



## #2

# WHY DEVELOP OFFSHORE WIND POWER IN FRANCE?

As part of the diversification of its energy system, France has set itself ambitious objectives in terms of the development of renewable energies in line with European objectives. The aim is to increase their share from 16% in 2016 to 33% by 2030 in gross final energy consumption (total energy consumed by end-users such as households, industry and agriculture). For electricity generation alone, this share has been set at 40% by 2030. Developing offshore energy, and in particular offshore wind – the most mature sector – is at the heart of this ambition.

## The French and European legislative framework

The law of 17 August 2015 on the energy transition for green growth (LTECV) aims to enable France to contribute more effectively to fight against climate change and the preservation of the environment, as well as to strengthen its energy independence while offering its companies and citizens access to energy at a competitive cost.

This law sets the framework for energy policy. It is required to:

- promote the emergence of a competitive and employment-rich economy by mobilising all industrial sectors, particularly those involving green growth;
- ensure security of supply and reduce dependence on imports;
- maintain a competitive and internationally attractive energy price and help control consumer energy expenditure;
- protect human health and the environment, in particular by combatting the worsening greenhouse effect and against major industrial risks, by reducing exposure of citizens to air pollution and by guaranteeing nuclear safety;
- guarantee social and territorial cohesion by ensuring that everybody has access to energy without undue cost to household resources;
- combat energy poverty;
- contribute to the establishment of a European energy union.



Since this law was passed, discussions among Member States have helped strengthen the ambition of the European Union. Directive (EU) 2018/2001 of the European Parliament and of the Council of 11 December 2018 has thus set at 32% the share of energy to be produced using renewable sources in the EU's gross final energy consumption by 2030.

In line with this ambition, the French legislative framework has set some ambitious national energy targets, including that of meeting 33% of all energy consumption from renewable sources, considering all forms of energy. For electricity generation alone, this share has been set at 40% by 2030.

### Multiannual energy plan (MEP)

Developed by the Ministry for the ecological and inclusive transition in consultation with all stakeholders, the Multiannual energy plan is a tool for steering energy policy for the next ten years in order to meet the aims defined by the law on energy transition for green growth. It sets out the government's priorities for action on energy over the next ten years in order to achieve the objectives of this law. It is revised every five years.

The current multiannual energy plan is for 2016-2023. It is currently being reviewed and the new version will cover the period 2019-2028. In accordance with the Environmental code, the State referred the matter to the national commission for public debate (*Commission nationale du débat public*). A public debate was held from 19 March to 30 June 2018, organised under the commission's auspices. On 30 November 2018, three months after the commission's report was published, the State decided to continue revising the Multiannual energy plan, factoring in the lessons learned from the public debate. This decision was published in the Official journal on 4 December 2018.

The proposed multiannual energy plan underwent a strategic environmental assessment, which was submitted to the Environmental authority (EA) and for consultation to several bodies involving various stakeholders. After these consultations, a public consultation will be held and the 2019-2028 multiannual energy plan could be adopted.

The proposed multiannual energy plan (2019-2028), presented by the President of the Republic and the Minister for the Ecological and Inclusive Transition on 27 November 2018 and published on the website of the Ministry for the Ecological and Inclusive Transition on 25 January 2019, stipulates that the next French offshore wind farm will be located on the East Channel-North Sea seaboard. This constitutes the decision to build the next offshore wind farm and has resulted in the national commission for public debate's submission by the Minister for the Ecological and Inclusive Transition in March 2019, leading to this debate.

### The role of offshore wind energy in the national energy mix

France's energy policy aims to reduce final energy consumption by 20% by 2030 compared with the 2012 base line, and to increase the share of renewable energies to 33% by 2030, of which 40% will be for electricity generation. It is also envisaged to reduce the share of nuclear power by 50% by 2035, in a phased, controlled and economically and socially viable manner. Finally, electricity generation will be significantly reduced, mainly by closing the remaining coal-fired power plants by 2022.

In 2018, 20% of total electricity production in France was of renewable origin (111 TWh out of 549 TWh), while nuclear energy accounted for 72% of this production and fossil-fuel thermal accounted for 7% (RTE's 2018 electricity report<sup>1</sup>). Renewable energy generation was assured by hydropower (57% of renewable energy production), onshore wind (25%), solar (9%) and bioenergy (9%).

