Energy transitions in Europe

France

A: Purposes, objectives and instruments of the energy transitions

The French energy transition is generally called “Transition énergétique” (“energy transition”) and aims at a change of the French energy system. The French energy policy principles are defined by an August 2015 law voted by parliament called LTECV (Loi de Transition énergetique pour une croissance verte - Transition Law for Green Growth)

The law provides also for the development of a National Low Carbon Strategy (SNBC Stratégie nationale bas-carbone) which is France's roadmap for reducing greenhouse gas emissions.

The law also provides for Multi-Year Energy Programming PPE (“Programation Pluriannuelle de l’Energie” - Pluriannual Energy Programming) which is reviewed every 5 years for setting policies for next 5 years (2019-2023) and evolution for an additional 5 years (2024-2028). It is recalled that the first PPE period was 2016-2018.

PPE is a tool for steering France's energy policy. All the pillars of energy and energy policy are covered. The PPE thus includes several components:

- security of supply;
- the reduction in energy consumption, particularly of fossil origin (oil, gas, coal);
- diversifying the energy mix by mobilizing renewable energies and reducing the share of nuclear energy;
- the balanced development of networks;
- preserving the purchasing power of consumers and the competitiveness of businesses;
- assessment of professional skills needs in the field of energy and appropriate training.

For redefining new PPE, the French population was called to participate in a public debate organized by the statutory independent national commission (CNDP), the result of which have been published in September 2018.The French government has issued first orientations which should be set in an official decree after a further step of consultation of the French people.

Main announcement by French president and the government was issued in November 2018. Twenty objectives have been set, organized around 7 major themes: energy production, buildings, transport, agriculture, industry, waste, and forestry and carbon sinks

Buildings

2.5 million renovated homes;
10,000 coal heaters and 1 million boilers fuel oil replaced by energy-based heating renewable or high-performance gas;
9.5 million wood-heated homes with a labelled device;
3.4 million homes connected to a heat network.

Transport

1.2 million electric passenger cars;
20,000 gas trucks in circulation;
Launch of an industrial strategy for electric vehicles (batteries).

Energy Overall targets

- The need to reduce energy consumption in all sectors is reaffirmed (an overall target to reduce final energy demand by 7% in 2023 and 14% in 2028 compared to the 2012 reference year). As one of the stated objectives of the PPE is to "turn its back on fossil fuels", it is planned in particular to reduce primary consumption of fossil fuels in France by 20% in 2023 and 35% in 2028 compared to the 2012 reference year. The trajectory of carbon taxation will be pursued and the modalities and objectives for the next periods of the UE scheme (Energy Saving Certificates) will have to be defined by the beginning of 2020.

Renewable energy

- LTECV provide for an increase in the share of renewable energies in final energy consumption to 32% by 2030. The new PPE confirms those vector-based targets for this horizon (40% renewables in electricity production, 38% in final heat consumption, 15% in final fuel consumption and 10% in gas consumption).
- Among its main objectives, the PPE plans to at least double renewable electricity capacity in metropolitan France by the end of 2028, to a level between 102 and 113 GW (compared to 48.6 GW at the end of 2017).
    - By 2030, the production of the onshore wind farm will thus triple.
    - By 2030 the amount of energy produced from photovoltaics will be multiplied by 5.
    - Off shore wind farm: During the PPE' five-year period, the first park off Saint-Nazaire will be commissioned and 4 new calls for tenders will be launched.
    - This would lead to the following status in 2023-2028

GW	2023	2028
on shore wind	24,6	31,4 - 35,6
off shore wind	2,4	4,7 -5,2
Solar PV	20,6	35,6 -44,5
Methanisation	0,27	0,34 -0,41
Hydro	25,7	26,4 -26,7
Total	74	102 -113

- In terms of heat production, the government plans, among other things, to strengthen the HeatFund ("by prioritizing the substitution of coal by biomass"), whose budget will be increased to 315 million euros in 2019, then 350 million euros in 2020 (compared to 245 million euros in 2018). It is also planned to increase by a factor of 5 the annual production of "renewable" gas (mainly from methanation) by 2028, compared to the 2017 level.

