COMMISSION
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Functionning of the wholesale electricity, CO_2 and natural gas markets

2014-2015 report

November 2015

Contents

Summary

Start of the operational deployment of REMIT

The wholesale market monitoring activities conducted by CRE at national level fall within the framework of the European regulation known as REMIT (Regulation on wholesale energy market integrity and transparency), relating to integrity and transparency of European wholesale energy markets. In force since December 2011, REMIT prohibits market manipulations and insider trading. It entrusts the Agency for the Cooperation of Energy Regulators (ACER) with the monitoring of all European Union markets, with cooperation from national regulators. These regulators are responsible for carrying out investigations in the event of suspected breaches of REMIT.

CRE, which is heavily involved in all of the work relating to this regulation, is actively taking part in the current phase of operational deployment of REMIT. The date 7 January 2015 marks an operational turning point with the entry into force of the implementing acts concerning the collection of transaction data on the wholesale gas and electricity markets. This regulation sets the key dates of 7 October 2015 and 7 April 2016 for the start of collection by ACER, depending on the type of contracts admitted to trading. For standard transaction data, collection started on 7 October.

Before reporting their transaction data, market participants must first register with ACER through their national regulator, by submitting in particular, information on the corporate and ownership structure of their group and any ties between subsidiaries. As specified by the REMIT regulation, this registration is essential for carrying out transactions in the wholesale gas and electricity markets.

At national level, CRE has the powers necessary for monitoring the wholesale electricity and gas markets, conducting investigations in the event of suspected market abuses and sanctioning any breaches. Within this context, CRE launched, in 2014 and the first half of 2015, 30 requests for information from market participants. Moreover, two formal investigations are in progress, one concerning the electricity market and the other, the gas market.

Wholesale energy market marked by the drop in commodity prices and the loosening of the supply/demand balance both for electricity and gas

Since the start of 2014, the backdrop to CRE's energy market monitoring activities has been a marked decrease in unusual market events and, in particular, the absence of price spikes, episodes for which CRE conducts systematic in-depth analyses.

The drop in commodity prices is general, with, in particular, a decline in the prices of oil, coal and gas. The price of oil dropped significantly from the second half of 2014 against the slowdown of economic growth and the excess supply related to the production of American shale gas and oil.

The climate, which has a specific impact on electricity and gas demand, was particularly mild in 2014, contributing to loosening the supply/demand balance. The mild winter limited the use of heating in Europe, and moderate temperatures in summer reduced the use of air conditioning. These climate conditions had a very significant impact on gas and electricity demand in France, down 16% and 6% respectively compared to 2013.

The increase in the price of CO_2 allowances was an exception compared to the downward trend in the price of commodities. Increasing almost constantly since early 2014, the emission allowance price is currently at around €8 per tonne, compared to periods at less than €3/tonne in 2013. Even though the current level is still low, it reflects the EU's desire to introduce structural reforms (backloading and stability reserve) to reduce the surplus of emission allowances in circulation.

Wholesale electricity market: drop in spot prices, futures prices below the ARENH cap and significant growth in the volumes traded in the market

The wholesale electricity markets in France were marked by a very loose supply/demand balance in 2014. Consumption dropped, particularly because of the climate context, and as regards supply, nuclear resources were highly available. Hydropower generation was also satisfactory. Growth was strong for renewable energy generation (excluding hydropower), which exceeded, for the first time in 2014, the level of fossil thermal energy. It can however be noted that energy price levels enabled gas plants to have periods of profitability, and they were thus re-operated during peak periods in winter 2014-2015.

Under these conditions, the fundamentals of the French electricity system enabled consumption to be met throughout the year with a comfortable system margin, with the use of imports only for optimisation purposes. Nuclear generation was marginal for more than 25% of the time in 2014. This context boosted exports, with a net export balance reaching a very high level (65.1 TWh).

In 2014, these conditions also enabled a 20% drop in spot prices, which stood at an average €34.6/MWh. No positive price spike was observed in the spot market, and negative price episodes were also rare (8 hours in 2014).

In the futures markets, electricity prices also dropped in 2014, especially towards the end of the year. After the stabilisation of calendar prices at around €42/MWh, for which CRE published an analysis in its previous market monitoring report, the prices have been below this level since the end of 2014. Futures prices at the end of September 2015 stood at levels close to €38/MWh, for the one-year, two-year and three-year maturities.

This context contributed to the net reduction in ARENH subscriptions and the growth in volumes traded in the wholesale markets. These volumes increased 70% in 2014, particularly in the last months of 2014 and the first half of 2015. This situation is conducive to the development of wholesale electricity market liquidity and the strengthening of activity and supply competition among participants in the different wholesale market segments.

Wholesale gas markets: drop in prices with, in particular a sustainable reduction in the difference between the North and South zones and the continued development of trading in the wholesale markets

Wholesale gas markets in France were marked, as for electricity, by a drop in consumption related to the climate context, as well as by the general drop in the price of commodities. LNG availability increased in the global markets and European stocks remained at high levels. At global level, these conditions enabled a close alignment of the prices of the different zones, (Europe, Asia, South America), and at European level, convergence of the prices of the different marketplaces.

Spot prices in France fell against this backdrop, particularly during the first half of 2014, and then fluctuated between €20 and €25/MWh. Similar developments were observed in futures prices. Concerns related to the conflict in Ukraine kept winter prices at relatively high levels and encouraged filling of storage, which accentuated the seasonal trend in prices.

Good storage levels, and the return of LNG supplies, served to alleviate congestion at the North-South link as from October 2014. Therefore, the price difference between the North and South zones, which had exceeded €10/MWh on several occasions at the end of 2013 and in 2014, narrowed considerably since October 2014 and now no longer exceeds €2/MWh.

With regard to trading, the merging of the South and TIGF PEGs entered into force on 1 April 2015, to create a single exchange point, the Trading Region South (TRS). Shippers no longer have to

subscribe to capacity at the interconnection between these two zones at the Midi point, with the physical flows between the networks and the calculation of shipper imbalances and their distribution across the two zones being delegated to GRTgaz and TIGF respectively.

The creation of the TRS improves the functioning of the gas market in the south of France and promotes its development. It is a decisive step towards the creation of the single marketplace by 2018.

Deliveries at the PEGS have continued to increase. The volumes traded in organised and brokered markets also continued to grow, although the pace of this growth has slowed down compared to previous years, down from 31% in 2013 to 3% in 2014. The increase observed is related only to futures products. It brought the volumes traded in the wholesale gas markets to a level which exceeds that of consumption for the first time since the opening up of the markets.

Key Figures

1 Electricity market

Table 1: Installed production capacity in France

				Annual variation 2014/2013	
	end 2012	end 2013	end 2014	As percentage	Variation
Installed capacity (GW)	**128.7**	**128.1**	**128.8**	**1%**	**0.7**
Nuclear	**63.1**	**63.1**	**63.1**	**0%**	**0.0**
Hydraulic	**25.4**	**25.4**	**25.4**	**0%**	**0.0**
Fossil fuel-fired	**27.8**	**25.6**	**24.3**	**-5%**	**-1.3**
Coal	7.9	6.3	5.1	-20%	-1.2
Fuel	9.4	8.8	8.8	0%	0.0
Gas	10.5	10.5	10.4	-0.5%	-0.1
Renewables (excl. Hydro)	**12.4**	**14.0**	**16.0**	**15%**	**2.0**
Wind turbines	7.4	8.1	9.1	12%	1.0
Photovoltaic cells	3.5	4.3	5.3	22%	1.0
Thermal renewables	1.4	1.5	1.6	8%	0.1

Source: RTE

Table 2: Production of the different technology sectors in France

				Annual variation 2014/2013				Half-yearly variation H1 2015 / H1 2014	
	2012	2013	2014	As percentage	Variation	H1 2013	H1 2014	As percentage	Variation
Generation (TWh)	**541.4**	**550.9**	**540.6**	**-2%**	**-10.3**	**275.3**	**282.3**	**3%**	**7.0**
Nuclear	**404.9**	**403.7**	**415.9**	**3%**	**12.2**	**208.7**	**210.4**	**1%**	**1.7**
Hydraulic	**63.8**	**75.7**	**68.2**	**-10%**	**-7.5**	**37.9**	**36.3**	**-4%**	**-1.6**
Fossil fuel-fired	**47.9**	**44.7**	**27.0**	**-40%**	**-17.7**	**13.0**	**18.1**	**40%**	**5.1**
Coal	18.1	19.8	8.3	-58%	-11.5	4.1	5.0	21%	0.9
Gas	23.2	19.5	14.3	-27%	-5.2	6.9	11.3	63%	4.4
Fuel	6.6	5.4	4.4	-19%	-1.0	1.9	1.8	-6%	-0.1
Renewables (excl. Hydro)	**24.8**	**26.8**	**29.5**	**10%**	**2.7**	**15.7**	**17.5**	**12%**	1.8
Wind turbines	14.9	15.9	17.0	7%	1.1	9.5	10.2	8%	0.7
Photovoltaic cells	4.0	4.6	5.9	28%	1.3	3.0	3.8	27%	0.8
Thermal renewables	5.9	6.3	6.6	5%	0.3	3.2	3.5	9%	0.3

Source: RTE

Table 3: France imports and exports

				Annual variation 2014/2013				Half-yearly variation H1 2015 / H1 2014	
	2012	2013	2014	As percentage	En valeur	H1 2014	H1 2015	As percentage	Variation
Imports (TWh)	**29.1**	**31.8**	**27.2**	**-14%**	**-4.6**	**13.1**	**18.4**	**40%**	**5.3**
Peakload imports (TWh)	12.6	13.7	11.9	-13%	-1.8	5.8	7.6	31%	1.8
Offpeak imports (TWh)	16.5	18.1	15.3	-15%	-2.8	7.3	10.8	48%	3.5
Exports (TWh)	**73.3**	**79.1**	**92.3**	**17%**	**13.2**	**43.3**	**45.8**	**6%**	**2.5**
Peakload exports (TWh)	25.6	28.1	33.3	19%	5.2	15.6	16.9	8%	1.3
Offpeak exports (TWh)	47.7	51.0	59.0	16%	8.0	27.7	28.9	4%	1.2
Net balance (TWh)	**44.2**	**47.3**	**65.0**	**37%**	**17.7**	**30.2**	**27.4**	**-9%**	**-2.8**

	Yearly values			Yearly variation 2014 / 2013		Half-yearly values		Half-yearly variation S1 2015 / S1 2014	
	2012	2013	2014	As percentage	Values	H1 2014	H1 2015	As percentage	Values
Cross-border exchanges balance, in TWh									
Germany	-8.7	-9.8	-5.9	-40%	3.9	-3.2	-6.3	97%	-3.1
Spain	1.9	1.7	3.6	112%	1.9	0.1	2.3	2170%	2.2
United Kingdom	6.5	10.5	15.1	44%	4.6	7.5	7.3	-3%	-0.2
Belgium	11.9	12.9	16.5	28%	3.6	7.6	8.1	7%	0.5
Italy	15.1	15.3	19.3	26%	4.0	9.2	9.8	7%	0.6
Switzerland	17.6	16.7	16.4	-2%	-0.3	9.1	6.2	-32%	-2.9
Total	**44.2**	**47.3**	**65.0**	**37%**	**17.7**	**30.3**	**27.4**	**-10%**	**-2.9**

Source: RTE

Table 4: Concentration indices (HHI) for the different segments of the wholesale electricity market in France

	HHI - Market concentration index					
	2012		2013		2014	
Wholesale energy market	EDF excl.	*EDF incl.*	EDF excl.	*EDF incl.*	EDF excl.	*EDF incl.*
OTC - block purchases	306	*511*	326	*581*	295	*648*
OTC - block sales	387	*519*	417	*620*	355	*725*
EPEX - purchases	525	*593*	381	*423*	528	*530*
EPEX - sales	437	*533*	506	*650*	342	*818*
Injections						
Generation	4 372	*8 702*	4 128	*8 613*	4 835	*8 907*
VPP	727		1 223		3 489	
ARENH	1 656		1 712		1 656	
Imports	2 110	*1 760*	2 258	*1 835*	1 403	*1 203*
Deliveries						
End-consumer consumption	1 382	*6 866*	1 451	*6 805*	1 773	*6 657*
Grid losses	1 252	*1 177*	1 254	*1 220*	1 337	*1 181*
Exports	1 019	*1 273*	771	*1 036*	1 018	*1 101*

Sources: RTE, EPEX SPOT, Brokers

Table 5: French electricity system injections and withdrawals

	Yearly values			Yearly variation 2014 / 2013		Half-yearly values		Half-yearly variation H1 2015 / H1 2014	
	2012	2013	2014	As percentage	Values	H1 2014	H1 2015	As percentage	Values
Injections, in TWh									
Production without ARENH and VPP	453	478	466	-2%	-11.94	238	270	13%	32.01
ARENH	61	64	71	11%	6.99	37	12	-66%	-24.38
VPP	28	8	3	-64%	-5.44	2	0.3	-78%	-1.24
Imports	29	32	27	-14%	-4.50	13	18	39%	5.17
Withdrawals, in TWh									
End-consumer consumption	455	462	435	-6%	-26.80	225	234	4%	9.41
Water pumping	6.7	7.1	7.9	11%	0.78	4.0	3.6	-9%	-0.34
Exports	74	81	95	17%	13.99	45	47	5%	2.42
Grid losses	34	33	30	-9%	-2.85	16	16	0%	0.07

Source: RTE

Table 6: Spot and futures prices in the French electricity market

	Yearly values			Yearly variation 2014 / 2013		Half-yearly values		Half-yearly variation H1 2015 / H1 2014	
	2012	2013	2014	As percentage	Values	H1 2014	H1 2015	As percentage	Values
Spot market prices, in €/MWh									
Intraday France price	47.0	44.3	35.0	-21%	-9.3	35.3	39.4	12%	4.1
Day-ahead France baseload price	46.9	43.3	34.6	-20%	-8.6	34.6	38.8	12%	4.2
Day-ahead France peakload price	59.5	55.1	43.8	-20%	-11.3	44.0	46.5	6%	2.5
Spread baseload Day-Ahead France-Germany	4.35	5.48	1.87	-66%	-3.61	2.26	8.60	281%	6.34
Spread peakload Day-Ahead France-Germany	6.03	6.40	2.84	-56%	-3.56	3.70	9.50	157%	5.80
Convergence Day-ahead rate France-Germany	64%	47%	51%	-	4%	57%	26%	-	-31%
Future market prices, in €/MWh									
Price M+1 France	47.1	43.2	40.0	-7%	-3.14	37.6	35.8	-5%	-1.8
Spread M+1 France-Germany	2.42	5.41	6.51	20%	1.10	4.76	5.00	5%	0.25
Price Q+1 France	48.7	43.9	42.0	-4%	-1.90	33.0	31.7	-4%	-1.3
Spread Q+1 France-Germany	2.41	5.57	7.60	37%	2.03	0.66	1.32	100%	0.66
Price Y+1 France	50.6	43.3	42.5	-2%	-0.85	42.4	38.8	-8%	-3.6
Spread Y+1 France-Germany	1.31	4.24	7.38	74%	3.14	7.09	6.74	-5%	-0.35
Peak/Offpeak Y+1 ratio									
France	1.26	1.31	1.25	-4%	-0.05	1.28	1.22	-4%	-0.05
Germany	1.23	1.27	1.26	-1%	-0.01	1.28	1.27	-1%	-0.01

Sources: EPEX SPOT, EEX

Table 7: Spot and futures volumes traded in the French electricity market

	Yearly values			Yearly variation 2014 / 2013		Half-yearly values		Half-yearly variation S1 2015 / S1 2014	
	2012	2013	2014	As percentage	Values	H1 2014	H1 2015	As percentage	Values
NEB									
Volumes NEB, in TWh	340	307	339	10%	32.1	165	230	40%	65.0
Ratio NEB/Consumption France	75%	66%	78%	-	11.5%	73%	98%	-	24.8%
Spot market, in TWh	**84.8**	**83.6**	**106.4**	**47%**	**22.89**	**49.1**	**76.9**	**57%**	**27.81**
Volumes of the intraday market EPEX SPOT, in TWh	3.3	4.3	5.2	21%	0.92	2.7	2.7	-1%	-0.02
Share of cross-border FR-GER intraday volumes	70%	61%	72%	18%	0.11	75%	58%	-23%	-0.17
Volumes sur le marché Day-Ahead EPEX SPOT, en TWh	59.3	58.5	67.8	16%	9.34	31.5	49.9	58%	18.36
Volumes on the day-ahead market Brokers, in TWh	22.19	20.79	33.42	61%	12.64	14.87	24.34	64%	9.47
Future market									
Volumes, in TWh	**493.4**	**488.8**	**863.6**	**77%**	**374.8**	**373.2**	**588.9**	**58%**	**215.72**
Share Brokers	97.0%	96.4%	90.4%	-	-6.0%	94.7%	81.5%	-	-13.2%
Share EEX	3.0%	3.6%	9.6%	-	6.0%	5.3%	18.5%	-	13.2%
Transaction number	**53 893**	**51 157**	**89 070**	**74%**	**37 913**	**39 893**	**59 374**	**49%**	**19 481**
Share Brokers	97.3%	96.7%	93.3%	-	-3.4%	96.2%	87.0%	-	-9.2%
Share EEX	2.7%	3.3%	6.7%	-	3.4%	3.8%	13.0%	-	9.2%
Y+1 product									
Volumes, in TWh	96.5	110.6	213.3	93%	102.68	82.6	149.1	80%	66.45
Transaction number	1 955	2 256	4 139	83%	1 883	1 613	3 089	92%	1 476
Q+1 product									
Volumes, in TWh	71.4	47.8	96.3	102%	48.51	27.4	63.2	131%	35.85
Transaction number	1 955	2 256	4 139	83%	1 883	1 613	3 089	92%	1 476
M+1 product									
Volumes, in TWh	91.0	82.7	122.7	48%	39.96	64.3	91.5	42%	27.15
Transaction number	9 141	8 665	16 467	90%	7 802	7 728	13 248	71%	5 520

Sources: EPEX SPOT, Brokers, EEX

Table 8: Clean dark and spark spread and coal

	Yearly values			Yearly values 2014/2013		Half-yearly values		Half-yearly variation H1 2015 / H1 2014	
	2012	2013	2014	As percentage	Values	H1 2014	H1 2015	As percentage	Values
Coal (€/t)	80.5	67.1	58.9	-12%	-8.2	59.9	53.0	-12%	-6.9
Clean Dark spread (future) (€/MWh)	28.6	28.8	26.7	-7%	-2.1	27.7	22.0	-21%	-5.7
Clean Spark spread (future) (€/MWh)	6.0	0.3	0.7	100%	0.3	0.6	0.4	-33%	-0.2

Sources: Heren, ECX, EEX

2 Gas market

Table 9: Fundamentals of the gas market in France

Market fundamentals	Yearly values			Yearly variation 2014 / 2013		Half-yearly values		Half-yearly variation H1 2015 / H1 2014	
	2012	2013	2014	As percentage	Value	H1 2014	H1 2015	As percentage	Value
Entry and exit flows									
Supply (TWh)	699	687	624	-9%	-63	318	340	7%	22
Storage withdrawals	120	124	100	-19%	-24	55	79	42%	23
Imports	573	559	524	-6%	-35	263	262	-1%	-1
Pipeline	466	473	454	-4%	-19	230	230	0%	0
LNG	107	86	70	-19%	-17	33	31	-4%	-1
Production	6	4	0	-96%	-4	0	0	48%	0
Demand (TWh)	699	687	624	-9%	-63	318	340	7%	22
Storage injections	109	116	116	0%	0	54	42	-22%	-12
End-consumer demand	490	497	416	-16%	-81	228	257	13%	29
Distribution consumers	324	335	271	-19%	-64	157	177	13%	20
Trabsmission consumers	166	162	145	-11%	-17	71	80	13%	9
Exports	92	67	87	30%	20	33	38	18%	6
Other	8	6	5	-17%	-1	3	2	-20%	-1
Deliveries at PEGs (TWh)	502	581	585	1%	4	297	343	15%	46
PEG Nord	381	442	452	2%	10	232	274	18%	42
TRS*	121	139	133	-4%	-6	65	69	6%	4
Infrastructure figures									
North-to-south link	89%	94%	94%		0%	100%	88%		-12%
Availability of North-to-south link	78%	77%	86%		9%	88%	82%		-6%
Utilization of Taisnieres H interconnection (Entry)	51%	69%	74%		4%	69%	73%		4%
Utilization of Obergailbach interconnection (Entry)	51%	65%	44%		-20%	45%	36%		-9%
Utilization of Pirineos interconnection (Exit)	90%	76%	75%		-2%	72%	0%		-72%
Stock levels (TWh as at the end of the Quarter)	74	96	83	-13%	-13	83	78	-7%	-6
Avg. Net variation of French stocks (GWh/d)	22	-11	-8	-28%	3	-33	-1	-97%	32
Avg. LNG terminals send-out (GWh/d)	291	236	190	-19%	-46	181	174	-4%	-7
Avg. Exports from France to Spain (GWh/d)	96	115	134	16%	19	124	103	-16%	-20

**For the periods preceding 1 April 2015, the TRS represents the entity formed by the South and TIGF PEGs*

Sources: GRTgaz, TIGF, Storengy – Analysis: CRE

Table 10: Gas prices in France

Prices	Yearly values			Yearly variation 2014 / 2013		Half-yearly values		Half-yearly variation H1 2015 / H1 2014	
	2012	2013	2014	As percentage	Value	H1 2014	H1 2015	As percentage	Value
Spot prices (€/MWh)									
PEG Nord day-ahead (avg.)	25.5	27.6	21.4	-23%	-6.2	22.1	21.5	-2%	-0.5
TRS* day-ahead (avg.)	27.2	30.5	25.0	-18%	-5.5	26.5	22.5	-15%	-3.9
Day-ahead PEG Nord/Sud spread (avg.)	1.7	2.8	3.5	23%	0.6	4.2	0.6	-85%	-3.6
Day-ahead PEG Nord/TTF spread (avg.)	0.5	0.6	0.5	-11%	-0.1	0.5	0.4	-18%	-0.1
Forward prices (€/MWh)									
PEG Nord M+1 (avg.)	25.3	27.2	21.9	-19%	-5.2	22.4	21.3	-5%	-1.1
PEG Nord Y+1 (avg.)	0.0	32.5	25.7	-21%	-6.8	27.0	22.2	-18%	-4.8
M+1 PEG Nord/Sud spread (avg.)	27.3	27.1	24.8	-8%	-2.3	25.3	21.9	-13%	-3.4
Y+1 PEG Nord/TTF spread (avg.)	0.0	4.4	3.8	-15%	-0.7	4.6	0.5	-88%	-4.0
Summer-ahead/Winter-ahead spread (avg.)	3.1	1.6	3.4	115%	1.8	3.5	1.6	-53%	-1.8

**For the periods preceding 1 April 2015, the TRS represents the entity formed by the South and TIGF PEGs*

Sources: Powernext, Heren – Analysis: CRE

Table 11: Gas trading in France

Trading activity	Yearly values			Yearly variation 2014 / 2013		Half-yearly values		Half-yearly variation H1 2015 / H1 2014	
	2012	2013	2014	As percentage	Value	H1 2014	H1 2015	As percentage	Value
Wholesale markets activity in France									
Natural gas exchanged at PEG* (TWh)	362	422	454	8%	32	223	224	0%	1
% of national consumption	74%	85%	109%		24%	98%	87%		-11%
Trading volumes in the French intermediated markets									
Spot market (TWh)	121	153	149	-3%	-5	71	87	24%	17
Intraday	8	16	16	-2%	-0,3	8,2	8,8	8%	0,7
Day-ahead	69	83	88	5%	4,3	41,6	49,8	20%	8,2
Exchange (DA, WD, WE, other spot)	43	70	93	32%	22,5	44,5	57,2	29%	12,8
Brokers (DA, WD, WE, other spot)	78	83	56	-33%	-27,1	26,1	29,9	15%	3,8
Forward market (TWh)	223	292	310	6%	18	140	118	-16%	-22
M+1	67	85	97	15%	12,7	39,6	31,1	-22%	-8,6
Q+1	29	25	32	29%	7,3	12,8	12,6	-1%	-0,2
S+1	64	83	89	7%	6,2	44,6	29,8	-33%	-14,8
Y+1	5	14	13	-11%	-1,5	4,4	2,8	-36%	-1,6
Exchange (all maturities)	37	29	40	36%	10,6	19,6	21,5	10%	1,9
Brokers (all maturities)	186	263	270	3%	6,9	120,4	96,3	-20%	-24,1
Number of transactions in the French intermediated markets									
Spot market (TWh)	64 112	98 407	118 512	20%	20 105	58 268	66 857	15%	8 589
Intraday	9 192	18 462	21 952	19%	3 490	10 870	12 365	14%	1 495
Day-ahead	44 727	64 758	79 680	23%	14 922	39 013	44 242	13%	5 229
Exchange (DA, WD, WE, other spot)	33 351	64 843	90 590	40%	25 747	43 518	54 610	25%	11 092
Brokers (DA, WD, WE, other spot)	30 761	33 564	27 922	-17%	-5 642	14 750	12 247	-17%	-2 503
Forward market (TWh)	3 122	3 911	4 871	25%	960	2 117	1 956	-8%	-161
M+1	1 840	2 475	3 060	24%	585	1 293	1 177	-9%	-116
Q+1	226	227	319	41%	92	103	131	27%	28
S+1	346	385	538	40%	153	282	222	-21%	-60
Y+1	26	75	83	11%	8	25	21	-16%	-4
Exchange (all maturities)	1 015	1 061	1 574	48%	513	764	648	-15%	-116
Brokers (all maturities)	2 107	2 850	3 297	16%	447	1 353	1 308	-3%	-45
Concentration of the natural gas market in France									
Number of shippers active in the market	88	96	106	10%	10	100	103	3%	3
active in Powernext Gas Spot	46	43	54	26%	11	48	83	73%	35
active in Powernext Gas Future	28	33	38	15%	5	35	44	26%	9

**Deliveries resulting from trading in the brokered and organised markets in France*

Sources: Powernext, brokers – Analysis: CRE

Table 12: Trading statistics for the French organised and brokered markets

	2012	2013	2014	H1 2014	H1 2015	Yearly variation 2014 / 2013	Half yearly variation 2015 / H1 2014
Volume traded (TWh)							
Spot	121	153	149	71	87	-3%	24%
day-ahead contracts	69	83	87	42	50	5%	20%
Forwards	223	292	310	140	119	6%	-15%
monthly contracts	80	101	114	46	38	13%	-17%
season contracts	93	139	137	70	55	-2%	-21%
Total intermediated market	345	446	459	211	206	3%	-2%
Number of transactions							
Spot	64 112	98 407	118 512	58 268	66 861	20%	15%
day-ahead contracts	44 727	64 758	79 211	39 013	44 245	22%	13%
Forwards	3 122	3 911	4 871	2 117	1 972	25%	-7%
monthly contracts	2 232	2 866	3 541	1 489	1 338	24%	-10%
season contracts	507	611	783	429	393	28%	-8%
Total intermediated market	67 234	102 318	123 383	60 385	68 833	21%	14%
Most commonly traded volume (MWh/d)							
Spot	1 000 (15%)	1 000 (31%)	1 000 (44%)	1 000 (43%)	1 000 (45%)		
day-ahead contracts	1 000 (15%)	1 000 (33%)	1 000 (48%)	1 000 (46%)	1 000 (50%)		
Forwards	720 (28%)	720 (45%)	720 (40%)	720 (39%)	720 (45%)		
monthly contracts	720 (27%)	720 (46%)	720 (40%)	720 (40%)	720 (43%)		
season contracts	720 (32%)	720 (44%)	720 (41%)	720 (39%)	720 (55%)		
Total intermediated market	1 000 (15%)	1 000 (30%)	1 000 (43%)	1 000 (41%)	1 000 (44%)		

Sources: Powernext, brokers – Analysis: CRE

SECTION I: REMIT and CRE's monitoring activities

Since 28 December 2011, CRE's wholesale energy market monitoring mission has been governed by the European regulation on the integrity and transparency of wholesale energy markets (EU Regulation No. 1227/2011 of 25 October 2011)[1] known as REMIT. A general presentation of REMIT is included in the 2012-2013 report on the functioning of energy markets (in particular the general context of the regulation and the respective roles of ACER and national regulatory authorities) and in the 2013-2014 report also. REMIT prohibits market manipulations and insider trading in the wholesale electricity and gas markets. It entrusts the Agency for the Cooperation of Energy Regulators (ACER) with the monitoring of all wholesale markets in the European Union, in cooperation with national regulators. These regulators are responsible for carrying out investigations in the event of suspected breaches of REMIT. Moreover, ACER can coordinate an investigation group bringing together several regulators for cross-border investigations.

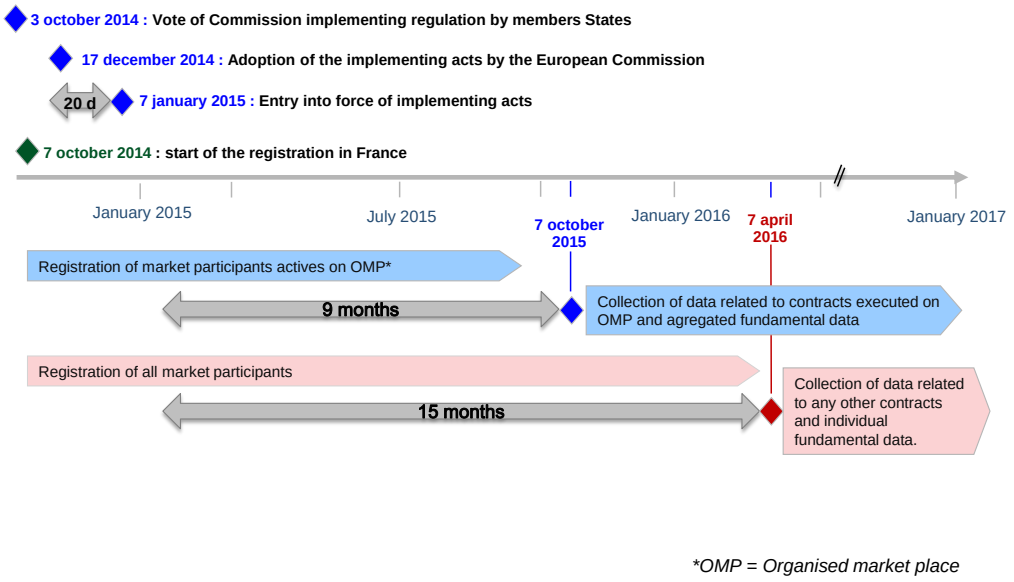
1 Start of the operational implementation of REMIT

CRE, which is heavily involved in all of the work relating to REMIT, is actively taking part in the current phase of operational deployment of the regulation. On 7 January 2015, the implementing regulation[2], which concerns data collection, entered into force. This text marks the start of the operational implementation of REMIT. It specifies that the first phase and the second phase of data collection shall start nine months and fifteen months respectively after its entry into force, i.e. 7 October 2015 and 7 April 2016 (Graph 1) depending on the type of contract. Data collection by ACER started on 7 October 2015 for standard transactions.

[1] See commission regulation (EU) N°1227/2011 of 25 October 2011

[2] See Commission Implementing regulation (EU) No 1348/2014 of 17 December 2014

Graph 1: Schedule for the entry into force and implementation of REMIT



**OMP = Organised market place*

Source: CRE

For the application of the implementing regulation, ACER drafted documents specifying the criteria for transaction data collection which it updates regularly (Transaction Reporting User Manual (TRUM) and Manual of Procedures on transaction and fundamental data reporting (MOP)). They set out the arrangements for reporting in accordance with the implementing regulation. Several other documents provided elements for understanding the regulation and specifying the terms for data collection[3]. Lastly, ACER outlined the registration process for data reporting entities or registered reporting mechanisms (RRM).

CRE is contributing significantly to these different activities: it is actively taking part in the working groups of ACER and the Council of European Energy Regulators (CEER) on market integrity and transparency. In addition, CRE is part of the coordination group set up by ACER for the operational implementation of REMIT in 2015. Bilateral meetings are also organised, particularly with the German regulator.

This work serves to address:

- matters relating to the operational implementation of REMIT, and in particular, the IT and security aspects of data transmission and exchange systems;
- matters relating to the monitoring tools and methods and the coordination of investigations if market abuse is detected.

At national level, CRE organised two information meetings with market participants active in France, on 7 October 2014 and 9 June 2015. Specific meetings were also organised with renewable energy producer associations. These meetings were used to present the REMIT regulation and its operational implementation to market participants (see part 1.3). All of the documents are available on CRE's website[4].

[3] Among these documents: the list of organised market places (OMP), the list of standard contracts, the monthly update of answers to questions most frequently asked by market participants (REMIT Q&A), the REMIT quarterly. All of these documents can be consulted at ACER's REMIT portal.

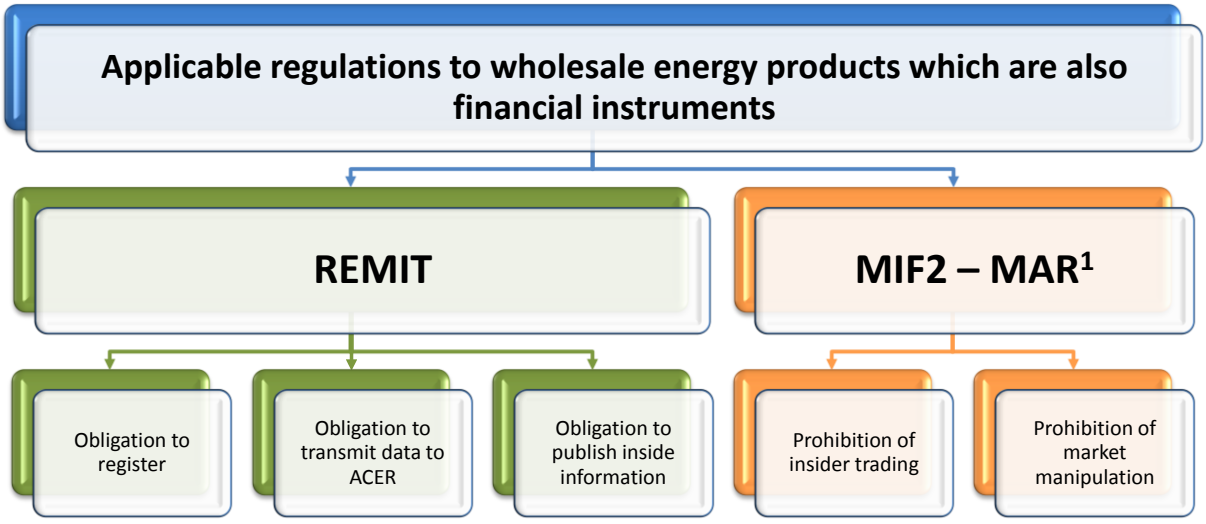
[4] See http://www.cre.fr/marches/remit/presentation

2 REMIT and financial regulation

REMIT interlinks with financial regulation, which applies to transactions involving financial instruments. The directive[5] and the regulation[6] concerning markets in financial instruments (known as MIF II) were adopted in May 2014 and will enter into force in 2017. The MIF II Directive defines in particular the list of financial instruments. It qualifies CO_2 emission allowances as a financial instrument[7] and provides for the exemption of wholesale futures energy products traded in an organised trading facility and that must be physically settled[8]. European Union Member States are currently transposing the articles of the financial directives.

The prohibition of insider trading (Article 3) and of market manipulations (Article 5) under REMIT do not apply to wholesale energy products which are also financial instruments according to financial regulation[9]. For these instruments, financial regulation applies (MIF II and the market abuse regulation (MAR). However, REMIT remains applicable as regards the obligation to publish inside information (Article 4) and to report information to ACER (Article 8).

Graph 2: Wholesale energy products and financial regulation



[1] MAR = Market Abuse Regulation

[2] Except for derivatives that are transmitted to trade repositories under EMIR

Sources: (EU) Regulations 600/2014 and (EU) No 1227/2011 – Analysis: CRE

Lastly, in March 2013, technical standards entered into force concerning the European market infrastructure regulation (EMIR)[10], specifying market participants' obligation to report derivative contracts to trade repositories. Transactions reported within the framework of EMIR and which

[5] Consult the Directive (EU) 2014/65/EU of 15 May 2014 on markets in financial instruments and amending Directive 2002/92/EC

[6] Consult the Regulation (EU) 600/2014 of 15 May 2014 on markets in financial instruments and amending Regulation (EU) No 648/2012

[7] See Annex I, section C (11) of Directive 2014/65/EU

[8] See Annex I, section C (6) of Directive 2014/65/EU

[9] See Article 1(2) of REMIT ((EU) No 1227/2011)

[10] Consult Commission Delegated Regulation (EU) No 153/2013 of 19 December 2012 supplementing Regulation (EU) No 648/2012 of the European Parliament and of the Council with regard to regulatory technical standards on requirements for central counterparties

concern wholesale energy products shall not be subject to double reporting obligations according to REMIT provisions[11].