---

1. <https://bilan-electrique-2018.rte-france.com/>

## The main renewable electricity production sectors: potential costs and impacts

	Production costs in €/MWh (in particular as observed in competitive bidding procedures)	Potential impacts
Ground-mounted solar photovoltaic	40-70	Changes in land use Changes in land use
Rooftop solar photovoltaic	80-130	
Onshore wind	60 – 70	Biodiversity and landscape
Offshore wind	40-80 (wind turbine) 120-150 (floating wind turbine) <sup>2</sup>	Biodiversity and usage conflicts with existing offshore activities
Hydropower	30 – 160 (depending on size)	Biodiversity and landscape
Tidal	> 200	Biodiversity
Deep geothermal energy	> 200	Micro-seismicity
Biomass	100-150	Air quality and biodiversity
Biogas	120-145 (pumped-storage hydroelectric power stations, non-hazardous waste storage facility) 180-190 (agriculture)	Air quality and biodiversity

Source: Ministry for the Ecological and Inclusive Transition

The main energy production sectors that will help achieve the 40% renewable electricity target will be hydropower, solar photovoltaic and wind – both offshore and onshore. These sectors have their own advantages and disadvantages, as explained in the table above. In particular, offshore wind is a crucial component of this future energy mix, since it is a plentiful resource, the wind is stronger and more regular than on land, offshore areas allow for larger wind turbines in greater numbers, and it is a competitive sector.

A balanced energy mix is also essential for the expansion of renewable energy production: for example, the solar and wind generation curves do not follow the same time structure, the electricity production of these technologies is not correlated. The development of a single sector on its own – the solar sector, for example – would engender massive costs for the electricity system (network costs, storage costs, etc.). On the contrary, a development of random means of production using several technologies ensures a secure supply.

Achieving the target of having 40% of all electricity produced from renewable energies therefore requires mobilising all sectors. Thus offshore wind could represent around 10% of renewable electricity generation in 2030, hydropower 30%, onshore wind 38% and solar photovoltaic 20%.

2. Offshore wind costs are falling sharply. As far as floating offshore wind turbines are concerned, this technology is reaching the commercial stage and there is a consensus on tariffs converging with those of fixed offshore wind power within a decade.

### OFFSHORE WIND ENERGY IN THE MULTIANNUAL ENERGY PLAN

Wind energy is a major component of the energy transition, and must help achieve the 33% renewable energy target and 40% renewable electricity target by 2030.

In terms of total power, the 2016-2023 multiannual energy plan, in force until the publication of the law on the 2019-2028 multiannual energy plan, provides for the allocation of between 500 MW and 6 GW of offshore wind, in addition to the first six wind farms already allocated when it was adopted in 2016.

The draft 2019-2028 multiannual energy plan, published on the website of the Ministry for the Ecological and Inclusive Transition on 25 January 2019, provides for the allocation of proposed wind farms (fixed and floating) generating total power of between 3.25 GW and 4 GW by 2024, and then 500 MW per year thereafter. Furthermore, the Prime Minister announced in his policy statement in June 2019 that the targets set out in this draft multiannual energy plan for offshore wind will be increased by 1 GW<sup>3</sup> per year.

For the first time, the draft multiannual energy plan sets annual quantitative targets for the launch of offshore wind farm competitive bidding procedures and identifies the regions that will host the future ones, in accordance with the following timetable.

#### Timetable of competitive bidding procedures for offshore wind

Competitive bidding procedure award date	2019	2020	2021	2022	2023	2024	After 2025
Floating wind turbine			250 MW South Brittany (€120/MWh)	250 MW Mediterranean (€110/MWh)		250-500 MW depending on prices	One 500 MW project per year, fixed or floating, depending on price and wind potential
Fixed wind turbine	500 MW Dunkirk (€70/MWh)	1 GW Normandy (€65/MWh)				1 – 1.5 GW (€60/MWh)	

NB: The dates given are the dates on which a winner will be selected at the end of the competitive bidding procedure. The prices indicated are target prices; calls for tenders will be launched with maximum prices €10 to 20/MWh higher than the target prices. Source: draft multiannual energy program

## The role played by offshore wind in the national energy mix on the seaboard

There are seven electricity generation sites on the Eastern Channel-North Sea seaboard, including five nuclear power plants, a coal-fired power plant and a gas power plant. Most electricity is generated by the nuclear power plants, which reflects the energy mix at country level.

All territories as well as local stakeholders are committed to the ecological and energy transition and are fully involved in the necessary energy diversification. The Eastern Channel-North Sea seaboard will also be involved in developing onshore wind or photovoltaic power. However, possessing real assets to contribute, the seaboard is destined to become a pioneer in the offshore renewable energy generation, mainly involving wind energy and, more marginally, tidal energy. With regard to offshore wind projects, four wind farms (including three in Normandy) totalling nearly 2 GW capacity are currently in development, with the first expected to be commissioned in 2022.

3. <https://www.ecologique-solidaire.gouv.fr/gouvernement-accelere-deploiement-leolien-en-mer>