic consumption corrected to account for climatic variations reached 478.1TWh, which is 1.8% less than in 2008 (following correction due to the impact of 29 February 2008). This development was essentially caused by the reduction in consumption by customers connected to the RTE network (heavy industry). Consumption by heavy industry decreased by 8.6% compared with 2008, a trend that eased off over the last few months of the year. Consumption in the last quarter of 2009 was back up to the same level as for the last quarter of 2008, which is when the economic crisis began, but was down 12.6% overall compared with the last quarter of 2007. The electricity consumption of small and medium sized businesses was down by about 3% in 2009. On the other hand, the consumption of customers with a low-voltage connection (domestic customers, business customers, public services, public lighting, various service industries) continued to rise by 2% compared with 2008. Made up of customers served by the supply networks, the growth recorded amongst private and business customers almost entirely compensated for the reduction in consumption by small and medium-sized businesses.

Historic maximum levels of national power consumption were exceeded on 5, 6 and 7 January 2009 with temperatures of 5 to 8°C below seasonal averages. The maximum of 92400 MW, recorded on 7 January 2009 at 19.00 hours, is still the highest level ever reached with outside temperatures almost

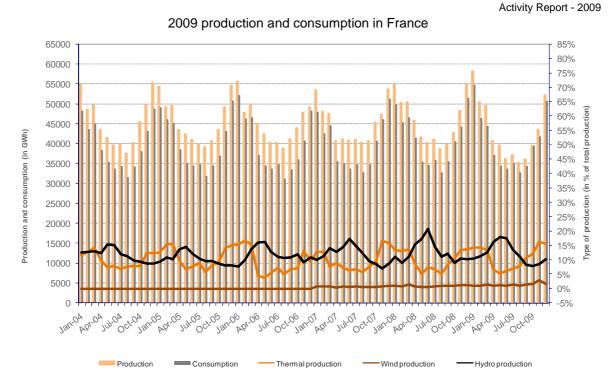
8°C below climatic averages (according to RTE, with out the impact of the economic crisis on industry, this figure would have been higher by approximately 1000 MW).

	Energy TWh	Variation 2008/2009 (%)	Share of consumption (%)
Gross domestic consumption	486,4	-1,6	-
Exchanges balance	25,7	-46,5	-
Energy withdrawn for pump storage	6,7	1,4	-
Net production	518,8	-5,5	100%
Nuclear	390	-6,8	75,1%
Thermal	54,8	3,1	10,6%
Hydraulic	61,8	-9,2	11,9%
Wind	7,8	39,9	1,5%
Other renewables	4,4	7,5	0,9%

#### Power supply 2009: France

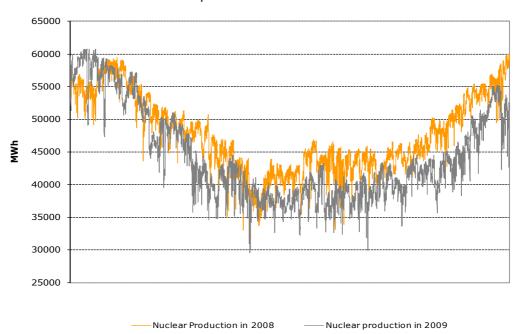
Source: RTE

France produced 518.8 TWh in 2009, 75% from nuclear power (-6.8%), 54.8 TWh from fossil fuel power stations (10.6% of the mix), 61.8 TWh from hydroelectricity (12% of the mix), 7.8 TWh from wind power (an increase of 40% compared with 2008) and 4.4 TWh from other renewable energy sources.



#### Source: DGEC

As for production, the most significant observations were made in the nuclear sector. Production levels fell below the levels observed in previous years for the same period (72% on average in 2009 compared with 80% in 2008). This drop can be attributed to the low availability of these production units.