At national level, the interaction between REMIT and financial regulation is the subject of much discussion between CRE's and AMF's (French financial authority) departments within the framework of the cooperation agreement between the two institutions.

3 Start of registration at national level and collection of data by ACER

According to REMIT, market participants must be registered before reporting their data. Registration is a pre-requisite for entering into transactions in the wholesale energy markets. However, it is important to note that the registration of participants in no way constitutes authorisation or licence to carry out transactions in the wholesale energy markets.

In concrete terms, market participants must first register with the national regulatory authority (NRA) of the Member State in which they are established. If they are not established in a country in the European Union, they must register with the NRA of the Member State in which they are the most active. They must quickly report to the NRA any change in the information in the register[12]. It is in fact market participants that are responsible for the information contained in the national register.

CRE chose to use the Centralised European Register for Market Participants (CEREMP) developed by ACER. The information in its register enables ACER to establish a European register of market participants. This European register is regularly updated and part of the information it contains is made public by ACER, in particular, the name of each market participant, its ACER code and its website devoted to the publication of any inside information.

Market participants must fill in the information described in ACER's decision of 26 June 2012[13], broken down into five sections:

1. general information related to the market participant;
2. personal information concerning natural persons linked to the market participant (responsible of trading activities, responsible of operational decisions, contact for communications);
3. data related to ultimate controller or beneficiary;
4. data related to the corporate structure at European level (parent undertaking, subsidiary, etc.);
5. data related to parties delegated by the market participant for reporting its data to ACER.

CRE opened the national registration system on 7 October 2014 and, as mentioned above, held information meetings with market participants on that same day, then on 9 June 2015, as well as two specific meetings with renewable energy producer associations. These meetings served to present the CEREMP registration system as deployed by CRE and to answer the practical questions asked by market participants on the registration and data transmission obligation (see below). CRE's website contains a specific page that provides up-to-date information on REMIT[14], through which the registration platform can be accessed. As at 7 October 2015, 90 market participants were registered with CRE.

[11] See Article 8(3) of REMIT

[12] See Article 9(5) of REMIT

[13] http://www.acer.europa.eu/Official_documents/Acts_of_the_Agency/Directors%20decision/ACER%20Decision%2001-2012.pdf

[14] See the relevant pages: http://www.cre.fr/marches/remit

4 Data collection in two stages

The implementing regulation sets out the type, timing and frequency of the data that must be reported by market participants. Data collection shall be conducted in several stages.

As from 7 October 2015, the following shall be collected:

- standard contracts and transactions carried out in organised marketplaces, including orders to trade (excluding transmission contracts);
- fundamental aggregated transparency electricity and gas data (transmitted in particular by system operators).

As from 7 April 2016, the following shall be collected:

- transactions in standard contracts entered into outside the organised market;
- transportation contracts, including orders to trade;
- non-standard contracts and transactions related to non-standard contracts;
- the other individual fundamental electricity and gas data.

The following shall be collected ad hoc and upon a reasoned request by ACER[15]:

- intragroup contracts and transactions;
- contracts for the physical delivery of electricity produced by a single production unit with a capacity equal to or less than 10 MW or by several production units with a combined capacity equal to or less than 10 MW;
- contracts for the physical delivery of gas produced by a single production unit with a capacity equal to or less than 20 MW;
- contracts for balancing services in electricity and natural gas.

The data fields to be filled in are presented in the four tables of the Annex to the implementing regulation. The content of these fields is specified in the technical documents TRUM, MoP, standard contracts and list of organised marketplaces.

The sending of data to ACER is done by market participants themselves or through reporting entities. The data must then be re-transmitted by ACER to the NRAs and any other competent authority (financial, competition authorities, etc.), complying with strict data confidentiality and protection clauses.

Lastly, REMIT specifies that the collection of data by ACER shall be without prejudice to the NRAs' right to collect additional data for national purposes[16].

[15] See ACER's no-action relief letter concerning the deadline of 31 December 2016 for reporting this data

[16] See recital (17) of REMIT

5 A national monitoring framework specified by legislative and regulatory provisions

At national level, the Brottes law of 15 April 2013[17] amended the French Energy Code tasking CRE with ensuring compliance with REMIT, and within CRE, it empowered its dispute settlement committee (CoRDiS) to sanction breaches of REMIT[18]. Moreover, the procedural framework specific to CoRDiS was specified by Decree No 2015-206 of 24 February 2015 relating to CRE's dispute settlement committee. The legal framework therefore is now complete and fully operational and enables CRE, within the framework of REMIT, to:

- monitor the wholesale markets;
- conduct investigations in the event of suspected market manipulation;
- sanction any breaches.

Within the framework of its wholesale market monitoring mission, CRE may be required to conduct analyses following the detection of an unusual or suspicious market event. This detection may be done by:

- CRE's wholesale market monitoring department;
- persons professionally arranging transactions, who must immediately alert the national regulatory authority if they suspect a breach of Articles 3 and 5 of REMIT. In that regard, a notification platform was set up by ACER for all notifications of suspected breaches of REMIT[19];
- ACER as part of its market monitoring activities. In the event of suspected market abuse or non-disclosure of inside information, ACER may request CRE to launch an investigation. If ACER considers that a potential breach of REMIT has a cross-border impact, it may establish and coordinate an investigation group comprising the NRAs concerned, as well as representatives of financial regulators or of any other relevant authority;
- any other player that may suspect a breach of REMIT.

As soon as CRE detects or is informed of an unusual event, it shall conduct an in-depth analysis to determine if there has been a breach of REMIT or if the event may seriously affect the functioning of the energy markets. When it has been decided to launch an investigation, the CRE chairman designates agents in charge of conducting that investigation.

In 2014, CRE sent 19 requests for information to operators within the framework of in-depth analyses. In the first half of 2015, it launched 11 requests for information from market participants.

Two formal investigations are in progress, one concerning the electricity market and another concerning the gas market.

[17] Law No 2013-312 of 15 April 2013 aimed at preparing the transition to a greener energy system and with several provisions on the pricing of water and wind turbines

[18] See Articles L. 131-2 and L. 134-25 of the French energy code.

[19] See the suspicious transactions reporting platform

SECTION II: Context and energy market trends

Since the start of 2014, CRE's monitoring activities have been conducted within a context of energy markets marked by the general drop in commodity prices, particularly in the price of oil, coal and gas. The drop in the prices of these fuels is a decisive element determining the price of electricity generation.

The climate, which has a specific impact on electricity and gas demand, was particularly mild in 2014, contributing to loosening the supply/demand balance. Under these conditions, there was a net reduction of unusual market events, and in particular, no price spikes, episodes for which CRE carries out systematic in-depth analyses.

The increase in the price of CO_2 allowances was an exception to the downward trend in the price of commodities. Even though the current level is low (€8/tonne), it reflects the EU's desire to introduce structural reforms to reduce the surplus of allowances in circulation.

1 A year marked by the major drop in commodity prices

Since the second half of 2014, there has been a general drop in the price of commodities (Graph 3), reflecting the slowdown of global growth[20].

The drop in oil prices as from the second half of 2014 was particularly sharp. After reaching levels higher than €80/b in summer, the price per barrel of Brent started to decline sharply as from July, reaching at the end of January 2015 its lowest price since summer 2009 (€40/b). Prices then experienced a correction and ranged between €50/b and €60/b for the rest of the first half before dropping again in summer 2015 (Graph 4). The drop in oil prices is related to the economic slowdown and, from the supply perspective, to the production of American shale oil[21], and the decisions made by OPEC countries[22].

Coal, apart from reasons related to global slowdown, has seen a specific drop in demand for several years now because of the development of American shale gas and therefore, less use of coal for electricity generation. The drop in coal prices has been regular, and measured since the start of 2013, has reached 45%. The drop in the price of oil, measured since the same date is 50%, but as mentioned above, has been observed especially since the second half of 2014 (Graph 5).

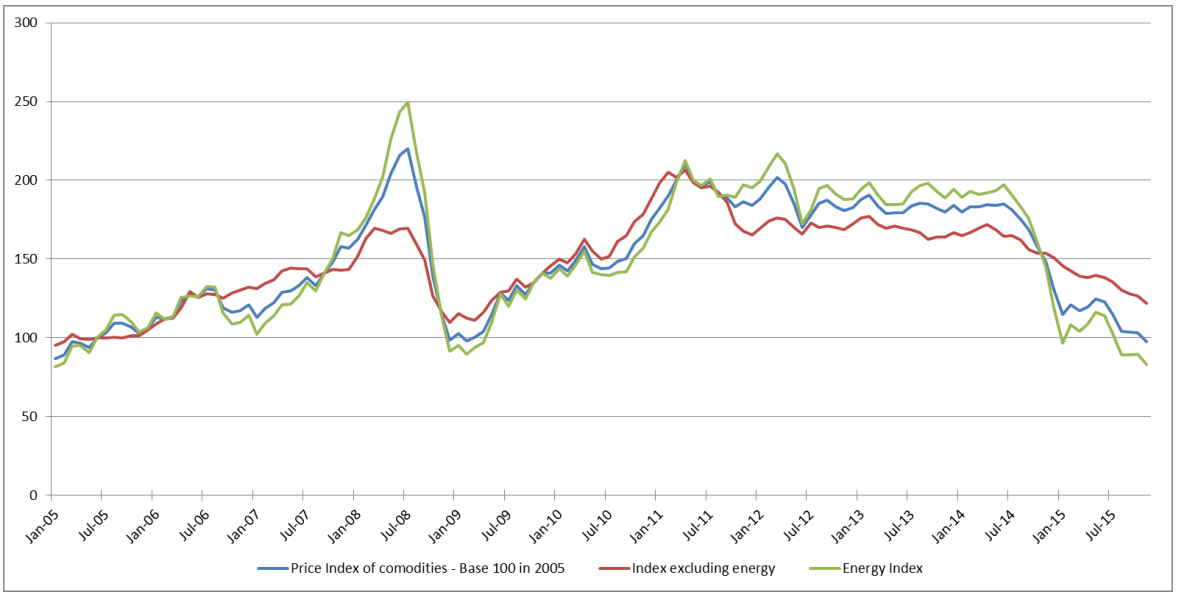
The drop in demand and the decline in the price of fuels are reflected globally in the downward trend in electricity and gas prices, whose specific evolution in France and Europe are presented in detail in the next two sections of this report.

[20] The IMF's world growth forecasts for 2014 dropped from 3.7% in January 2014 to 3.6% in April, 3.4% in July and 3.3% in October 2014.

[21] According to the IEA, only four countries (USA, China, Canada and Argentina) currently produce sellable quantities of shale gas and oil. The USA produces most of these volumes, which represented in 2014 approximately 48% of total production. According to this source, shale oil production rose from 2.19 Mb/d in 2012 to 4.19 Mb/d in 2014.

[22] OPEC's Decision of 27 November 2014 to not reduce its quota set at 30 million barrels per day and not to not take action against its members that exceed their quotas (estimated between 0.5 and 1 million barrels per day)

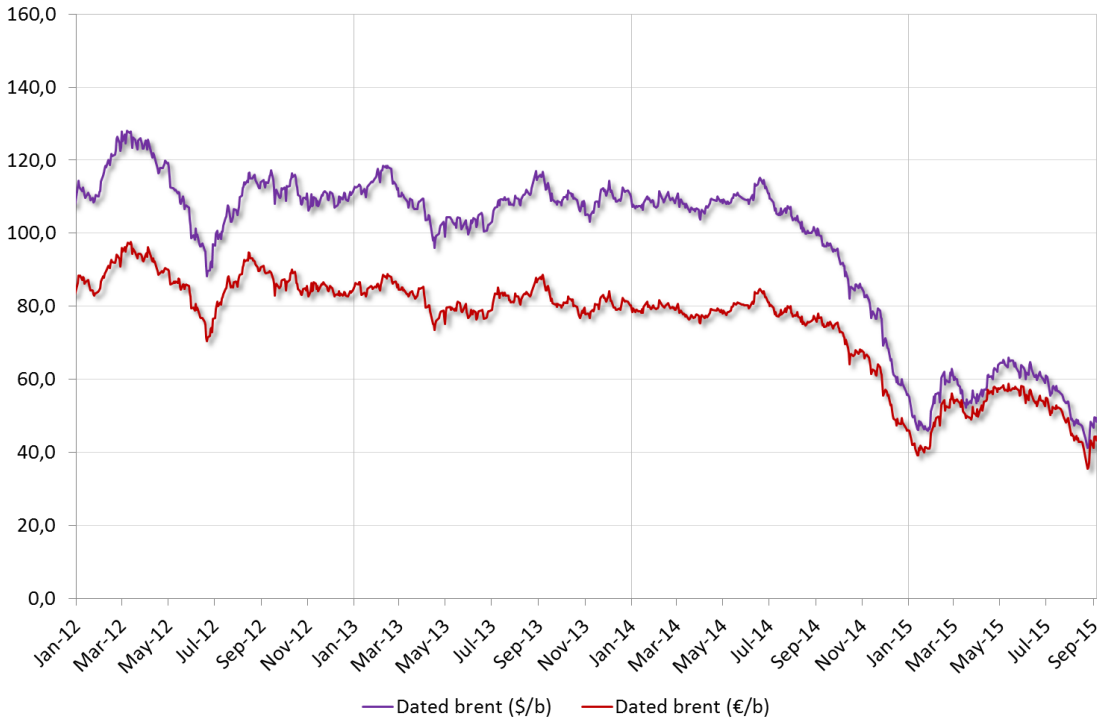
Graph 3: Evolution of commodity prices



Index including energy commodities and minerals and foodstuffs.

Source: IMF

Graph 4: Evolution of oil prices



Source: Reuters – Analysis: CRE

Graph 5: Evolution of energy prices

Sources: Electricity: EEX base product Y+1; Gas: Heren TTF Y+1; Coal: EEX CIF ARA Y+1

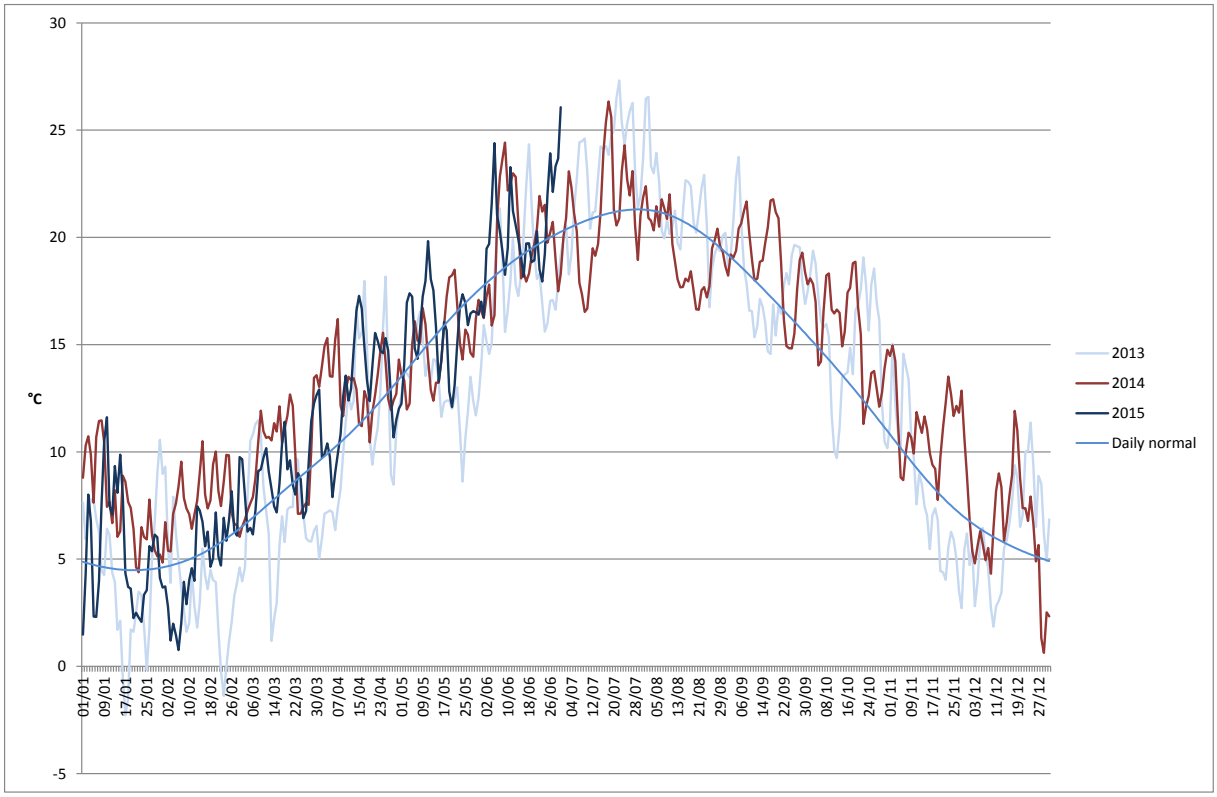
2 Demand heavily affected by climate conditions

In addition to commodity price developments, wholesale electricity and gas markets were marked by a loose supply/demand balance in 2014 because of a particularly mild climate. Temperatures in 2014 were on average 1.26°C higher than normal season averages. According to the French meteorological centre (*Météo France*), the year 2014 was the hottest since 1900. Temperatures were very mild in winter, with a positive difference of 2.13°C compared to the normal temperatures, and up to 2.97°C in January. The summer months were marked by temperatures close to normal, with an average positive difference of 0.42°C. In August, temperatures however were 1.28°C below normal, lowering air conditioning needs. In total, with the exception of the months of May and August, all the months of 2014 saw temperatures higher than normal.

Rainfall in 2014 was 10% higher than the reference annual average. The months of July and August saw intense episodes of rain, with, in particular, cumulative rainfall two times higher than the normal July rainfall. The amount of accumulated rainfall for the two months was the highest for this period since 1959.

The climate context had very important effects on gas and electricity demand in France and in Europe, with perceptible consequences in the wholesale markets. Electricity consumption in France dropped 6% in 2014 (435 TWh) reaching its lowest level since 2002. Gas consumption fell 16% reaching 416 TWh, i.e. the lowest level since 1997.

Graph 6: Temperatures during the last three years compared to reference temperatures



Source: Reuters – Analysis: CRE

3 The renewable energy boom

The energy markets are increasingly affected by the development of renewable energy, which modifies the electricity generation mix, and has an impact on price formation in Europe and France.

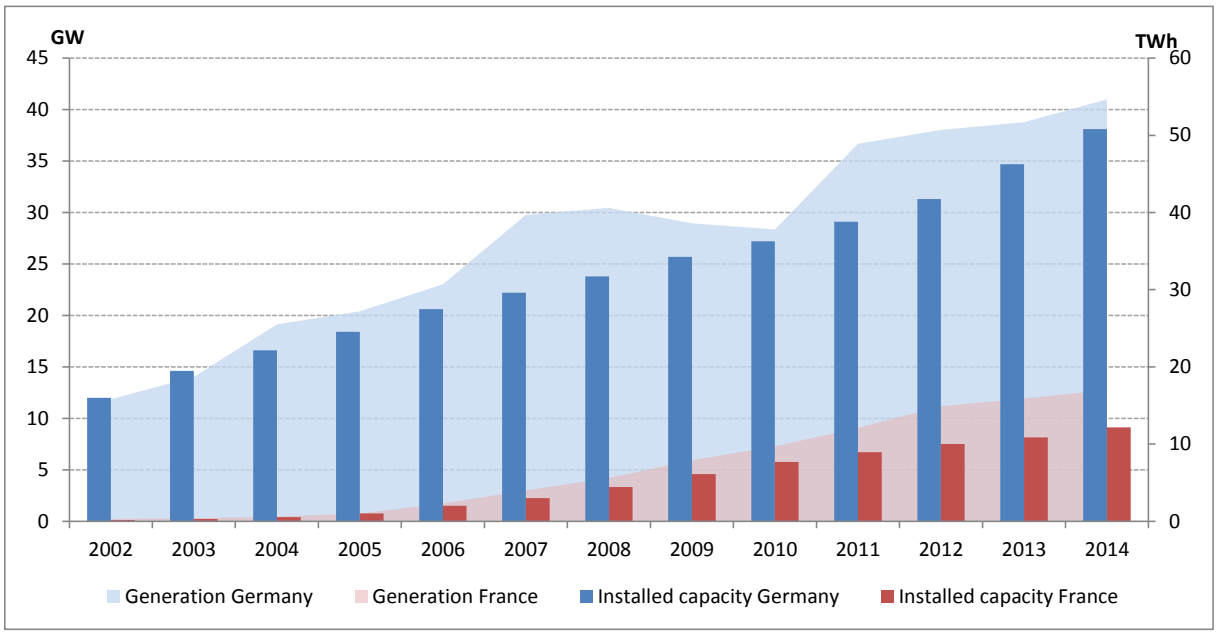
This development is encouraged by a favourable legislative framework at European level and at national level. In France, the recently adopted energy transition law aims to increase the portion of renewable energy to 40% of electricity generation by 2030[23].

Electricity generation from renewable energy sources has developed significantly in Germany and exceeds 35 GW of installed capacity both for wind and photovoltaic. In France, wind generation is close to 10 GW and photovoltaic generation, whose development is more recent, has reached 5 GW of installed capacity (graph 5 and 6).

[23] The law on energy transition towards green growth of 17 August 2015 sets the following objectives:

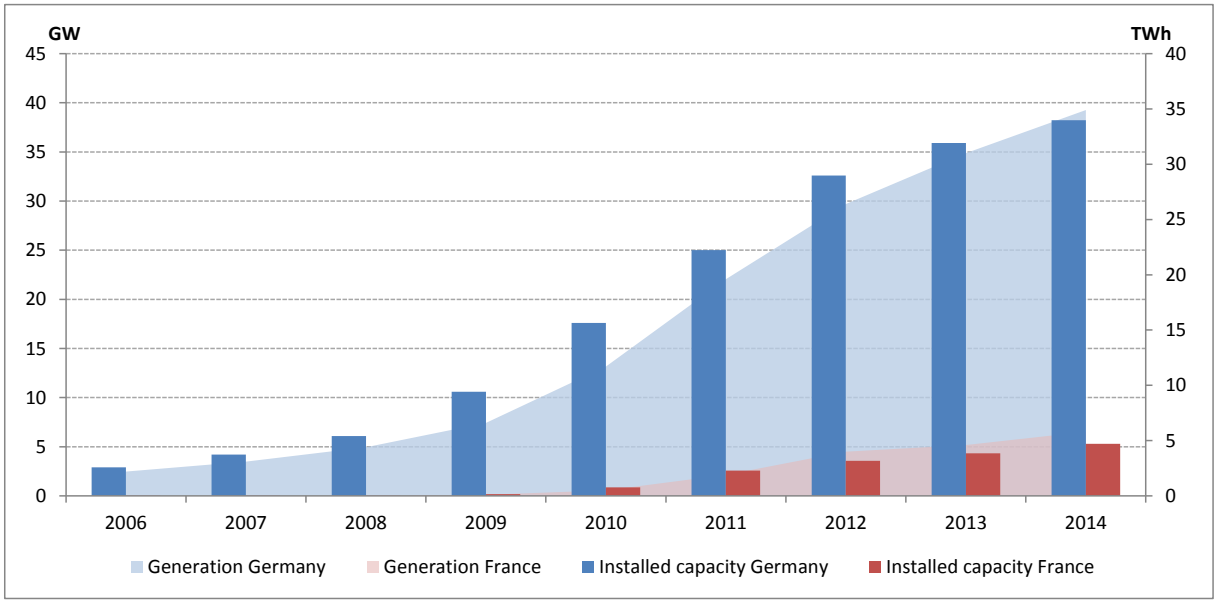
- increase the proportion of renewable energy in final energy consumption to 32% by 2030, and to 40% of electricity production.
- diversify electricity production and drop the nuclear proportion to 50% by 2015;
- reduce final energy consumption by 50% in 2050 compared to the 2012 reference.

Graph 7: Evolution of installed wind capacity – France and Germany



Sources: RTE annual report, Bundesumweltministerium

Graph 8: Evolution of installed photovoltaic capacity – France and Germany



Sources: RTE annual report, Bundesumweltministerium

4 Increase in CO_2 prices against reform in the European carbon emissions market

The European carbon emissions market is characterised by a surplus of allowances in circulation which is responsible for the low price of carbon emission allowances. To reduce this surplus, structural reforms have been undertaken by European authorities (see below).

With regard to market monitoring, as mentioned in section I, the MIF II Directive now qualifies emission allowances as a financial instrument. The detection and potential sanctioning of market abuse in the emission allowance market shall therefore fall within the scope of financial regulators as from 2017. Article 10 of the REMIT regulation offers the possibility to ACER to access data relating to emissions markets, which shall be collected and followed under financial regulation. Under these conditions, CRE shall be able to access carbon transaction data through the collection mechanisms which shall be set up by ACER as the case may be.

Today, CRE has national competence to monitor transactions in the carbon market made by participants active in the French electricity and gas market. This competence allows it to interrogate as needs be the participants active in the energy market in the event of unusual price or volume movements in the carbon market. It could be interfaced with the framework which will be in force in 2017. CRE shall continue to follow the carbon market as part of the follow-up of the energy market fundamentals. This follow-up could give rise to specific requests for information from participants active in the French energy markets. These requests could be placed within the framework of unusual events involving the carbon market and electricity market at the same time. The detection of these cases could result from the analysis conducted directly by CRE, ACER or the financial regulators.

4.1 A surplus of allowances in circulation reduced in 2014 due to the implementation of structural reforms

Every year, within the framework of the European Union Emissions Trading Scheme (EU ETS), a predefined volume of CO_2 allowances is allocated to participants according to two mechanisms: buying through auctions and free allocations. In order to comply with their obligations, participants concerned by EU ETS are required to return at the end of each year, an allowance for every tonne of CO_2 that they have emitted over the year. Within the framework of Phase III of EU ETS launched in 2013, the selling of allowances through auctions must become the main mode for distributing allowances and will ultimately replace free allocations which have been maintained temporarily for certain industrial sectors. The "combustion plants" sector, which includes in particular electricity generation plants, no longer receives free allocations as from the start of phase III (except for certain countries that are exempt[24]) (Graph 9).

Therefore, auctions are now used as a paying form to obtain allowances. They are conducted on the EEX and ECX platforms for European demand and the individual demands of Germany, Great Britain and Poland. In 2014, the number of allowances auctioned was 527 M (Graph 10), down compared to the volume auctioned in 2013 because of the backloading measure (see box 1 below). With this measure, 400 Mt were withheld from the auction mechanism in 2014. The continuation of this measure for a volume of 300 Mt in 2015 maintains the downward trend in the reduction of the number of allowances allocated in auctions in 2015.

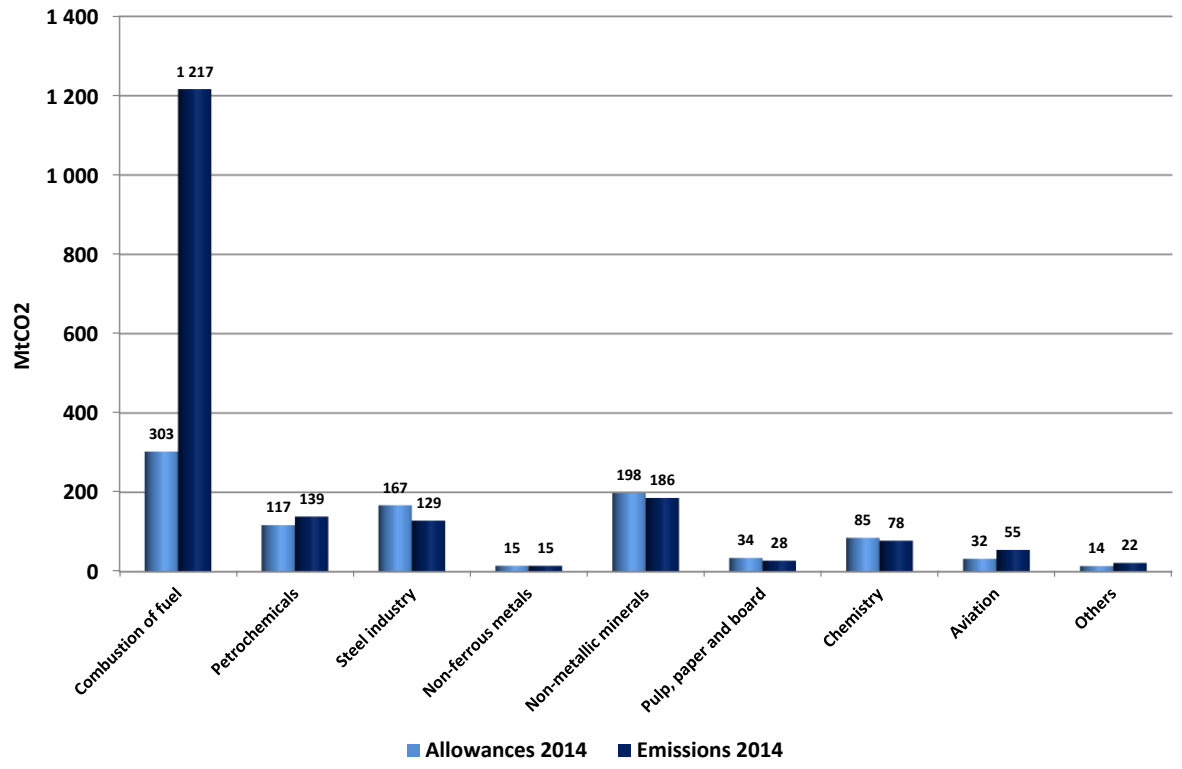
In 2015, the surplus[25] of allowances in circulation in the EU ETS market (530 Mt) considerably decreased compared to 2014 levels (800 Mt). At the end of the 2014 compliance year, the difference

[24] Eight European countries are exempt, which enables them to keep a free allowance allocation system for the electricity production sector.

[25] Cumulated difference between the volume of allowances distributed (free allocations plus auctions) and the volume of actual emissions in the European Union Emission Trading Scheme

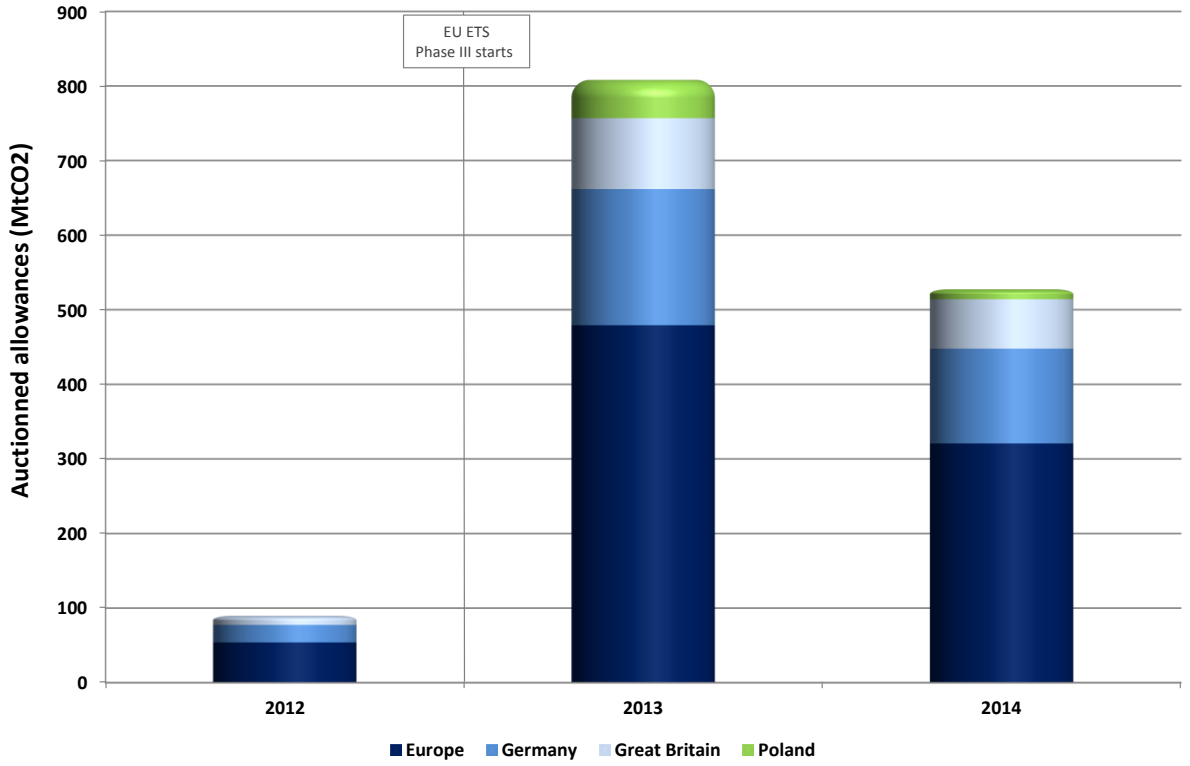
between allowances distributed (through auctions or free of charge) and allowances verified represents a deficit of 374 Mt (-25%) which participants compensated through the use of the stock of surplus allowances (Graph 11). In total, the volume of allowances in circulation corresponding to the cumulated surplus and new allocations (free of charge and auctions) dropped 14% between 2013 (2,679 Mt) and 2014 (2,260 Mt).

Graph 9: Free allocations and emissions verified according to sector type in 2014



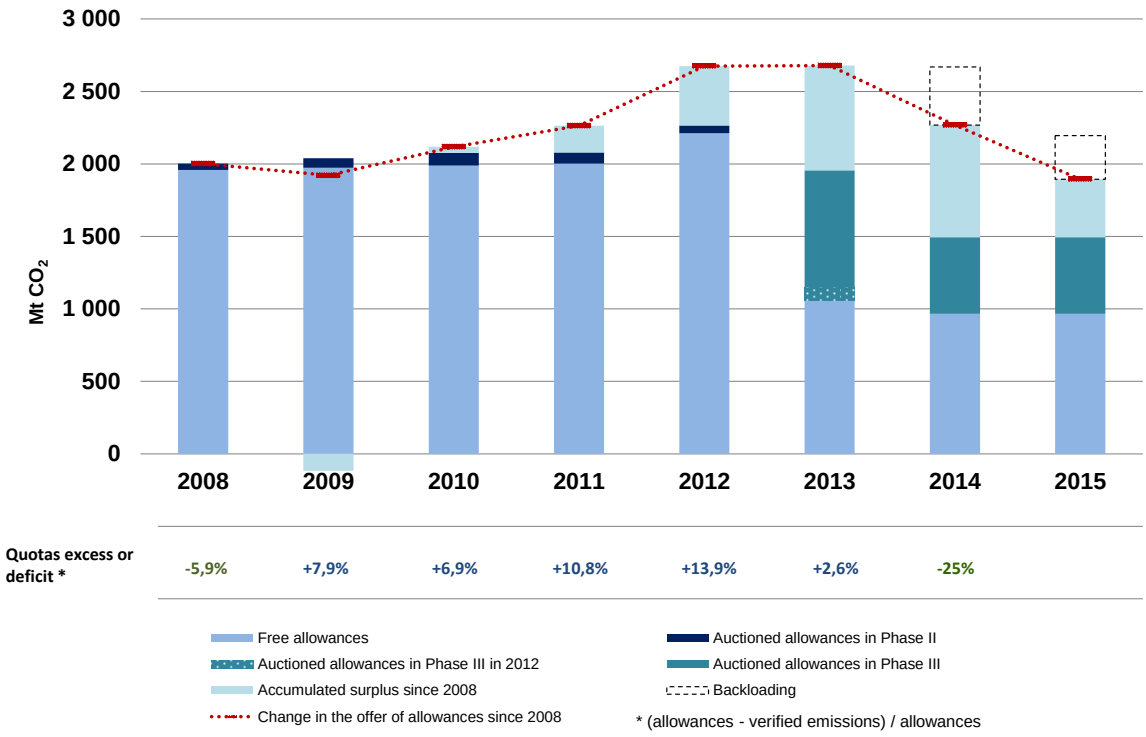
Source: CITL – Analysis: CRE with grouping of 25 activities into 8 sectors

Graph 10: Emission allowances auctioned since 2012 (Phase III)



(Source: European Commission – Analysis: CRE

Graph 11: Reduction of the surplus of allowances in circulation



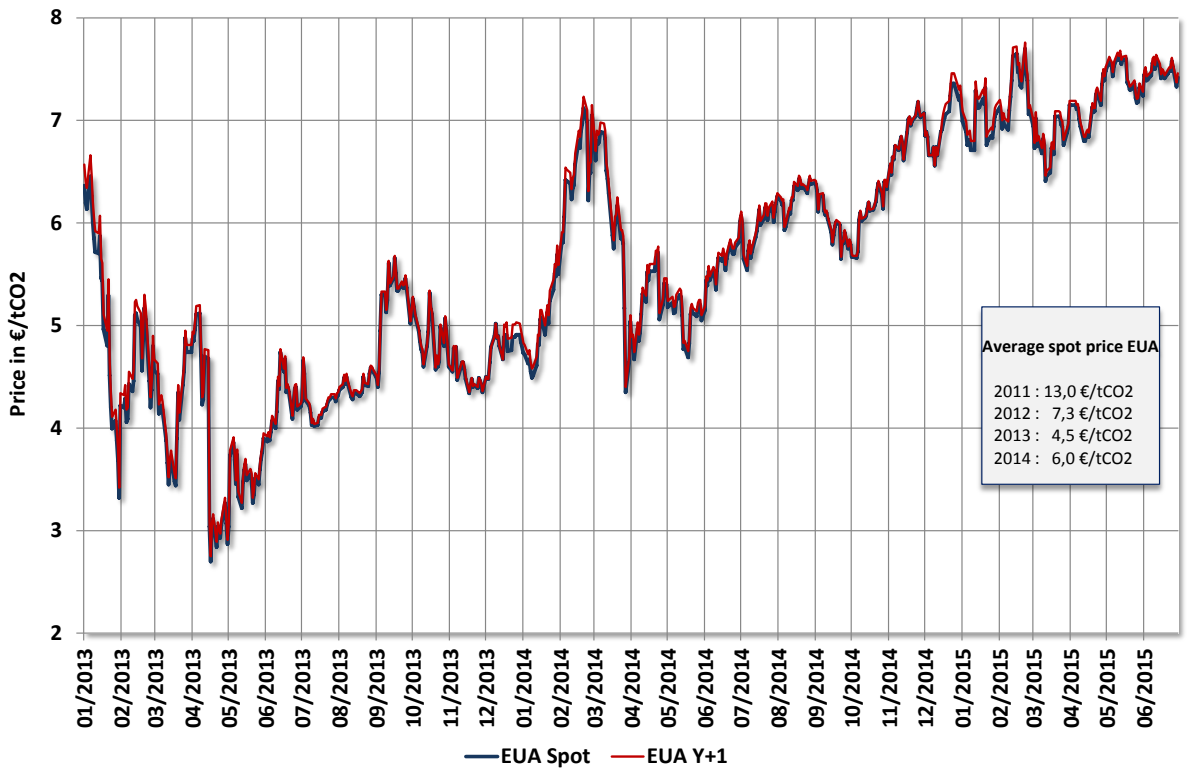
Source: CITL, European Commission – Analysis: CRE (hypotheses for 2015: free allocations in 2015 identical to 2014; Number of allowances auctioned in 2015 equivalent to the number of allowances auctioned in 2013 and 2012 (phase III) minus 300 M of allowances (backloading))

4.2 A slight increase in the price of the emission allowance

In 2014, the price of the carbon emission allowance increased significantly against the implementation of the structural reforms mentioned above and outlined in box 1 below. The price went above €7/tCO_2 in the first quarter of 2014, as discussions about backloading were underway. In the second quarter of 2014, the price of the emission allowance once again fell below €5/tCO_2 before gradually rising again to reach €7//tCO_2 at the end of 2014. In the first half of 2015, it was discussions about the implementation of the market stability reserve that made the emission allowance price fluctuate between €7 and €8/tCO_2 (Graph 10).

