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France

IEA Wind TCP Annual Report 2025

Country Report

Introduction

In 2025, about 900 MW of new onshore and 500 MW of new offshore wind power capacitiy was built in France, raising the country's total wind power capacity to 26.1 GW [1]. The newly installed wind power capacity was higher than in 2024 for offshore wind and slightly lower for onshore. An annual increase of 1.7 GW will be necessary to reach the objective of 34.6 GW set for 2030.

In 2025, wind power generation amounted to 49.6 TWh, including 5.7 TWh for offshore wind. This amount represented 10.9% of French electricity consumption which is similar to the share in 2024. Wind power electricity output stands ahead of gas production and is ranked 3rd behind nuclear and hydropower [2].

Total annual onshore wind power energy output was 43.9 TWh, showing a slight increase (2%) in comparison with 2024. This increase is due to the development of onshore wind power capacity

during the year, and relatively similar wind conditions. Indeed, the capacity factor was 21.4% in 2025 compared to 21.8% in 2024 [2].

Offshore wind power output was about 5.7 TWh, 43% higher than in 2024. The capacity factor for offshore wind was 38.2%.

One commercial bottom-fixed offshore wind farm (Yeu and Noirmoutier) became operational in 2025.

The new PPE (Programmation Pluriannuelle de l'Energie -Multi-annual Energy Programming) has been enacted in February 2026, with decreased targets for wind energy development compared to the targets set in the previous PPE (PPE2) [3].

Table 1. Key National Statistics 2025: France

Total (net) installed wind power capacity	26.1 GW
Of which total offshore capacity	2 GW
Newly installed wind power capacity	1.4 GW
Total electrical energy output from wind	49.6 TWh
Wind-generated electricity as percent of national electricity demand	10.9%
Average national capacity factor	Onshore: 21.4% Offshore: 38.2%
Target set for 2030	31 GW onshore 3.6 GW offshore
Target set for 2035	35-40 GW onshore 15 GW offshore

Highlights

- At the end of 2025, the capacity of planned onshore wind projects reached 13.6 GW, of which 2.2 GW relates to projects with a signed connection agreement. The capacity of planned offshore wind projects reached 3.4 GW, of which 1 GW relates to projects with a signed connection agreement (Courseulles-sur-Mer, Dieppe-Le Tréport and Gruissan.) [1].
- For onshore wind, around 90 new projects were selected from the two 2025 calls for tenders, for a total power capacity of 1.9 GW and an average price of EUR 87/MWh.
- Provence Grand Large pilot floating wind farm (25 MW) became fully operational in 2025.
- Yeu Noirmoutier wind farm was partially commissioned in 2025.
- The result of the AO8 call for tenders (Centre Manche 2 – bottom-fixed - 1.5 GW) was disclosed in September 2025. The wind farm should be commissioned in 2031. This is the largest renewable energy project in France to date [4].
- To reach the new PPE target of 34.6 GW installed wind capacity at the end of 2030, about 1.7 GW need to be installed each year until 2030 (300 MW/year of offshore wind power capacity and 1.4 GW/year of onshore wind capacity).

Market Development

Targets and Policy

The new Multi-year Energy Programming (PPE) enacted in February 2026 sets the following overall global objectives:

- achieve carbon neutrality by 2050 and ensure its maintenance beyond that point,
- integrate a target for reducing its carbon footprint including reducing emissions within the national territory, but also imported emissions,
- reducing total energy consumption by 50% in 2050 compared to 2012,
- phasing out coal by 2030, oil by 2045, and gas by 2050.

Updated wind power capacity targets are:

- for 2030: 31 GW for onshore wind power capacity and 3.6 GW for offshore wind power capacity. Priority will be given to renewing existing parks.
- For 2035: between 35 and 40 GW for onshore wind and 15 GW for offshore wind.

It is to be noted that the 2030 targets are slightly lower than those previously set in the PPE 2, because of an observed delay in shifting fossil fuels uses to electricity, as indicated in the text of the PPE 3 [5]. To reach the 2030 targets, 1.4 GW for onshore wind and 300 MW for offshore wind new capacities need to be installed each year until 2030.

Progress and Operational Details

Generated renewable electricity in France amounted to 156 TWh in 2025, representing about 28.4 % of the total electricity generation. Wind contributed to 32% of the total renewable electricity production.

The total (onshore and offshore) wind power energy output reached 49.6 TWh, representing an increase of 5% compared to 2024. Wind power accounted for 10.9% of electricity consumption (excluding overseas territories).