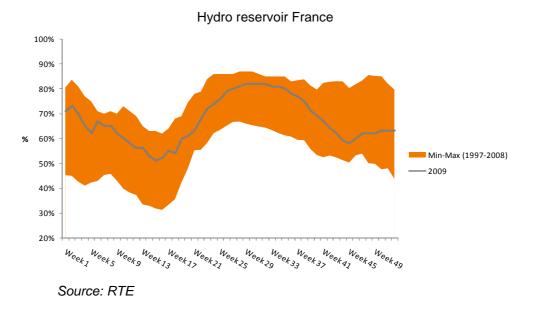


### Nuclear production in 2008 and 2009

Source: RTE



Hydroelectric stocks measured throughout 2009 represented a volume amounting to 63% of the total capacity of the French hydroelectric power system. This level was significantly lower than that observed over the same period for the previous year (73%).



### Switzerland

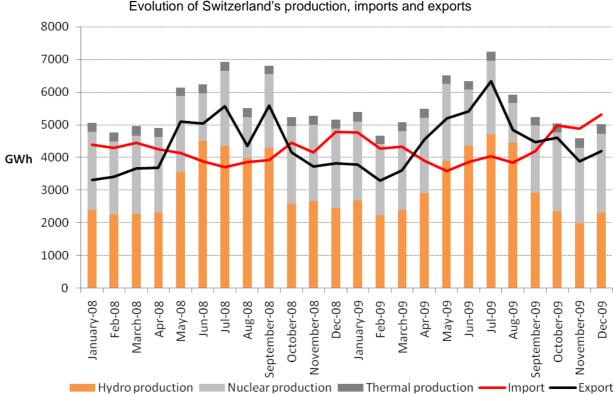
Power consumption in Switzerland dropped by 2.1% in 2009 to 57.5 TWh. National production reached 66.5 TWh, 0.7% less than in 2008. An exchange balance of 2.2 TWh was observed, with imports of 52.0 TWh and exports of 54.2 TWh.

TWh	2008	2009
Hydroelectric production	37.56	37.14
- run of the river	16.69	16.11
- pumped storage	20.87	21.03
Nuclear production	26.13	26.12
Thermal production and others	3.28	3.24
2009 production	66.97	66.5
Pumping (to be deducted)	2.69	2.52
Total	64.28	63.97
Import	50.27	52
Export	51.41	54.16
2009 consumption	63.15	61.81

#### Power supply 2009: Switzerland

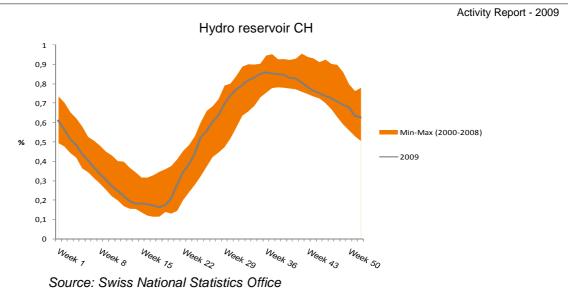
Source: Swiss National Statistics Office

Electricity production (national production – deduction for pumping) dropped by 0.7% in 2009 to 66.5 TWh (2008: 67.0 TWh). Nuclear power production in Switzerland went from 26.13 TWh in 2008 to 26.12 TWh in 2009. The availability of the 5 nuclear power stations in Switzerland was 92.4% in 2009 (92.7% in 2008). Hydroelectric power stations supplied 55.8% of the total power production, followed by nuclear power stations (39.3%) and then thermal and other types of power station (4.9%).



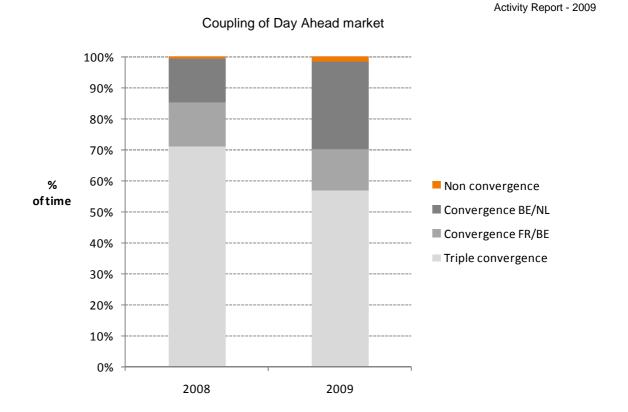
### Source: Swiss National Statistics Office

