The perfect biodegradable reef

De Rijke Noordzee

Background

The installation of large-scale offshore wind farms in the North Sea makes it both possible and necessary to strengthen nature within and around the wind farms. The North Sea Foundation (Stichting De Noordzee) and Natuur & Milieu have launched The Rich North Sea (De Rijke Noordzee or DRN) - project in which we investigate ways to enhance nature in offshore wind farms. We introduce reef building species like oysters or install artificial reefs to attract marine life.

DRN participated in the 3rd Offshore Wind Innovation Challenge last year. The challenge was to design a construction to deploy oysters in offshore conditions. Two of the contestants made it to the finals with their design and one of them will see its construction being deployed inside a wind farm this year.

In the coming years, DRN continues to expand with new partners and more locations to run projects. This means more research into the possibilities of nature enhancement which requires extensive monitoring. To make future projects a success, innovation is needed both for monitoring and the way artificial reefs are constructed.

An artificial reef has the purpose of facilitating local biodiversity by offering shelter and substrate for settlement. Species which need hard substrate for settlement such as mussels, anemones or tunicates can profit but also more mobile species such as fish and crustaceans.

The goals of this challenge is to create the perfect artificial reef.

The Challenge

Our challenge is to come up with a new artificial reef structure which is suitable for multiple marine species which can be put in the North Sea permanently on a large scale (no obligation for decommissioning). The optimal reef design is stable, easy-to-install, easy-to-locate, suitable for many different species and can be monitored in a cost-efficient way. Lifting (parts) of the structure could enhance monitoring but also risks damaging the developed habitat. Innovative solutions to this problem are wanted. The ecological integrity must be guaranteed, meaning that **the reef structure should not harm the environment and is preferably made from biodegradable or natural occurring materials.**
The reef structure could be placed in an offshore wind farm, on the seafloor or on or next to the scour protection. It will serve as a stable base for reef building, reef associated and reef benefitting species. Once the reef building species have settled into a stable population the original artificial structure will be part of the natural habitat or slowly degrade, making it unnecessary to decommission or remove it.