In total, the spot price of the CO_2 allowance stood at an average €7.2/tCO_2 in the first half of 2015, compared to annual averages of €6/tCO_2 in 2014 and €4.5/tCO_2 in 2013. The current level is still however limited compared to the initial goal of the trading scheme to provide a price signal that would encourage low-carbon investments. By way of illustration, the theoretical price of one tonne of CO_2 from which it is more interesting to produce electricity from a gas plant than from a coal plant which is more carbon-intensive, was, given the market conditions of the first months of 2015, between €40 and €50/tCO_2.

Graph 12: Evolution of the price of the carbon emission allowance



Source: ECX – Analysis: CRE

Box 1: Structural reforms of the carbon market[26]

European institutions adopted measures to stop the accumulation of surplus allowances in the market. The main measures are backloading and the market stability reserve.

Backloading measure (implemented as from 2014):

The implementation of the allowance backloading measure was approved in December 2013 by the European Parliament and Council and entered into force on 25 February 2014[27]. This measure aims to postpone the auctioning of 400 M emission allowances in 2014, 300 M in 2015, and 200 M in 2016. Initially, 300 M allowances were supposed to be re-introduced in 2019, followed by 600 M in 2020; however, with the implementation of the market stability reserve (see below), these allowances will not be re-introduced into the market, but instead placed in that reserve.

Creation of a stability reserve (as from 2019):

The market stability reserve was proposed by the European Commission in January 2014 to resolve in the longer term the surplus allowance situation and strengthen the EU ETS system in the event of major fluctuations in allowance demands.

On 8 July 2015, the European Parliament approved by formal vote, the European Commission's reform proposal to establish a market stability reserve ahead of time. The text was adopted by the European Council on 6 October 2015[28]. As from January 2019, allowances shall be gradually withdrawn from the market to be placed in the stability reserve depending on the annual surplus of allowances in circulation.

The market stability reserve enables an emission allowance reserve to be built based on the level of allowances in circulation.

Several cases are anticipated:

- in the case in which the volume of allowances in circulation is higher than 833 M tonnes, 12% of the volume of allowances will be placed in the reserve;
- in the case in which the volume of allowances in circulation is lower than 400 M tonnes, 100 M allowances will be re-introduced into the market;
- between 400 M and 833 M tonnes in the market, the reserve will remain unchanged.

The goal is thus to reduce the surplus allowances in circulation and ensure greater stability of the carbon market.

[26] For more information, see http://ec.europa.eu/clima/policies/ets/reform/index_en.htm

[27] See: Regulation (EU) 176/2014 of 25 February 2014 amending Regulation (EU) 1031/2010 in particular to determine the volumes of greenhouse gas emission allowances to be auctioned in 2013-2020

[28] See: Decision of the European Parliament and of the Council concerning the establishment and operation of a market stability reserve for the Union greenhouse gas emission trading scheme and amending Directive 2003/87/EC

SECTION III: The wholesale electricity markets

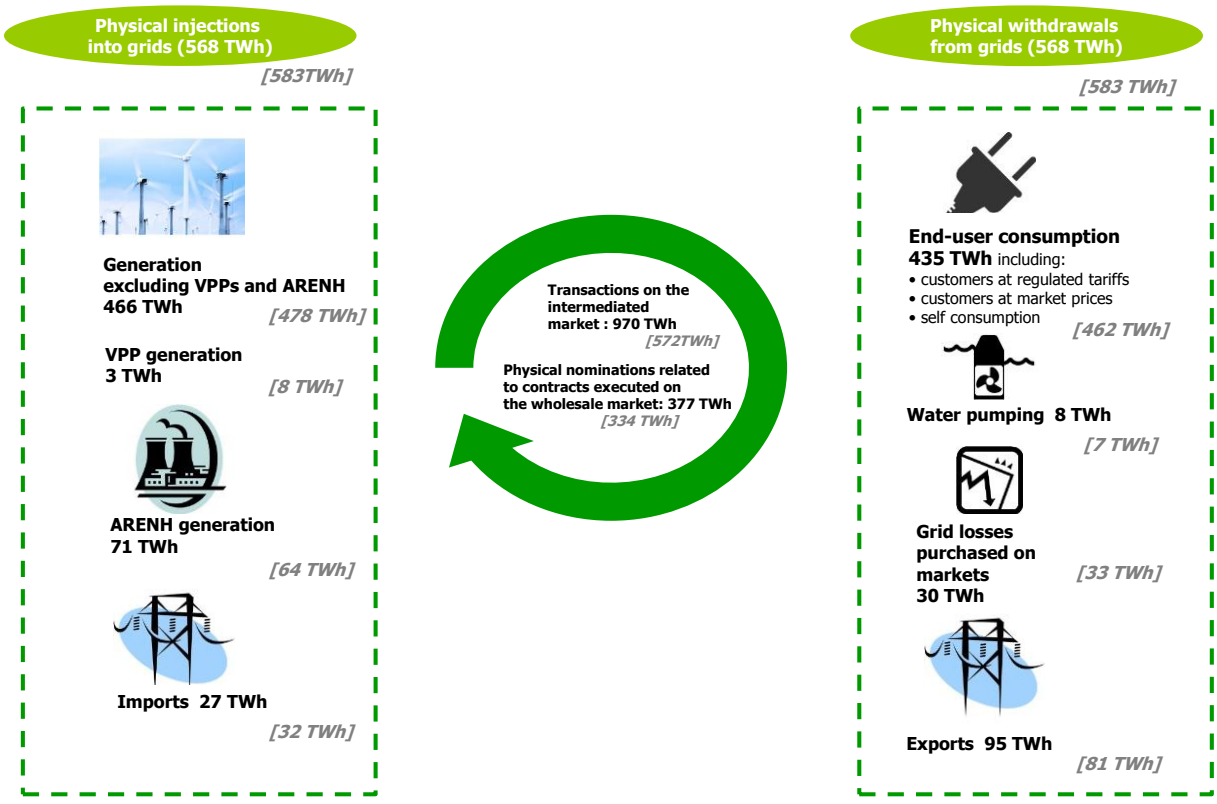
1 The fundamentals of the wholesale electricity market: loose supply/demand balance

The wholesale electricity markets in France were marked by a very loose supply/demand balance in 2014. The particularly mild climate caused a sharp drop in electricity consumption, down 6% compared to 2013. From the supply perspective, the availability of nuclear generation was high and boosted exports. Hydropower generation was also satisfactory and generation from other renewable energy also saw a major increase. Thermal fossil generation was used to a lesser extent in 2014 compared to 2013, but it can however be noted that energy price levels enabled gas plants to have periods of profitability, and they were thus re-operated during peak periods in winter 2014-2015.

1.1 A major drop in injections and withdrawals in the network in 2014 against the fall in consumption

Graph 13 presents a simplified version of the main flows for 2014 in the French electricity system and compares them to the figures for 2013 (between brackets).

Graph 13: Injections and withdrawals for 2014 [2013]



Sources: EPEX SPOT, Brokers, RTE

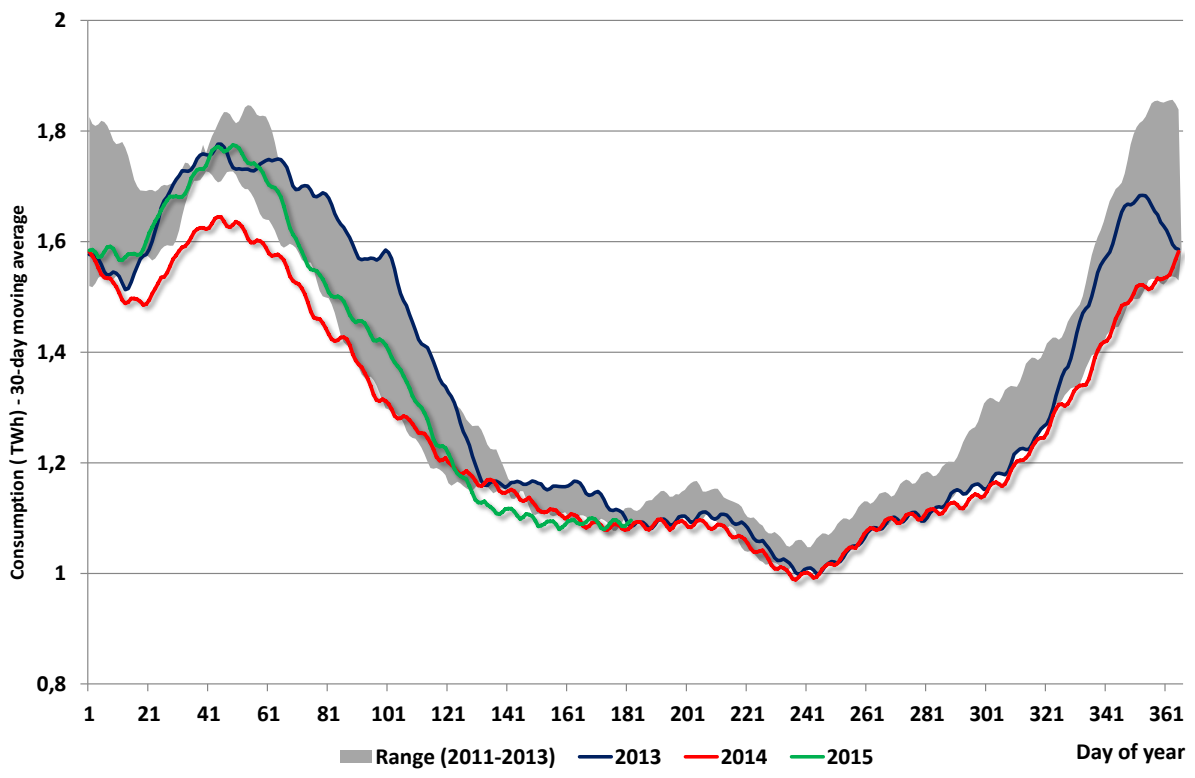
Consumption levels were low throughout 2014 following a very mild winter, limiting the use of electrical heating, and moderate temperatures in summer reducing the use of air conditioning. Consumption in

France reached historically low levels in the first half of 2014 (Graph 14). In 2014, it dropped 6% compared to 2013.

The year 2014 was also marked by the increase in nuclear availability and exports.

Trading in the brokered and organised markets increased significantly (+70%) compared to 2013. This increase is due partly to the arbitrage between futures products, for which trading increased 77% in 2014 and ARENH subscriptions. Electricity deliveries related to the Virtual Power Plant (VPP) mechanism dropped significantly and were stopped in 2015. No product offered during the last auctions in 2012 concerned deliveries beyond 2015.

Graph 14: Consumption in France

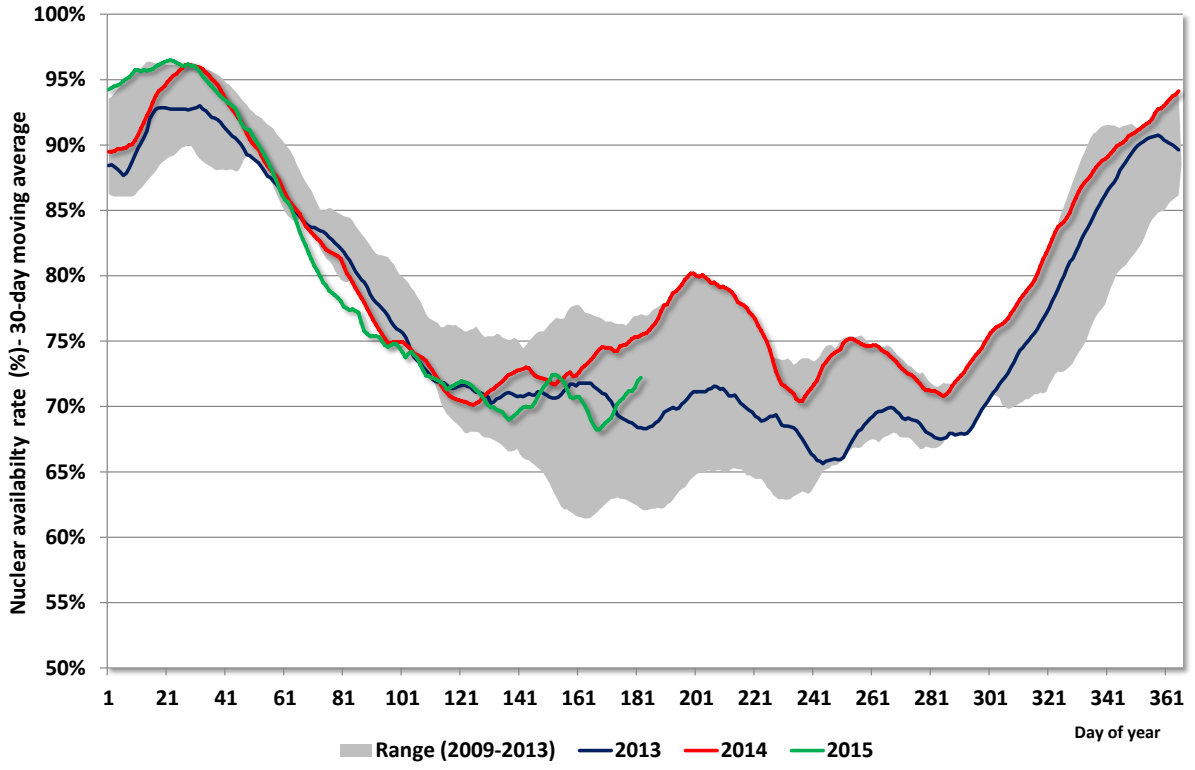


Source: RTE – Analysis: CRE

1.2 Very good availability of French nuclear facilities enabling a high level of exports

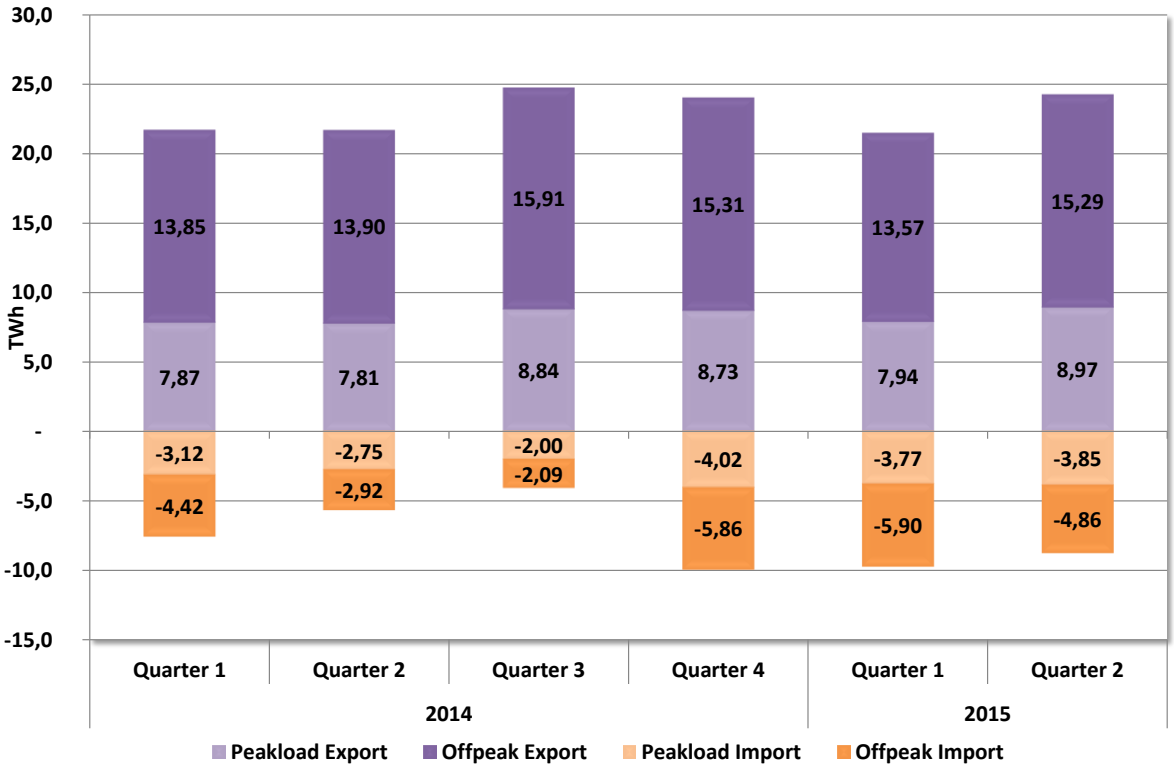
Besides consumption, nuclear availability is a key element in market fundamentals. In 2014, it was very high (annual average of 80%) particularly in summer, during which maintenance of nuclear units generally takes place, with availability higher than 70% on average. The availability of nuclear power stations was very high in winter 2014/2015, exceeding the availability levels of the three previous winters (**Graph** 15). The high availability of nuclear power stations, combined with the drop in consumption, boosted exports (+17%) and limited imports (-16%) (**Graph** 16). The net export balance therefore increased sharply, reaching 65.1 TWh in 2014 compared to 47.3 TWh in 2013 (Graph 17).

Graph 15: Availability rate of the French nuclear power stations



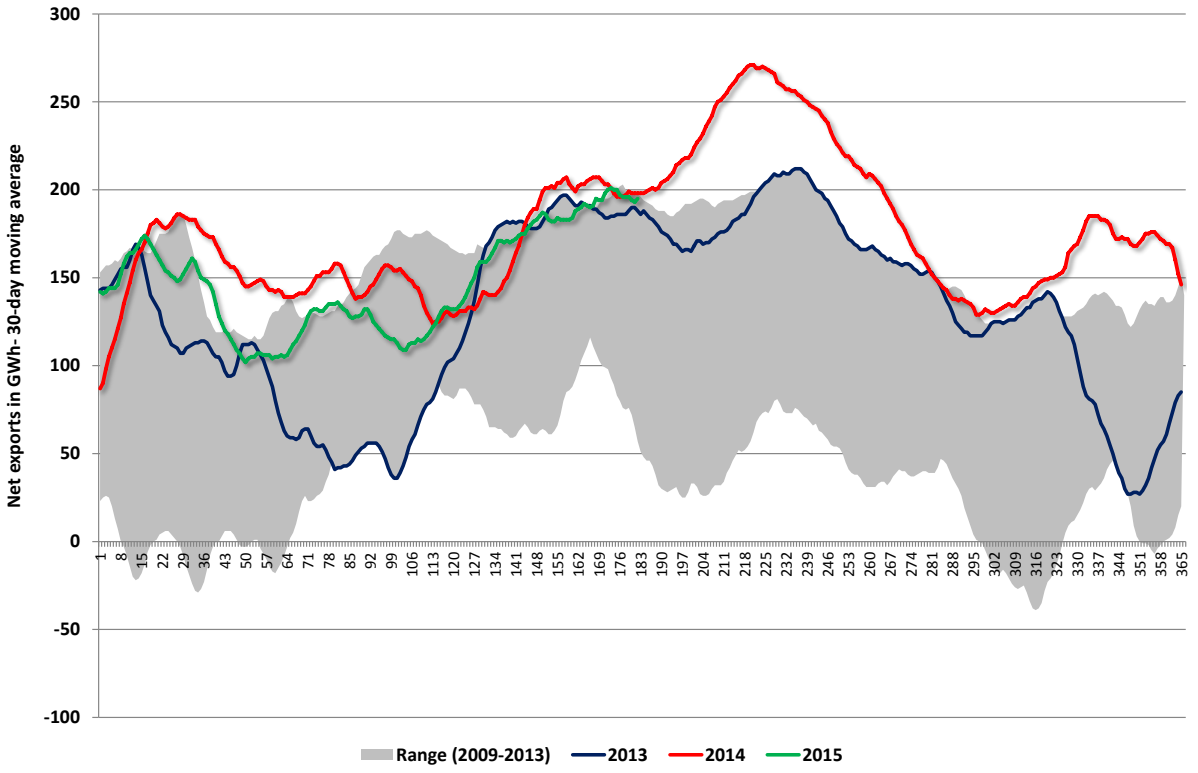
Source: RTE – Analysis: CRE

Graph 16: Quarterly volumes traded at borders



Source: RTE – Analysis: CRE

Graph 17: Net export balance



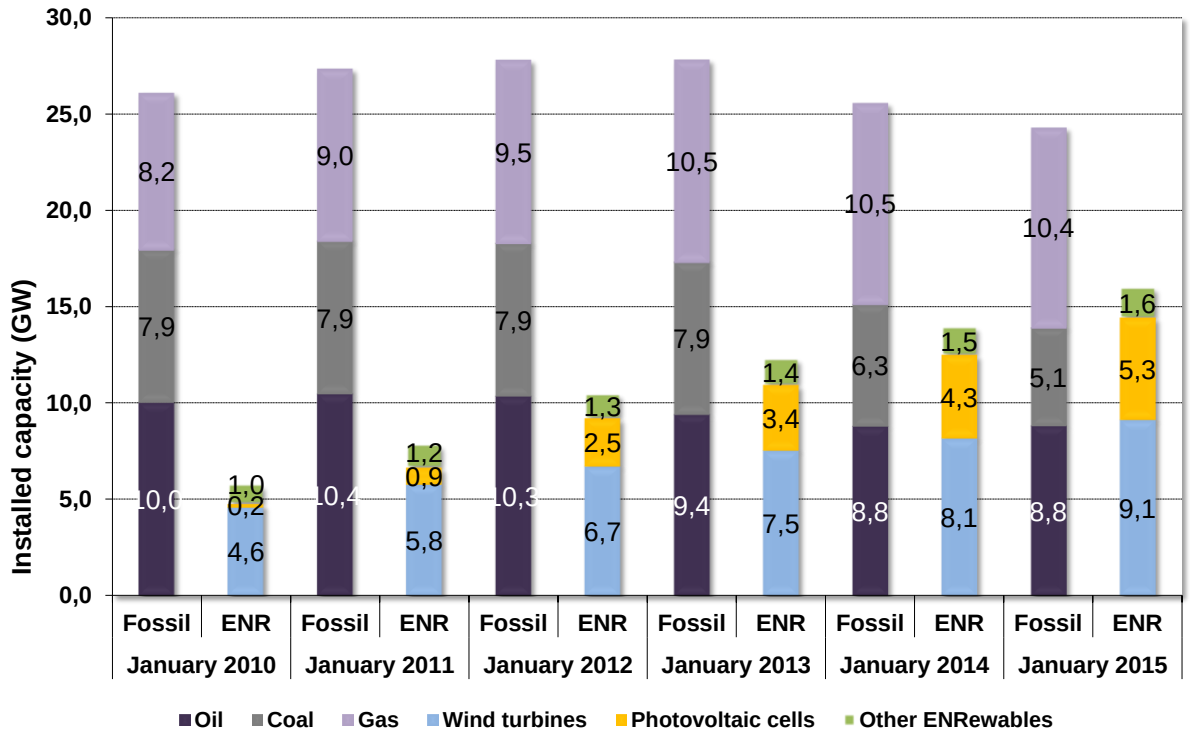
Source: RTE – Analysis: CRE

1.3 Generation from "new" renewable energy (excluding hydropower) exceeding for the first time thermal fossil production in 2014, and high availability rate of the hydropower sector

As mentioned in Section II, installed capacity of renewable energy has been increasing for several years now. In January 2015, installed capacity of renewable energy (excluding hydropower) increased 15% to reach 5.3 GW of installed photovoltaic capacity and 9.1 GW of installed wind capacity (Graph 18).

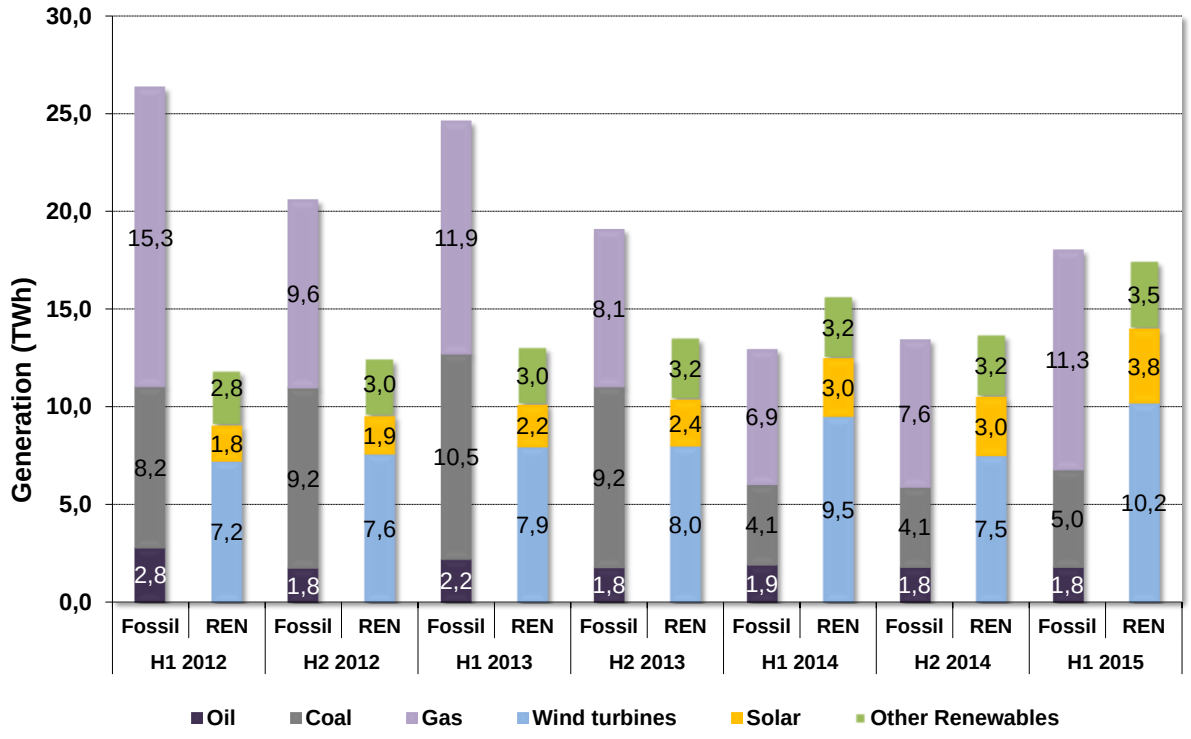
In comparison, installed capacity of thermal fossil production means dropped, particularly for the coal sector, which lost 1.2 GW of installed capacity (-20%). In terms of production, thermal-based generation was little used in 2014 against the very mild weather which enabled production from renewable sources (excluding hydropower) to exceed that of fossil-based generation for the first time in France (Graph 19).

Graph 18: Comparison of installed capacity of the thermal fossil and renewable energy sectors (excluding hydropower)



Source: RTE – Analysis: CRE

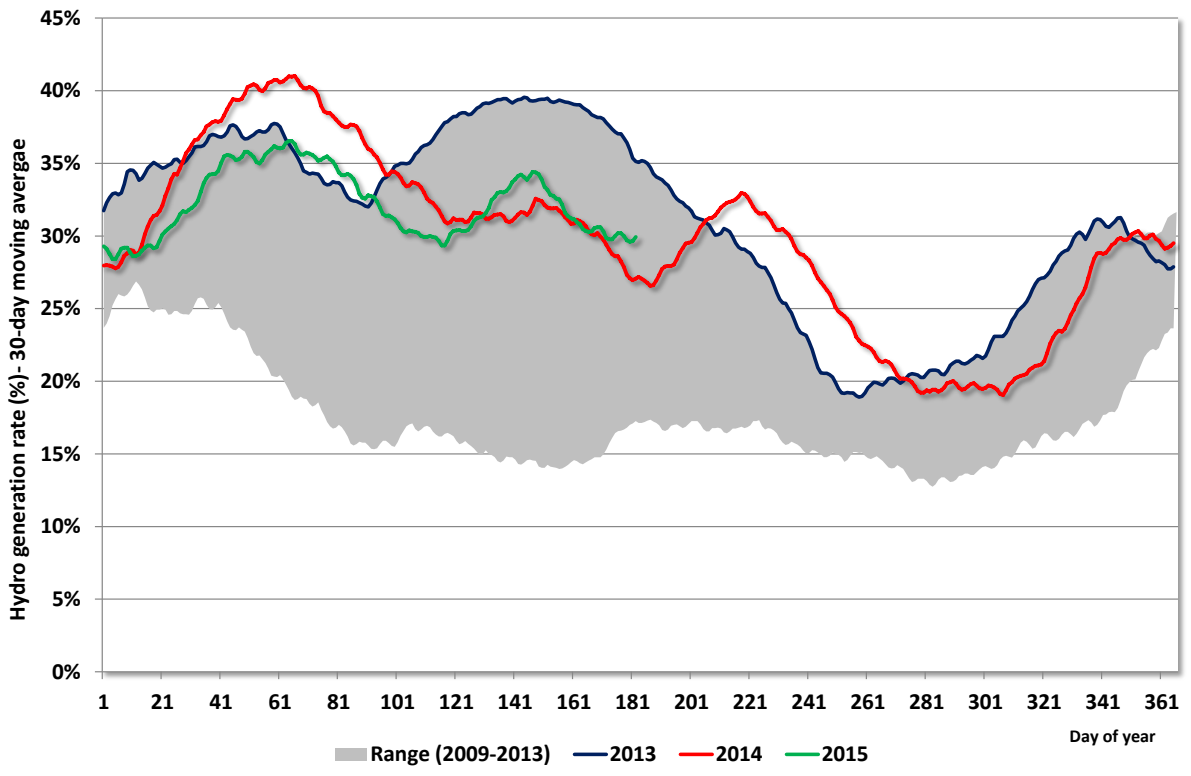
Graph 19: Comparison of six-month production of thermal fossil and renewable energy sectors (excluding hydropower)



Source: RTE – Analysis: CRE

Power generation from "new" renewable sources which grew in 2014 was combined with the high availability of the hydropower sector, whose generation in France reached relatively high levels in 2014, particularly in February and March against favourable weather conditions and during summer, heavy rainfall. In 2015, the rate of hydropower generation was in the upper average of its historic progression (**Graph** 20).

Graph 20: Rate of hydropower generation



Source: RTE – Analysis: CRE

1.4 Gas plants profitable in winter 2014/15 promoting their use for generation in peak periods

The analysis of the theoretical profitability of coal plants in the spot market for peak load (clean dark spread[29]) or of gas plants (clean spark spread[30]) can be used to assess whether it is beneficial for a producer to operate its plants.

Daily profitability in peak periods reached an average €19/MWh in 2014 for the coal sector, which was also profitable in base load periods.

The theoretical profitability of gas plants remained negative however, for the greater part of 2014. But relative energy prices recorded at the end of the year enabled these gas plants to have periods of profitability, and they were thus re-operated during peak periods in winter 2014-2015 (**Graph** 21). In

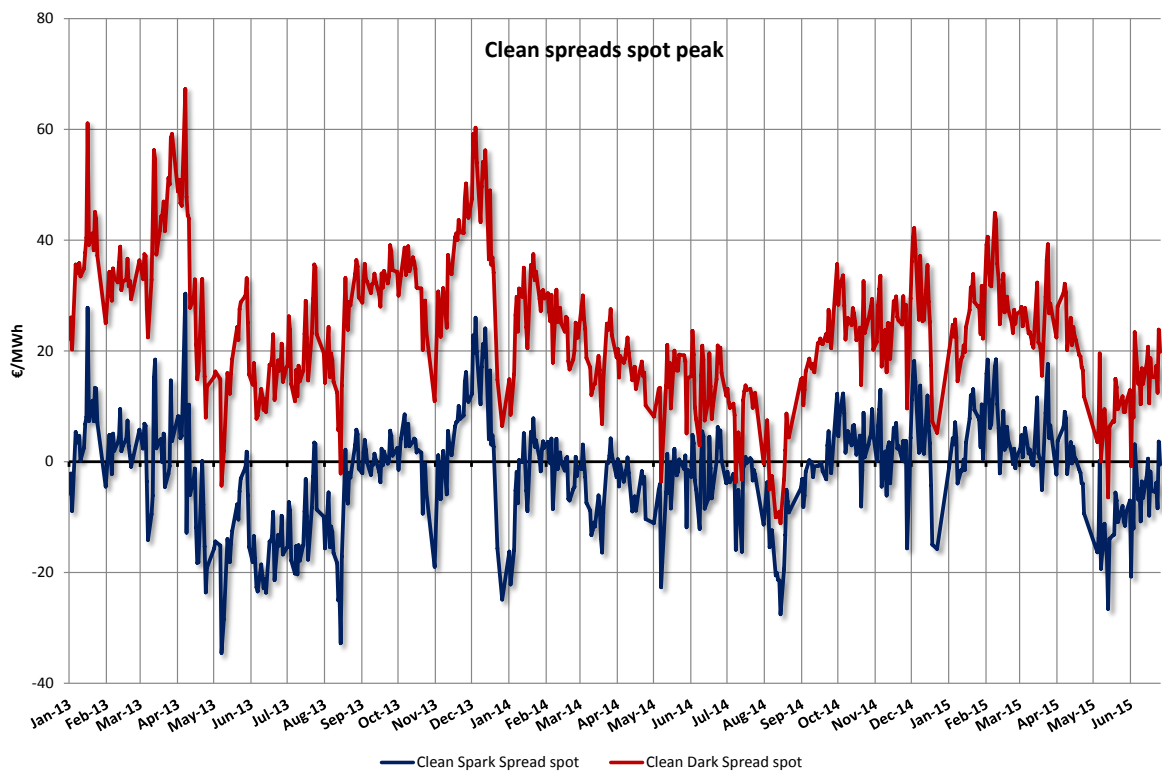
[29] CDS (€/MWh) = $p_E - (\alpha p_C + \beta p_{CO2})$, where p_E is the day-ahead electricity peak price in France, p_C the price of coal, p_{CO2} the spot price of CO_2, α the average yield of a coal plant (35%) and β the emission factor of coal plants (0.96 tCO_2/MWh). Calculations are done on the basis of a coal calorific value of 8.14 MWh/t.