Hydroelectric power stations produced 1.1% less power than in 2008. "Run of the river" production dropped by 3.5% whilst the production of pumped-storage plants increased by 0.7%. Whilst hydroelectric production increased by 6.9% during the first half of the year, it dropped by 7.9% during the second, "drier" half of 2009. The level of reservoirs was recorded at 60% full in January 2009. This dropped to less than 20% around week 15 (close to minimum levels over the past 10 years), rising again to 82% in week 32.



## Trilateral Market Coupling (TLC)

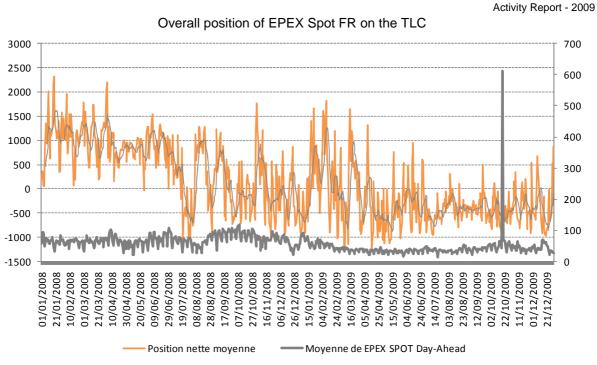
The aggregation of the order books of APX, Belpex and EPEX Spot enables the market offering the lowest price to export electricity to the market that has the highest price. Two situations may arise - either the available transfer capacity is large enough and the prices of both markets converge or it is too small and the prices are different. Market coupling shows that price convergence on the Dutch, Belgian and French stock exchanges happened less often in 2009 than in 2008. In 2009, the prices between the three markets converged 57% of the time, compared with 70% in 2008. Convergence was 70% between France and Belgium (85% in 2008) and 85% between Belgium and the Netherlands (85% in 2008).



Network operators of the zone, Elia, RTE and Tennet make available a significant share of the Available Transfer Capacity (ATC) to the TLC. In relation to 2008, the France-Belgium ATC increased by on average more than 500 MW, that of Belgium-France decreased by more than 40 MW and that of Belgium-Netherlands increased by around 200 MW.

	Average capacity made available to TLC in MW		
Border	2009	2008	
France> Belgium	2552	2016	
Belgium> France	1042	1088	
Belgium> Netherlands	1458	1289	
Netherlands> Belgium	1291	1252	

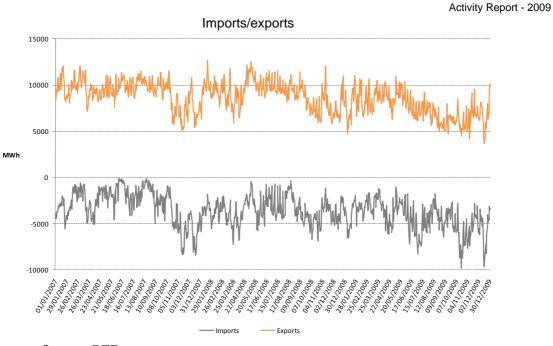
Throughout the whole of 2008, EPEX Spot France and APX were overall in an export position whilst Belpex was importing. Over some periods, however, such as during the months of October and December for example, EPEX Spot FR was clearly in an importing situation. In 2009, the situation was very different on the other hand. EPEX Spot FR was in an import position throughout the entire year from April; APX was in an import position throughout the entire year apart from January, April and the last quarter of 2009. Belpex was in an export position throughout the entire year apart from in January, February and November.