Fossil energy

- Close all coal fire plants by 2022

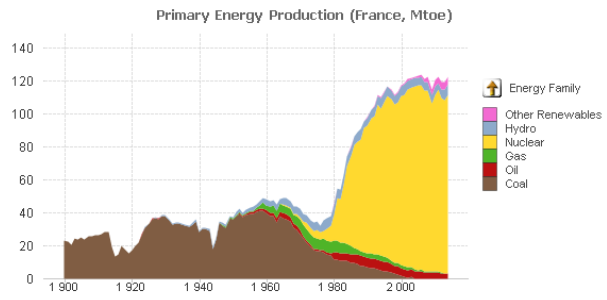
Nuclear energy

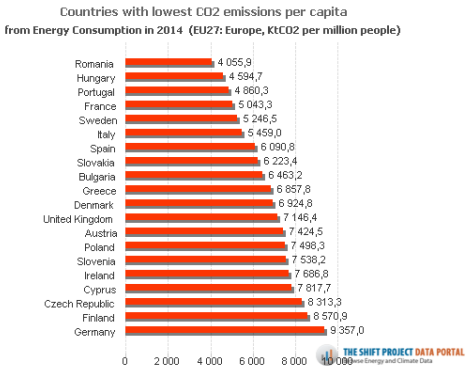
- Maintain the 50% target of electricity supplied by nuclear, but by extending the maturity date to 2035 (instead of 2025 as provided for in LTECV).
- The government is not currently committed to a programme to build new reactors, considering that "new nuclear capabilities do not appear necessary for the power system until about 2035". However, a work programme will be carried out with EDF (in particular around the EPR): analyses will have to be delivered in mid-2021, at which point the interest of a new nuclear power programme can be discussed, in the context of the campaign for the next presidential election.

Reaffirmation by the President that there is no plan to reduce further nuclear share below 50% (nuclear energy remains a promising avenue for continuing to rely on reliable, low-carbon and low-cost energy).

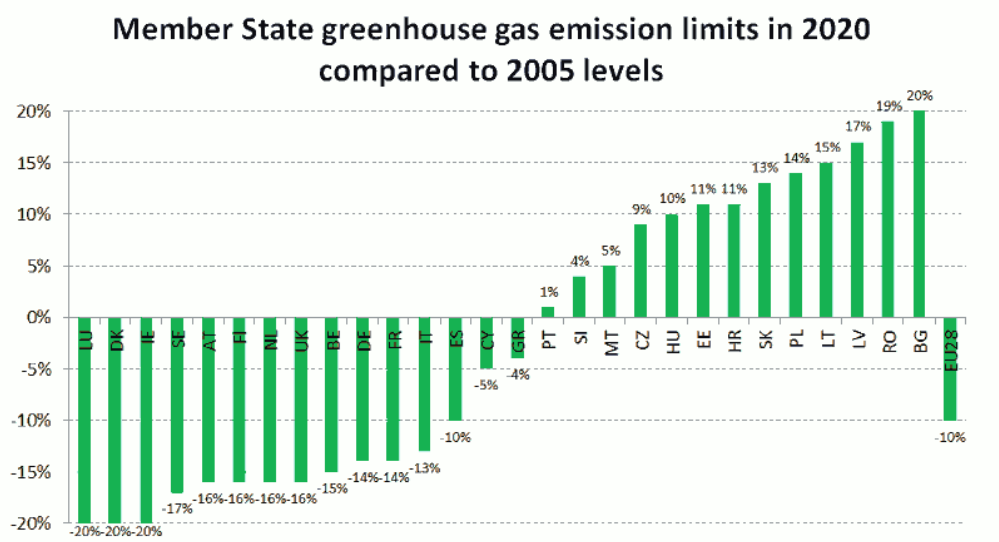
B: Successes and obstacles for the success of the individual energy transitions