New and total installed wind power capacity (onshore and offshore) is showed below in figure 1.

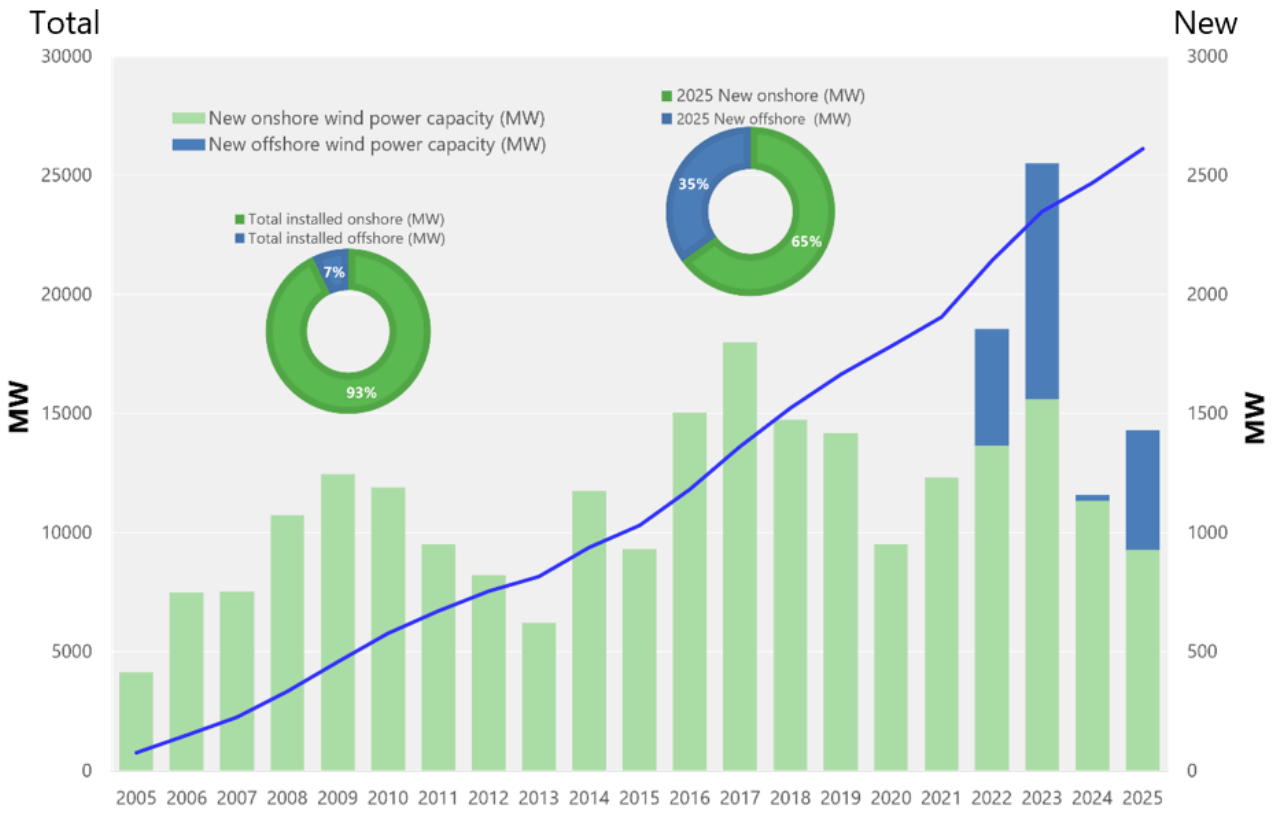

Figure 1. New and total installed wind power capacity (onshore and offshore), author: IFPEN, source SDES [1]

The total capacity for onshore wind reached 24.1GW on December 31, 2025, mainly located in the North and the East of the country (see Figure 2). The installed offshore wind power capacity reached 2 GW, located in Brittany and Normandy.