Source: EPEX Spot

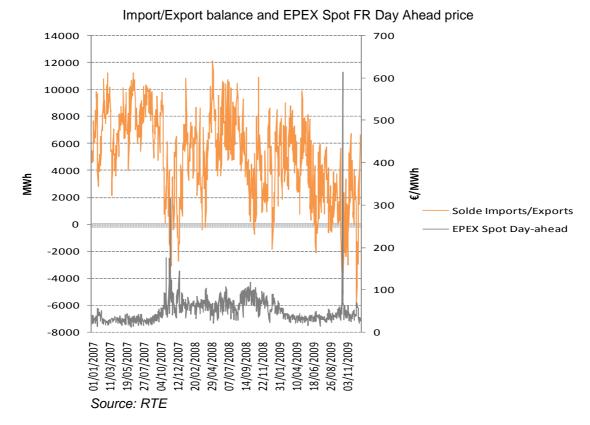
### The situation at the borders

In France, 2009 was a year of a marked increase in imports and reduction in exports, especially during the last quarter. Imports increased by 25% in the last quarter of 2009 compared with the previous quarter (in October, France was a net importer of electricity for the entire month), for the first time in 27 years, and by 42% compared with the same quarter of the previous year. Exports dropped by 4% in the last quarter of 2009 compared with the previous quarter. The net export balance was at 1 TWh in the 4<sup>th</sup> quarter of 2009, a drop of 86% compared with the last quarter of 2008 (net export balance of 7.4 TWh).



Source: RTE

The graph below shows the link between the exchange balance and the EPEX Spot price (Day Ahead):

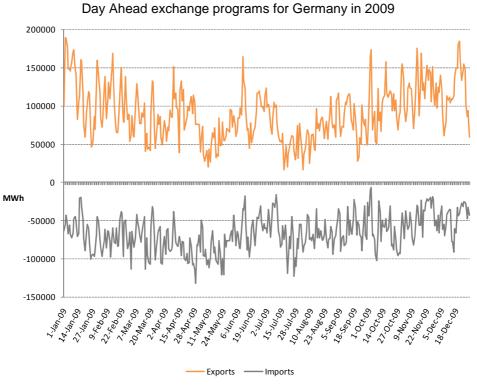


The graphs shown below depict the exchange programs for Germany and Switzerland in 2009. In Germany, exports decreased until May 2009 and took off again from August onwards (although there

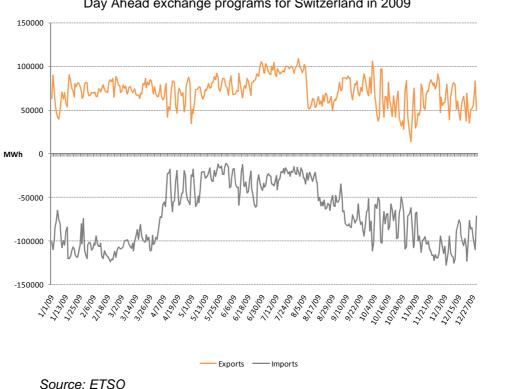


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are peaks during the summer period), whilst imports increased very significantly over the same period. In Switzerland, exports increased during the period from May to August 2009, whilst imports decreased slightly.



Source: ETSO



### Day Ahead exchange programs for Switzerland in 2009

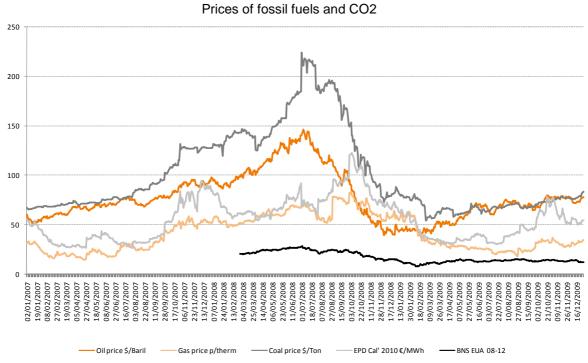
### **Fuel prices**

Whilst in the rest of Europe, power production from "classic" fossil fuels (coal, fuel oil or natural gas) occupies a predominant position, in France it is marginal in terms of nominal output. On the other hand, it is necessary for balancing production / consumption, especially during peak consumption periods. The price of raw energy materials plays a decisive role in the forming of energy prices because these are "settled" on the running costs of the marginal power station.