[30] CSS (€/MWh) = $p_E - (\gamma p_G + \delta p_{CO2})$, where p_E is the day-ahead electricity peak price in France, p_G the price of gas, p_{CO2} the spot price of CO_2, γ the average yield of a gas plant (49%) and δ the emission factor of gas plants (0.46 tCO_2/MWh)

winter 2014/2015, the rate of production of the gas sector increased quickly reaching historically high levels with an average production rate close to 50% in the first half of 2015 (**Graph** 22).

The rate of production of the coal sector reached historically low levels for almost all of 2014 (an average 18% in 2014 compared to 43% in 2013), against mild winter and summer temperatures (see **Graph** 23). In 2015, it was very high in the first quarter (an average 43%) but dropped considerably as from the month of May because of the shutdown of certain plants and the launch of EDF's modernisation programme "Coal 2035"[31]. The availability of coal plants dropped below 1 GW as from May 2015.

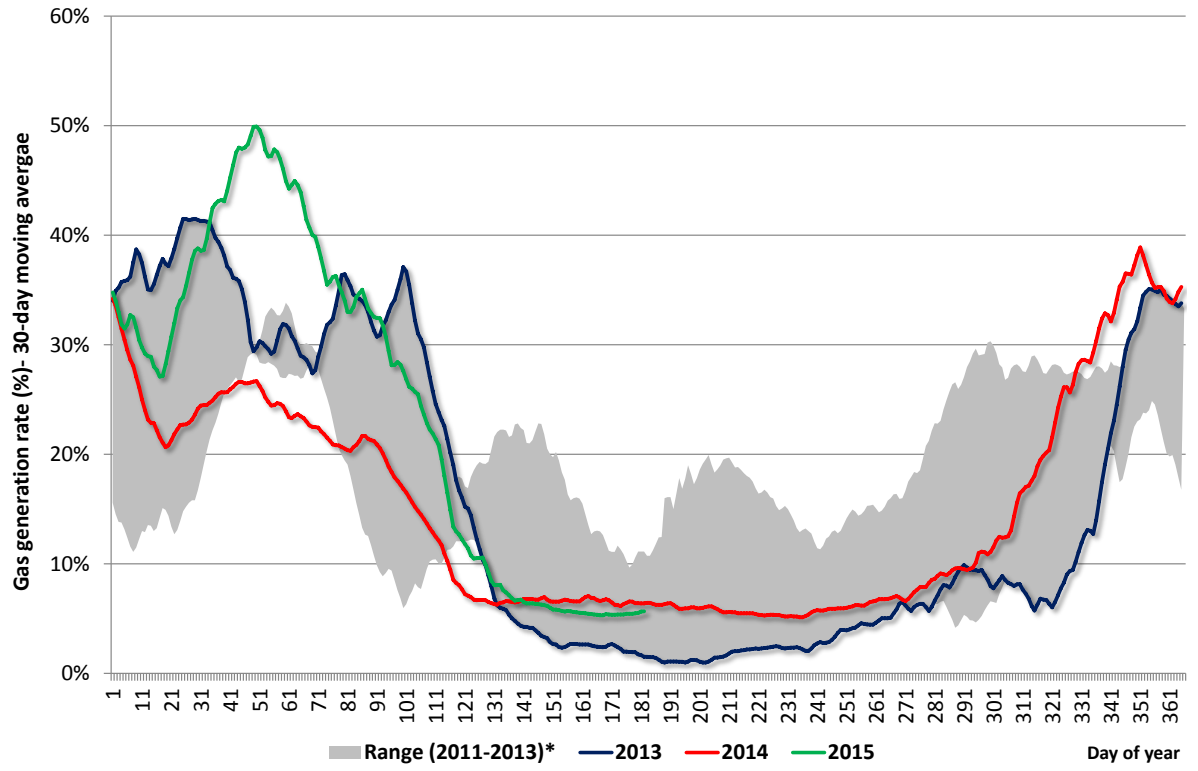
Graph 21: Spot, peak clean dark and clean spark spreads



Sources: ECX, Heren, Powernext, EPEX Spot – Analysis: CRE

[31] Work to ensure compliance with new environmental standards, particularly of units 4 and 5 of Cordemais, each with 580 MW of power

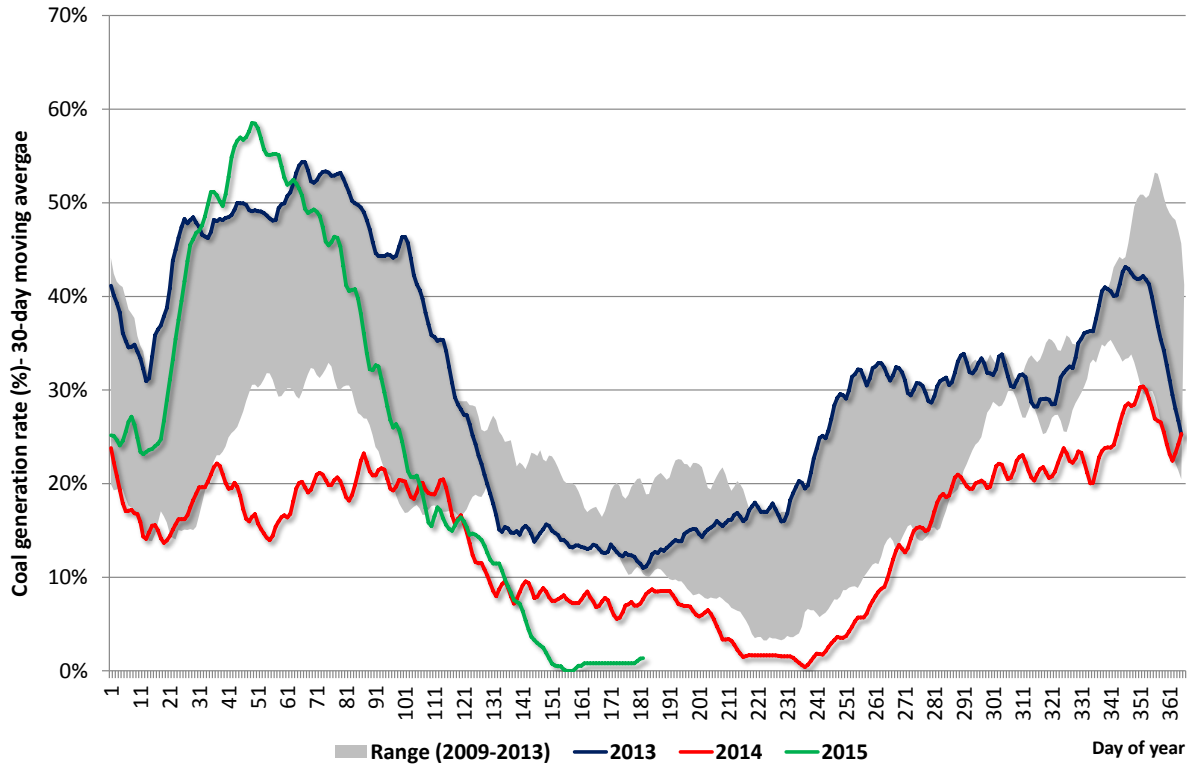
Graph 22: Rate of gas power generation



*Data available from 2011

Source: RTE – Analysis: CRE

Graph 23: Rate of coal power generation



Source: RTE – Analysis: CRE

1.5 A comfortable system margin in 2014 due to the climate

The load duration curve for the French electricity system classes consumption for all hours of the year in descending order. These times are combined into nine categories (time-season)[32]. Generation per energy resource is set against these consumption levels. Against a very mild winter, the load duration curve for 2014 was considerably different to those observed for the previous years. The baseload/peakload asymmetry of the generation facilities (Box 2) is less perceptible in 2014 because the power consumed at the tip of the peak is lower (by 15 GW compared to 2012).

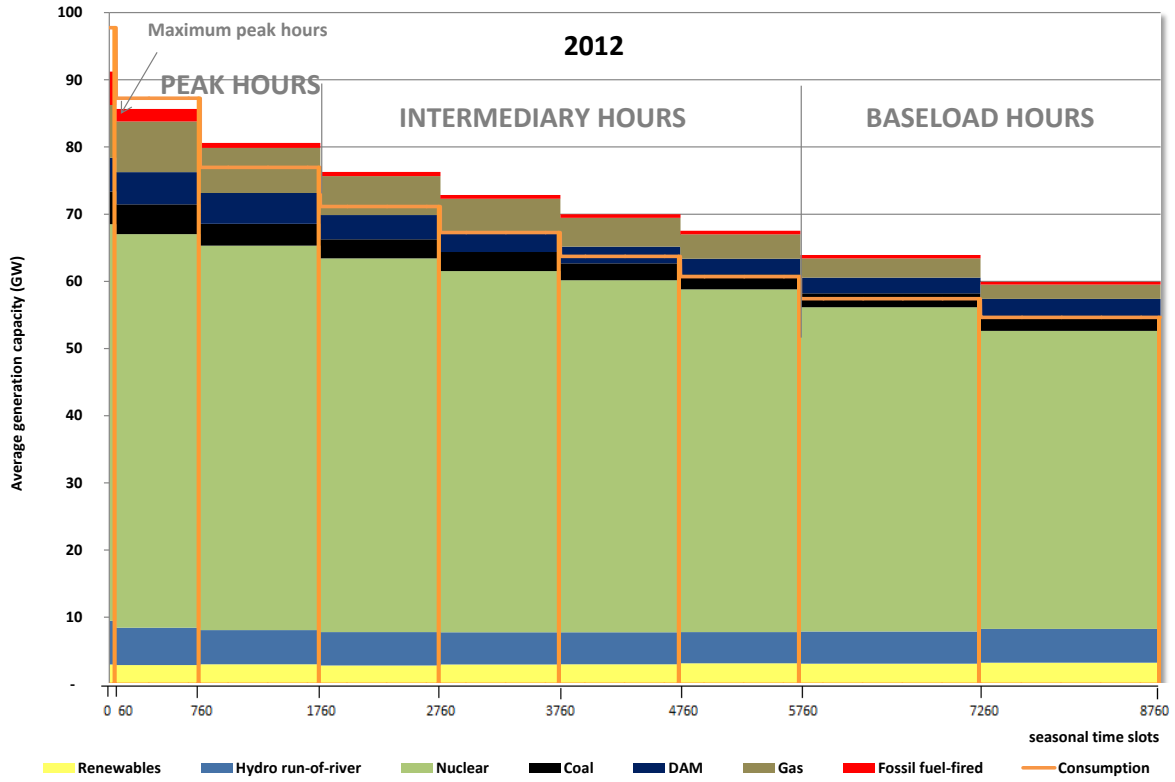
Box 2: Load duration curve of French generation facilities in 2012 and 2014

French power generation is characterised by a major asymmetry in its load duration curve. The major baseload generation capacity (nuclear in particular) made France a net exporter during these periods. For peakload and extreme peakload, generation is less capable of meeting all national demand, therefore requiring imports and saturating interconnections. This was the case in 2012. The year 2014 however, was marked by mild temperatures and different fundamentals. Consumption slightly exceeded 80 GW during the extreme peakload period. This was reflected by a consumption curve that never went beyond the production curve. Production could have, if France was on an "electrical island", met national consumption in 2014. France naturally imported energy for optimisation purposes.

[32] Construction of the "load duration curve":

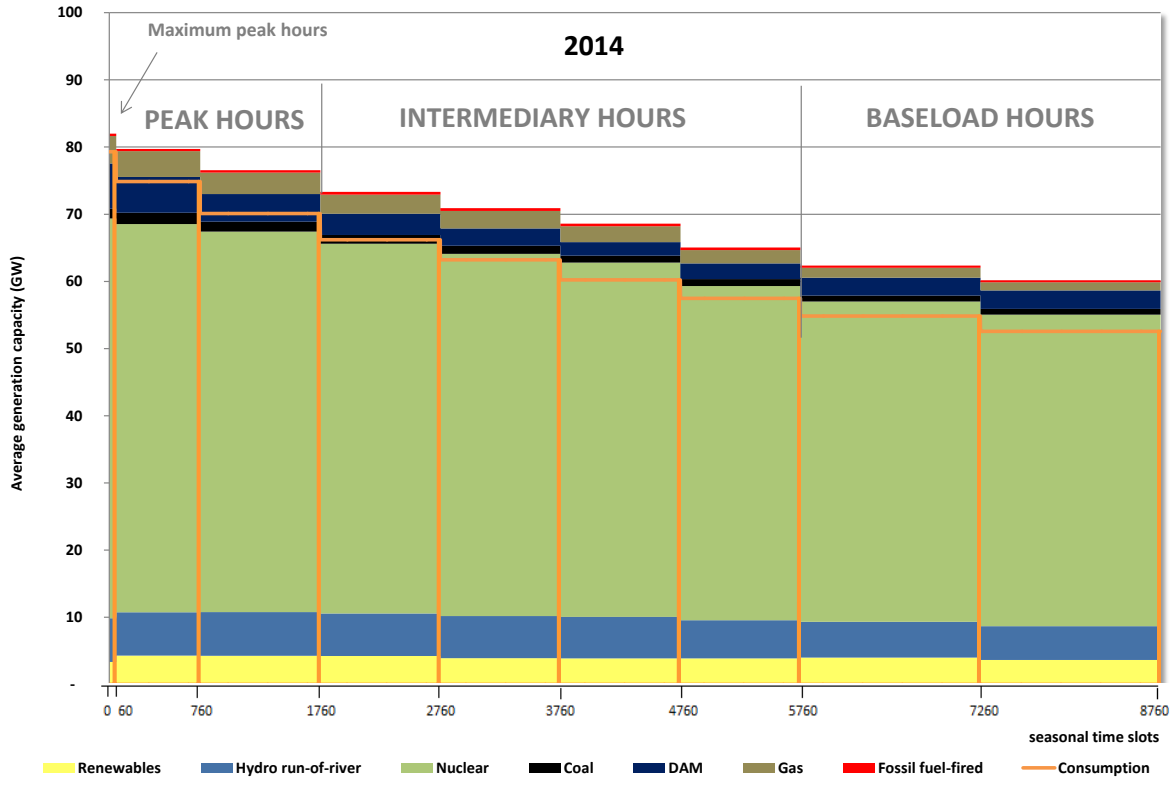
- nine time/season portions are defined to simulate the annual functioning of the electricity system;
- consumption of French clients, excluding exports, for each hour of the year is classed from the highest to the lowest. The average of this consumption is recorded for each hourly portion. This is called load duration curve;
- in addition to this load duration is the corresponding total production power of the French generating system;
- for each of the time/season portions, the average production of each of the generating system sectors stacked by ascending order of the production cost of the systems used is calculated. The more power demand increases, the less amount of time it is used.

Graph 24 : Load duration curve in 2012



Source: RTE – Analysis: CRE

Graph 25: Load duration curve in 2014



Source: RTE – Analysis: CRE

1.6 Nuclear generation marginal for more than 25% of the time in 2014 and used more in the balancing system

A means of generation is termed "marginal" when its marginal cost determines the market price, i.e. when the cost of a plant in this sector is close to EPEX SPOT's day-ahead auction market price. It can then be considered that it is the last unit used to meet demand and that its cost is decisive in the formation of the market price.

Improvements in methodology were made for the calculation of the marginal plant. An hour-based approach is no longer the only approach considered; offers submitted in block form are also taken into account[33]. A large portion of thermal fossil plants, as well as some consumption shedding, are in fact offered at the EPEX SPOT auction in the form of blocks of consecutive hours.

Once all of the marginal blocks are analysed, all of the remaining hours of the year are examined and the marginal price of each hour (not attributed previously to a marginal block) must be determined. For the hour analysis, the method is as follows:

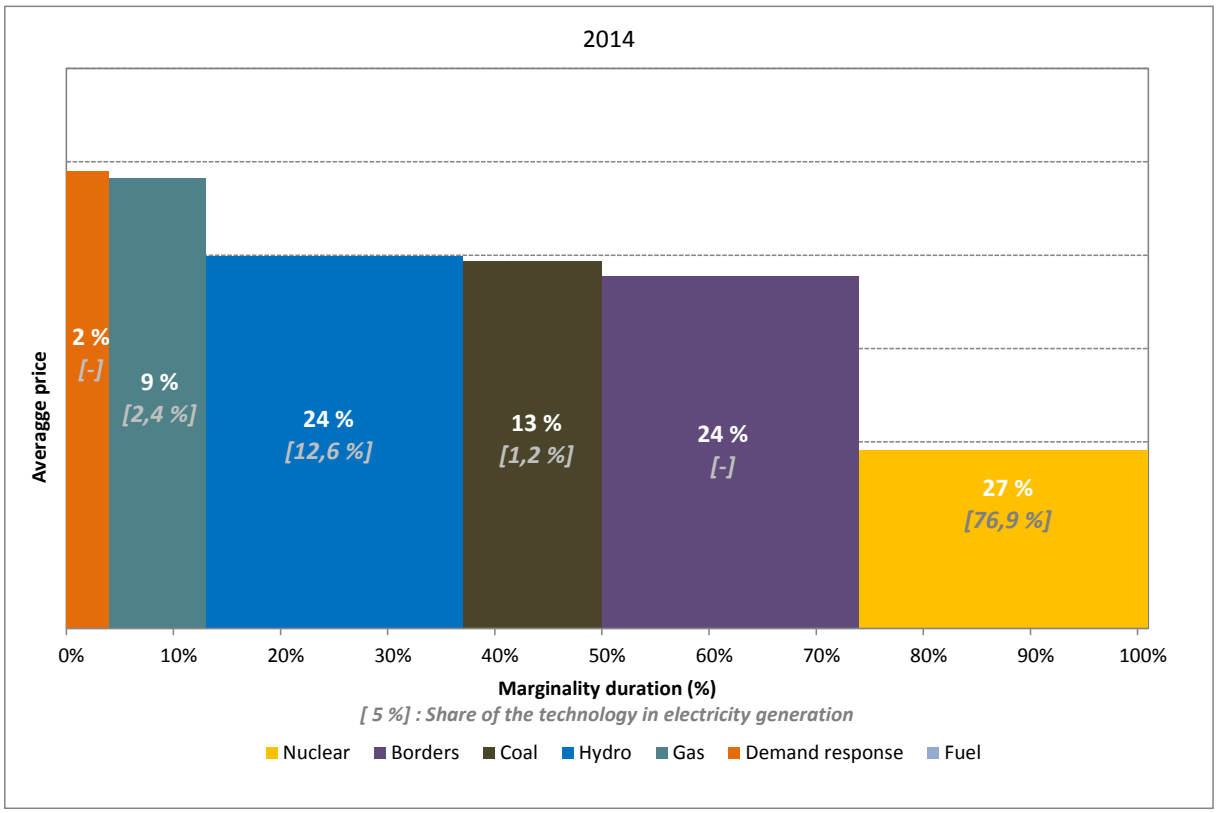
- when France is not coupled with its neighbouring countries, the price-setting marginal unit of the EPEX price can only be based in France and therefore, the production unit with the closest marginal price must be sought;
- when France is coupled with at least one of its neighbouring countries and the difference between the market price and the marginal price of the closest production unit is less than €1, then that unit is considered the marginal unit. If this is not the case, it is considered that it is a production unit located in a bordering country that has set the price ("Borders" category).

The result (Graph 26) is consistent with the fundamental analyses mentioned above. It highlights a very loose supply/demand balance in 2014 marked by:

- nuclear marginal for more than 25% of the year, in line with the low spot prices observed in 2014;
- very limited use of peakload energy resources (absence of fuel energy and gas sector marginal only 9% of the time).

[33] Initially, an analysis is conducted of all of the blocks proposed for purchase or sale in the EPEX SPOT auction which correspond to a given sector of production. If the difference between the market price and that of the block is lower than €1, it is considered that the associated production unit (or shedding) is marginal for all of the hours included in the block.

Graph 26: Price-setting per generation type

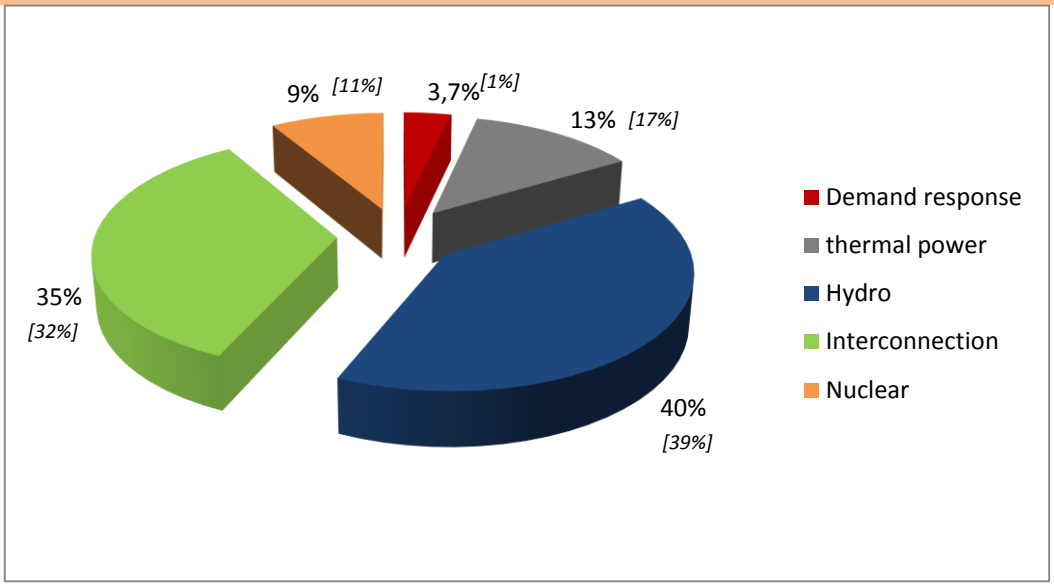


Sources: EPEX SPOT, RTE, Producers

In line with the previous result, the analysis of the offers in the balancing mechanism shows a doubling of the presence of nuclear in downward balancing offers (Graph 27).

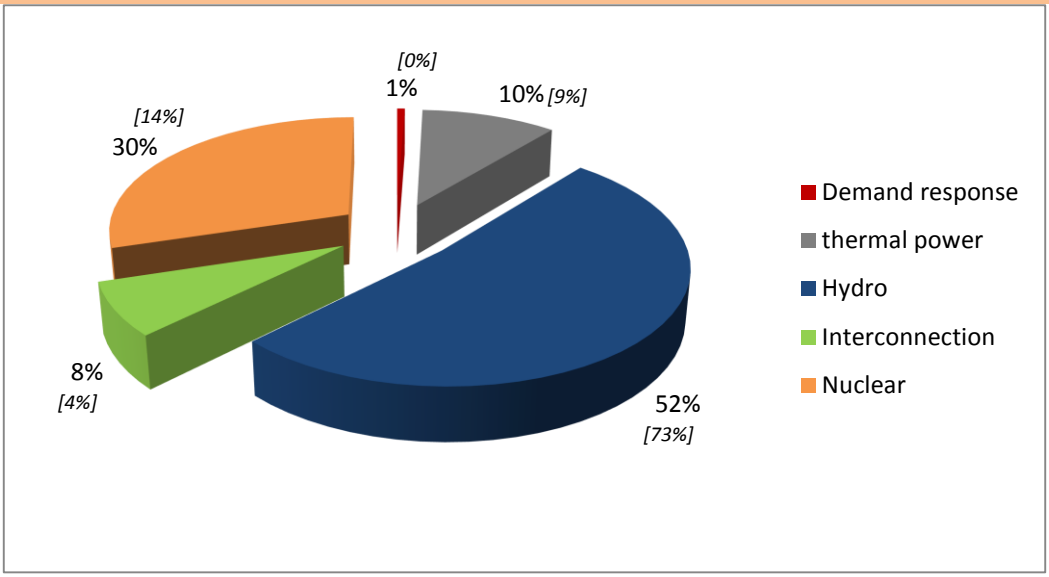
Graph 27: Proportion of technologies in the balancing mechanism in 2014

a. Proportion of technology for upward balancing



Source: RTE

b. Proportion of technology for downward balancing



Source: RTE

1.7 The transparency mechanism: overestimation of availability forecasts in 2014 remains comparable to that of 2013

Since December 2014, RTE has harmonised the data that it publishes with those required by transparency regulation EC 543/2013. The data communicated on RTE's website for France are now consistent with the data available on the European transparency platform deployed by ENTSO-E since January 2015.

One of the most important changes concern production: short-term, medium-term and long-term availability of generation sources are replaced by planned and unplanned unavailability, transmitted to RTE and published as soon as they are known.

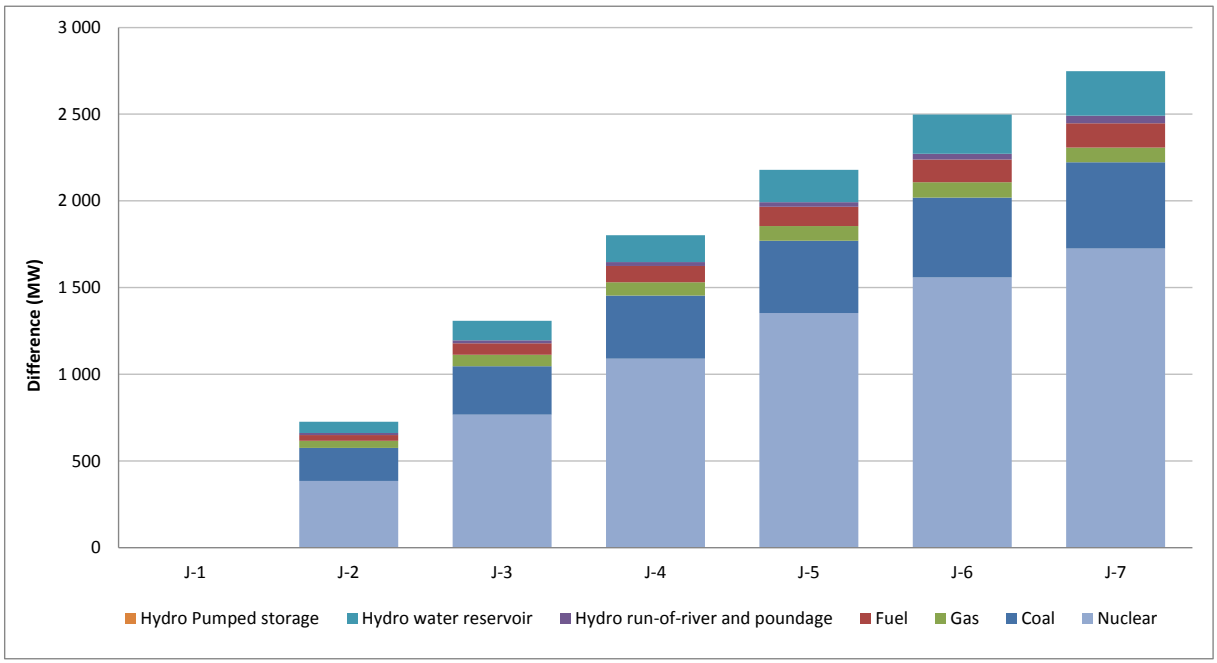
This data and installed generation capacity are used to produce forecast availability for D-1 to D-7, as well as actual availability, in line with past publications. As for previous years, forecast availability anticipated one to several days beforehand is always overestimated. The values are very close to the previous year with the greatest uncertainty concerning an overestimation seen D-7 for nuclear availability at 2.2 GW (i.e. 3.5% of the installed fleet) and coal availability at 532 MW (Graph 28 and Table 13).

Table 13: Forecast availability of the different generation sources in 2014

Production type	Nuclear	Coal	Gas	Fuel	Hydro run-of-river and poundage	Hydro water reservoir	Total
D-1 average difference (MW)	516	58	-1	37	7	109	726
D-3 average difference (MW)	1283	330	67	104	24	220	2028
D-7 average difference (MW)	2241	532	86	185	53	369	3466
D-7 average difference (% of total capacity)	3,5%	11,1%	1,5%	2,7%	0,5%	4,5%	3,3%
D-7 average difference 2013 (% of total capacity)	3,6%	16,0%	2,7%	4,1%	0,3%	1,3%	3,5%

Source: RTE – Analysis: CRE

Graph 28: Average difference between the availability forecasts and D-1 forecast



Source: RTE – Analysis: CRE

2 Drop in wholesale prices

The conditions in 2014 also caused a 20% drop in spot prices, which stood at an average €34.6/MWh. No positive price spike was observed in the spot market, and negative price episodes were also rare (8 hours in 2014). In the futures markets, electricity prices also dropped in 2014, especially towards the end of the year, in the wake of the drop in commodity prices. After the stabilisation of calendar prices at around €42/MWh, for which CRE published an analysis in its previous market monitoring report, the prices have been below this level since the end of 2014. Futures prices at the end of September 2015 stood at levels close to €38/MWh, for the one-year, two-year and three-year maturities.

2.1 The spot market marked by a major drop in prices

2.1.1 Drop in spot prices in France and absence of price spikes against comfortable margins in 2014

Baseload average price was €34.6/MWh, i.e. a significant drop of €8.6/MWh compared to 2013. This drop in prices was even greater in the peakload day-ahead price, with the average price of the megawatt hour at €43.8/MWh compared to €55.1/MWh in 2013, i.e. a drop by €11.3/MWh. For the first half of 2015, the average baseload price was €38.8/MWh, i.e. a €4.2/MWh increase compared to the first half of 2014. As opposed to 2014, the winter period in 2015 was marked by temperatures close to normal temperatures for the season, which sustained consumption in France and therefore increased the average price (Graph 29). The average intraday price in the EPEX SPOT market in 2014 was €35/MWh, down €9.3/MWh compared to 2013.

Against the loose supply/demand balance, there was no price spike in 2014 as was the case in 2012 and no negative price episode as in 2013. The hourly prices of EPEX SPOT's day-ahead auction however, were negative for eight hours in 2014. They however remained at levels between €0/MWh and €-2/MWh. The absence of price spikes fell within the context of low volatility in 2014 (Graph 30).

Volatility had been high during cold winter episodes and price spikes in 2012. The volatility index related to the French spot price has since regressed and stood below 15% throughout 2014 because of the absence of supply/offer tightness.

Table 14: Average day-ahead and intraday prices

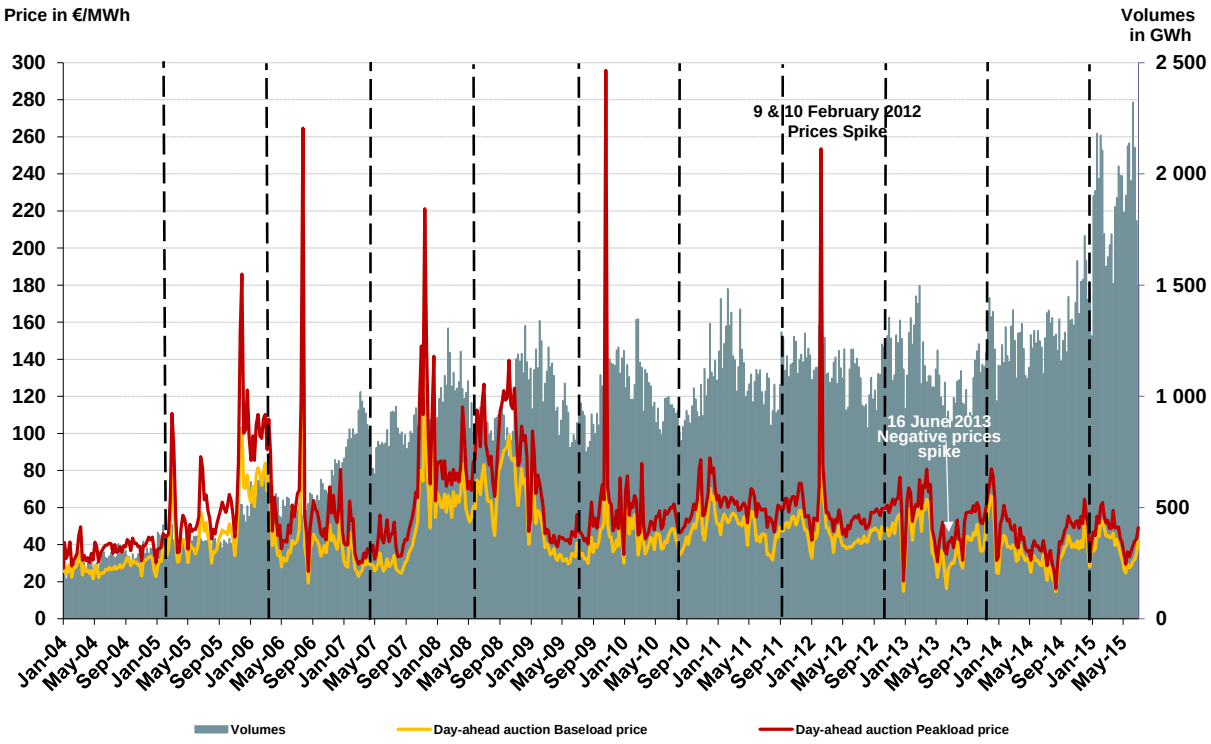
Period	Average day-ahead price	Average Intraday price
2013	43,2 €/MWh	44,3 €/MWh
2014	34,6 €/MWh	35 €/MWh
H1 2014	34,6 €/MWh	35,3 €/MWh
H1 2015	38,8 €/MWh	39,4 €/MWh

Source: EPEX SPOT

This absence of tightness is linked to a comfortable electricity system margin in 2014. The formation of spot prices correlates with the forecast system margin, which is the difference between available production capacity and consumption. In 2014, the margins assessed by CRE[34] were on average 29.5 GW. Comparing spot prices observed with the margins seen hour by hour can be used to verify the overall consistency of prices with fundamentals (Graph 31).

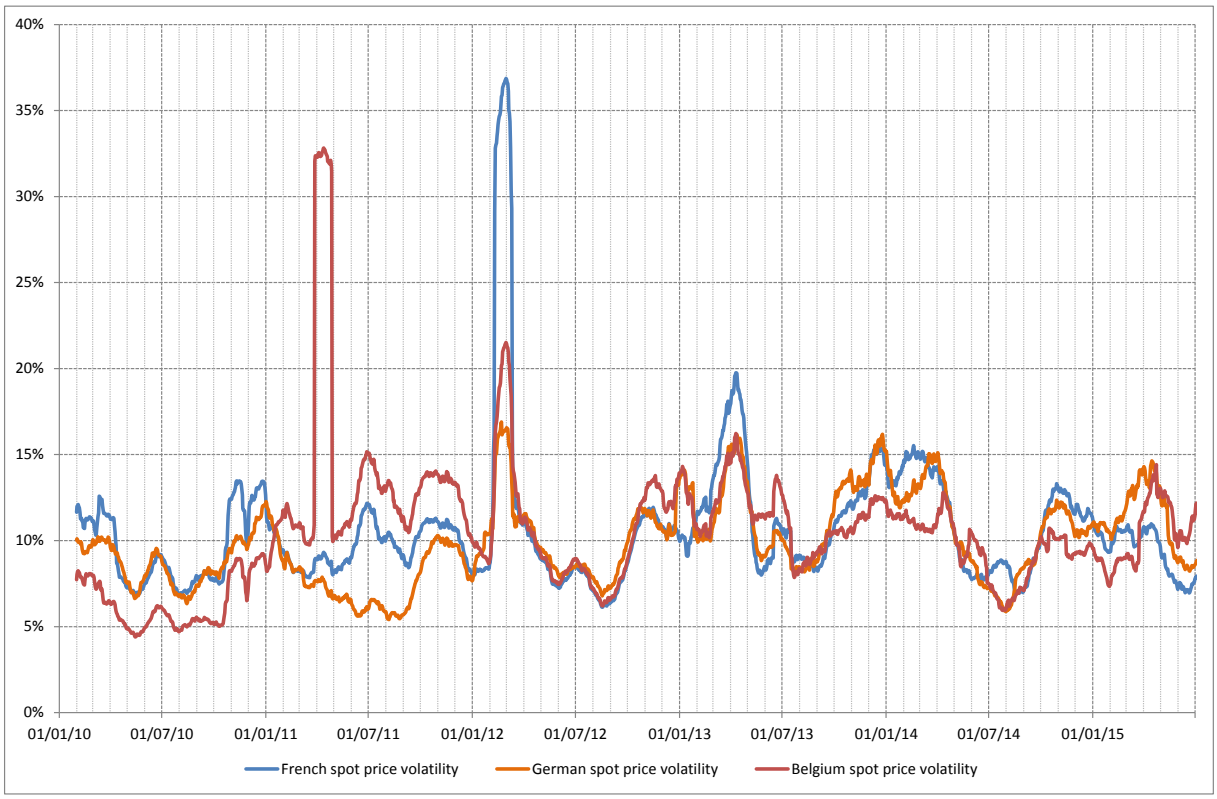
[34] The calculation of margins conducted by CRE is based on public transparency data and is different to the calculation of margins published by RTE. RTE calculates margins by time period (morning or evening), and they are used as a component for running the system. They therefore correspond to a volume available that can be used to handle production or consumption contingencies. This volume can differ from the calculation made by CRE due to the physical constraints of installations (delay in starting plants, hydraulic volume effectively "useable" in the short-term, etc.).