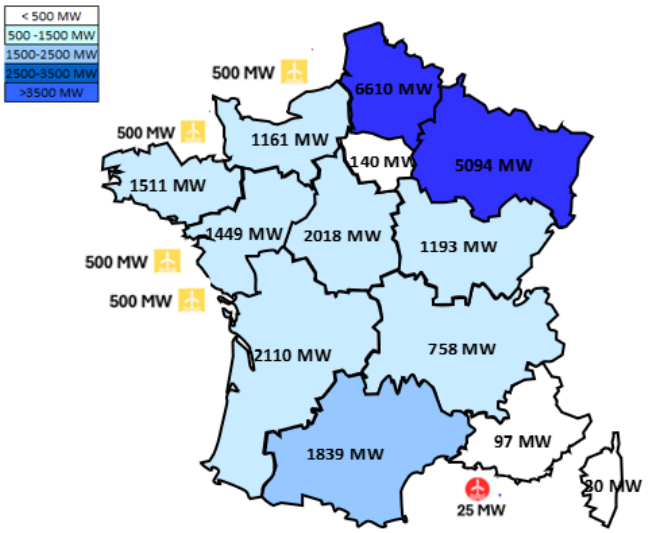

Figure 2. Total installed wind power capacity (onshore and offshore) in the administrative regions, author: IFPEN, source SDES [1]

The ongoing call for tenders for onshore wind started in 2021 is divided into ten phases, running until 2026. The 9th and 10th tenders took place in 2025 and a total of 1.9 GW of new capacities was awarded. A new tender is expected in 2026.

Regarding offshore wind power, the commercial bottom-fixed offshore wind farm of Yeu and Noirmoutier (about 0.5 GW) became partly operational in 2025 (see Figure 3). On the other hand, the wind farm of Courseulles sur Mer, planned to be commissioned in 2024, will not be operational before 2027, due to drilling issues encountered during the construction of the foundations.