Prices of the main fuels for energy production, which plunged at the end of 2008 as a result of the current financial crisis and economic situation, remained fairly stable during the first three quarters of 2009. Prices were less volatile in 2009. During the fourth guarter of the year, fossil fuel prices were on the up. Thus, the average gross oil price per barrel (Brent) increased by more than 6%. In the British gas market, considered to be the most liquid in Europe, Gas Year product prices recorded an increase of almost 18% between the third and fourth quarters. Over the same period, prices of coal for delivery in the ARA zone were fairly stable, increasing slightly by 1%. Only CO2 recorded a drop in price:

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Source: Reuters, BlueNext, EPD

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## 2. Price trends on EPEX Spot markets

### Prices on the Day Ahead market

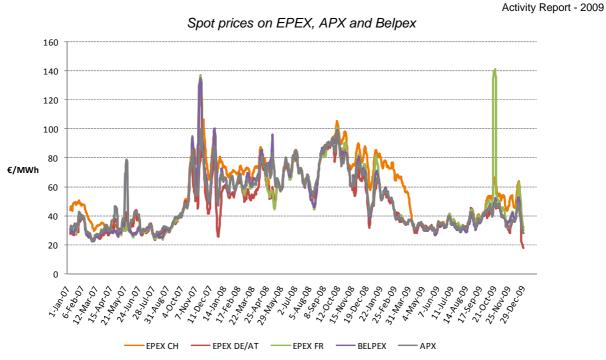
Average prices were  $\in$ 38.85/MWh in the Germany/Austria region,  $\in$ 43.01/MWh in France and  $\in$ 47.92/MWh in Switzerland. Prices were clearly down on 2008 levels (when there was a stark increase in the price of energy raw materials), in spite of the peak of  $\in$ 3000 recorded on EPEX Spot France on 19th October over four consecutive hours. This peak in prices is responsible for the very marked increase in the volatility of French prices recorded for 2009 (73%, compared with 31% in 2008). This episode was the focus of a CRE paper dated 20 November 2009.

Baseload price in €/MWh			
	EPEX DE/AT	EPEX FR	EPEX CH
2008	65.76	69.15	74.38
2009	38.85	43.01	47.92
Volatility			
2008	33%	31%	22%
2009	52%	73%	21%

In the German market, volatility was also more pronounced than the previous year due to the very low level of prices recorded for 4th October and 26th December (€-11.59/MWh and €-35.57/MWh base rate). The level of these negative prices can be explained by the strong production levels from wind power in Germany on these two days. Electricity from renewable sources is prioritised on the network, and so prices can become negative on days of strong winds in order to compensate for the start-up costs of classic power stations. Prices in Switzerland were on average higher than in other European markets, especially in winter. This can be explained by the dominance of power production from hydroelectricity in the Swiss mix. In winter, Swiss electricity production is therefore generally deficit to requirements, which puts a stress on prices.

Generally speaking, all the European markets saw a decrease in their Day-Ahead prices during the period under review. Spreads still exist between European prices. They reflect in particular existing differences between the production capacities of each country, the characteristics specific to the demand of each country and limited interconnection capacities between the countries.

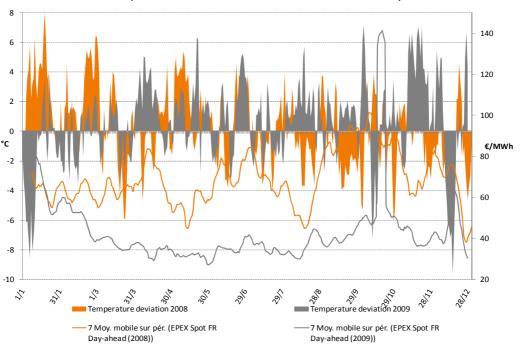
The general drop in prices is linked to the lowering of fuel prices in 2009 and the reduction in demand associated with the economic crisis. Baseload Day-Ahead prices listed on EPEX Spot recorded an average of €37.3/MWh in the third quarter of 2009. They dropped by 93.5% compared with the same period of 2008 (94.8% for peak prices with €50.1/MWh). The drop in prices in Germany was -45.7% over the same period.



