

OFFSHORE WIND ENERGY IN PORTUGAL: A PROMISING FUTURE

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Offshore wind energy is one of Portugal's key strategies to expand renewable energy production over the coming decades. This technology, which harnesses turbines located off the coast, benefits from stronger and more consistent winds, with lower turbulence and visual impact compared to onshore turbines. Furthermore, the ocean provides vast, continuous areas suitable for large-scale wind farms capable of supplying electricity to the national grid or supporting other energy forms such as green hydrogen.

Portugal already operates a 25 MW pilot project, Windfloat Atlantic, off the coast of Viana do Castelo, developed by Ocean Winds (a joint venture between EDP and Engie). However, the real momentum is yet to come: the Government has set a target of awarding up to 10 GW in offshore wind licenses, with 2 GW operational by 2030, in line with the [National Energy and Climate Plan 2030 \(PNEC 2030\)](#) and the goal of carbon neutrality.

OPPORTUNITIES AND CHALLENGES

In addition to electricity generation, offshore energy presents an opportunity to create a national value chain, boosting industry, technological innovation, and skilled employment. However, it faces significant challenges: port adaptation, workforce qualification, attracting investment, and strengthening the onshore electricity grid to integrate energy produced offshore.

The [Offshore Renewable Energy Allocation Plan](#) (“**PAER**”), recently approved, sets the framework for installing up to 2 GW by 2030. Beyond designating maritime zones, the PAER establishes technical, environmental, and legal criteria for projects, laying the groundwork for public tenders and licensing. The plan emerged from a participatory process, including public consultations and negotiations with sectors such as fisheries, balancing energy, environmental, and traditional interests. It was supported by a Strategic Environmental Assessment that excluded sensitive areas, such as Ericeira and the southern region of Viana do Castelo.

Nonetheless, the implementation of offshore wind energy brings multiple challenges. In addition to integration with the National Electricity Transmission Grid (“**RNT**”), it requires the adaptation of ports (including quay reinforcement, logistics areas, and sufficient draft for large vessels) and the management of spatial conflicts at sea. It is essential to develop a domestic industry capable of manufacturing components such as towers, blades, floating platforms, and subsea cables, along with logistical solutions for offshore turbine installation. Onshore, the electrical grid needs new substations, reinforcement of existing ones, and subsea cables to connect wind farms to distribution points.

The success of the PAER will depend on the ability to mobilise qualified private investment, accelerate licensing procedures, and maintain a transparent and technical dialogue with coastal communities and other stakeholders.

AREA SELECTION CRITERIA

The plan covers 2,711.6 km² of maritime space, divided into four main zones (Viana do Castelo, Leixões, Figueira da Foz, and Sines) and an additional 5.6 km² in Aguçadoura for non-commercial research projects. Following public and environmental adjustments, the final area was reduced by 470 km², enabling 9.4 GW for commercial projects, with allowances for environmental impact mitigation and navigation corridors, assessed on a case-by-case basis through environmental review processes.

The selected areas are based on technical and economic viability criteria to ensure project sustainability:

- Wind resource: wind speeds between 6.51 m/s (Sines) and 8.5 m/s (Viana do Castelo) at 100 metres above sea level, with 3,000 to 4,250 annual full-load hours;
- Wind power density: from 350.1 W/m² (Sines) to 650 W/m² (Viana do Castelo);
- Wave energy potential: between 30.1 kW/m (Leixões) and 35 kW/m (Figueira da Foz);
- Bathymetry and slope: depths from 75 m to 500 m and slopes below 10%, suitable for floating technologies;
- Distance to shore: balancing grid connection and minimising impacts.

The PAER promotes the multiple use of maritime space, harmonising activities such as fishing, transport, and defence, and respects protected areas (Natura 2000 Network), navigation corridors (5–6 km wide), and submerged cultural heritage. Safeguard measures are foreseen from planning to decommissioning, with the objective of minimising conflicts and ensuring compatibility between uses.

IMPLEMENTATION MODEL AND FUTURE OUTLOOK

Area occupation will be initiated by the Government through competitive tenders, granting both the Title for the Private Use of Maritime Space (TUPEM) and Capacity Reservation Titles (TRC) for injection into the public electricity grid. An initial allocation of 2 GW is expected by 2030, with gradual rollout of the remaining areas by 2045. However, the PAER does not specify the priority order or geographical sequencing of zones for the upcoming auctions.

On April 21, [Ministerial Order No. 4752/2025](#) was issued, establishing the model and timeline for the first public tender. The selected model - centralised and sequential - foresees two phases:

- First: awarding of the TUPEM; and
- Second: awarding of the grid connection capacity through a guaranteed remuneration scheme.

Three entities - DGRM, DGEG, and EMER - have 60 days to present a detailed proposal for the implementation of the tender, including its timeline, selected maritime zones, pre-qualification criteria, and potential legal adjustments. Within 180 days, the full tender documentation must be finalised.

Portugal holds unique conditions to lead the energy transition: abundant natural resources, political commitment, emerging industrial capabilities, and a strategic location. The challenge now lies in converting this potential into a tangible reality.

The launching of the first auction by the end of 2025 will undoubtedly be the first real test of the country's willingness to turn this ambition into action.