France Electricity Report for 2014
Press kit
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In compliance with the remits assigned to it by the legislator, every year RTE publishes the electricity report, which provides an overview of the power system for the past year (trends in electricity consumption and generation, power mix, level of market prices, extent of French electricity exports and imports, etc).

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Drop in electricity demand and increase in renewable energies, which henceforth account for nearly 20% of power consumption.

Excerpt from the communication campaign: RTE, the grid for smart power.
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**2014**

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Published in the year when the 21st climate conference will be hosted by France, the latest issue of the electricity report highlights the close correlation between electricity consumption and weather conditions. In 2014, gross electricity consumption fell by 6% to 465.3 TWh against 2013, representing the lowest level observed since 2002.

These energy savings can be mainly attributed to the mild weather: according to Météo France (the French national meteorological service), 2014 was the hottest year since the beginning of the 20th century. With temperatures greater by 0.5°C than the reference temperature and virtually never less than 5°C during the winter months, electrical heating needs were moderate. Sensitivity of consumption to temperature remained at around 2,400 MW/°C in winter.

In the absence of cold spells, peak electricity consumption was 82,500 MW on 9 December 2014, as opposed to record consumption of 102,100 MW reached during February 2012. Peak consumption had never been so low since 2004.

The economic crisis and energy efficiency measures also contributed to limiting consumption. After adjustment for climatic effects aiming to present electricity consumption in normal weather conditions, it was observed that annual electricity demand fell by 0.4% in 2014. French consumption has ceased to grow over the past four years.

1) Due to moderate temperatures in 2014, French electricity consumption fell by 6%, but remained stable once adjusted for meteorological effects
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After years of consecutive rises followed by the tendency to stabilisation observed last year, 2014 recorded a slight drop of around 0.5% against 2013, after climate adjustment. This trend reflected the slowdown in economic activity, which tended to temper SMI (Small and Medium Industries) - SME (Small and Medium Enterprises) and professional consumption, and perhaps also that of the households. The energy efficiency measures taken for equipment and buildings and the drop in the market share of electricity heating in new buildings, further to application of the thermal regulations for buildings of 2012, undoubtedly had their share of responsibility.

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● STABILISATION IN LARGE-SCALE INDUSTRIAL CONSUMPTION

In France, large-scale industrial sector consumption remained stable at 67.4 TWh, after three years of downturn. Contrasting fortunes were observed in the different sectors of economic activity. Downturns were recorded in the paper and cardboard (-7.1%), car manufacturing (-4%) and rail transport (-2.6%) sectors, with upturns in the chemistry (+2.1%), steel-making (+2.2%) and metallurgy (+6.2%) sectors.

● DECREASE IN SMI-SME, PROFESSIONAL AND PRIVATE CONSUMPTION

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The drop of electricity consumption, a European phenomenon

This phenomenon of reduced electricity consumption was observed on the European scale. From mid-2013 to mid-2014, European electricity consumption fell by 1.5% compared to the previous period. This drop was more than 4% in Germany, 2% in Italy and in Switzerland, and around 0.7% in Spain (consumption not adjusted for climatic effects).
2) Renewable energies were developed and accounted for nearly 20% of French power consumption

Renewable energies were able to be further developed due to clarification of the regulatory framework and more favourable economic provisions in 2014. The situation of wind power and photovoltaic power improved with additional installed capacity of nearly 1,900 MW in 2014. France now has wind power and solar power generation capacity of more than 9,100 MW and nearly 5,300 MW respectively.

Electricity power generated by renewable energies other than hydropower (28 TWh) outperformed fossil fuel power generation for the first time in 2014. More than half was generated by wind power, with the remainder being split between photovoltaic and biomass energy.

Maximum wind power generation was reached on 27 December 2014 with output of slightly over 7,000 MW, representing 80% of installed wind power capacity. Maximum photovoltaic power generation was reached at 13:30 on 17 May 2014 with output of 3,700 MW. Such levels had never previously been achieved.

In addition, hydraulicity was particularly high last year, due to heavy rainfall: the level of hydropower generation (68.2 TWh) was the second highest of the decade after that of 2013, which was exceptional.

All the favourable conditions resulted in generation across the board of renewable energies accounting for nearly 20% of French power consumption.
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The strained economic context adversely affected fossil fuel power generation, with a total drop of 17.7 TWh (-40%). In 2014, coal-fired power plants were the most affected with a slump in generation of 58%, as opposed to 28% for gas-fired power plants. Gas-fired power generation outperformed that of the coal-fired power plants by more than 6 TWh. This situation can be partly attributed to the decommissioning of coal-fired power plants in order to comply with the European regulations governing CO2 emissions applicable as from 31 December 2014. Gas-fired power generation (emitting lower levels of CO2) outstripped that of coal-fired power plants, which contributed to reduced CO2 emissions. The combined cycle gas power plants, required to ensure electricity supply-demand balance, especially for peak consumption, nevertheless experienced hardship. Like in 2013, some units were mothballed during the summer.
4) **CO₂ emissions in the electricity sector were reduced by more than 40% in 2014**

Decreased electricity consumption results in limited deployment of fossil fuel power plants (coal, gas and oil), which are normally used to top up electricity generation. CO₂ emissions in the electricity sector were effectively reduced by more than 40% against the previous year, amounting to 19 million tonnes of CO₂ equivalent. This phenomenon shows the benefits of the measures taken to control energy demand. Composition of the French power mix thus confirmed the structural change along the lines of energy transition enabling carbon emissions to be reduced.