#### Source: EPEX Spot, APX, Belpex

Temperature differences and EPEX prices in France:

Price trends on EPEX Spot France were overall in line with the climatic situation. In the graph shown below, we can actually see that price variations were in line with temperature differences (compared with the normal temperature) recorded in 2009. Price variations observed in 2009 were less significant than in 2008, as were the average differences in temperature.

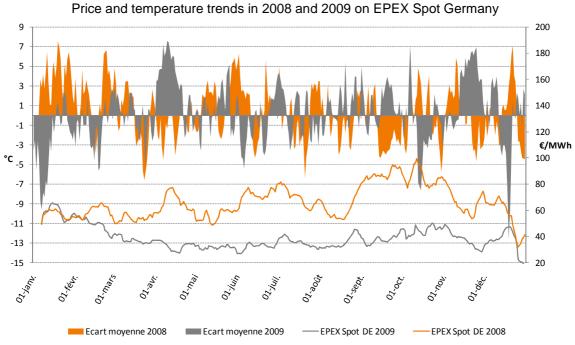


#### Price and temperature trends in 2008 and 2009 on EPEX Spot France



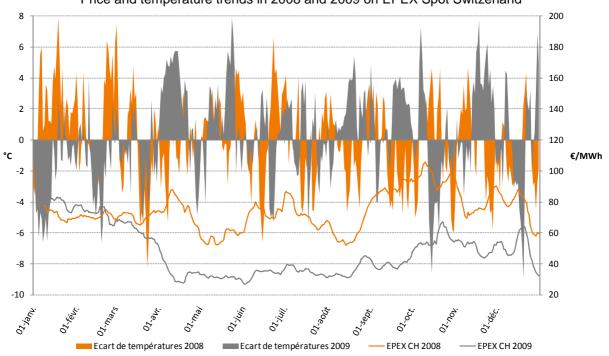
### Source: EPEX Spot, Metnext,

Temperature differences and EPEX prices in Germany:



Source: EPEX Spot, Metnext

Temperature differences and EPEX prices in Switzerland:



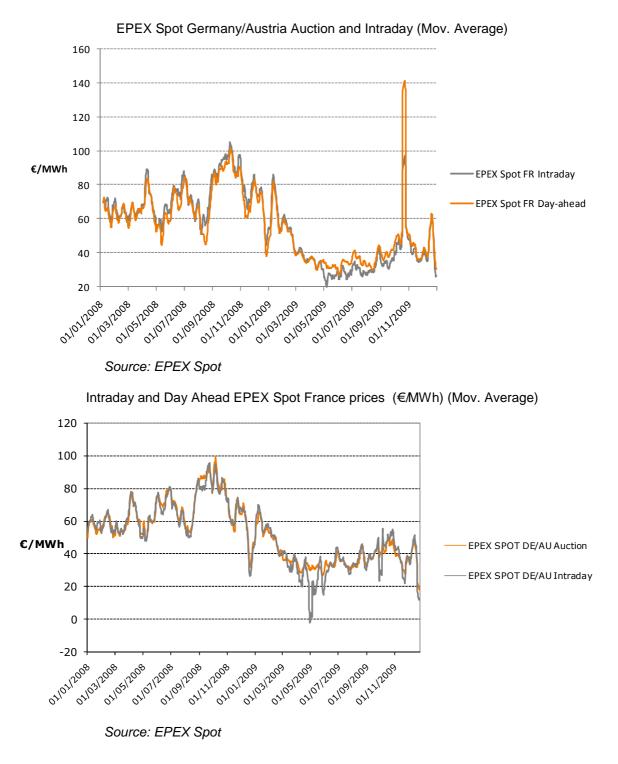
### Price and temperature trends in 2008 and 2009 on EPEX Spot Switzerland

Source: EPEX Spot, Metnext,

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## Prices on the Intraday market

Price correlations remain very high between EPEX Day-Ahead auction and EPEX Intraday continuous market segments.

