

Ecowende: The future of offshore wind is about strengthening the natural environment

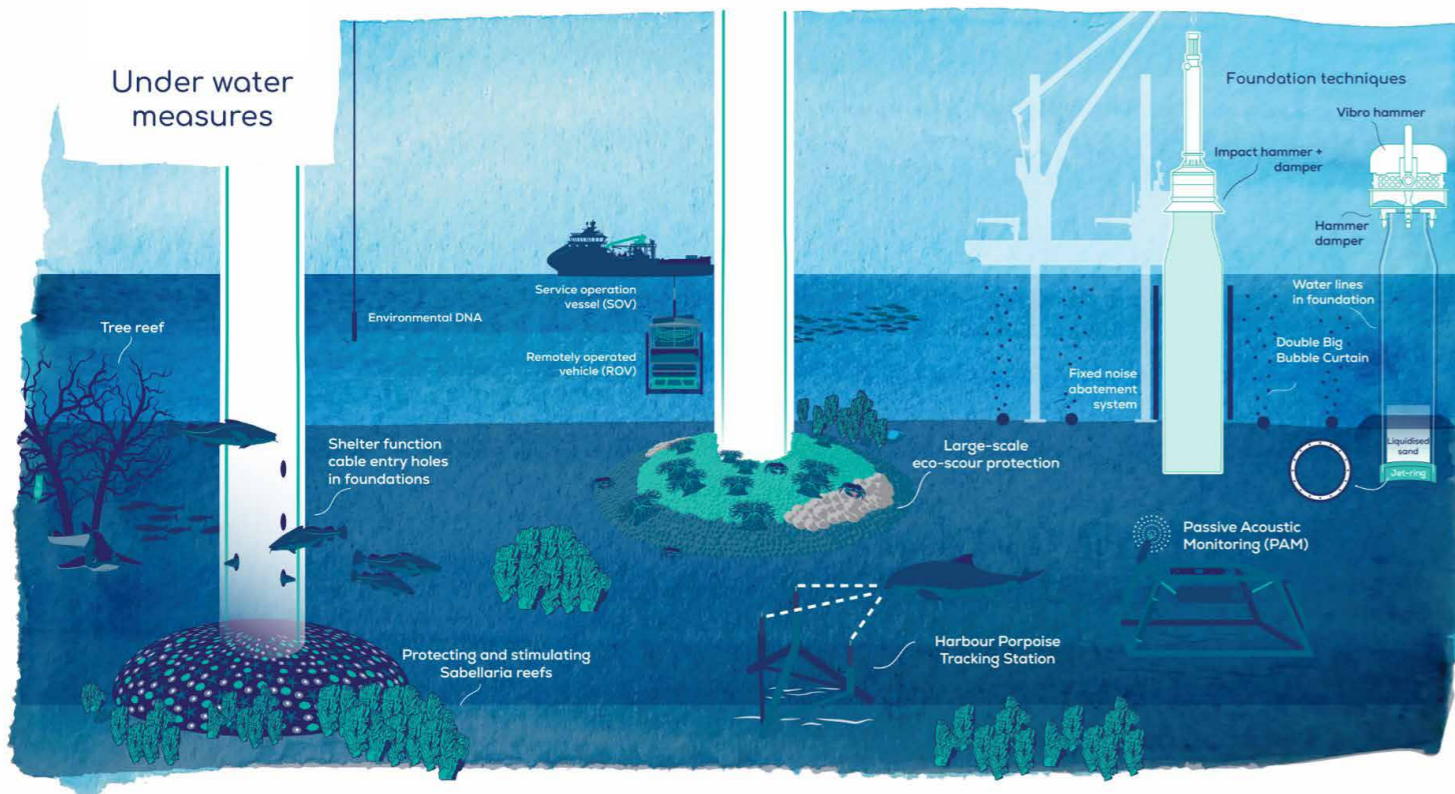
Ecowende will build the most ecological offshore wind farm to date off the coast of North Holland. In addition to providing green electricity, the “Hollandse Kust West” wind farm will also make a positive contribution to the natural environment for marine life, both above and below the water. With over 40 studies and pilot projects linked to this wind farm, it will serve as a major field lab that will help accelerate the responsible rollout of offshore wind energy across the sector.

Construction will begin offshore in late September 2025 with the placement of rocks for the foundations (monopiles). “52 wind turbines will be placed more than 50 kilometers off the coast of IJmuiden,” says Construction Director Arjan Hamoen-Kleerekooper. “What’s special is that these wind turbines will differ from each other. Some will have additional

holes in the foundation for marine life, there will be masts of varying heights, and some will be equipped with cameras while others will have sensors. The wealth of data we collect will provide us with valuable insights into the natural environment.”

Knowledge sharing

What stands out about this wind farm is its focus on nature. During the tender process, the Dutch government mainly considered the proposed measures for a healthy ecosystem and minimal negative impact on nature. Arjan: “Ecowende is working towards a sustainable future for offshore wind, contributing positively to marine ecology. By making the knowledge we gain accessible to scientists, policymakers, nature organizations, and wind farm developers, we ensure a positive impact.”