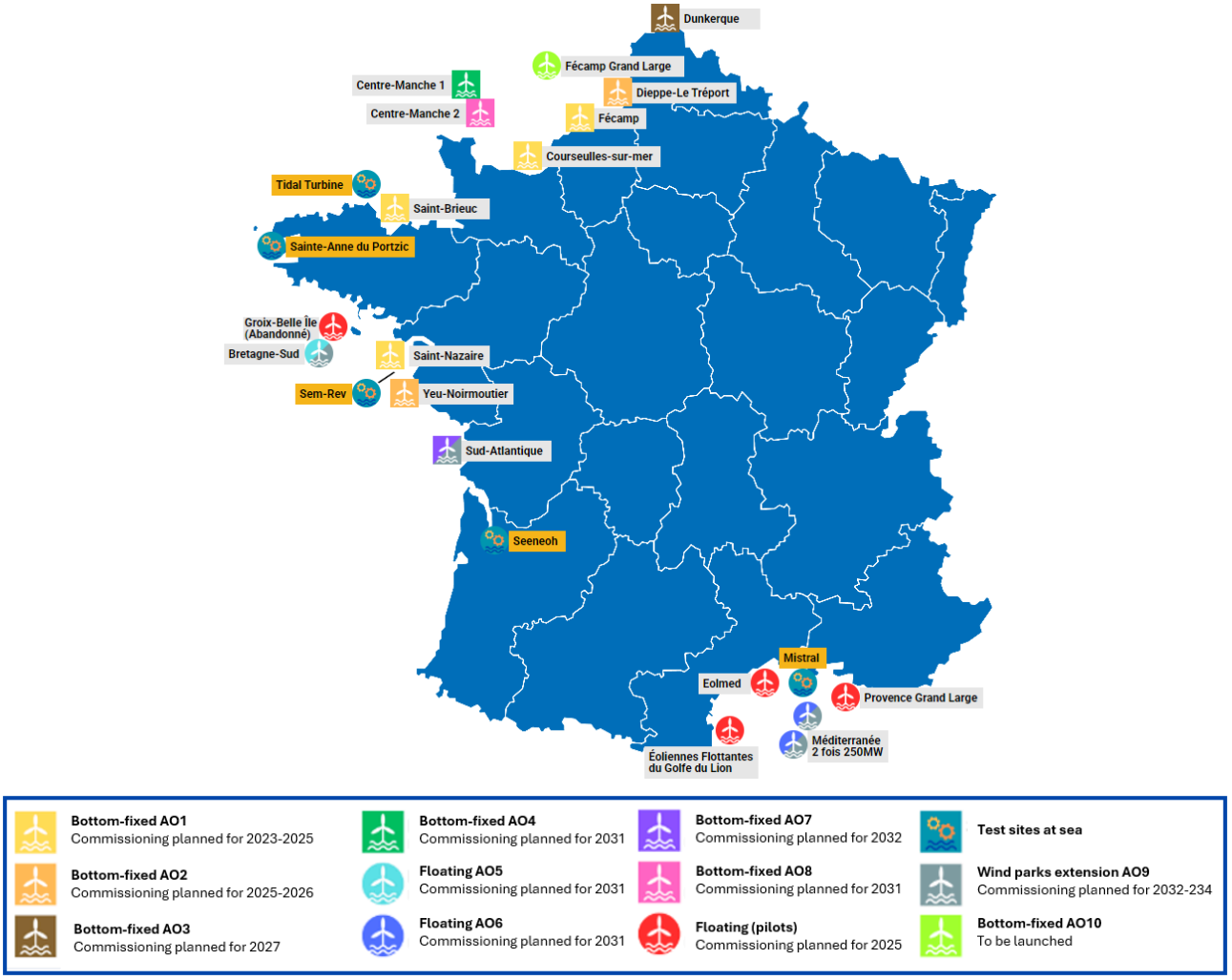

Figure 3. Offshore wind power farms commissioning plan 2025 [7]. NB: «AO» stands for «Appel d'Offres», which means «call for tender»

The results of two calls for tenders regarding offshore wind farms were announced in September 2025. For the first time in France, one call was unsuccessful (AO7 – Oleron – bottom-fixed) . There were also a few offers for the AO8 site (Centre Manche 2 – bottom-fixed) but one candidate was successful (TotalEnergies-RWE consortium). [8]

Matters Affecting Growth and Work to Remove Barriers

Significant increase in periods of negative prices in 2024 (twice as many as in 2023 with €80 million in losses for producers in the first half of the year alone) has resulted in a decree, dated September 8, 2025, to mitigate this financial impact on the various stakeholders. It mainly improves the conditions for accessing the negative price premium and specifies the injection tolerances on the grid that are granted [9].

In 2024, wind power generation resulted in €267 million (90/10 onshore /offshore) of tax revenue for local authorities. The largest share (77%) goes directly to local communities, with the remainder

going to the respective regions. Annual income for a medium-sized onshore wind farm (10MW) is around 100 k€ [10].

RD&D Activities

National RD&D Priorities and Budget

In 2023 (last year available), Public investment in research and development (R&D) dedicated to renewable energies amounted to €183 million, €18 million of which for wind power. Investment in renewable energies R&D represented 7% of total public investment in energy-related R&D. [11]

The French Agency for Ecological Transition (ADEME) is the driving funding agency for applied RD&D projects in this area. ADEME finances and administers three kinds of projects: Ph.D. theses; R&D projects for intermediate TRLs; and industrial projects funded by subsidies, refundable aids, and possibly equity.

The CORIMER (Orientation Council for Research and Innovation in Sea Industries) also issues periodical calls for proposals with public funding. Bringing together representatives of the maritime industrial sector (shipbuilding, equipment manufacturers, oil services, energy companies, renewable energies, nautical industry), the R&D Committee of the sector and the public authorities, it acts as a trusted third party. Its calls for expressions of interest are based on the sector's technological roadmaps, with a view to structuring public aid and support for sector projects.

National Research Initiatives and Results

Several research projects relate to impact of windfarms on avifauna and bats. Among these projects, **PIAFF&CO** is a four-year observation on the FLOATGEN FOWT with cameras and acoustic sensors. 30.000 records identify with Artificial Intelligence assistance 44 species of birds and 6 species of bats and 2000 videos were used to study the flight of birds near the turbine. **BATWAKE** was launched in 2025 to assess the impact of wake (wind speed deficit, turbulence) on bats in terms of habitat use. **AVOCET**, also launched in 2025, aims to assess the collision risk between land-based migratory birds and offshore wind turbines.

Several projects relate to atmosphere and wind farms interactions. **2CNOW/2CMORE** deals with impact of climate change on the output and size of offshore wind turbines. 13 IPCC models are considered to assess wind, wave and sea level impacts. **OWWAAW** was launched in 2025 to study impact of wake generated by offshore wind farm on local meteorological conditions in coastal aeras and noise propagation. The study case is St Nazaire Wind farm.

FISHOREMAN aims at modelling the dynamics of fishing fleets near wind farms to assess impacts on the ecosystem.

Test Facilities and Demonstration Projects

The Fondation Open-C is coordinating the **HiPoTeSis** project (High Power Test Sites to consolidate industrialisation of Floating Offshore Wind in Europe) co-financed by the Interreg Atlantic Area programme. To mitigate the risks associated with the large-scale deployment of future commercial floating wind farms, Fondation OPEN-C is preparing to support the testing of next-generation floating wind turbine exceeding 10 MW in capacity. This testing site would have the capacity to host and operate two to three floating wind turbine prototypes simultaneously.