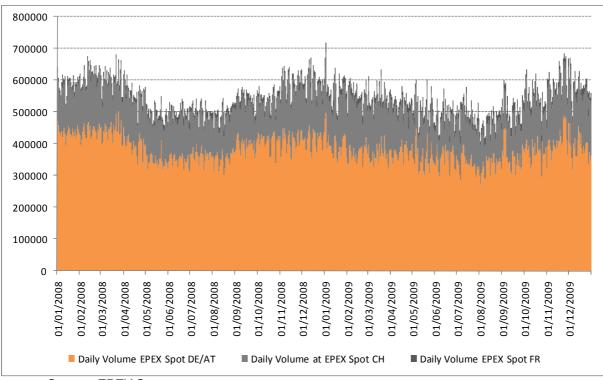




## 3- Volumes traded on the EPEX SPOT markets in 2009

The global volume traded on market sectors at EPEX Spot auction was 196.3 TWh in 2009, which represents a drop of 4% compared with 2008. This fall is essentially due to the reduction in volumes linked with the physical delivery of Phelix forward contracts on the Germany/Austria auction. This drop is itself linked to the decrease in volume of transactions on derivatives markets in Europe, in a context marked by the global economic and financial crisis and by the change in strategy of many market players. In the French and Swiss segments, the volume was on the increase compared with 2008. This increase was particularly pronounced in the Swiss Auction (+30%), which confirms its appeal since its launch in 2007.

MWh	2009	2008	Variation
EPEX DE/AT	135 601 265	145 941 910	-7%
EPEX FR	52 648 347	51 634 901	2%
EPEX CH	8 007 362	6 156 075	30%
Total	196 256 974	203 732 886	-4%



#### EPEX Spot daily volumes

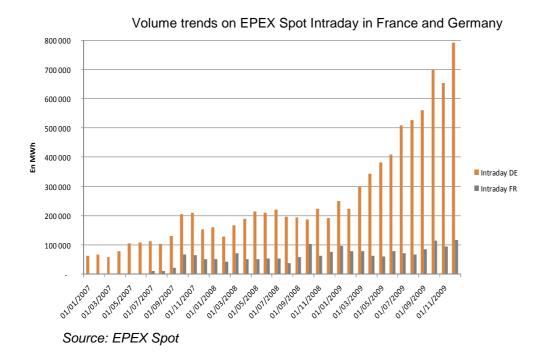
Source: EPEX Spot

On the Intraday market, the French and German segments have been very dynamic. 5,662,044 MWh were traded on the Intraday Germany, which represents an increase of almost 150% on the previous year. This increase can be partly explained by German Transmission System Operators management of renewable energy purchase obligations. On the Intraday France market, transaction volumes



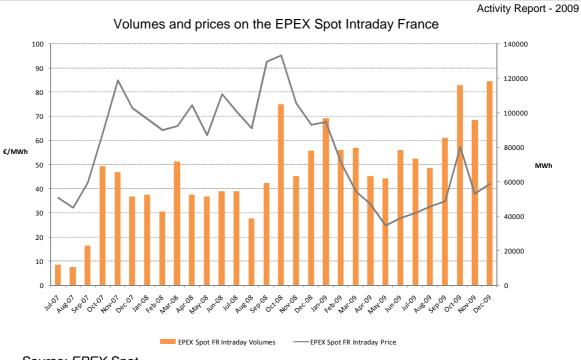
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increased to 1,018,189 MWh, which is 40% more than in 2008. This strong growth is proof of the growing interest of German and French market players in this type of continuous trading, which is closest to the delivery period.

