

## EU aims to rule the waves with offshore solar

If the technology works, it could prove a major boost to green power.



EU aims to rule the waves with offshore solar

by [Aitor Hernández-Morales](#)

Nov 19, 2020, 2:05 PM

Offshore renewable energy brings to mind giant wind turbines rising from dramatic seascapes. The European Commission aims to update that image.

In the [Offshore Renewable Energy Strategy](#) released on Thursday, it sees rapid growth in green offshore energy, including electricity generated by arrays of solar panels floating on the sea.

Such sea-based floating photovoltaic (PV) farms are still a rarity, but they're increasingly common on more benign inland waters. The first system was built in 2007 in Japan, and they're now present all over Europe, from the [Rabagão river dam reservoir](#) in Montalegre, Portugal to the [Dettelbach quarry lake](#) in Bavaria. The technology has taken off most dramatically in the Netherlands because of scarce land that is needed for farming and other uses.

“In the same way that the problems finding space for on-land wind farms led us to pursue offshore wind options, floating solar has been seen as a potential way to solve

the problem,” said Jan Kroon, senior project manager at the independent Netherlands Organization for Applied Scientific Research (TNO).

With 52,000 hectares of shallow waters, the Netherlands has become a hotbed of floating solar activity. Companies like GroenLeven — which owns [Zonnepark Bomhofsplas](#), Europe’s largest floating PV farm which can power 7,000 homes — promise a [stable income](#) to those willing to rent locations capable of hosting the floating panels. The costs are similar to those of ground-mounted systems.

The World Bank [estimates](#) that the offshore and inland sector could have a potential global capacity of over 400 gigawatts.

## Going offshore

“The challenge now is to determine how we take this system from calm inland waters to much harsher conditions in the open sea,” said Kroon, who [studied](#) the impact of wind and waves on floating PV systems at a special testing facility in a lake near Rotterdam.

Kroon said that offshore solar energy could have an enormous impact if the technology were perfected. The idea would be to link the installations to offshore wind farms in the open sea, where their potential for generating power would be especially significant during the summer. But he stressed there was still a long way to go before that capacity could be fully harnessed.

“We are performing a pilot study at a lake where there are 1-meter waves, and we’ve had system failures because the structures are not yet optimally designed,” Kroon said. “In the North Sea you can have 10, 15-meter waves. To survive that you need something really robust.”

The solar energy expert added that open seas were also complicated due to the corrosive nature of salt water, which degrade the kit more quickly.

Despite the challenges, Kroon said that offshore solar parks could be revolutionary for Europe’s islands, from those scattered across the Mediterranean, to those in the EU’s [outermost regions](#), which include French islands like Martinique and Réunion, Spain’s Canary Islands, and Portugal’s Madeiran and Azores archipelagos.

“A lot of these places rely on diesel generators for power, so there’s huge potential for clean energy there, but even in other scenarios this technology could be used to provide electricity to industrial activities located near the coastline,” he said.

## Falling costs

Oceans of Energy is a Dutch company that became a pioneer in the field in 2019, when it launched the world's [first offshore floating solar instalation](#) in the North Sea.

The 17-kilowatt [pilot module](#) was designed to withstand 13-meter waves. It has since been expanded to 50 kW and survived extratropical cyclones including this year's storms Ciara and Dennis, which [wreaked havoc](#) in the British Isles and caused widespread flooding across Europe.

"We've proved that our panels can be placed in a complex, highly corrosive environment and endure," said company founder and CEO Allard van Hoeken.

"The price for offshore solar is still relatively high, but in just the past three years we've seen the sector's cost curve come down at a faster pace than that of offshore wind," he said, adding there was a catch-22 element to the situation. "We need more volume to become cheaper, but we need things to be cheaper to build up volume."

The company estimates that offshore solar will be competitive with offshore wind or onshore solar by 2023 in the Mediterranean and by 2030 in northwestern Europe.

Van Hoeken said that the inclusion of offshore solar in the Commission's Offshore Renewable Energy Strategy — which includes measures geared toward boosting research and innovation and investments in ocean energies — could provide critical support for the burgeoning sector.

TNO's Kroon agreed, and added that although it was a high-risk enterprise, it could also reap enormous benefits.

"When people started talking about offshore wind many said it was impossible, and now you see how big it's become," he said. "There will be those who say that building a strong enough system will always be too expensive, but I think that nothing is impossible, and there's much to be done here."