Graph 29: Evolution of day-ahead prices in France (weekly average and sum of volumes)



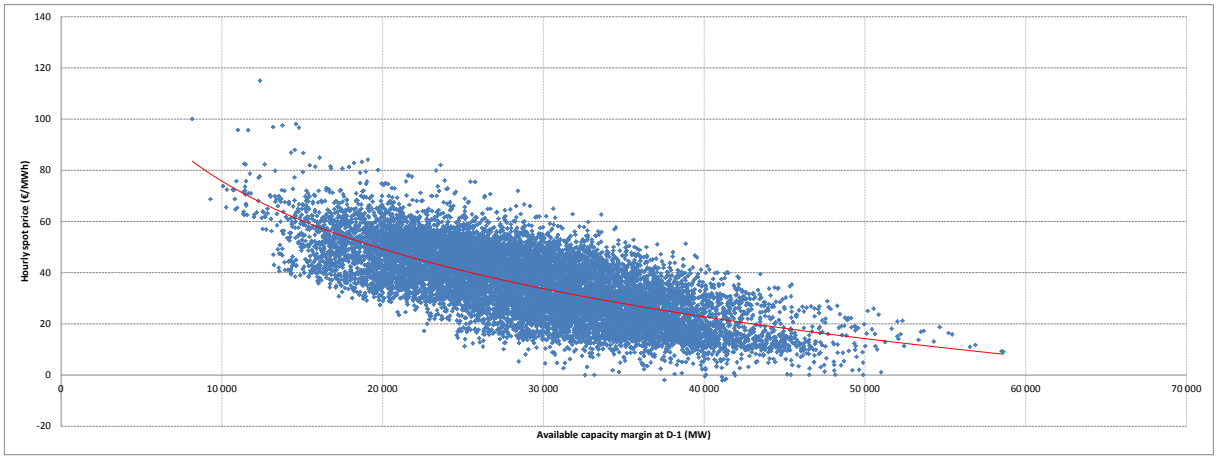
Source: EPEX SPOT

Graph 30: Volatility of day-ahead prices



Sources: EPEX SPOT, Belpex – Analysis: CRE

Graph 31: Spot prices and D-1 forecast margin of the French electricity system in 2014 and the first half of 2015



Sources: RTE, EPEX SPOT

2.1.2 A spot price/cost difference for EDF evaluated at an average 5.5% in 2014

With regard to the formation of the spot price, CRE specifically monitors differences existing between the prices in the spot market and the marginal costs of EDF's generating facilities resulting from the calculation of its daily optimisation models.

This indicator assists in detecting the exercise of market power. This analysis is carried out on a daily basis, based on data received monthly, and covers the hours for which it is assumed that EDF's offers determine the auction price. On average, the price-cost difference during these periods in 2014 was 5.5%. This difference was 4.5% in 2013 and 2.2% in 2012 (see 2013-2014 and 2012-2013 Monitoring Reports). Ever since CRE has measured this indicator (2008), it has never exceeded 6.5%.

CRE considers that the difference measured for 2014 does not reflect the exercise of market power.

2.1.3 Spot markets that reflect specific national situations against growing market integration

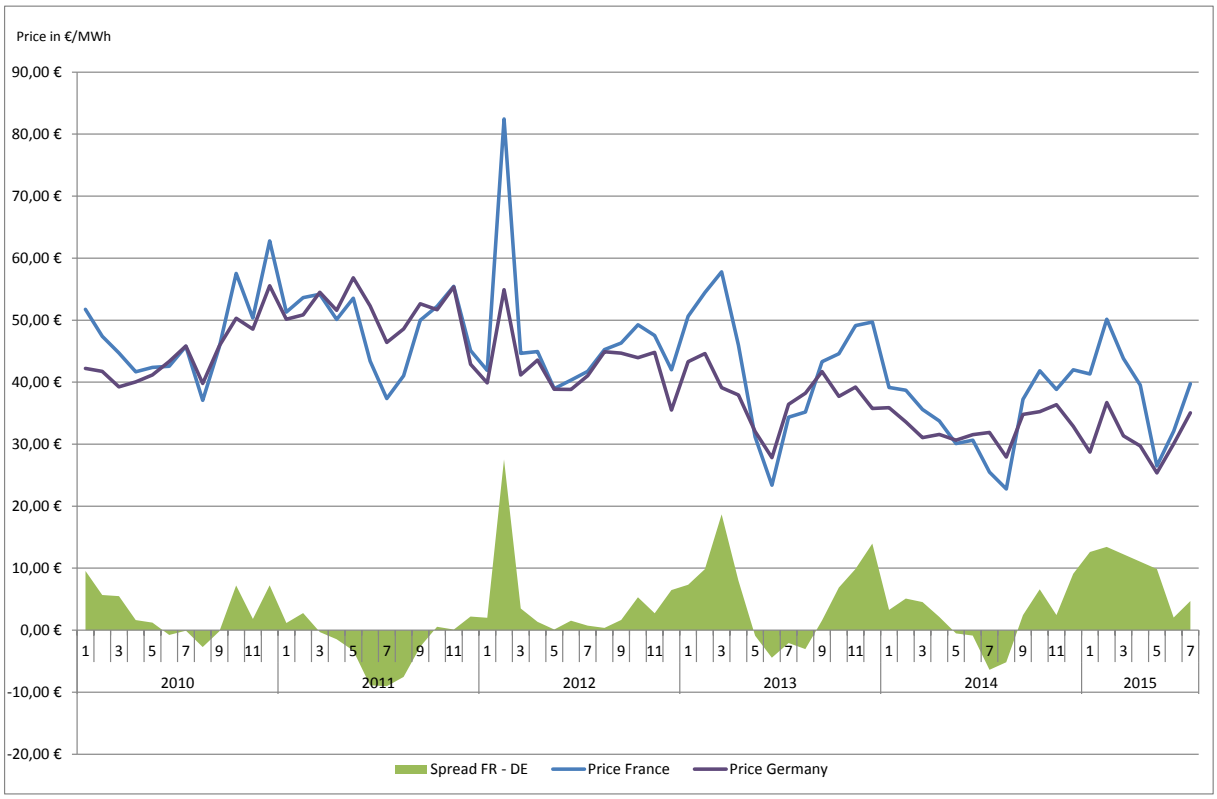
The analysis of spot prices in France and neighbouring countries shows the formation of price differences reflecting specific supply/demand situations, even though the expansion of market coupling and optimisation of cross-border trading (thanks in particular to the flow-based mechanism (see below)) serve to strengthen European market integration.

Spot price developments in France, Germany, Belgium and Spain are compared in the following graphs (**Graph** 32, **Graph** 33 and **Graph** 34). The France-Germany price difference was €1.9/MWh in 2014, i.e. a €3.6/MWh drop compared to 2013. In general, the spot price difference with Germany reflects the thermo-sensitivity of French prices, which causes major seasonal trends in the France-Germany price difference. This seasonal trend was not seen in 2014 given the specific climate conditions. The first half of 2015 was marked by colder temperatures and a more sustained demand, which widened the France-Germany difference to €10.2/MWh, a usual configuration compared to the atypical conditions of 2014.

In 2014, the France-Belgium price difference grew (France less expensive) to €-6.1/MWh, compared to €-4.2/MWh in 2013). Since 2013, the France-Belgium price difference has been very sensitive to nuclear availability in Belgium. The shutdown of the Doel 3 and Tihange 2 reactors in the first half of 2013 had a specific impact. This difference widened in 2014, since the two reactors were again shut down from March 2014, with a restart subjected for approval by the *Agence Fédérale de Contrôle Nucléaire*.

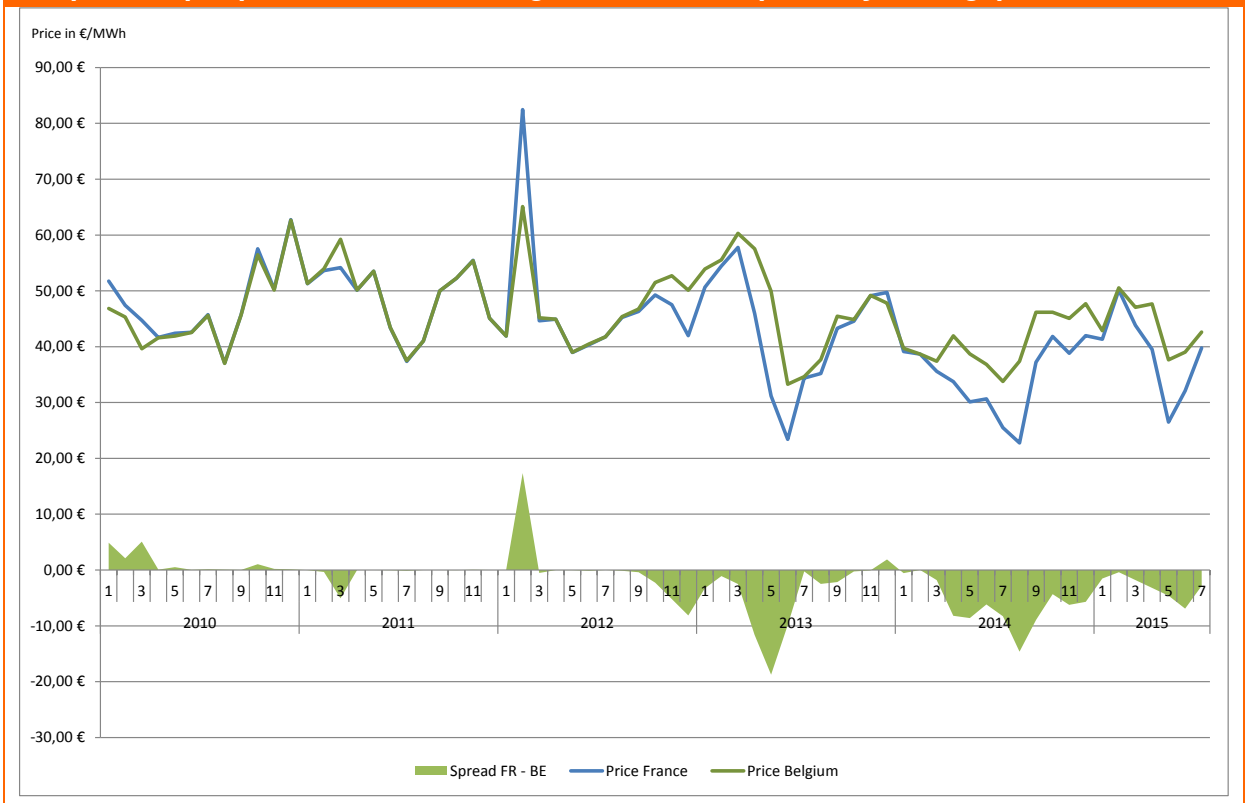
In Spain, the effects of the climate on wind and hydropower generation are decisive in price formation. These generation sources have greater potential in the first months of the year after which the Spanish prices can reach monthly levels lower than €20/MWh, enabling France to import from Spain during winter periods.

Graph 32: Spot price and France-Germany difference (monthly average)



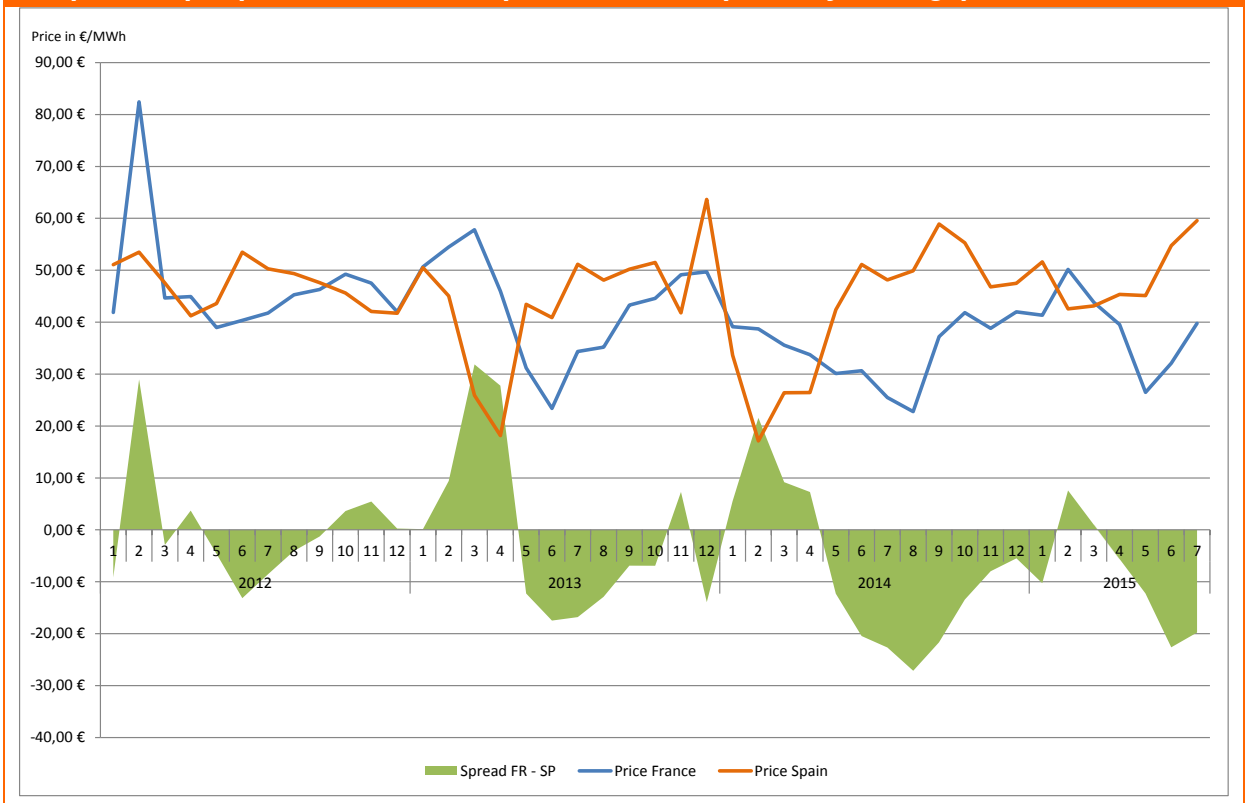
Source: EPEX SPOT

Graph 33: Spot price and France-Belgium difference (monthly average)



Sources: EPEX SPOT, Belpex

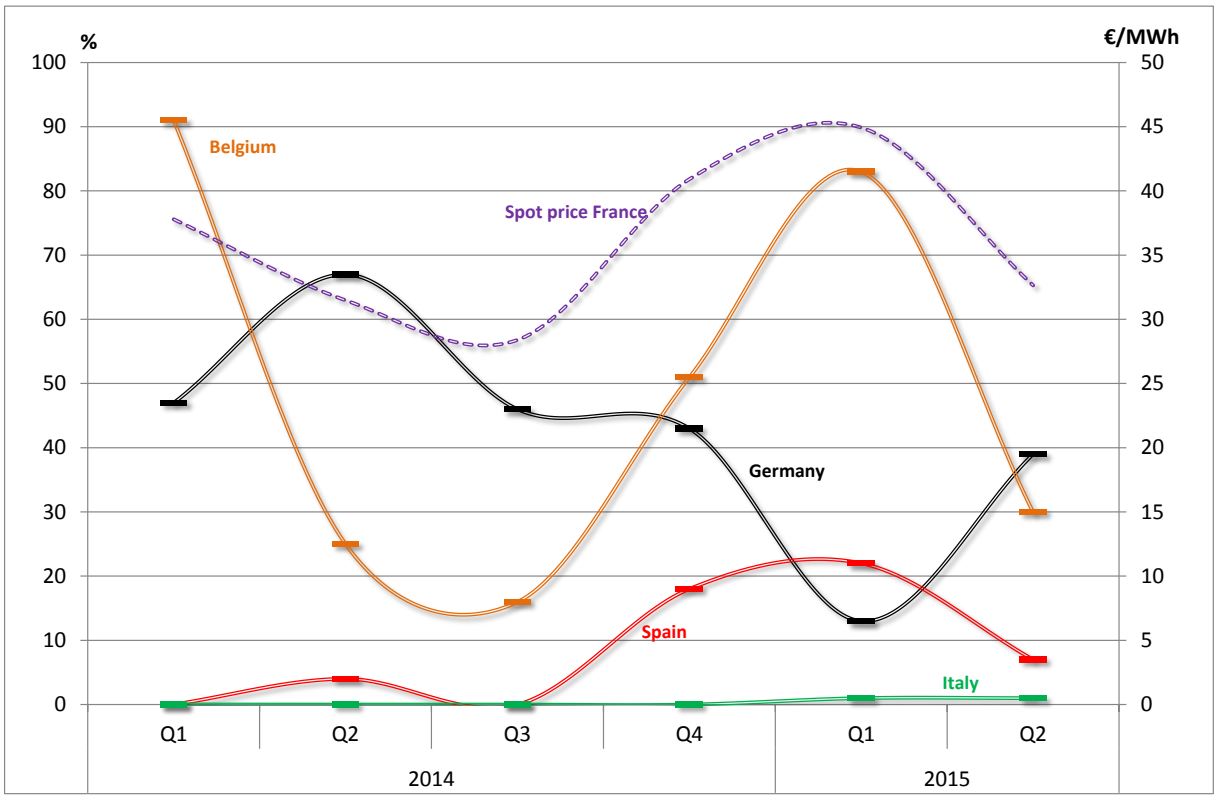
Graph 34: Spot price and France-Spain difference (monthly average)



Sources: EPEX SPOT, OMEL

The formation of price differences between France and its neighbouring countries falls within the development of the price convergence rates resulting from market coupling (Graph 35). This mechanism was extended to Spain in March 2014 and to Italy in February 2015. The convergence rates observed with these two countries, though moderate, especially with Italy, are not zero, particularly in winter. There was a high rate of convergence with German prices in 2014, and with regard to Belgium, there was a significant drop following the shutdown of the nuclear units.

Graph 35: Quarterly convergence rates of hourly prices with coupled countries

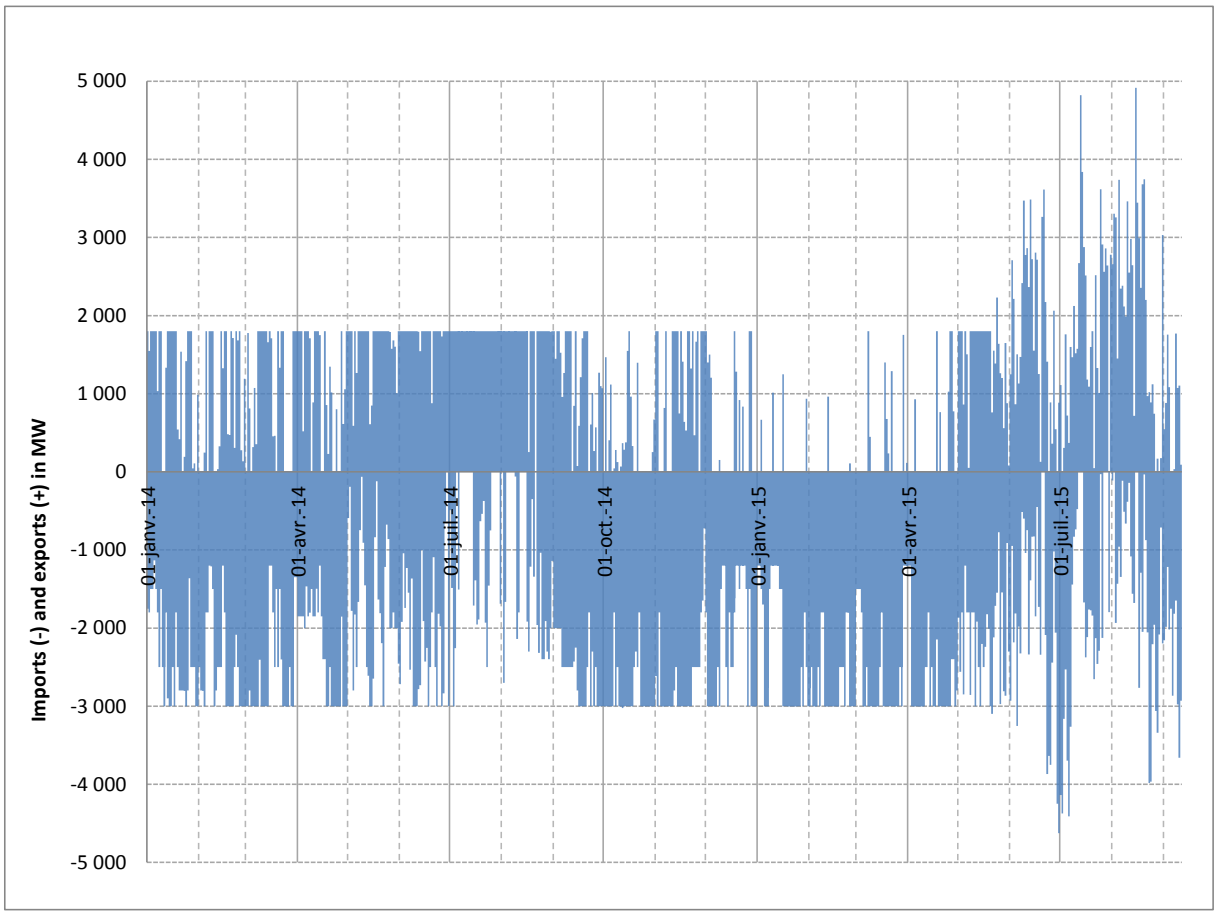


Sources: EPEX SPOT, Belpex, OMEL, IPEX

The flow-based market coupling method[35] was launched on 20 May for delivery on 21 May 2015. The countries concerned are those in the central west zone (France, Belgium, the Netherlands, Germany and Luxembourg). The impact of the flow-based method is particularly visible in flows at the Belgian and German borders. The new method allowed the export of up to 4.9 GW to Germany in certain configurations in which there was abundant supply in France, whereas previously, capacity was limited to 1.8 GW (Graph 36). Inversely, some system configurations enabled France to import from Germany up to 4.6 GW to meet its demand at the best price instead of the former limit of 3 GW. In Belgium, where the supply/demand balance is tighter, the flow-based method enabled, in certain system configurations, to double exports to reach an hourly record of 5.7 GW (Graph 37).

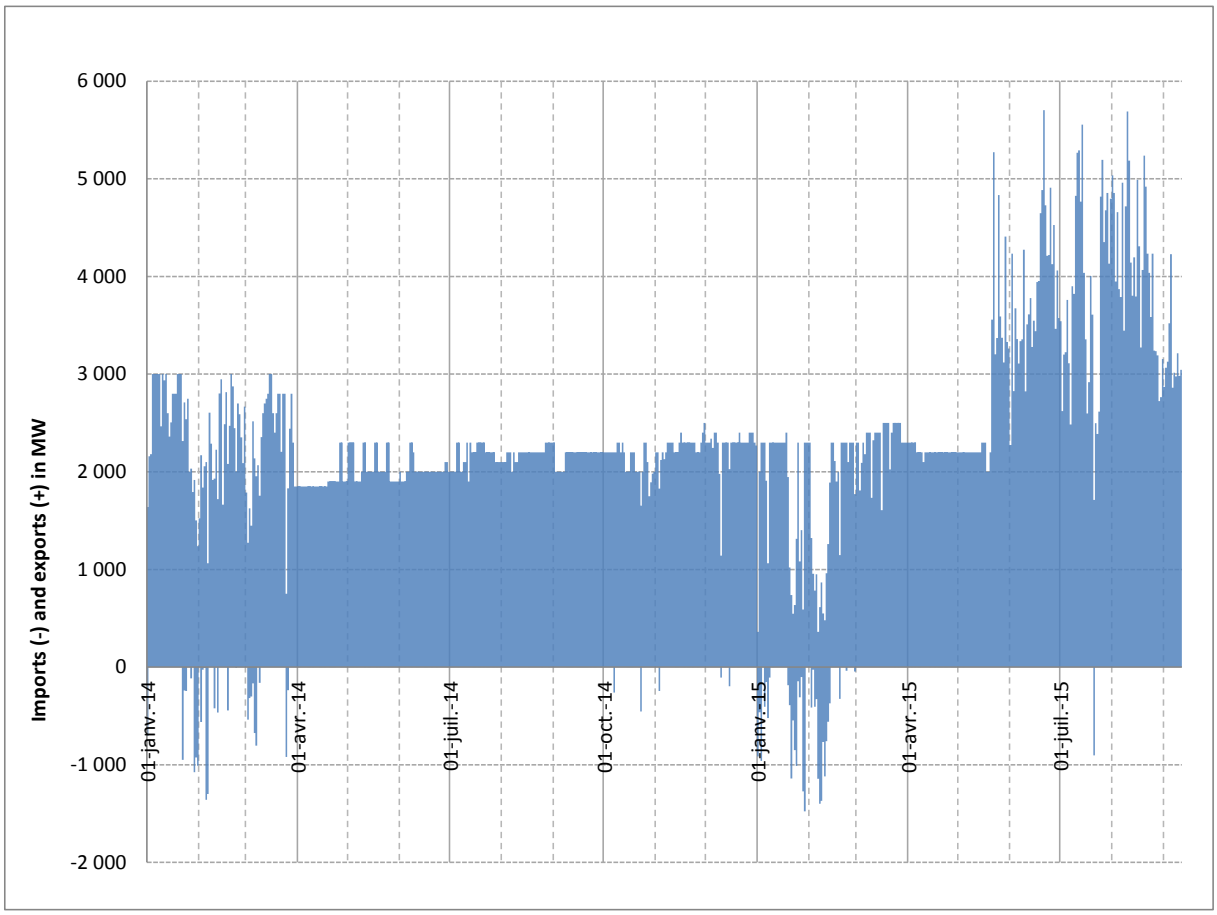
[35] This new method of allocating energy flows at borders on a day-ahead basis, maximises cross-border exchanges by complying with the actual physical constraints of the European transmission networks. Capacity allocation following the flow-based method is dynamic depending on the supply/demand balance of each of the countries concerned.

Graph 36: Trading scheduled D-1 between France and Germany



Source: RTE

Graph 37: Trading scheduled D-1 between France and Belgium



Source: RTE

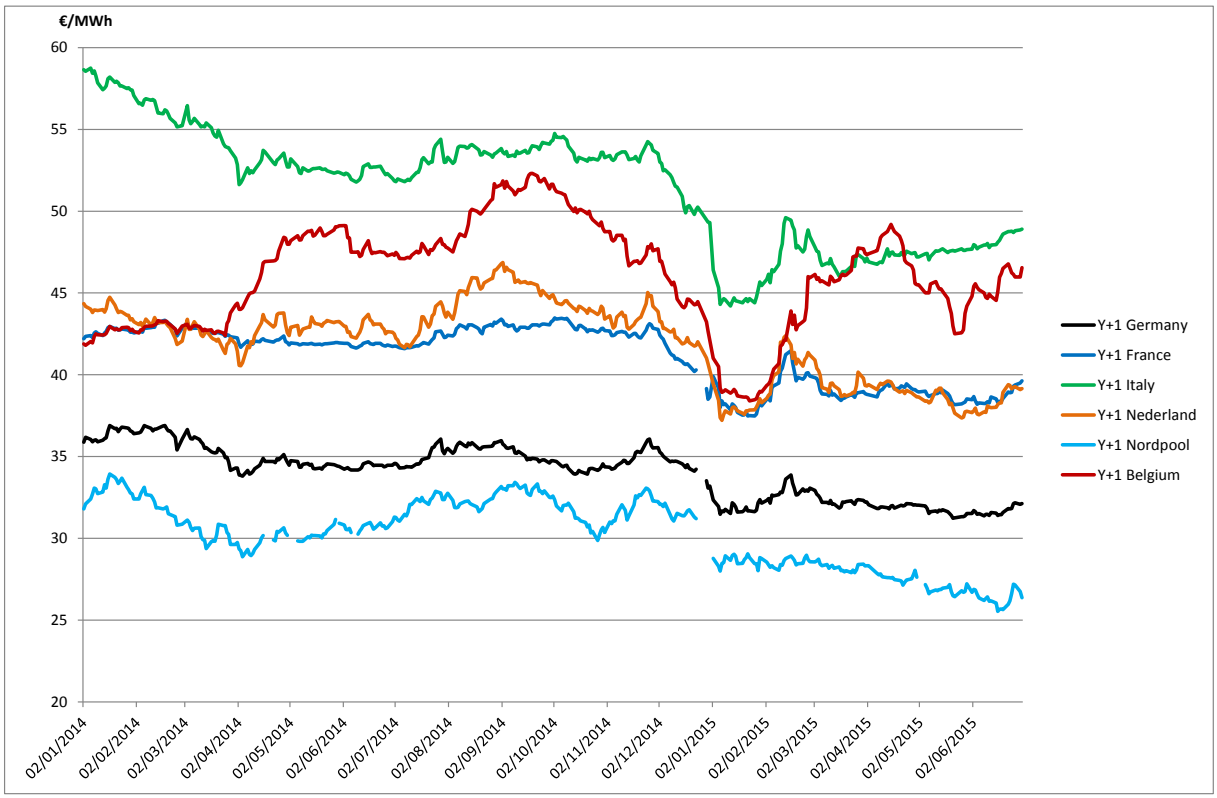
2.2 The futures market under the influence of the drop in commodity prices

2.2.1 A drop in futures prices in Europe

Electricity futures prices in Europe are heavily influenced by the price of gas, coal and to a lesser extent, CO_2. Therefore, they globally followed the downward trend observed for raw materials. In particular, German prices reflected the downward trend in the price of coal (Section II) (Graph 38). Belgian futures prices however, saw an increase by almost €10/MWh following the announcement in April 2014 of the shutdown of the Doel 3 and Tihange 2 nuclear plants.

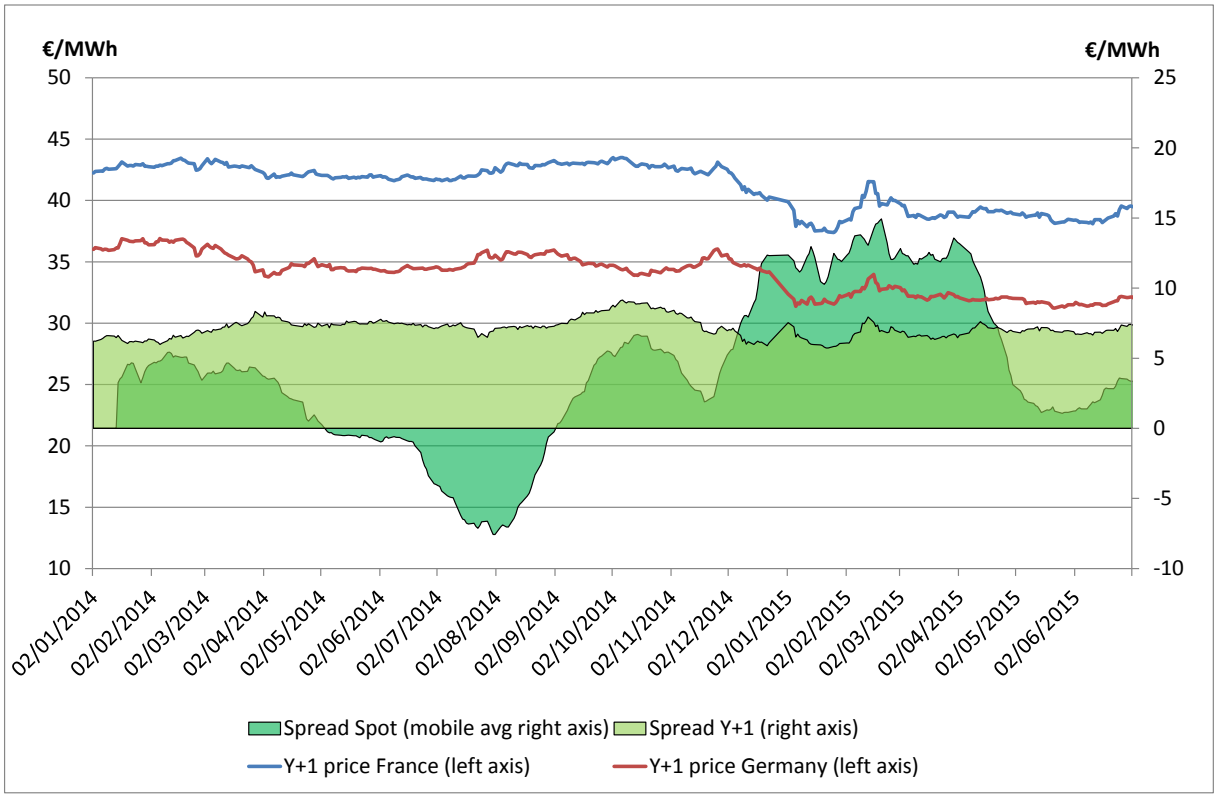
In 2014, the difference between the price of German and French calendar products widened until the month of October, where it reached a maximum €9/MWh after the drop in German prices, while French prices remained stable at around the €42/MWh cap (Graph 39). The fall in futures prices at the end of 2014 narrowed the difference between German and French product prices. In the first half of 2015, this difference was at a level comparable to that observed in the spot market. Moreover, the disconnection of French prices, going below the €42/MWh cap, was accompanied by greater volatility of those prices, after reaching very low levels in 2014 (Graph 40).

Graph 38: Price of Y+1 products in Europe



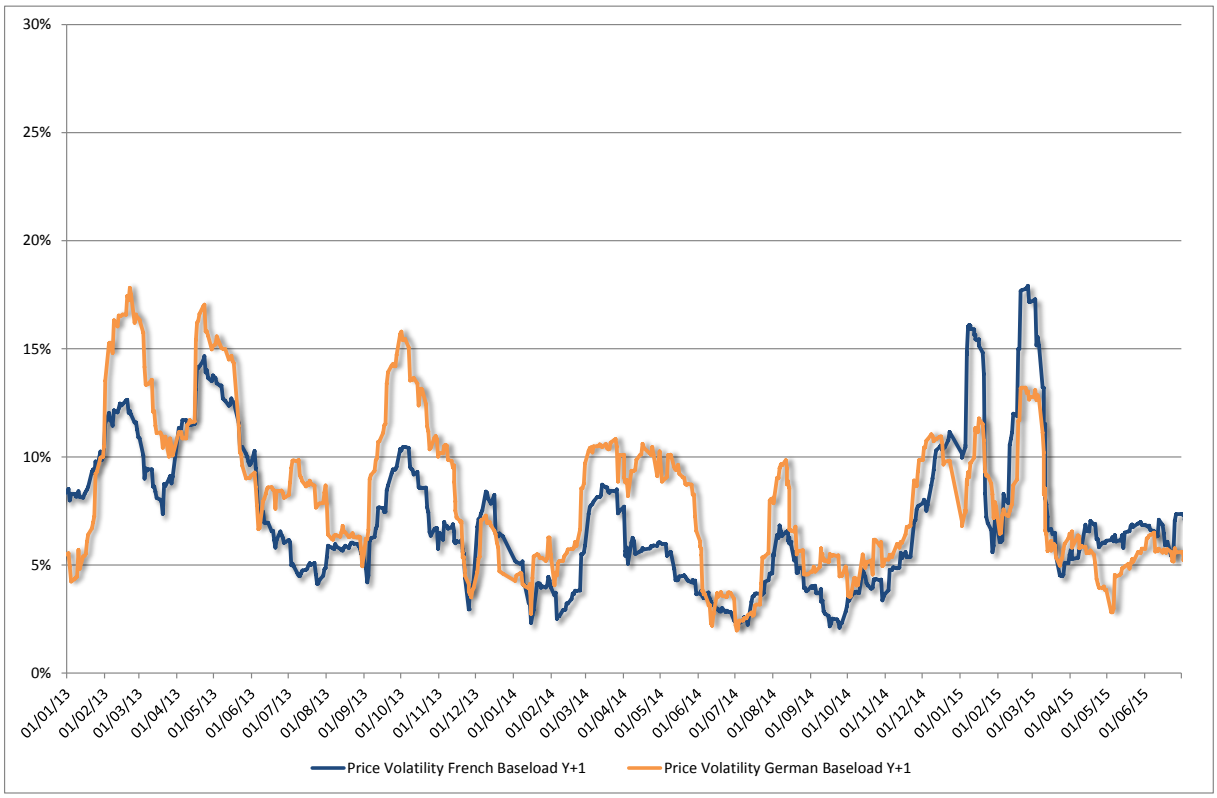
Sources: EPD, ICE ENDEX, Heren

Graph 39: Prices and difference between the French and German calendar products



Sources: EPEX SPOT, EEX

Graph 40: Volatility of calendar product prices



Source: EPEX SPOT

2.2.2 Futures prices in France lower than ARENH prices

In its previous monitoring report, CRE analysed the evolution of French futures prices against the stabilisation observed in the ARENH price level, i.e. €42/MWh.

