







Showcasing the effectiveness of Ocean Multi-use practices in the North Sea and in the Baltic Sea.



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SCAN ME

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RESTORE OUR OCEAN & WATERS

About the pilot

The Belgian Pilot includes nearshore testing sites and an offshore pilot within the Belwind wind farm, operated by Parkwind.

It focuses on **bivalve and seaweed cultivation and nature restoration**. To reduce monitoring costs, the pilot is developing advanced techniques, such as multibeam acoustic detection of underwater aquaculture products. It also studies habitat complexity's impact on oyster settlement and installs an acoustic release system for remotely lifting structures. Additionally, innovative systems like a submersible seaweed line are being tested for storm resilience.



Main Achievements

Stakeholder engagement:

Community of Practice with government, industry, and research stakeholders to refine design solutions.

Advanced production system design:

Developed and tested the Impact-9 submersible seaweed longline system, showcasing buoyancy control to reduce hydrodynamic forces.

Physical & numerical modelling:

Conducted simulations and tests to optimize production system design.

Cutting-edge monitoring:

Developed a semi-automated tool for processing multibeam acoustic data of aquaculture lines.

Main Challenges

- **Rising insurance and sea mission expenses**
- **Harsh offshore conditions and storm impacts**, leading to design adjustments
- **Restrictions on diving within wind farms**, requiring design modifications for native oyster restoration

Piloted Solutions

- **Use of alternative testing sites:**
 - Wave flume experiments and nearshore testing for the submersible seaweed system.
 - Search for alternative exposed nearshore sites in Belgium and with partners.
 - Collaboration with other projects and companies for potential upscaling or commercialization.
- **Revised deployment designs** for the nature-inclusive oyster structures, incorporating elements like artificial substrates, clay spat collectors, and mini-tripods with gabion baskets..
- **Implementation of an acoustic release system** for retrieving oyster structures, no more need for divers.

Application

Scientific

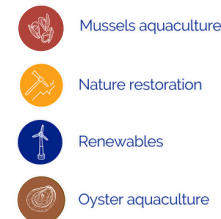
- **Innovative Monitoring:** Advanced multibeam acoustic methods for underwater biomass estimation.
- **Habitat Complexity Studies:** Research on oyster settlement patterns in varied habitats
- **Submersible System Innovations:** Remote acoustic release mechanisms improve safety and reduce diver reliance in offshore environments.
- **Restorative Aquaculture:** Integrated nature restoration elements into aquaculture designs, supporting the restoration of native oyster populations in offshore settings
- **Enhanced Resilience:** Modeling optimizes system performance under extreme offshore conditions.

Commercial

- **Scalable Systems:** The Impact-9 submersible seaweed longline offers a large-scale offshore solution that withstands harsh conditions.
- **Industry Collaboration:** Partnerships with stakeholders ensure systems are commercially viable and industry-aligned.
- **Expansion Opportunities:** Identification of alternative nearshore and offshore sites in Belgium and beyond
- **Sustainable Designs:** Nature-inclusive aquaculture systems meet market demand for environmentally responsible practices.
- **Pathways to Market:** Collaborations with other projects and companies pave the way for commercialization and upscaling.

BELWIND
BELGIUM NORTH SEA

Sectors covered:



Mussels aquaculture

Nature restoration

Renewables

Oyster aquaculture