Thanks to reduction of coal, oil and gas for electricity production and large increase in nuclear power France emissions of CO2 have been drastically reduced since the early 1980





A major difficulty of the French energy transition is the perspective of simultaneously reducing CO2 emissions and the share of nuclear electricity. Although emission of CO2 per capita by France are low compared to other large EU countries, the target ratio for reduction agreed for 2020 compared to 2005 (-10 % for Europe and -14 % for France and Germany for instance – see diagram below) is identical to that of Germany making it much more difficult for France than for Germany to achieve. For instance, global emission per capita in France is less than 60% of the global emission per capita in Germany and emission of power generation in France is almost 10% of German emission per KWH supplied. As a consequence, the impact of the development of non-manageable renewable electricity on the global emission of power generation is very low.



A second one is in the social perception of the transition, notably as people's life-styles and resources are becoming increasingly different between larger cities and the rest of the country. There exist in France a lot of controversies on the best way to achieve the aimed-for CO2 reduction.

In order to have better advice the French President installed the High Council for Climate, composed of experts (13 scientists, economists and other experts, chaired by the French-Canadian climate scientist Corinne Le Quéré) who will produce each year an "independent perspective" on France's policy in the fight against climate change. The High Council's annual report will assess, among other, "compliance with the greenhouse gas emissions reduction trajectory" and the implementation of measures to reduce these emissions.

However, it must be noted that, despite numerous announcements of ambitious long-term objectives and in contradiction with its international commitments, European regulations and French law, France does not respect its short-term objectives, whether in terms of reduction of greenhouse gases, development of renewable energies or improving energy efficiency, even when measures have been implemented that were identified as essential for the ecological and solidarity transition.

Greenhouse gases

- the revised SNBC draft published in December 2018 states that "France will not be unable to meet the first 2015-2018 carbon budget" and provisionally estimates this overrun to 72 Mt CO2eq over the entire period 2015-2018. The SNBC project takes note of this overrun by increasing the carbon budgets until 2023 by postponing a large part of the effort to the coming years even though France has the long-term objective of achieving greenhouse gas neutrality by 2050.
- it is worth noting that the targets for greenhouse gas reductions have clearly been missed in the transport, buildings, and agricultural sectors.

Development of renewable energies

- The plan to increase renewable energy forecasts a target for gross final consumption of renewable energy of 30.7 Mtoe in 2017. With 25.5 Mtoe achieved, it is 17% below target. This delay in France's response to renewable energy is almost unique within the European Union. Indeed, as Eurostat notes, "Compared to the 2015-16 average of the indicative trajectory established in the Renewable Energy Directive, it is noted that France, Luxembourg, the Netherlands and the former Yugoslav Republic of Macedonia were below the values of the second indicative trajectory, while all other countries were above the values of the second indicative trajectory".

Energy efficiency

- France is not meeting the 2017 objectives of the EPP118 or its trajectory to meet the 2020 objectives under the European Directive. Indeed, Eurostat noted that French final energy consumption amounted to 147.1 Mtoe in 2017, which is higher than the 139.9 Mtoe trajectory provided for under the Directive and will not make it possible to achieve the 2020 target of 131.4 Mtoe

The reasons for these failures are certainly manifold but they have not been analysed in a single document. Among other elements, the Académie des sciences and NATF have pointed out during the Débat Public of the PPE and earlier at the time of LTECV:

- Financing of renewable energy for electricity production (mainly PV and wind) although French electricity is already decarbonized at 95%, should be reduced in order to use available financing to favour the construction and transport sectors which could be the source of real decarbonisation.
- Renewable energy should be developed for heat applications, transport and construction sectors.
- Assessing the cost and effect on public finances, the trade balance, CO2 emissions and employment (both in terms of jobs and qualifications created), in comparison with a different decision, in order to identify priorities should be mandatory.
- In the near and medium term, there is a real contradiction in wanting to reduce greenhouse gas emissions while at the same time reducing the share of nuclear power.