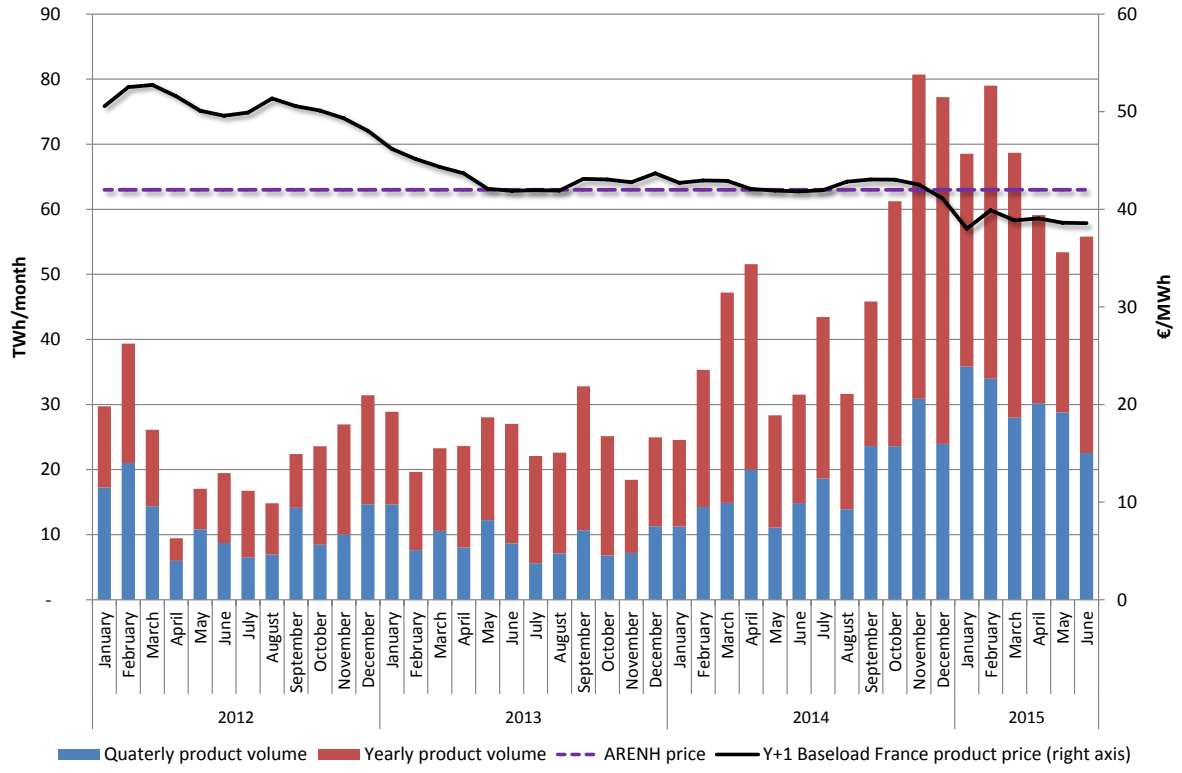
Throughout 2014, the market price remained close or slightly higher than €42/MWh, with the maximum at €43.5/MWh in October 2014. At the end of 2014, the futures price however went below €42/MWh, falling as low as €38/MWh as the drop in commodity prices accelerated. This drop was recorded for one-year, two-year and three-year calendar products (Graph 41).

The disconnection of futures prices favoured purchases in the wholesale market to the detriment of ARENH subscriptions. The volumes subscribed within the framework of ARENH stood at 12.6 TWh in the first half of 2015 compared to 34.5 TWh in the second half of 2014, i.e. a 65% drop. Volumes which could not be sold under ARENH were therefore dispatched to the electricity market. The volumes of quarterly and annual products in fact increased considerably in the last quarter of 2014 and the first quarter of 2015 (Graph 42). The volumes traded corresponding to these products practically doubled over those two quarters. A portion of the volumes was also dispatched to the spot market whose volumes increased significantly during that period.

Graph 41: Evolution of the prices of calendar products in France for the next three years

Source: EEX

Graph 42: Prices and volumes of Y+1 calendar products traded



Source: EEX

3 The development of the main wholesale market segments: major increase in volumes traded

Activity in the French wholesale market includes transactions made in power exchanges and in organised over-the-counter markets (broker platforms). This scope covers most of the activity in the French wholesale electricity market, with the remaining portion being covered by direct bilateral transactions between market participants (Table 15).

Table 15: Portion of trading by platform and maturity

	2014	2013
Exchange DA + Intraday	7.5 %	11%
Exchange Futures	8.5%	3%
Brokers DA	3.4%	4%
Brokers Futures	80.5%	82%

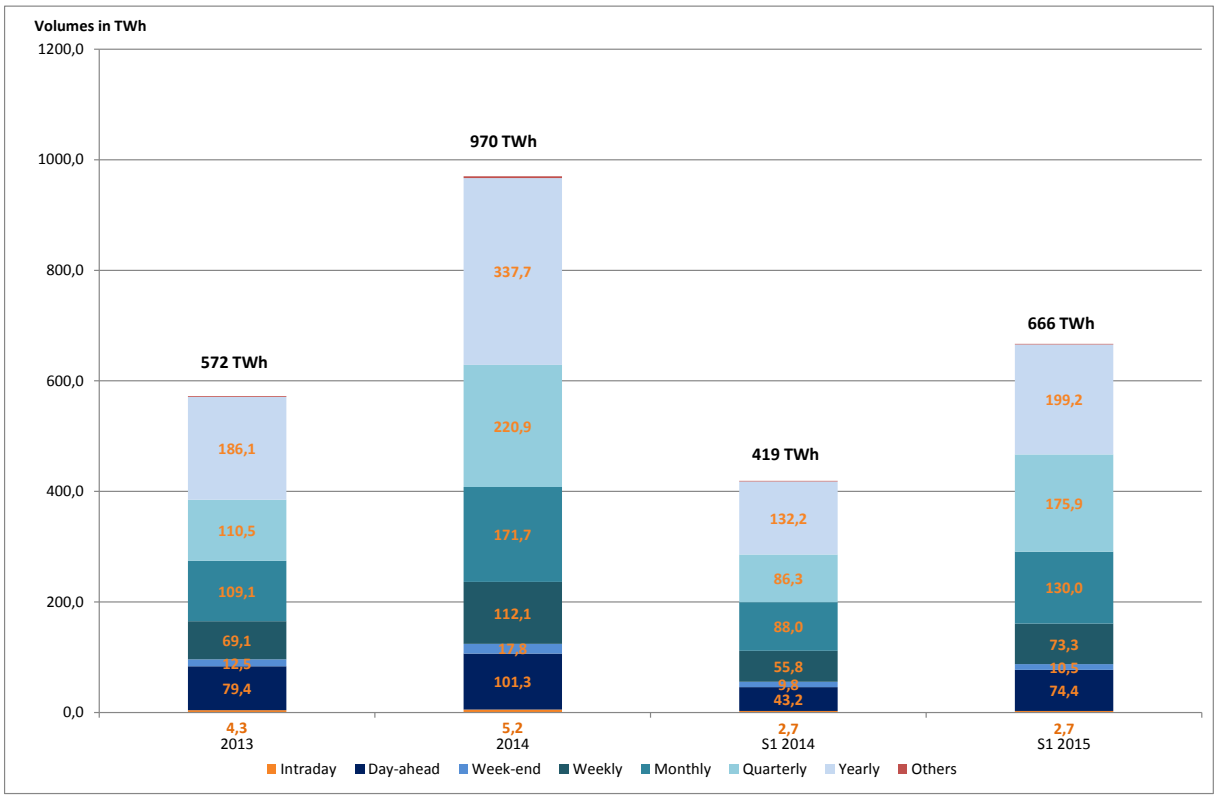
Sources: EPEX SPOT, EEX, Brokers

3.1 A 70% increase in the volumes traded in 2014

While the number of participants active in the wholesale market was stable in 2014 compared to 2013 (Table 16), the volumes traded in the wholesale market totalled 970 TWh in 2014, which represents a very sharp increase compared to 2013 (+70%) (Table 7). The volumes traded in the markets represent 208% of French consumption. This high percentage reflects the increase in liquidity. The number of transactions in the futures market increased 74% in 2014, totalling 89,070 transactions.

In the first half of 2015, the volumes continued to soar, totalling 666 TWh (Graph 43), against low ARENH subscriptions for the two halves of 2015 and the dispatching of these volumes to the markets. This increase came mainly from half-yearly and yearly products, the preferred substitutes to the ARENH product, in particular in the exchange (Graph 44).

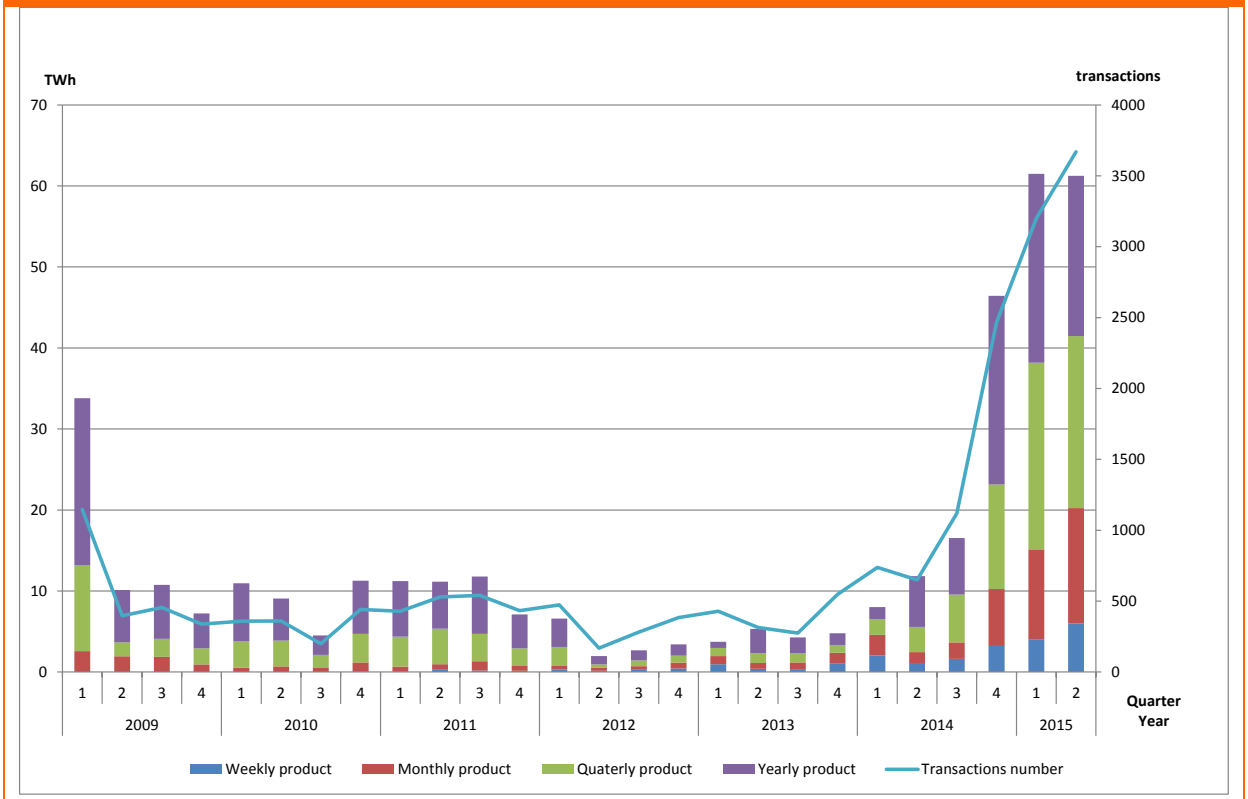
Graph 43: Volumes traded in the wholesale markets*



*Excluding bilateral transactions

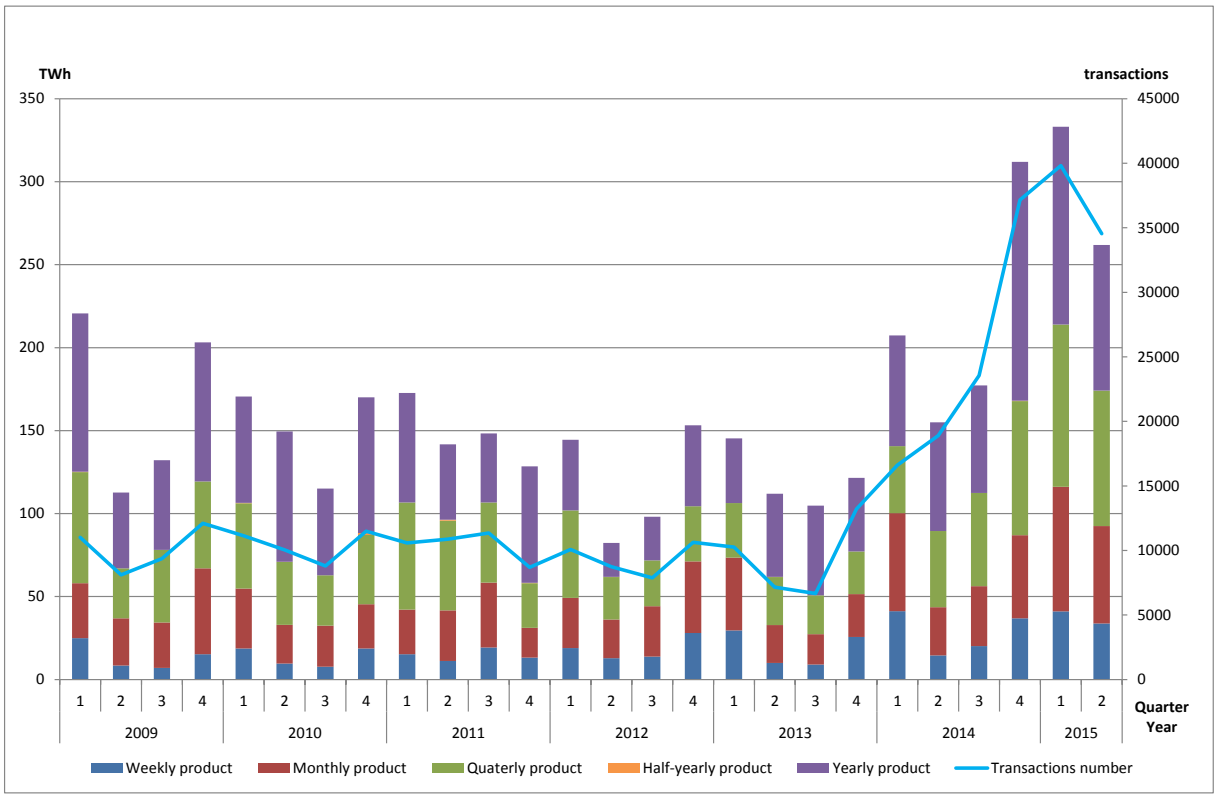
Sources: EPEX SPOT, EEX, Brokers

Graph 44: Volumes traded in the futures exchange



Source: EEX

Graph 45: Volumes traded in the brokered and organised markets



Sources: Brokers, EEX

Table 16: Breakdown of wholesale electricity market participants in France

Source : RTE, EPEX Spot, Brokers	2012	2013	2014	Annual variation 2014/2013 As percentage	Annual variation 2014/2013 Variation	H1 2013	H1 2014	Half-yearly variation H1 2015 / H1 2014 As percentage	Half-yearly variation H1 2015 / H1 2014 Variation
Balancing responsible	**195**	**193**	**193**						
Active in electricity generation	29	25	23	-8%	-2	19	20	5%	1
Holder of volumes purchased at VPP	31	24	10	-58%	-14	9	5	-44%	-4
Holder of rights of regulated access to ARENH	17	18	20	11%	2	19	14	-26%	-5
Final customers provider	29	28	26	-7%	-2	25	23	-8%	-2
Active on imports/exports	86	94	103	10%	9	96	87	-9%	-9
Active on block exchange	110	107	113	6%	6	104	108	4%	4
Active on exchange	93	96	105	9%	9	99	94	-5%	-5

Source: RTE

3.2 Launch of the capacity mechanism

On 1 April 2015, the certification phase for generation and demand-response capacities was launched, which is the first stage in the capacity mechanism. The purpose of this mechanism is to guarantee sufficient generation and demand-response capacity to meet demand in particularly tight supply/demand scenarios. Electricity suppliers and large consumers will be required, as from delivery year 2017, to cover their consumption or that of their clients during the days considered the tightest of the year for the security of supply.

To obtain these capacities, suppliers shall either have to go through capacity holders via over-the-counter exchanges or take part in the auctioning of certified capacity organised by EPEX SPOT, the first of which is scheduled for early 2016 and will concern delivery year 2017.

RTE has begun to certify the capacity of electricity producers and load management operators for delivery year 2017 (Graph 46: Capacity certified as at 1 October 2015).

Graph 46: Capacity certified as at 1 October 2015

Production type	Certified capacity October 1, 2015	% of installed capacity
Nuclear	59782,9	95%
Gas-Hard Coal	6326,5	58%
Water reservoir	5582,2	68%
Fossil oil	4892,4	73%
Run-of-river and poundage	4585	44%
Pump storage	3980,1	80%
Multi production types	3891,7	-
Others	325	-
Demand response	38	-

Source: RTE

SECTION IV: The wholesale gas markets

In 2014 and the first half of 2015, wholesale gas markets in France and Europe were affected by the drop in demand and the decline in commodities prices. Oil in particular contributed to the drop of imports price in Asia, which was reflected in the alignment of Asian and South-American prices with European prices. The narrowing of the difference between these markets led to a lowering, since mid-2014, of arbitrages observed these past years which limited LNG supply in Europe.

Climate conditions also had a major effect on short-term markets. Following a mild winter, European spot prices declined considerably in summer 2014. In contrast, concerns about European supply during winter 2014-2015, particularly in connection with the conflict in Ukraine, maintained winter prices relatively high and encouraged the filling of storage. This context considerably accentuated the seasonal trends in market prices in 2014.

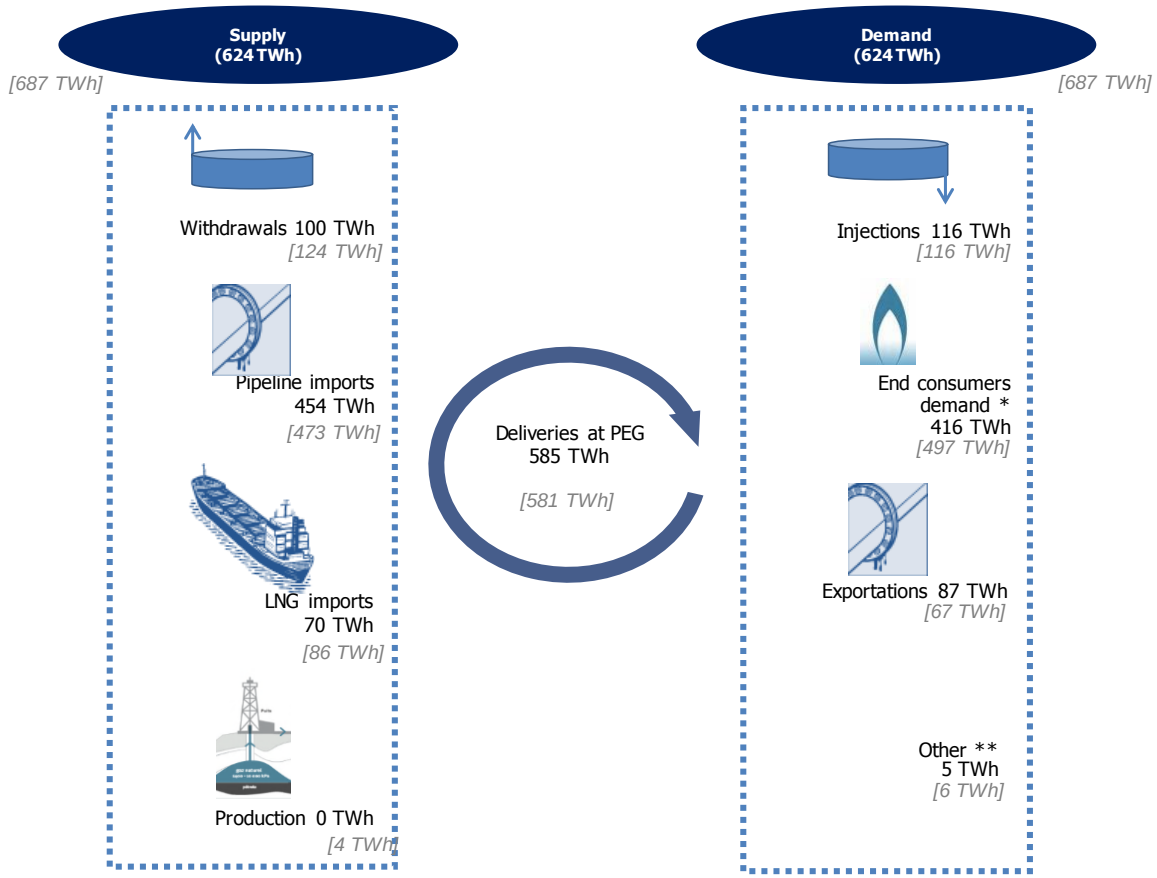
The decline in European production continued with the announcement at the end of 2014 of new production cuts for the Groningen gas fields in the Netherlands.

1 The gas system: major drop in consumption

1.1 Decline in consumption due to the climate

The 2014 gas balance shows a net decline with supply volumes down 9% compared to 2013 (Graph 47). This decline can be observed for all components of the gas balance. The year 2014 was marked by a 16% drop in gas consumption in France against record temperatures compared to normal temperatures recorded since 1900. Moreover, the low electricity prices caused a drop in consumption of gas power plants (Graph 48).

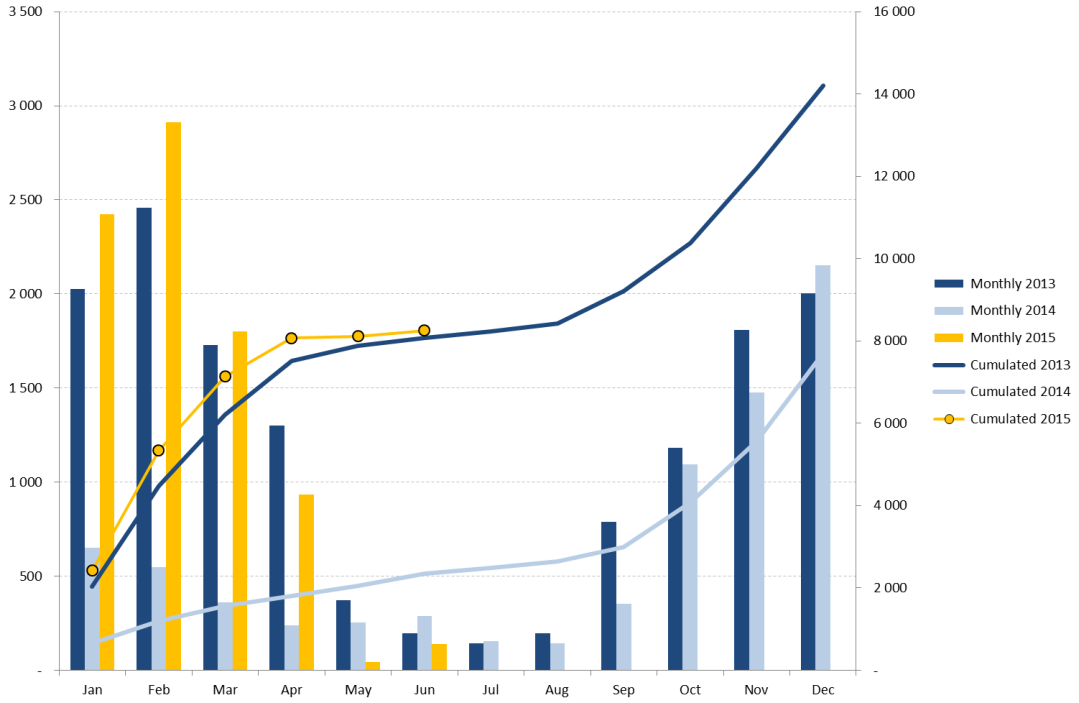
Graph 47: Supplies and demands in the French system 2014 [2013]



Sources: GRTgaz, TIGF – Analysis: CRE

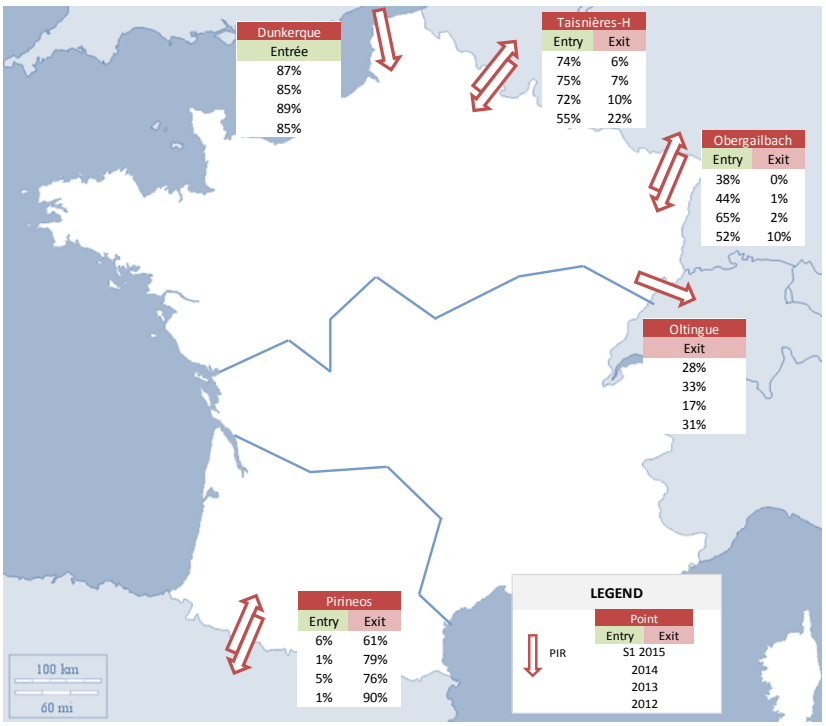
Low consumption caused a slight drop in both land and maritime imports, and enabled a recovery in exports. These were marked by the upturn in volumes at Oltingue, which doubled compared to 2013 returning to the 2012 level (Graph 49). Exports to Spain increased 18.7% in 2014.

Graph 48: Consumption of high modulation sites



Sources: GRTgaz, TIGF – Analysis: CRE

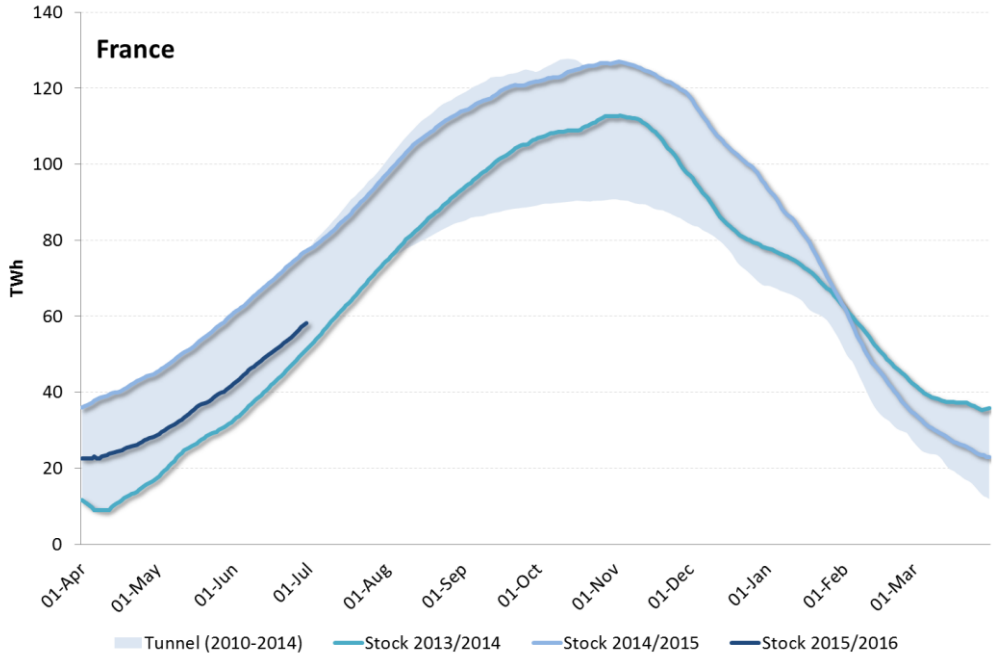
Graph 49: Rate of use of French interconnections



Sources: GRTgaz, TIGF – Analysis: CRE

In addition, the mild winter 2013/2014 allowed a positive balance in storage, with injections 16 TWh higher than withdrawals. This was reflected by very high storage levels throughout 2014 (Graph 50).

Graph 50: Storage levels in France

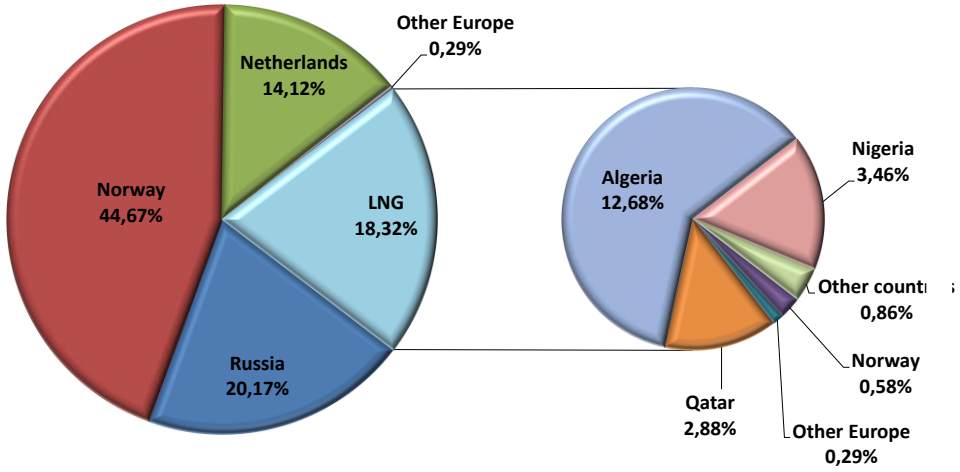


Sources: Storengy, TIGF – Analysis: CRE

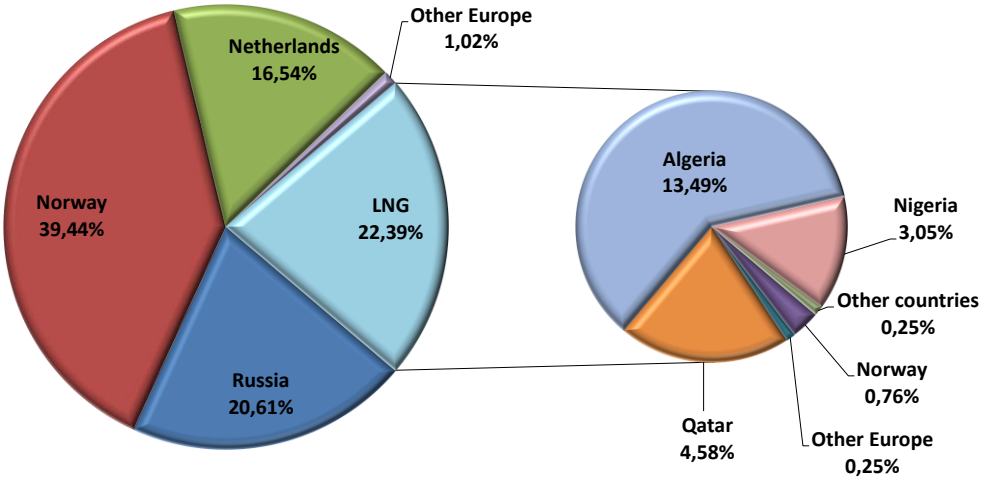
The market share of gas supply sources changed very little between 2013 and 2014 (Graph 51). The notable points are the decline in the proportion of LNG, offset by the increase in Norwegian imports, and the negligible impact of the Ukraine crisis on the proportion of imports from Russia.

Graph 51: Origin of French natural gas supply in 2013 and 2014

a. Year 2014



b. Year 2013



Source: BP Statistical Review of World Energy – Analysis: CRE

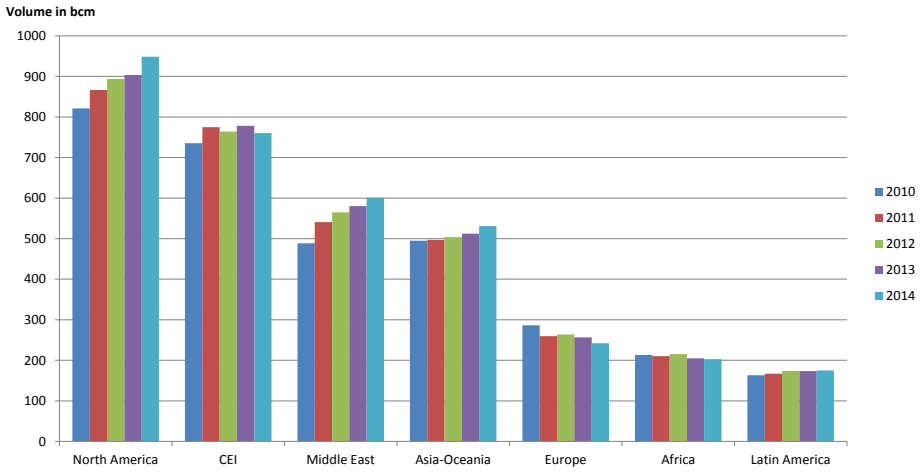
1.2 Drop in gas production in Europe

The year 2014 marks a symbolic turning point in France with national production injected into the transmission network being negligible. After 56 years of activity, the last major production field in the country, the Lacq gas field, stopped commercial operation on 14 October 2013. With a limited number of wells in operation, its activity is now limited to the supply of gas and hydrogen sulphide to industrial sites located in the neighbouring chemical platform.

In Europe, gas production has followed a downward trend since mid-2000. This drop is due to the depletion of certain gas fields on the North Sea Continental Shelf, in particular, those of the United Kingdom, whose production was cut by a third between 2000 and 2014, as well as to the stagnating production of the Norwegian field, which, after doubling the volumes extracted between 2000 and 2008, reached a production peak (Graph 52).

In the Netherlands, given the worsening of seismic conditions around the Groningen field, the government decided to lower gas extractions by 20% in 2014, and again by 20% in 2015. This field represents two-thirds of the country's production, i.e. close to 14% of European production in 2014, and plays a major role in gas B supply in the Netherlands, Belgium, the north of France and the north of Germany.