Underwater noise

For the construction of the wind farm, contractor Van Oord will use its new ship, the Boreas, starting next year. The ship will depart from Rotterdam, each time carrying three monopiles. These enormous steel piles need to be driven into the seabed for a significant portion of their length. “Traditionally, these piles are driven into the seabed, but to minimize underwater noise during construction, we will do this differently, under the motto: vibrate when possible, drive when necessary. Vibrating the piles generates significantly less underwater noise.”

Minimize noise during construction

Marine animals, such as harbor porpoises and seals, can be quite sensitive to the noise. Arjan: “That’s why we are taking measures to minimize noise. During the construction works, we will place an insulating cover around the pile and use two bubble curtains to block the transmission of vibration and sound. For a special pilot, water jets will be used alongside a so-called vibro hammer at three monopiles. These jets liquefy the sand under high pressure for a short time, so the pile experiences less resistance from the seabed while vibrating them into the seabed.”

Harbor porpoise



Arjan Hamoen-Kleerekooper,
construction director Ecowende
Photo: Jorrit 't Hoen



“The goal is for the wind farm to be connected to TenneT’s offshore grid by the end of 2026 and begin producing sustainable energy.”

Building wind turbines

Once the monopiles are installed, Van Oord will modify the ship to transport and install the wind turbine components from Eemshaven. Arjan: “The installation of the wind turbines is scheduled for the summer of 2026. The goal is for the wind farm to be connected to TenneT’s offshore grid by the end of 2026 and start producing sustainable energy.”

Developing rapidly

“Marine ecology is a field that is developing rapidly,” says Hermione van Zutphen, Program Manager for the ecological part of the wind farm. “Since the government issued the tender in 2021, much new knowledge and insights have been gained through research and technologies. During our project, we will discover what works and what doesn’t. This will provide valuable information for future offshore wind farms.”

Seabed monitoring stations

A year before the start of construction, fourteen sound receivers were recently placed on the seabed. Hermione: “These passive acoustic monitoring stations, or PAMs, contain microphones and recording equipment to gather information about the harbor porpoises in the area. They are also equipped with various sensors that collect data on water quality, underwater noise, flow speed, and wave conditions.”

‘This dataset will eventually provide us with a complete picture of the ecological environment in and around the wind farm.’



Hermione van Zutphen, program manager Ecowende
Photo: Jorrit 't Hoen

Before, during, and after

With the monitoring stations on the seabed, underwater noise will be measured for a year without construction noise starting in September. Hermione: “In total, our researchers will measure with the PAMs for seven years in and around the wind farm. This will allow us to compare the situation before, during, and after construction. This dataset will give us a comprehensive picture of the noise in and around the wind farm.”

Above the waves

More than 40 pilots, studies, and research projects are associated with the wind farm. Hermione: “A good example is the higher masts, which increase the rotor blade tip clearance from 25 to 35 meters. This will help us investigate whether we can reduce the risk of collision with birds and bats. To test whether this measure works, we will also install standard masts as a control group. Additionally, some turbines will have one red rotor blade to see if it increases visibility for birds.”

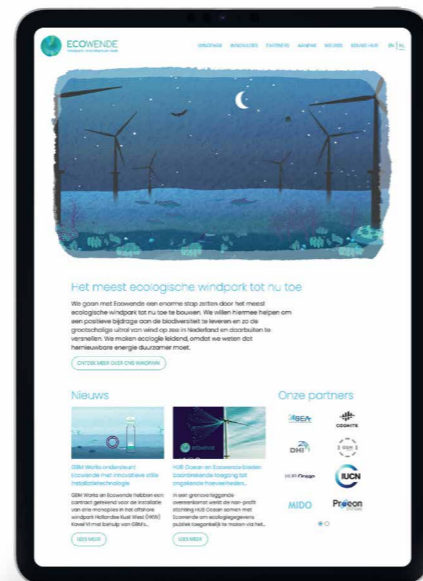
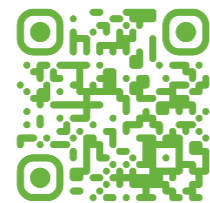
Bird corridor

The wind farm design includes a special bird corridor. Hermione: “Through this open passage, birds can fly directly from land through the wind farm to the Bruine Bank. This Natura 2000 area, located near the English border, is known to be an important feeding area for birds.”

Fruit trees

Old fruit trees will be placed on the seabed as the foundation for new artificial reefs. Hermione: “These reefs are a continuation of an experiment by the Royal Netherlands Institute for Sea Research near Texel. The wood of the trees will eventually decay, but the hope is that the structure will remain intact as shellfish attach to it. These reefs will provide a place for sharks and rays to lay their eggs.”