5) **Sustained use of the European interconnections in 2014 enabled France to remain the leading electricity exporter in Europe**

The moderate level of national consumption and the relatively low prices on the French bulk electricity market provided the opportunity for France to assist its European neighbours with electricity exports. Net exports amounted to 65.1 TWh as at the end of 2014, + 18 TWh against 2013 and a record high since 2003. Electricity trades were especially high in 2014 (exports: 92 TWh, imports: 27 TWh). Net exports averaged over the month were greater than 5 GW throughout the year, including in winter. France had to import around thirty Terra-Watt hours in the year without a day of net energy imports.

Border-by-border trade analysis highlights the growing impact of changes in the European energy mix, which integrates more and more renewable energies. Variability in wind power generation on a seasonal and weekly basis and the daily cycle of photovoltaic power generation resulted in increased fluctuations in electricity trades between European countries, and especially more frequent inversion of electricity flows.

Although France remained an importer concerning Germany, the trades were rebalanced with an import balance of 5.9 TWh against nearly 10 TWh in 2013, due to relatively low French prices. This decreased balance did not result from reduced trades but rather from balancing between alternative import and export situations. Furthermore, interconnections between France and Germany were saturated; in one direction or another, for virtually half the time.
Bulk prices down on the electricity market

Faced with the decrease in demand and due to falling fossil fuel prices, annual average spot prices fell throughout Europe to €34.6 per MWh in France (the second lowest in Europe after Germany). Annual average spot prices in the countries in the CWE zone (Germany, France and the Benelux countries) have remained within the bracket of €32.4 and €41.2 per MWh for the past 5 years.

Trades with Belgium were positively affected by capability loss of nearly half the Belgian nuclear fleet. Net export from France to Belgium increased (16.5 TWh). Trade capacities from France to Belgium were saturated most of the time.

- NET EXPORTS TO THE OTHER BORDER COUNTRIES WERE ALL UP

Concerning Spain, France mostly exported and imported when Spanish renewable energy generation was extensive as the prices were then lower than the French prices. The interconnection between France and England was used to export more than 99% of the year’s hours and was saturated for 90% of the time. Concerning Italy, it was a mainly exporting situation as export capacity had increased by 400 MW since October 2014, due to reinforcement of the transalpine grids between France and Italy.
6) RTE has invested to adapt the grid to energy transition aims

Growing use of the interconnections enables power generated in Europe to be optimised and pooled. It also enables customers to have access anytime to the most efficient and cost effective power sources. This trend consolidated RTE commitment to achieving the aims of energy transition initiated in France and in numerous other European countries.

In 2014, investments made by RTE in compliance with the framework laid down by the Energy Regulatory Commission (CRE) totalled M€1,374, of which M€1,243 was intended for grid structures (roughly the same level as in 2013).

The main investments were focused on the integration of renewable energies, continued construction works on the direct current line in order to reinforce the interconnection between France and Spain through the Eastern Pyrenees, replacements of cables for improved security of supply on the 400 kV Montélimar-Lyon axis, or improved security of territorial supply (PACA and Vendée regions).

The purpose of these developments is also to maintain quality of electricity as per the reference standards.

In 2014, equivalent cut-off time for consumers connected to the transmission system was 2 minutes and 46 seconds, excluding one-off events. This result was lower than the average over the past 10 years.

The average number of power cuts experienced by RTE distributor and industrialist customers (excluding the energy and railway sectors) was 0.46 power cut by customer, lower than the average over the past ten years and in keeping with the threshold of 0.6 set by the CRE.

Lastly, the impact of the network on the landscape continues to be of permanent concern for RTE, especially due to the ever more extensive deployment of undergrounding technologies. As at the end of 2014, the public transmission system was composed of 105,331 km lines in operation. The length of underground connections increased on a continuous basis whereas the length of overhead lines was stable in 2014. In addition, the undergrounding rates of new 63 kV and 90 kV structures built stood at 92% on average over the past three years.
7) A new version of the éco2mix application

RTE launched a new version of éco2mix, a free application providing access to all the electricity data, throughout France and for every region. It provides 15 million items of data so that everybody can improve their understanding of power system aims and measure energy transition development in the power sector on a daily basis.

The éco2mix application displays the following information in real time:

- Electricity consumption in France and the forecasts calculated by RTE

- French electricity generation detailed by sector
- Electricity trades (imports-exports) with the 6 countries with borders with France
- CO₂ emissions induced by electricity generation

Every month, the data on consumption, generation and inter-regional flows for every region is also posted.

The new version has been supplemented with:

- Key figures for better understanding of energy transition, with indicators, such as peak consumption, average rate of consumption coverage by wind power and photovoltaic power generation, etc
- Monthly analysis of the energy situation in France
- A geolocation system for access to electricity information in your region

The new version also informs the user of the pricing colour to be applied the next day for Tempo customers (blue, white or red).