Graph 52: Evolution of world gas production by region



Source: BP Statistical Review of World Energy – Analysis: CRE

2 Wholesale gas prices influenced by the drop in demand and in the price of other commodities

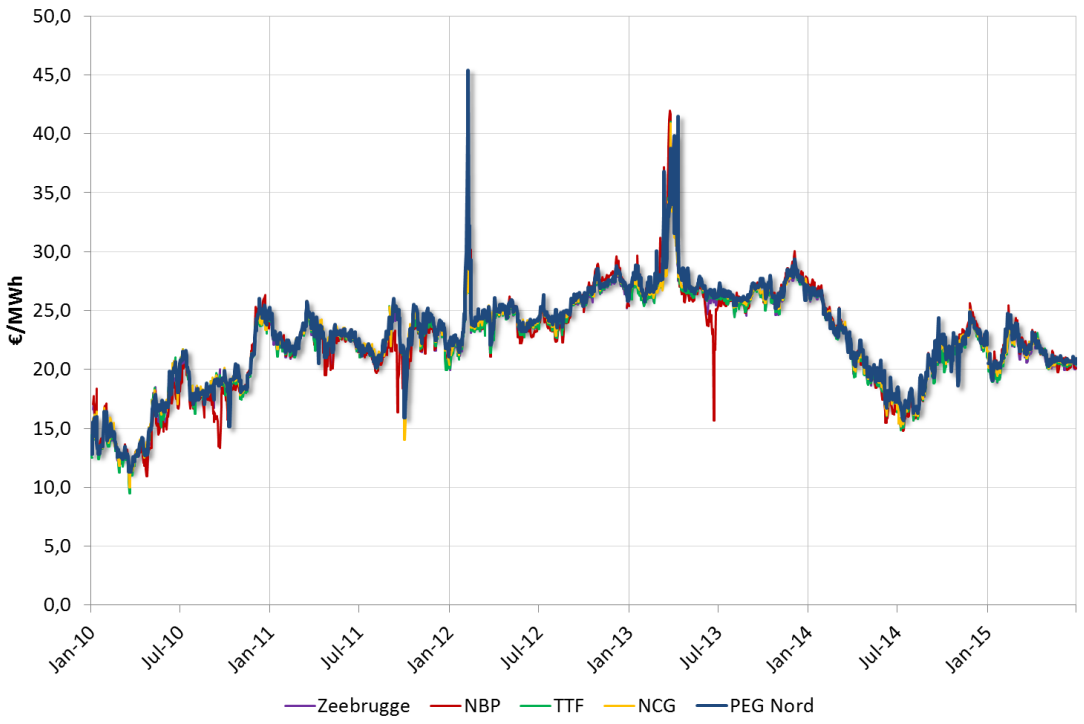
2.1 Fall in spot prices in France and Europe

The year 2014 was marked by a major drop in gas spot prices in the different European markets (Graph 53). Between December 2013 and July 2014, spot prices dropped from almost €29/MWh to roughly €15.5/MWh. This drop in prices, very pronounced during the first half of 2014, is due to an

abundant supply situation related in particular to extremely low consumption during winter 2014/2015 and stock levels higher than expected[36].

Prices went back up in the second half of 2014 and ranged between €20/MWh and €25/MWh. This price increase is due to the greater need to fill storage, which reached high levels at the start of winter against major uncertainty concerning the situation in Ukraine and its potential impact on supply to the European markets during winter. These concerns were reflected in the market by a considerable difference between the prices of the products for delivery in winter 2014/2015 and those for delivery in summer 2014 (see section 2.5).

Graph 53: Gas spot prices in Europe



Sources: Powernext EOD, ICIS Heren – Analysis: CRE

[36] See Monitoring Report 2013-2014

As at 1 November 2014, the filling rate of European storage was around 94%[37] compared to 85% in 2013. Concerns about the supply of European markets during winter gradually dissipated following the tripartite agreement (Ukraine, Russia and the European Union) signed at the end of October to secure gas deliveries from Ukraine and transits towards Europe until March 2015. Moreover, increased LNG availability in the world markets and temperatures close to the norm served to keep European storage levels high. European prices remained at levels lower than €25/MWh despite the uncertainty towards the end of the year caused by the announcement of the medium-term production cut for the Groningen gas field, which accounts for two-thirds of Dutch production.

In this context, good market supply and increased LNG availability led to a better convergence of the spot prices of the main gas hubs (Table 17).

Table 17: Average difference in spot price between the PEG Nord the main European marketplaces

Year	2012	2013	2014	S1 2014	S1 2015
PEG Nord / Zeebrugge	0,48	0,70	0,53	0,46	0,49
PEG Nord / Zeebrugge	0,34	0,48	0,36	0,31	0,28
PEG Nord / Zeebrugge	0,49	0,63	0,52	0,42	0,42
PEG Nord / Zeebrugge	0,56	0,90	0,65	0,63	0,33
Average	0,47	0,68	0,51	0,46	0,38

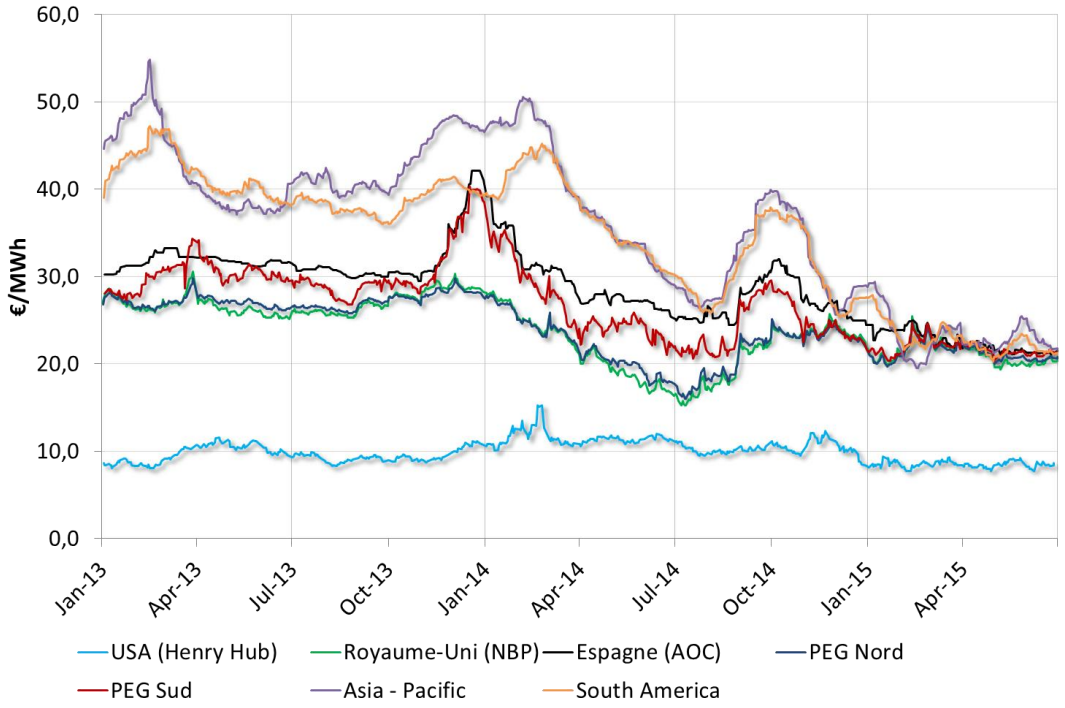
Sources: Powernext, ICIS Heren – Analysis: CRE

2.2 Convergence of LNG prices in Europe, Asia and South America

The considerable difference between LNG spot prices (Asia and South America) and prices in the European wholesale markets narrowed gradually 2014, reaching a high level of convergence in the first half of 2015 (Graph 54). The narrowing of the price difference between these market zones reflects the easing of tension in the global LNG market, which had led to a major reduction in LNG deliveries in Europe between 2011 and 2013 in order to meet demand in the most profitable markets. The drop in LNG deliveries in the Iberian Peninsula had caused a price difference between the Spanish market and the north-west European markets and an increase in Spanish supply from France.

[37] Filling rate of European storage (EU-28) with regard to technical capacity (source: Gas Infrastructure Europe)

Graph 54: Evolution of gas prices in the international markets



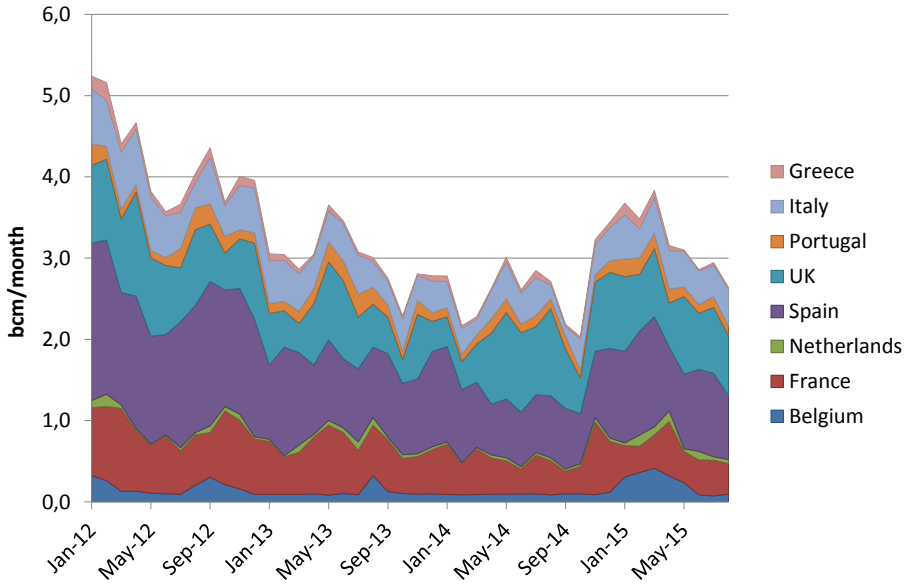
Sources: ICIS Heren, Reuters – Analysis: CRE

In the first half of 2014, the fall in gas demand in Europe and Asia led to a drop in prices in these two markets[38]. Despite a recovery in prices at the start of winter 2014-2015, LNG spot prices in Asia again fell as from October as a result of oil prices. While gas sold in Europe is increasingly indexed to wholesale markets, gas sold in Asia through long-term contracts is still heavily indexed to oil. Therefore, the fall in oil prices had a major impact on the price of imports in Asia and thus, on the prices in LNG spot markets.

Asian and South American prices gradually converged towards European price levels. The difference between these markets went from over €20/MWh early 2014 to a negligible level in the first half of 2015. In February 2015, this difference was inversed, with European prices up to €4/MWh higher than Asian prices. In this context, the arrival of LNG in the European markets increased significantly as at the end of 2014 (Graph 55), since the prices in other markets were no longer profitable for arbitrage.

[38] Gas demand in Europe in winter 2013-2014 was 12.3% lower than in winter 2012-2013 and storage was 44.9% full at the end of winter, compared to 23.8% at the end of March 2013 (Source: Heren).

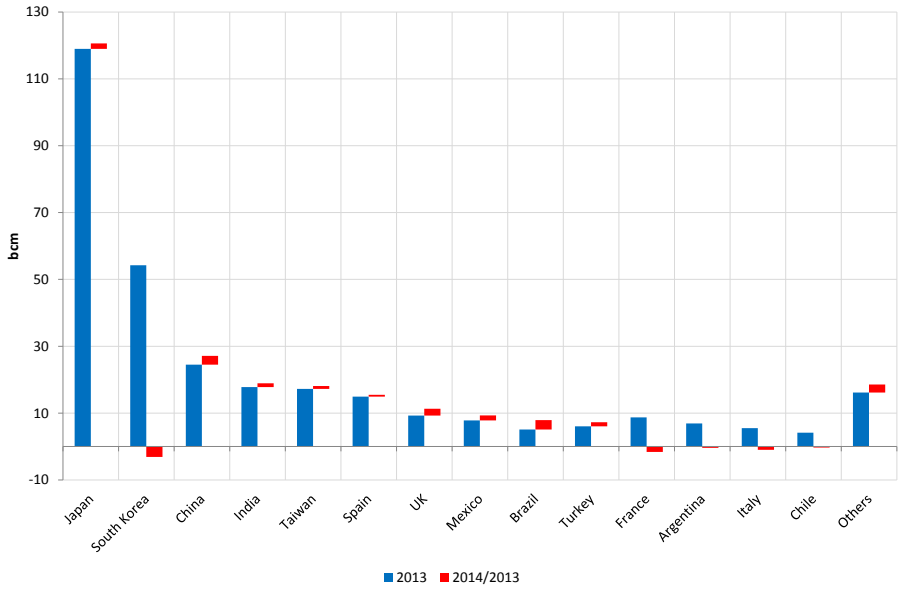
Graph 55: LNG imports in Europe



Source: GIE – Analysis: CRE

While global LNG demand remained stable in 2014 (333 bcm[39], +2% compared to 2013), growing uncertainty currently weighs on its evolution in the upcoming years, particularly in Asia, which represents 76% of global demand (compared to 16% for Europe). Demand in Japan, the main LNG importer at world level (Graph 56), had increased considerably since the Fukushima nuclear accident in March 2011. The forthcoming restart of several reactors in this country[40] could have an impact on its gas needs, which are mostly destined for electricity generation.

Graph 56: World LNG demand by country



Source: BP Statistical Review of World Energy – Analysis: CRE

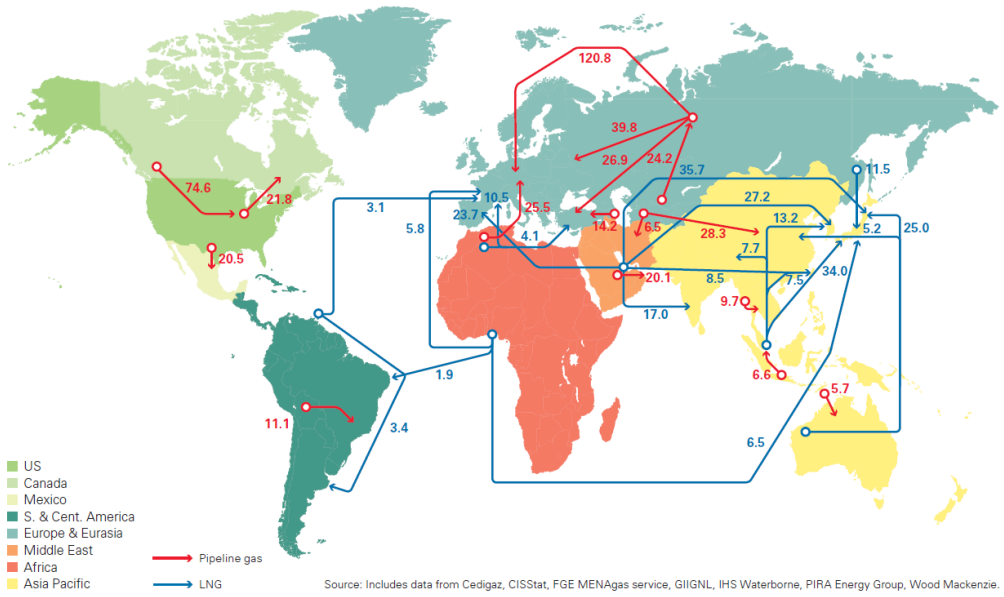
[39] i.e. approximately 3,253 TWh.

[40] More than four years after the Fukushima incidents, Japan restarted the Sendai 1 reactor on 11 August 2015. All reactors had been stopped since September 2013.

Major uncertainty also weighs on the evolution of Chinese demand, which could have significant effects on the LNG markets in the upcoming years: economic growth in China, its energy policy, the development of its local production (conventional and non-conventional) and gas pipeline projects (in particular with Turkmenistan and Russia) (Graph 57).

The arrival of Australian and American gas in the market due to the completion between 2014 and 2018 of several liquefaction terminal projects, combined with the slowing demand, led to the postponement or cancellation of certain LNG production projects, especially in Australia.

Graph 57: World trading in natural gas in 2014



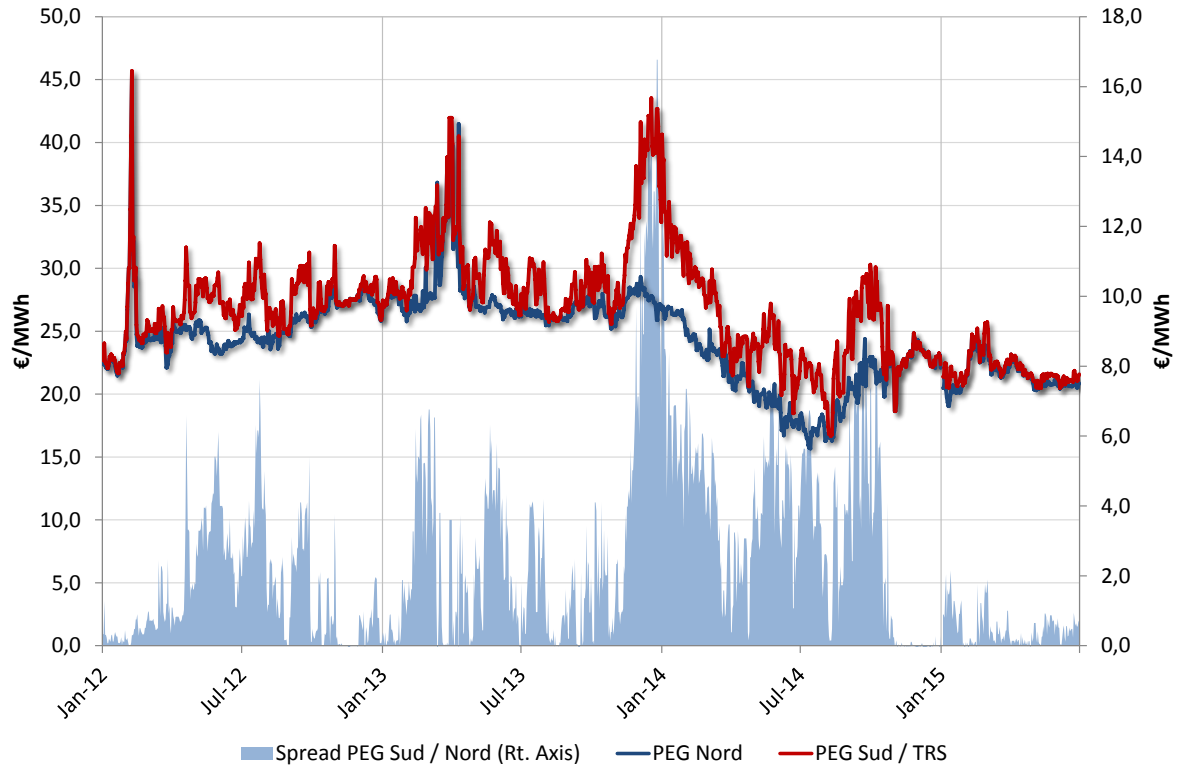
Source: BP Statistical Review of World Energy

2.3 The sustained disappearance of the price difference between the North and South zones

Since summer 2012, tight supply caused a persistent disconnection between spot prices of the markets in the south of France (PEG Sud and PEG TIGF) and those of the PEG Nord in the north. This tightness was the direct consequence of the high demand of the Asian and South American markets, which led to a drop in offloading at the Fos-sur-Mer LNG terminals and to an increase in exports from France to Spain. This situation led to congestion at GRTgaz's North-South link, used to supply gas to the south of France from the north zone. Price pressures in the south of France heightened at the end of 2013, with the price difference with the PEG Nord exceeding €10/MWh on several occasions (Graph 58).

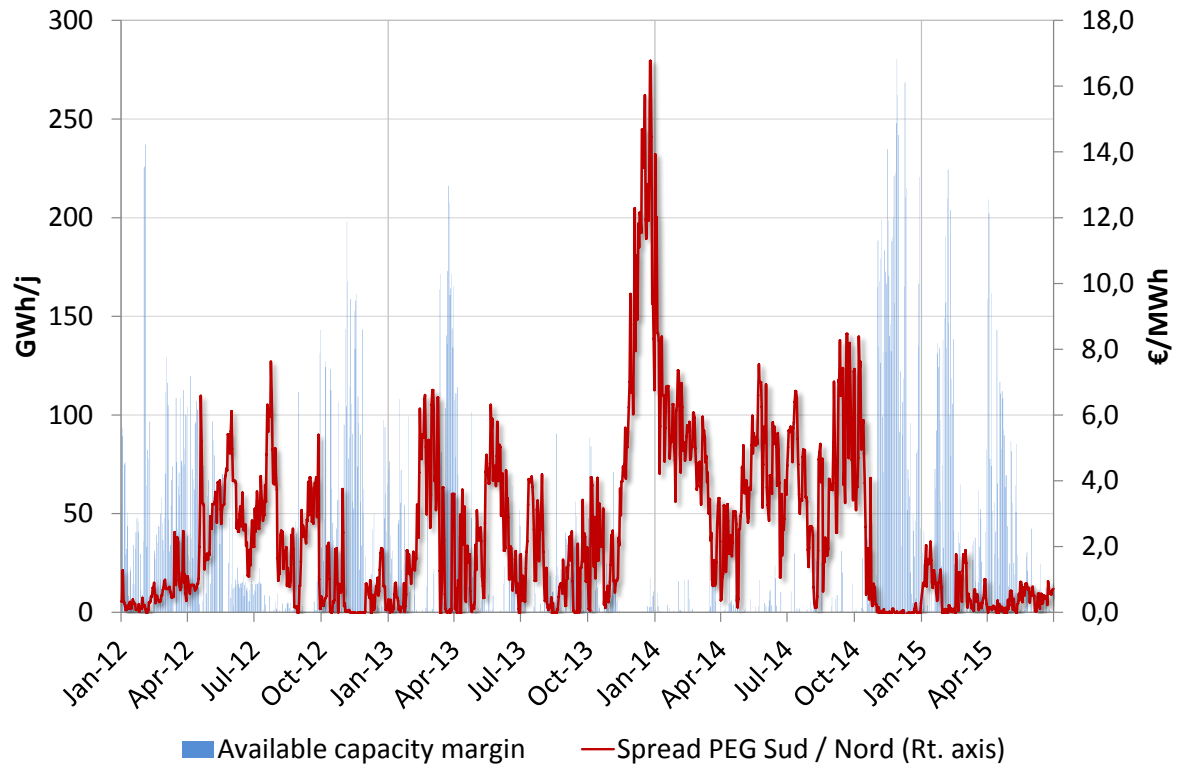
The lull in the LNG spot markets in 2014, linked in particular to the drop in Asian demand and the arrival of new production units at world level, led to a narrowing of the price difference between the North and South zones in the last quarter of 2014. The price at the PEG Sud drew very close to that of the PEG Nord, and there was less congestion at the North-South link (Graph 59). The high storage levels in the south of France and the mild temperatures at the start of winter 2014-2015 contributed to maintaining this price convergence in the first half of 2015. The PEG Sud/Nord spread remained below €2/MWh throughout the six-month period.

Graph 58: Evolution of the PEG Sud/Nord spread



Source: Powernext EOD – Analysis: CRE

Graph 59: Use of the North-South link and PEG Sud/Nord spread



Sources: GRTgaz, Powernext EOD – Analysis: CRE

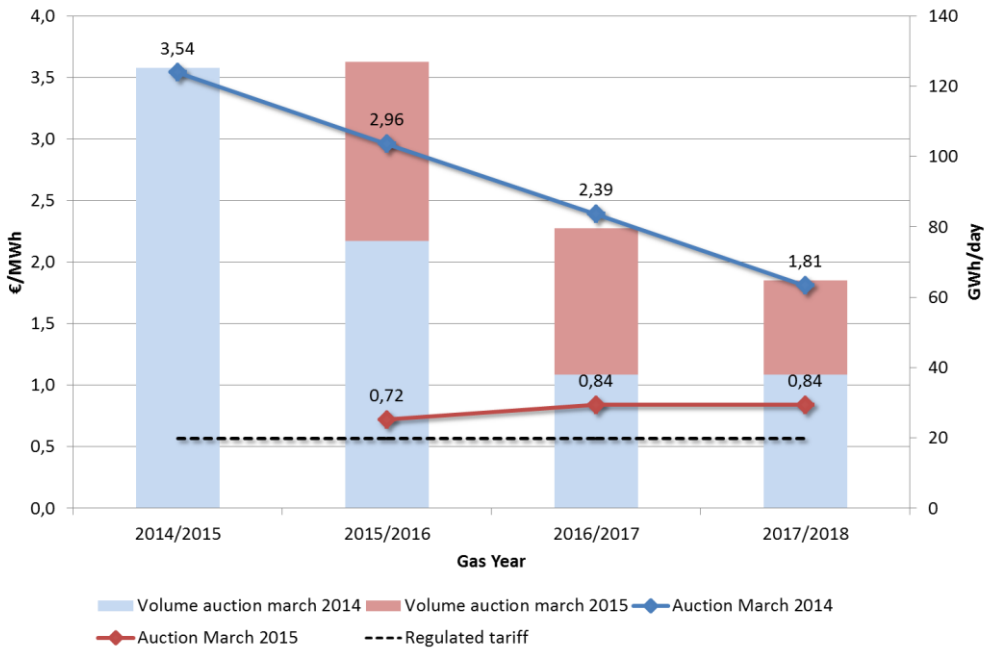
Graph 60 shows the results of the annual capacity auctions held in March 2014 and March 2015, as well as the volumes sold. Thirty-three shippers bought capacity during the March 2014 auctions and 26 during the March 2015 auctions.

With a large number of participants, these auctions contribute to the development of competition in the wholesale market in the south of France, and the emergence of a futures reference price in this market. Graph 60 also shows the evolution, between March 2014 and March 2015, of participants' expectations regarding the development of the futures prices in the south of France. While capacity for the 2016 to 2018 gas years had been sold in March 2014 between €1.81/MWh and €2.96/MWh, the result of the auctions for the same periods in March 2015 showed prices close to the regulated tariff. This reflects participants' expectations regarding the sustainability of the low price differences between the PEG Nord and the TRS (see section 2.3).

Moreover, the prices resulting from auctions, compared to the regulated tariffs, generate a surplus income that is redistributed to the consumers in the south of France. For the 2014-2015 gas year, a surplus of €164 M will be redistributed. The additional cost, between the prices of auctions and the regulated prices, and the surplus generated were incorporated into the transmission costs and lowered slightly the regulated sales tariff as at 1 July 2015 (see May 2015 audit report[41]).

These auctions also take place to award quarterly, monthly and daily capacity. They enable participants to cover their needs more finely and new participants to more easily access the PEG Sud market.

Graph 60: Awarding of firm annual capacity at the North->South link



Source: PRISMA – Analysis: CRE

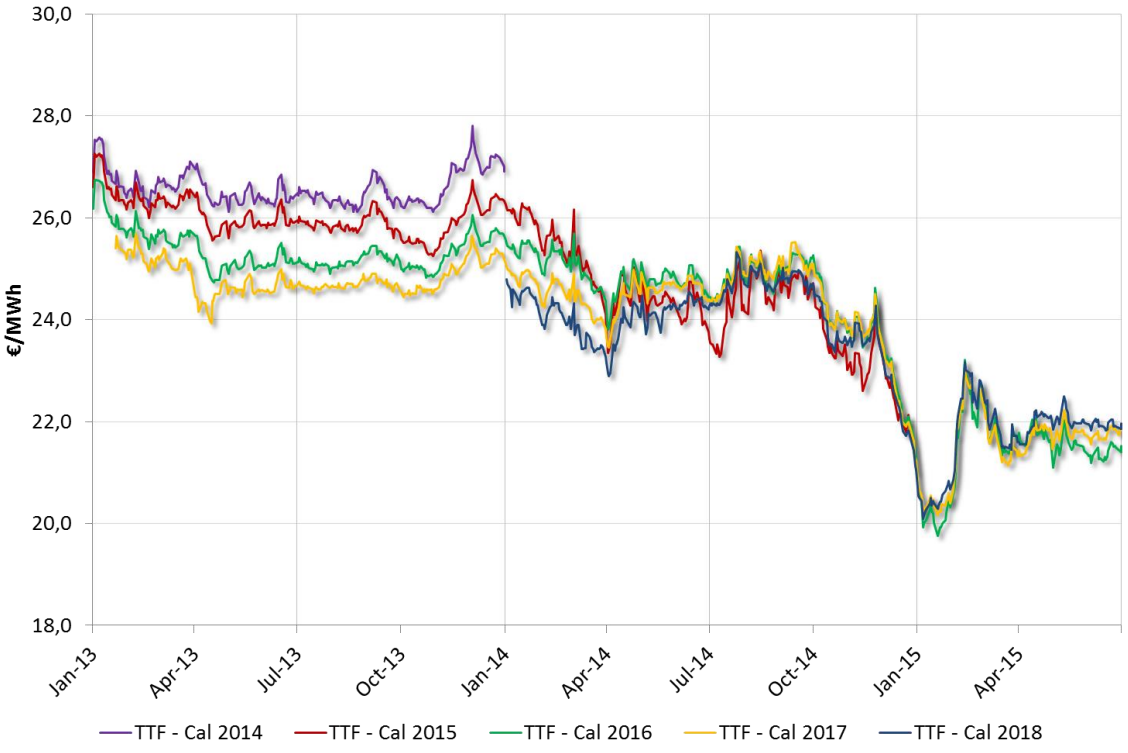
[41] CRE's deliberation of 13 May 2015 adopting the audit report on GDF SUEZ's supply and non-supply costs used to calculate the development of the regulated tariffs for the sale of gas

2.4 Major drop in futures prices

Against the major drop in the price of commodities recorded in the second part of 2014, futures gas prices in Europe declined sharply between the end of July 2014 and January 2015. They were also influenced by a short-term downward trend in fundamentals such as the high European storage levels. Prices then increased considerably in February, as was the case for oil prices. They finally stabilised at around €22/MWh between March and the end of June 2015 (Graph 61).

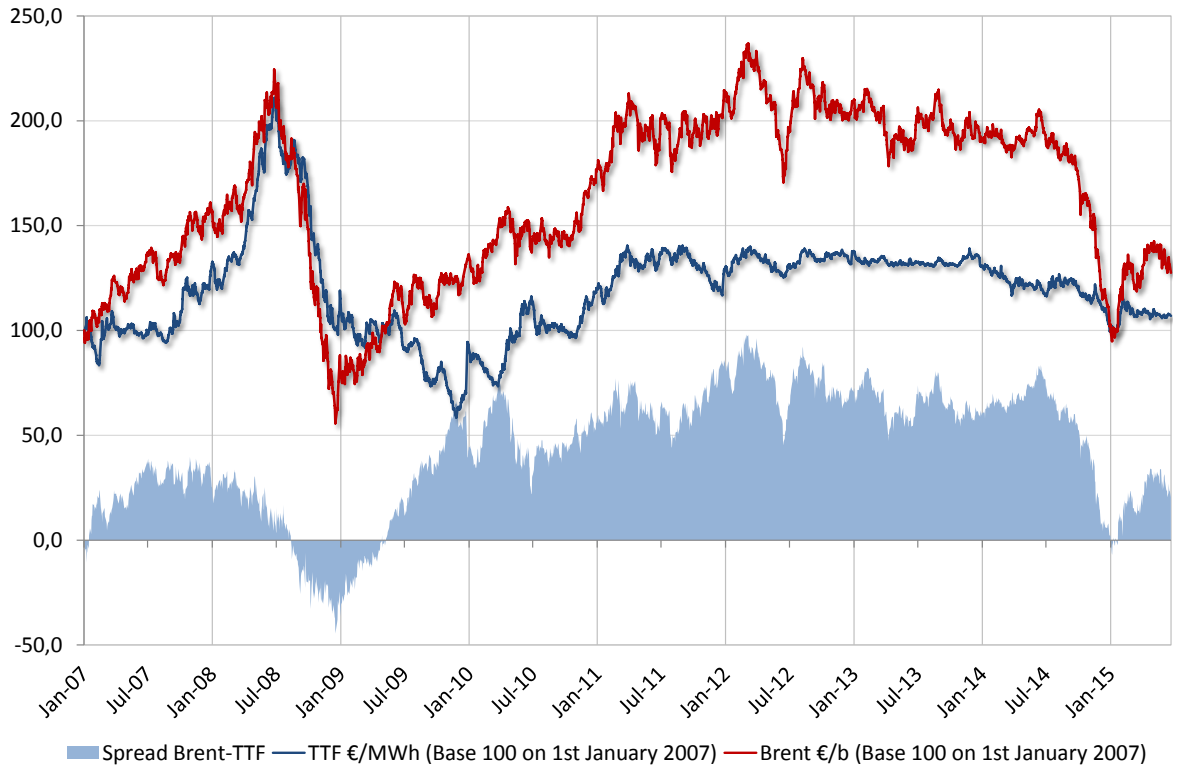
The major drop in oil prices since mid-2014 reduced the disconnection between these prices and those of oil recorded since 2010 (Graph 62).

Graph 61: Evolution of futures prices in Europe



Source: ICIS Heren – Analysis: CRE

Graph 62: Difference between oil and gas prices



Sources: Reuters, ICIS Heren – Analysis: CRE

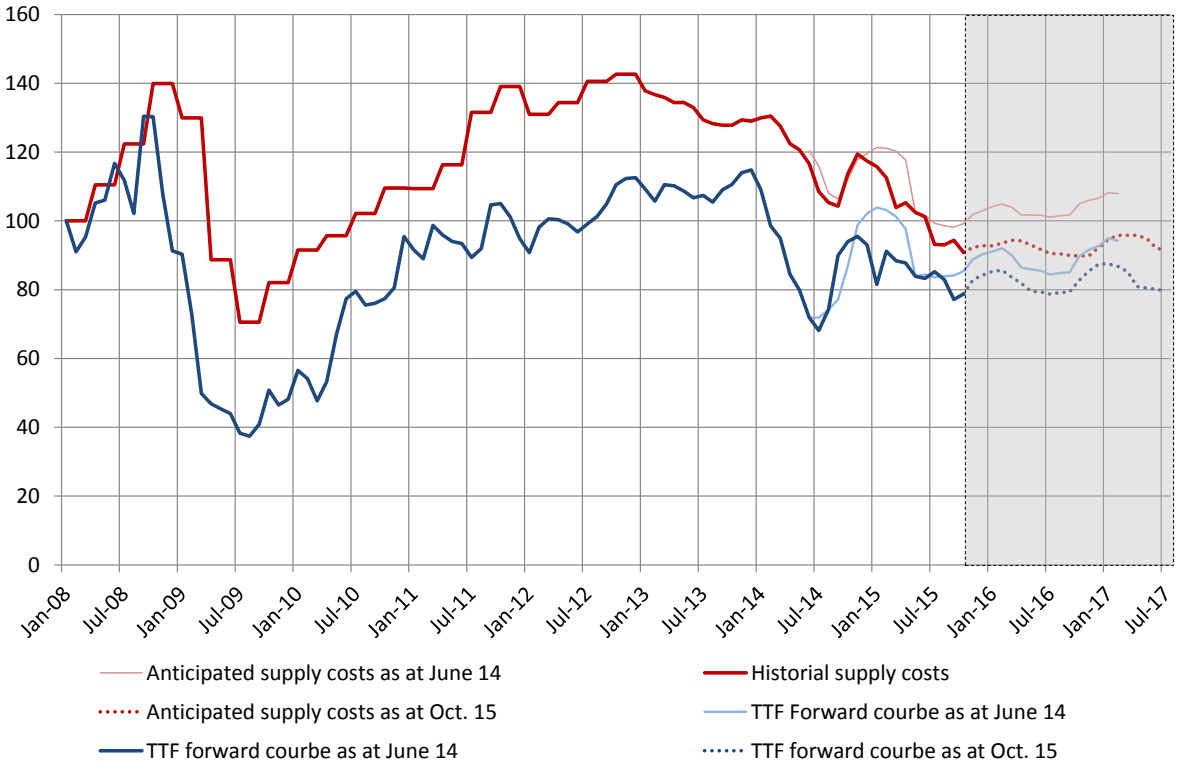
Change in the formula for calculating the gas procurement portion of the regulated tariffs

As at 1 July 2015, the formula for calculating the gas procurement portion of the regulated gas sales tariffs was changed to include a greater proportion of indexation to gas markets (77.4% compared to 59.8% since July 2014 and 45.8% since July 2013). This increase came at the expense of indexation to oil products. In addition, the formula for calculating the gas procurement portion now also includes indexation to the French PEG Nord index. Since then, there has been an even closer alignment between the evolution of the material portion and the evolution of gas indices.

Against the major drop in oil prices and gas prices since July 2014, the material portion of the regulated sales tariffs has seen marked variations. Because of the increasing indexation of the regulated tariffs to the gas markets, as well as the alignment between the prices of gas and those of oil[42], the difference between the material portion and the wholesale prices gradually narrowed. This trend should increase as from July 2015 with the new indexations (Graph 63).

[42] At levels comparable to those recorded in 2007 and 2008 (Graph 62).