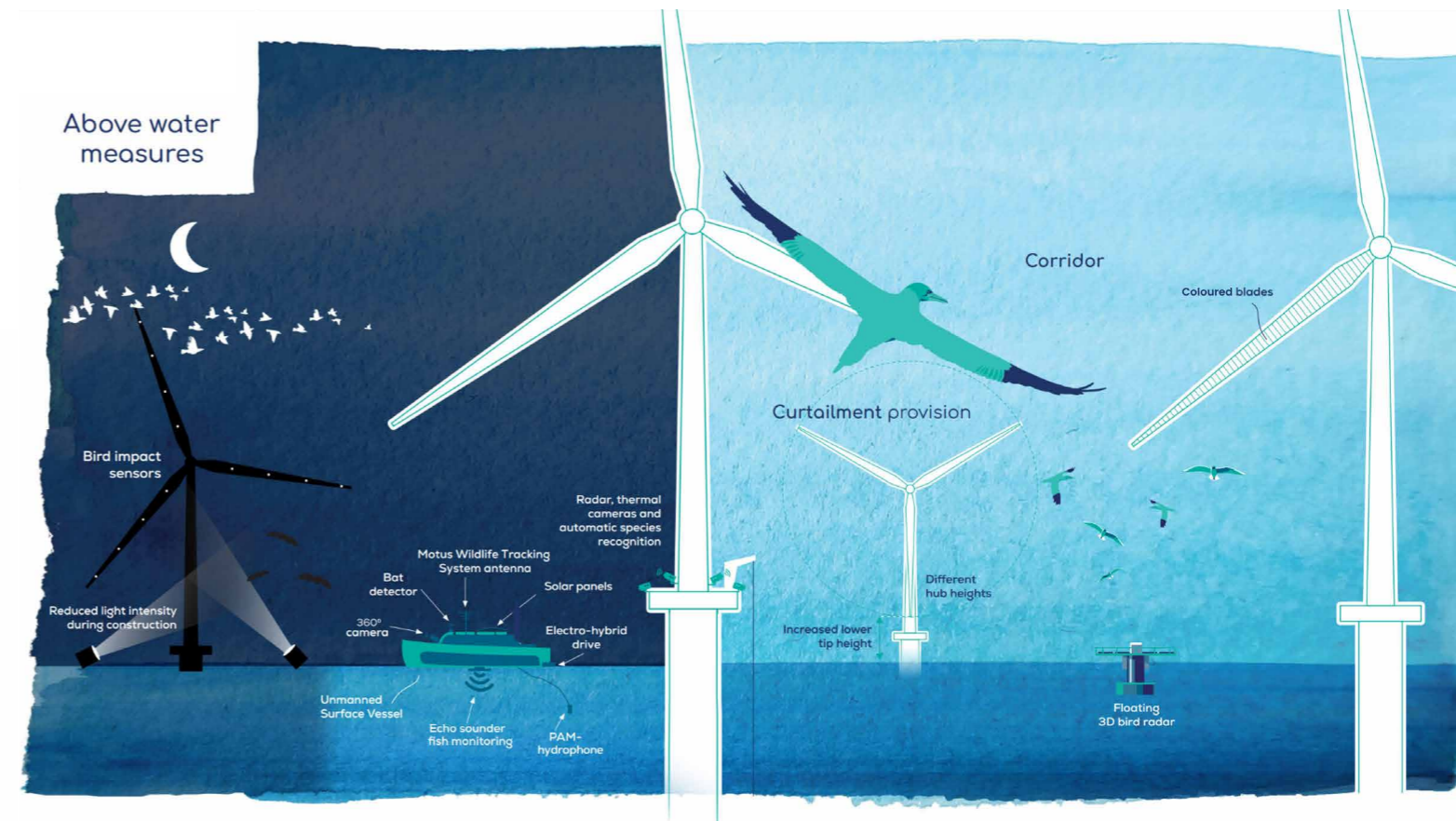
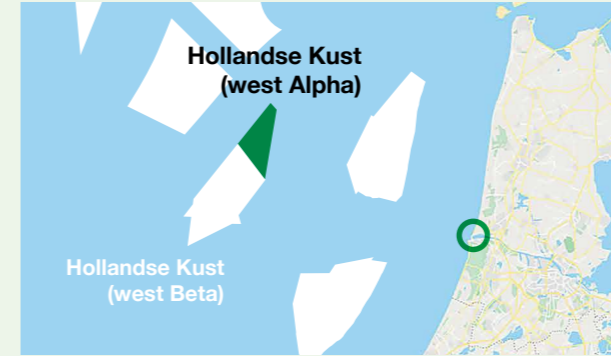
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Contact

Base in IJmuiden

To support the technicians who will do the maintenance of the wind farm, Ecowende will build an ‘onshore service base’ in the port of IJmuiden. Similarly, sister organization CrossWind (a joint venture of Shell and Eneco for the Hollandse Kust Noord wind farm) has had its base in IJmuiden since February 2023.



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