

## Portugal braves waves with wind farm

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By Peter Wise in Lisbon

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Portugal is set to become the first country to produce energy from floating offshore wind farms following an agreement between the country's dominant power utility and a US technology company.

**Energias de Portugal**, the world's fourth largest producer of wind energy, and Principle Power, a Seattle-based technology developer, plan to generate electricity on a commercial scale from wind turbines floating in deep waters 15km off the Portuguese coast.

The project is part of **an ambitious plan** by Portugal to become a world leader in clean energy, producing more than 60 per cent of its electricity from renewable sources by 2020. The equivalent European Union target is 20 per cent.

"Developing floating foundations for wind turbines is essential for the development of offshore wind farms worldwide," said António Mexia, EdP's chief executive. "Fixed structures are not feasible beyond 50m, but sites at lesser depths are scarce."

Total offshore wind energy capacity installed across the world, currently using only structures fixed to the seabed, is estimated at just over 1 GW, with Denmark and the UK accounting for about 80 per cent.

Analysts expect this to grow to 50 GW by 2020 to compensate for the diminishing availability of onshore sites. World onshore wind capacity currently totals about 121 GW.

Portugal is already **home to Europe's largest onshore wind farm**, but its steep continental shelf rules out fixed offshore turbines.

This, together with a densely populated coast that accounts for almost 90 per cent of the country's power consumption, makes Portugal "an ideal country for floating wind farms," according to Craig Andrus, a co-founder of Principle Power.

The technology licensed by Principle, originally developed for the offshore oil and gas industry, uses semi-submersible floating foundations to provide stable support for wind turbines at any depth.

EdP said a full-scale 5MW demonstration wind turbine could be in operation within 18 months and a commercial power plant within seven years. Maximum capacity will not go beyond 150 MW and turbines will not be installed within 12km of the coast.

The initial demonstration investment is estimated at €30m, but the utility said costs per megawatt installed would fall significantly as the project expanded. Offshore turbines, unobstructed by hills or buildings, can produce up to 50 per cent more energy than onshore equivalents.

An EdP executive said: "This is a combination of two technologies that have already proved their viability - wind turbines and floating foundations. The key to success is to bring down costs to a competitive level."

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