Graph 63: Comparison between the material portion of the regulated sales tariffs and the prices of gas in the wholesale market (TTF) - base 100



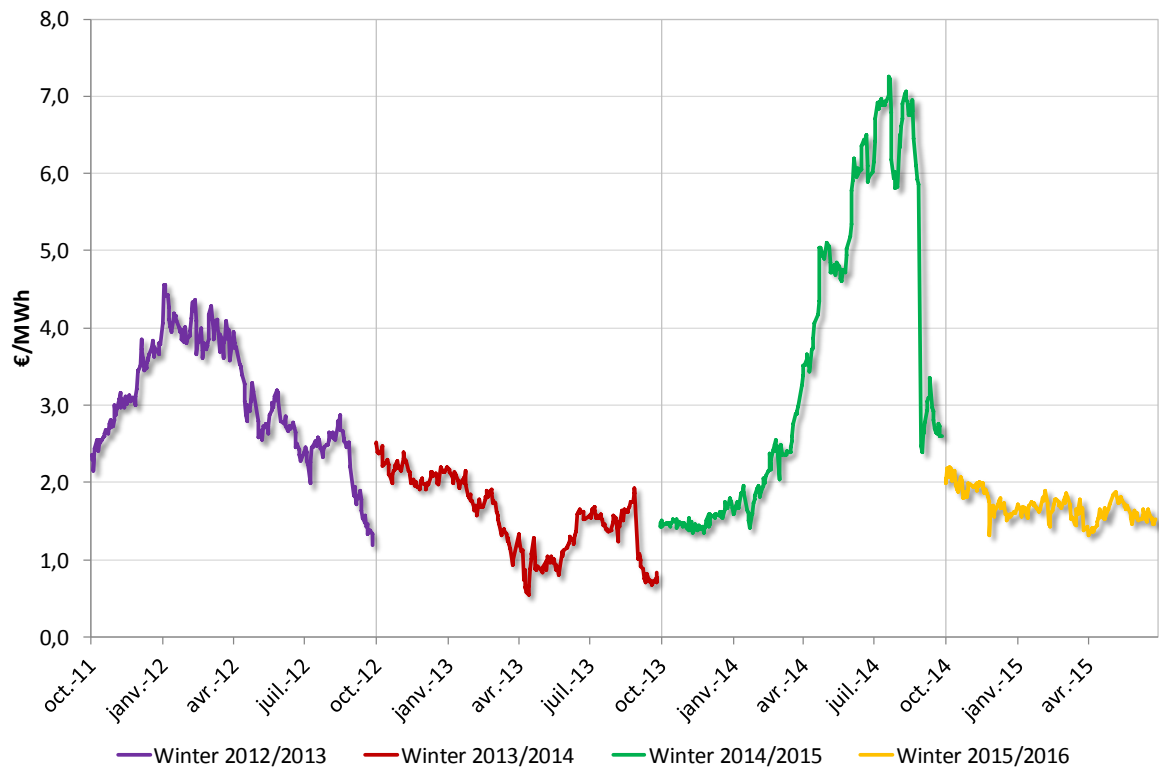
Sources: Powernext, Reuters, ICE, ICIS Heren – Analysis: CRE

2.5 A summer/winter price difference particularly high in 2014 and low in 2015

The more marked seasonal trend in gas spot prices in Europe in 2014 (Graph 64) explains the widening of the summer/winter price difference for winter 2014/2015. In France, this price difference reached levels higher than €7/MWh in July 2014. This price difference appeared against a sharp drop in spot prices since the end of winter 2014 and concerns about the supply of European markets because of tensions in Ukraine.

The summer/winter difference in 2014 is responsible for the higher European storage levels at the start of winter 2014/2015. However, winter 2014/2015 was relatively mild and the European markets were supplied adequately.

Graph 64: Summer/winter price difference in France



Source: Powernext – Analysis: CRE

3 Trading in the wholesale gas markets in France: continuing development in trading and competition

3.1 Merger between the PEG Sud and TIGF marketplaces

As from 2009, CRE undertook to reduce the number of marketplaces in France in order to improve the functioning of wholesale and retail gas markets for the benefit of end customers. Therefore, from 2009, the French market was organised into three marketplaces, called *Points d'échange de Gaz* (PEG): the PEG Nord and PEG Sud in GRTgaz's system and the TIGF PEG in TIGF's system.

In the first half of 2012, CRE carried out a wide consultation on the future of the French gas market. Following this consultation, it defined a roadmap towards the objective of a single marketplace in France:

- 1 April 2013: merging of the Nord H and Nord B balancing zones[43];
- 1 April 2015: creation of a marketplace common to the GRTgaz Sud and TIGF balancing zones[44];
- 2018 at the latest: creation of a single marketplace in France[45].

[43] CRE's deliberation of 29 May 2012

[44] CRE's deliberations of 19 July 2012 and 13 December 2012

[45] CRE's deliberation of 7 May 2014

The merging of the PEG Sud and the TIGF PEG took effect on 1 April 2015 in the form of a single exchange point, the Trading Region South (TRS), and two separate balancing zones. Shippers no longer have to subscribe to capacity at the interconnection between these two zones at the Midi point, with the physical flows between the networks and the calculation of shipper imbalances and their distribution across the two zones being delegated to GRTgaz and TIGF respectively.

The creation of the TRS improves the functioning of the gas market in the south of France and promotes its development. It is a decisive step towards the creation of the single marketplace by 2018.

3.2 Continued increase in deliveries at PEGs

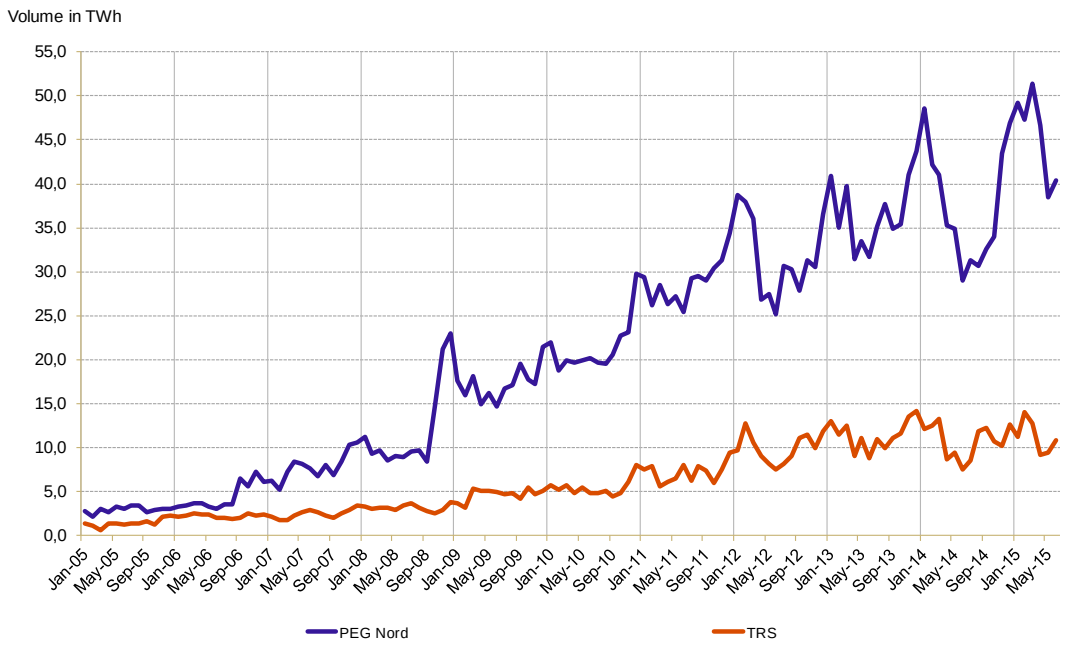
Wholesale gas trading in France is done over the counter, directly between participants or through brokers or via the organised market Powernext.

Exchanges in the French wholesale market are materialised at gas title transfer points (PEGs)[46], virtual points where participants deliver gas to their counterparties according to their obligations. Following the merging of the PEG Sud and the TIGF PEG, the French market is now organised into two marketplaces: the PEG Nord, attached to the north balancing zone, and the TRS attached to the GRTgaz Sud and TIGF balancing zones.

The present report distinguishes between volumes traded in the brokered and organised markets and physical deliveries at PEGs:

- brokered markets include all of the contracts signed between the different participants through the exchange or brokers;
- deliveries at the PEGs cover net daily deliveries made between pairs of participants at the PEGs.

Graph 65: Deliveries at PEGs



Sources: GRTgaz, TIGF – Analysis: CRE

[46] Trading related to long-term contracts can also be conducted at the border points of the French network. These trades do not fall within the scope of this report.

In 2014, deliveries at PEGs continued the growth recorded since 2005 (Graph 65). However, the pace has slowed down considerably, and differs according to marketplace. The growth of volumes delivered at the PEG Nord is largely offset by the stagnation of volumes in the South zone.

The significant slowdown in deliveries at the PEGs during summer 2014 may be due to the climate context and in particular, the high storage levels at the end of winter, which limited demand and participants' use of the short-term market.

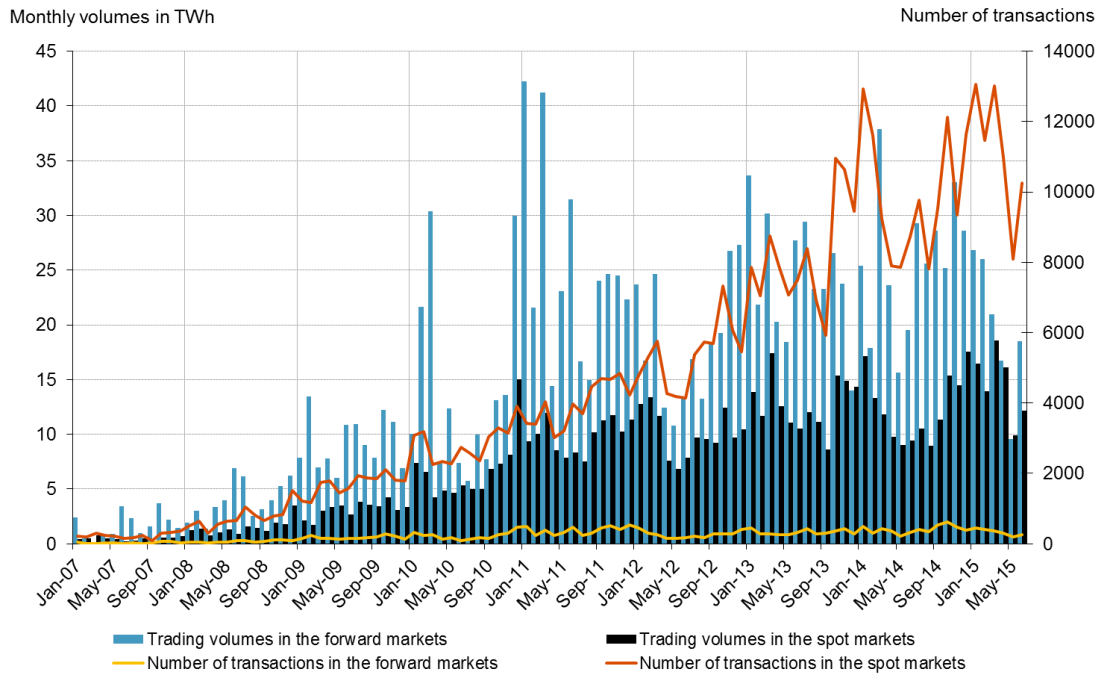
The major growth in volumes delivered recovered in H1 2015 at all PEGs, reaching 16% compared to H1 2014. This strong growth is due to the more intensive use of storage in the 2014-2015 gas year against uncertainty concerning the crisis in Ukraine.

3.3 Drop in trading in the spot segment in 2014 but increase in futures trading

Although activity in the French brokered and organised markets is on the rise, it slowed down in 2014 with, for all maturities, an increase in the number of transactions and volumes traded by 21% and 3% respectively, compared to 49% and 31% between 2012 and 2013 (Table 7). However, these increases differ considerably according to product: futures products continued to grow significantly, while spot products, with a 20% growth in the number of transactions, showed a 3% drop in volume.

For the first time since the opening up of the markets, volumes traded were higher than consumption. The Volume traded/Consumption ratio was 1.09 in 2014 compared to 0.85 for 2013. This large increase is due to a year 2014 marked by inverted development between volumes traded (+8%) and consumption (-16%). In the first half of 2015, this ratio declined slightly to 0.9 compared to 1.0 for H1 2014. However, there is still an upward trend since it stood at 0.6 as at H1 2012 and 0.7 as at H1 2013.

Graph 66: Evolution of volumes traded and of the number of transactions in the French brokered and organised markets

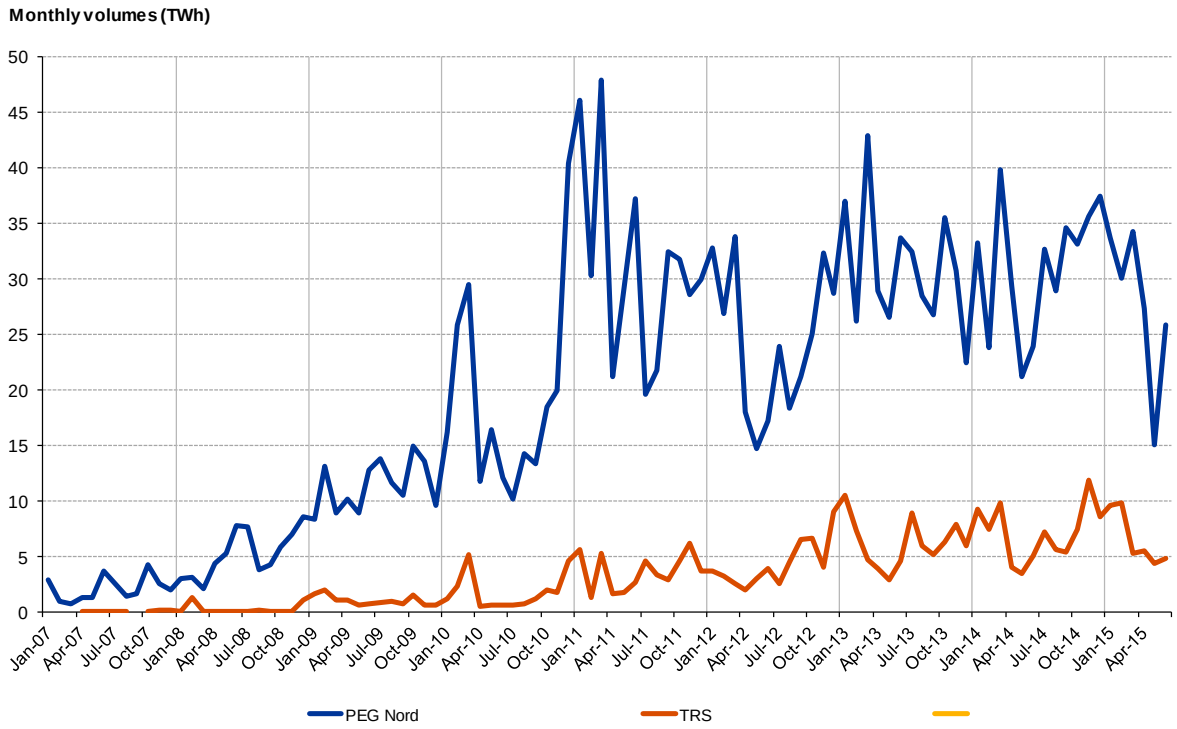


Source: Powernext, brokers – Analysis: CRE

In the first half of 2015, activity in the French brokered and organised markets slowed, with volumes traded down 3% compared to H1 2014 despite the increase in the number of transactions. However, the evolution observed per maturity is the opposite to that seen in 2014, with a sharp growth in spot products compared to a decline in futures products (Graph 66).

If the volumes traded are broken down by PEG, the PEG Nord remains much more dynamic than the PEG Sud with volumes almost four times higher. Nevertheless, market growth in 2014 came especially from the South zone with a 15% growth in volumes traded (i.e. 10.8 TWh) compared to less than 1% at the PEG Nord (i.e. 2.3 TWh) (Graph 67).

Graph 67: Volumes traded per PEG in the brokered and organised markets



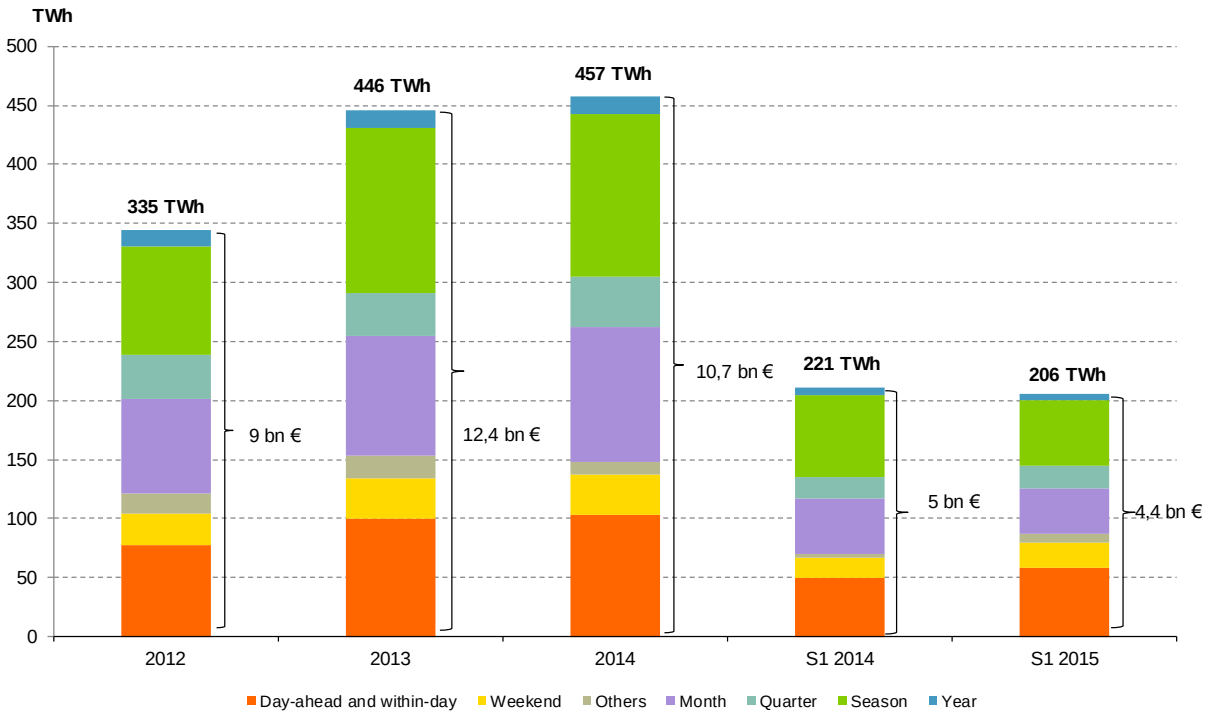
Sources: Powernext, brokers – Analysis: CRE

Despite the increase in volumes traded in the French organised and brokered markets in 2014, there was a sharp 14% drop in the value of these exchanges (Graph 68). This can be explained by the general drop in spot prices and futures prices in Europe, the reduction of congestion at the North-South link, which limits prices in the South, and the absence of price spikes. This downward value trend continued in the first half of 2015.

Compared to the first half of 2014, the first half of 2015 is marked by a drop in trades in seasonal and monthly maturities, to the benefit of spot products. This drop is due to a less interesting summer-winter spread and spot prices significantly lower than futures prices, which affected participants' use of the futures market.

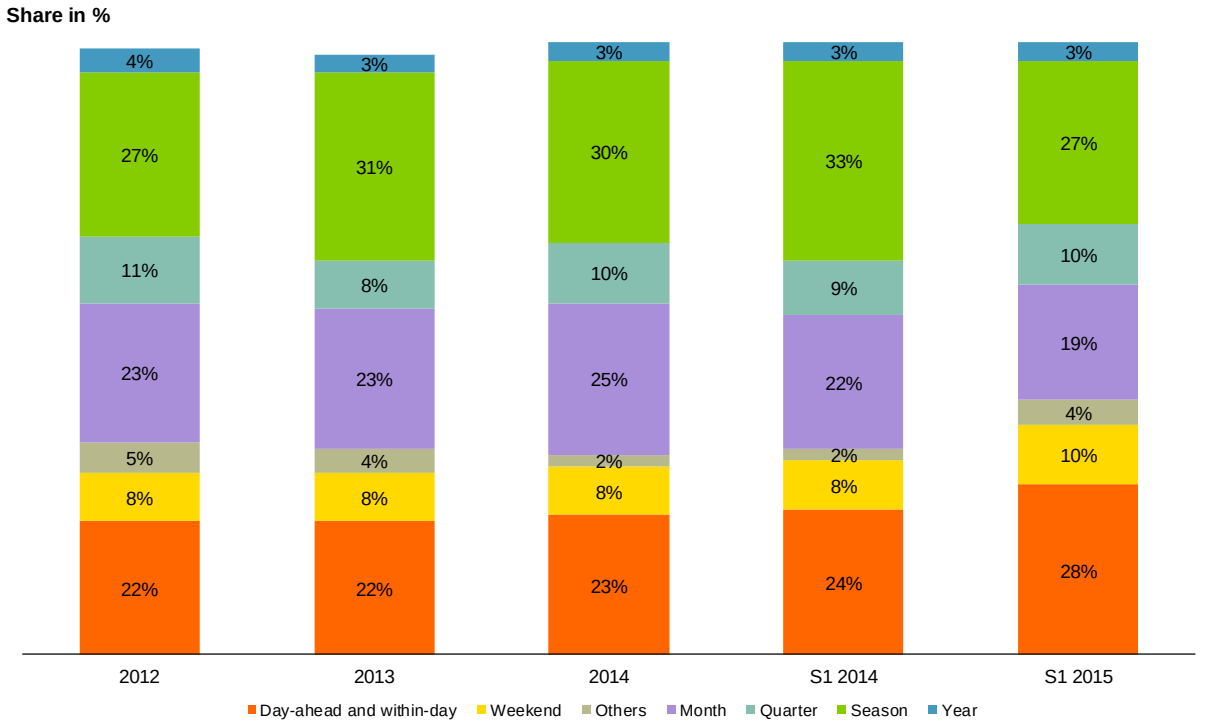
Graph 68: Volumes traded in the French brokered and organised markets

a. Per type of product (in TWh and in €)



Source: Powernext, brokers – Analysis: CRE

b. Distribution of volumes traded

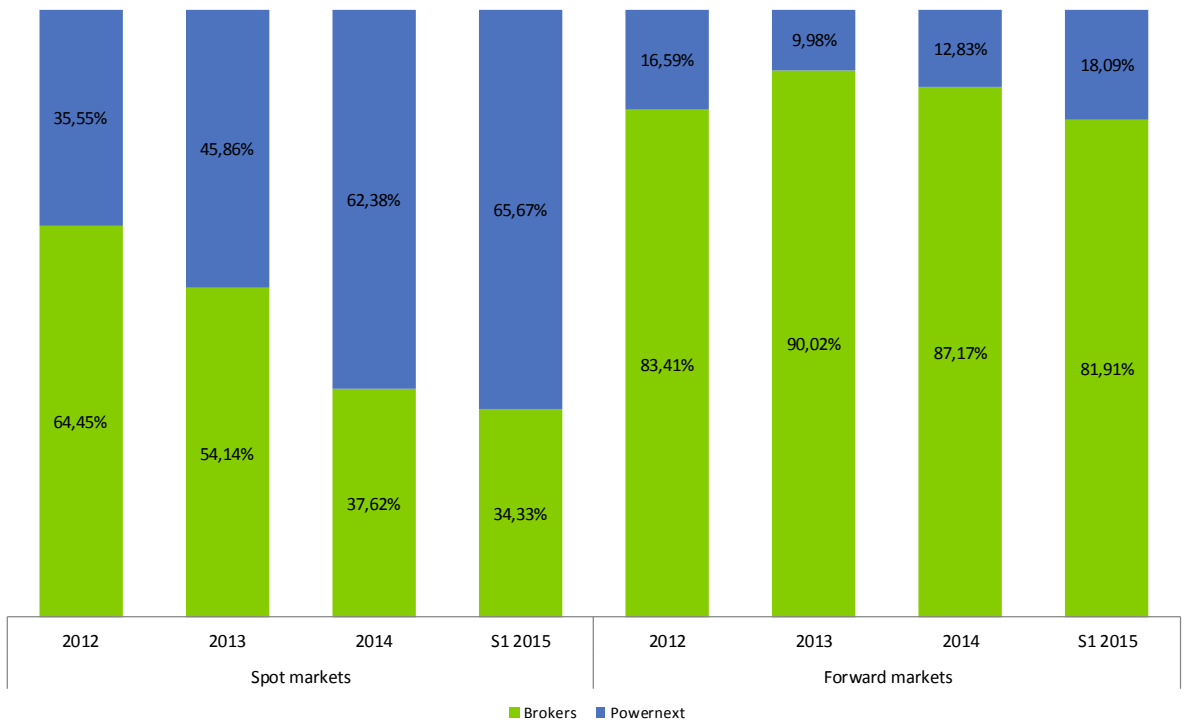


Sources: Powernext, brokers – Analysis: CRE

The Powernext exchange continued to grow, mainly in the spot market (Graph 69), and heavily diversified its offering in 2014 and H1 2015, especially following its merger with EEX, which transferred all of its gas activities to Powernext, and the launch of its products in new markets (ZPT, NBP, ZEE, PSV).

Moreover, since July 2014, Powernext offers the possibility of handling spot products in the French marketplaces 24/7. This expansion of the exchange's opening times aims in particular to facilitate system balancing by market participants. Although marginal, the number of transactions and volumes traded during these new time slots grew significantly in H1 2015 compared to H2 2014, with a 50% growth.

Graph 69: Distribution of spot and futures volumes traded by type of intermediary



Sources: Powernext, brokers – Analysis: CRE

3.4 Concentration indices characteristic of a competitive market

The HHI indices of the wholesale market in France (Graph 70) are characteristic of a competitive market. The concentration levels are similar in the spot segment for the north and south marketplaces. However, differences are still notable in the futures segment, where the PEG Nord remains less concentrated.

Since 2014, concentration of the north and south marketplaces for spot products is equivalent from the purchase perspective, and slightly lower for the south market from a sale perspective, which marks a sharp change compared to previous years. These concentrations in both markets differed greatly in 2014 and in H1 2015 between purchase and sale with very low levels of concentration from the purchase perspective and average levels from the selling perspective.

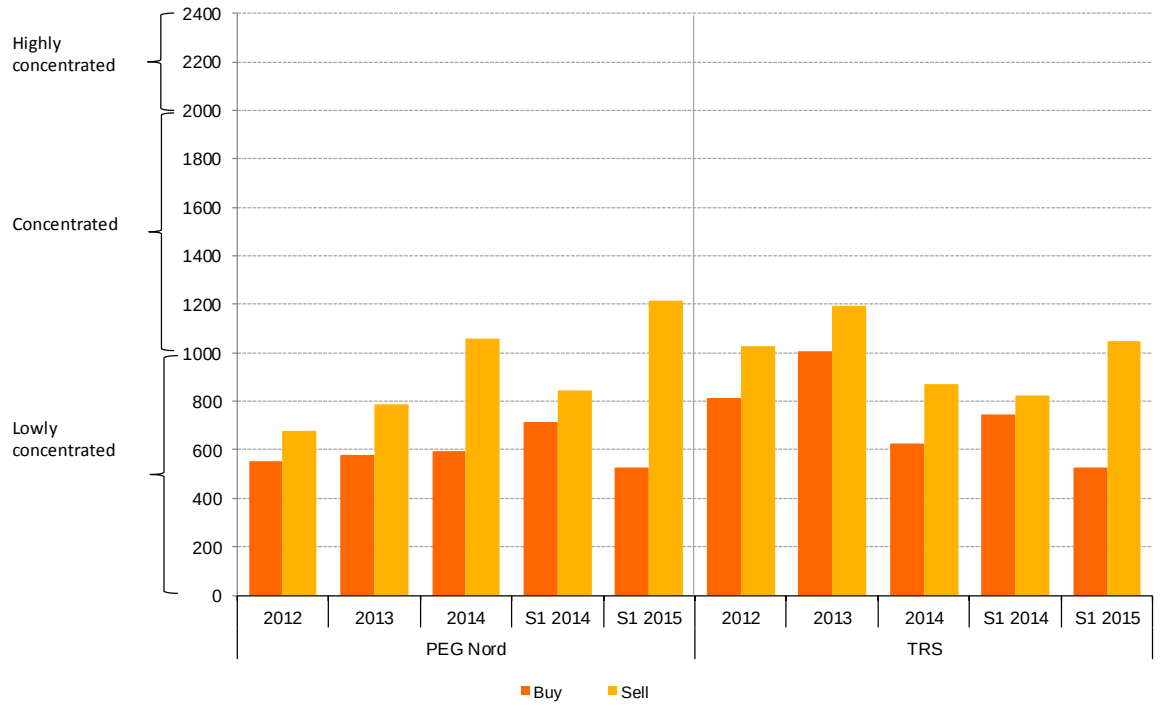
In the futures segment, concentration in the markets in the south of France had reached levels similar to those of the PEG Nord in 2014, but re-increased sharply in the first half of 2015, both for purchases and sales. The indicator remained stable at the PEG Nord in 2014 and in H1 2015 went to low

concentration. In the PEG Sud, concentration remained average with major growth in sales in particular. Despite the merger of the PEG Sud and PEG TIGF, the liquidity of the futures market in the south of France was very low.

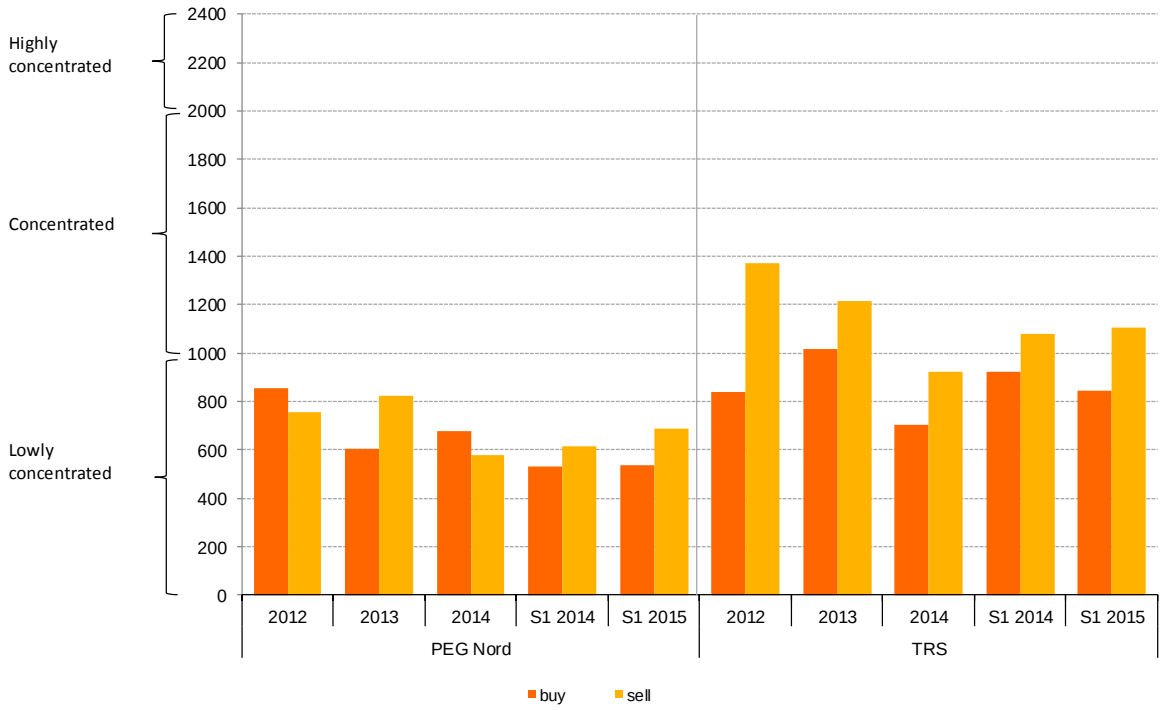
With the setting up of the TRS in April 2015, the functioning of the wholesale market in the south of France is expected to improve gradually and lead to the emergence of a more liquid futures market.

Graph 70 : Concentration indices for the French brokered and organised markets

a. Spot market



b. Futures market



Sources: Powernext, brokers – Analysis: CRE

The number of participants present in the French market continued to grow sharply in 2014 and stabilised in H1 2015 (Table 18). The number of shippers present at the interconnections and at transport/distribution interface points (PITDs) increased with the arrival of new suppliers. The year 2014 is marked by renewed attractiveness of storage with a 50% increase in the number of participants present at the transmission/storage interface point (PITS). This increased attractiveness is due to a major summer/winter spread, which attracts many traders in this segment. It is also related to the regulatory developments concerning storage capacity subscription obligations[47].

At the LNG terminals, there have been only two active participants since 2013 (Table 19).

Table 18: Number of active participants in the French market

	2011	2012	2013	2014	S1 2015
PEG	66	68	75	87	85
including traders	*16*	*17*	*18*	*16*	*15*
PIR	47	46	46	52	49
PITD	25	28	26	33	33
PITS	37	38	27	39	37
LNG Terminal	6	5	2	2	2

** For the PITSs, the number of active participants is calculated for the period from 1 April of year N to 30 March of year N+1*

Source: GRTgaz, TIGF – Analysis: CRE

Table 19: Number of active participants at the LNG terminals

	2011	2012	2013	2014	S1 2015
Montoir	4	2	1	1	1
Fos Tonkin	2	2	1	1	1
Fos Cavaou	3	3	2	2	2
All terminals	**6**	**5**	**2**	**2**	**2**

Sources: Elengy, Fosmax LNG – Analysis: CRE

Apart from at the North-South link, market share of the three main participants as regards the use of infrastructure remains high (Graph 71). After a downward trend since 2007, the share of the three main participants at the interconnections (PIRs) levelled off at around 75% for exports, and 85% for imports. Nevertheless, at the PITDs, interface points with the distribution networks, it continued the

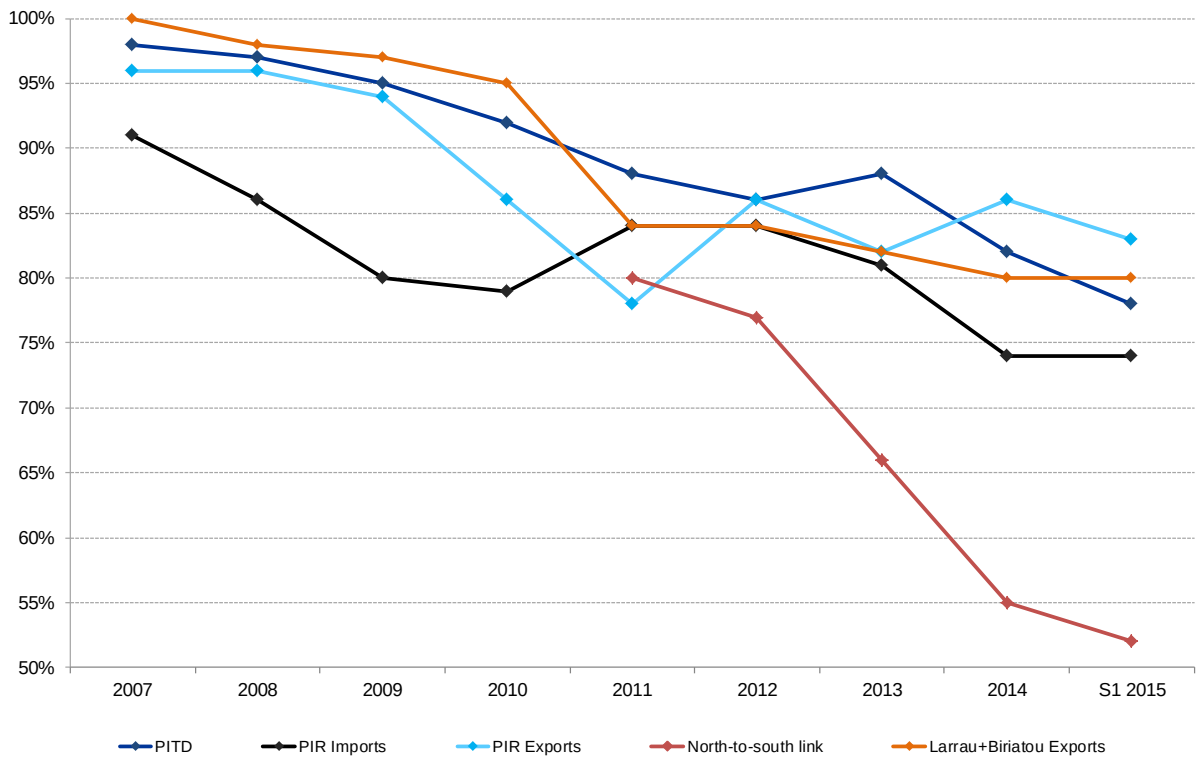
[47] Decree No 2014-328 of 12 March 2014 on access to underground natural gas storage and the ministerial decision of 11 March 2014 on profiles and unit rights to storage

Order of 11 March amending the Order of 7 February 2007 on profiles and unit rights to storage.

drop started in 2007 despite a slight rebound in 2013, which shows the impact of the opening up of the market and increased competition among suppliers to end customers.

At the North-South link, the market share of the three main participants dropped sharply in 2013 and 2014, particularly because of the very significant demand of other participants, suppliers and traders, against tightness in the south zone. The implementation in March 2014 of the first capacity auctions at the North-South link also contributed to the drop in concentration as regards the use of that link[48].

Graph 71: Aggregated market share of the three main participants calculated based on nominations at the different infrastructure



** The data concerning the North-South link is available only from June 2011*

Source: GRTgaz, TIGF – Analysis: CRE

[48] See Wholesale market monitoring report 2013-2014 (section 4.3, p.122) and CRE's deliberation of 17 October 2013

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