In the Mediterranean Sea, the **Provence Grand Large floating wind project** based on tension-leg platform (TLP) technology and composed of 3x8.4MW wind turbines was commissioned in 2024 and fully operational in 2025.

Also in the Mediterranean Sea, the **EoldMed** project and **Eoliennes Flottantes du Golfe du Lion** project (30MW each) are in progress. For both, offshore installation was completed in 2025, and commissioning is scheduled for 2026.

Collaborative Research

Since joining IEA Wind TCP in 2014, more than 30 French organisations, including more than 20 private companies, have expressed interest in collaborative research. France is currently involved in the following IEA Wind TCP Tasks:

- 43 Wind Energy Digitalization
- 44 WF flow control
- 45 Recycling
- 47 TURBINIA, Turbulent Inflow Innovative Aerodynamics
- 49 IDEA: Integrated DEsign of floating wind Arrays
- 51 Forecasting for the Weather Driven Energy System - Improving the value of renewable energy forecasts to the wind industry
- 52 Large-scale deployment of wind lidar
- 55 REFWIND (Reference Wind Turbines and Plants)
- 56 OC7: Offshore Code Comparison Collaboration
- 57 JAM Joint Assessment of models
- 59 WREN (Wind Energy-Environmental Research & Engagement Network)
- 60 CYCLEWIND
- 62 Social Science for Collaborative Wind Energy Planning & Participation
- 63 TWENTY-Fifty Integration of Variable Energy

Impact of Wind Energy

Environmental Impact

The volume of low-carbon electricity generation (nuclear and renewables) in France reached a historic high of 521.1 TWh in 2025. This represents 95.2% of the electricity generated in France, a share similar to that of 2024. The greenhouse gas emission intensity of the French electricity generation (19.6 gCO2eq/kWh) remained one of the lowest in the world [12].

Many research projects studying the impact of wind turbines on fauna and marine ecosystems are ongoing, such as **MIGRATLANE** (Complementary methods to characterise the use of the North-East Atlantic Arc by birds and bats), **MAPE** (Reduction of Avian Mortality in Operating Wind Farms), **SEMMACAPE** (Monitoring and study of marine megafauna in wind farms by automatic characterisation), **ECOSYSM-EOF** (Prefiguration of an observatory of marine ecosystems in interaction with floating offshore wind farms in the Gulf of Lion) and **ORNIT-EOF** (Prefiguration of an observatory of the Gulf of Lion birdlife in interaction with floating offshore wind farms).

Economic Benefits and Industry Development

According to Renewable Electricity Observatory 2025 [13], wind energy represented a total of 33,200 full-time equivalent jobs at the end of 2024. This represents a 6% increase from 2023. The increase was observed only for onshore wind jobs.

The wind power sector is well developed in France, with many companies located throughout the territory, in all segments of the value chain (planning and design, component manufacturing, engineering and construction, and operation and maintenance). In addition, several hundred million euros have been invested in a number of ports along the coastline to accommodate offshore wind farm construction sites, particularly for floating wind farms, which require very large areas for the assembly of the floating platforms.

Next Term

The new PPE (Multi-annual Energy Program) has been finally enacted in February 2026 for the period 2026-2035, stating onshore and offshore wind power objectives for the period 2026-2035.

In November 2023, the government had made public its energy and climate strategy (SFEC), which stipulates that France will exit fossil fuels in 2050 [9]. The rapid development of renewable energies until 2035 will be essential to achieve this objective. The law on the acceleration of renewable energy generation enacted in March 2023 also fosters wind energy development.

Regarding onshore wind, the current periodical tender (AO PPE2) with a total capacity of 9 GW should be completed in 2026. Next, as part of the new PPE enacted in February 2026, two calls for

tenders per year, of 800 MW each, are planned for the 2026-2035 period. Priority will be given to renewing existing parks including repowering.

Regarding offshore wind, a steady pipeline of 8 MW from previous call for tenders is currently under construction or planning. A huge call for tenders (AO9 and AO10, 8 to 10 GW) should be launched in 2026 for new offshore wind farms, enabling reaching the new target of 15 GW in 2035 set in the PPE 3. The former target of 18 GW set in the “offshore wind pact” dated March 2022 [6] has been reduced because of the observed delay in shifting fossil fuels uses to electricity, as indicated in the text of the PPE 3.

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