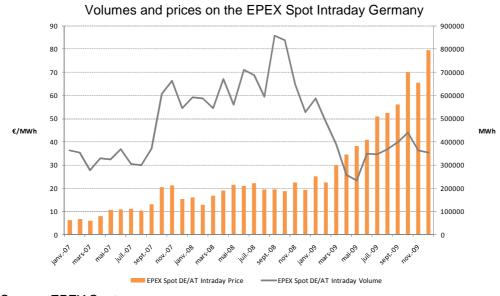


The number of transactions, an indicator of liquid assets, increased from 7,793 contracts in the third quarter of 2009 to 11,483 in the fourth quarter of 2009. A peak of activity (+37% in volume and +34% in number of transactions) was observed in the month of October compared with the previous month.

EPEXSPOT EUROPEAN POWER EXCHANGE



Source: EPEX Spot



Source: EPEX Spot

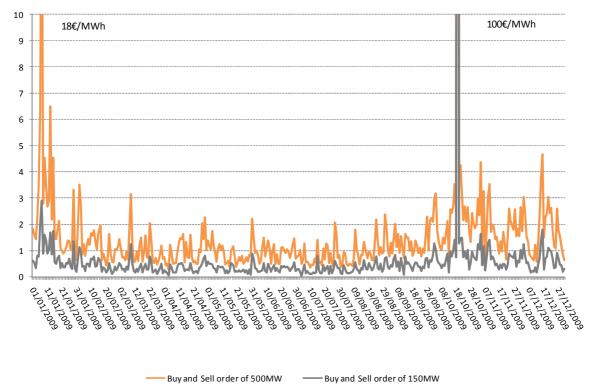


# 4. EPEX Spot liquidity

The continued growth of volumes traded and the increase in the number of active members have contributed towards the increase in liquidity of EPEX Spot markets.

Resilience is a way of measuring the capacity of the market to absorb an additional order without modifying the market price in any noticeable way. The resilience index is more precisely defined by the absolute average of market price variations brought about by sending an additional purchase and sale price-inelastic order in each of the hours of the period.

Price variation resulting from an additional sale/purchase offer on the EPEX Spot Day Ahead Auction



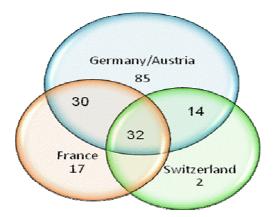
On the **EPEX Spot Day Ahead France**, the evolution of the resilience index on the auction reflects well the quality of price formation. In 2009, the variation in the exchange price for an additional price-inelastic order of 50 MW introduced a variation in the exchange price of  $\leq 1.08$ /MWh, and for an additional price-inelastic order of 500 MW a variation of  $\leq 2.8$ /MWh. These high variations can be explained to a great extent by the peak in prices on 19 October 2009. Without this particular day, the variation in market price for an additional price-inelastic order of 50MW introduced on average a variation in the market price of  $\leq 0.56$ /MWh, and an additional price-inelastic order for 500 MW a variation of  $\leq 1.93$ /MWh.

# **5- EPEX Spot members**



On 31 January 2009, 185 companies were members of EPEX Spot, taking into account all market sectors. Ten new members were admitted to EPEX Spot in 2009. More and more members are requesting to be active across several market areas. On 31 January 2009, 76 companies were members of at least two different market areas and 32 were trading on the three areas of EPEX Spot.

Number of members by EPEX Spot zone



As far as Intraday trading is concerned, 162 companies are authorised to trade in the German segment and 56 in the France segment. 48 members were active in both markets at the same time.

### Abbreviations

ARA	Amsterdam, Rotterdam, Antwerpen
ATC	Available Transfer Capacity
BDEW	Bundesverband der Energie- und Wasserwirtschaft
CWE	Central Western Europe
DGEC	Direction Générale de l'Energie et du Climat
EUA	European Union Allowance
EPD	EEX Power Derivatives
PCR	Price Coupling of Regions
RTE	Réseau de Transport d'Electricité
TLC	Trilateral Coupling



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