Living Lab Wadden Sea: Learning from Transboundary Pilots on Nature Restoration and Nature Based Solutions

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Background & Objectives

The Wadden Sea, known for its unique tidal mudflat ecosystem, is protected by international nature conservation agreements (See Figure 1). In the past, the focus of management efforts was on preserving existing nature and landscape values, as well as protecting habitat areas. However, a significant shift occurred in the 2000s towards expanding targeted nature habitats, promoting natural morphological and dynamic processes, and restoring salt marshes to benefit wading birds. Additionally, the Wadden Sea's role in flood risk management gained prominence since 2010. The presence of barrier islands, tidal flats, banks, and salt marshes helps attenuate waves and safeguard the mainland. Consequently, adaptive management strategies were introduced, and pilot projects were initiated to explore innovative approaches to integrate flood protection and nature development.

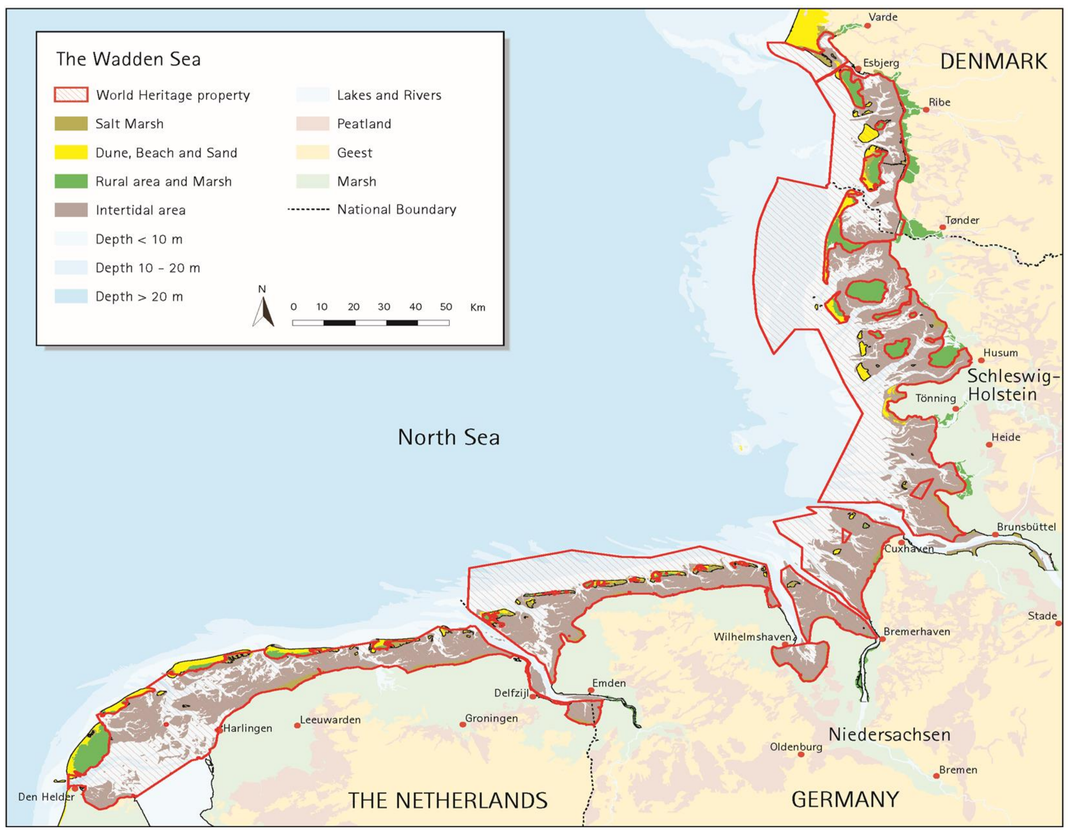

Figure 1. The Wadden Sea World Heritage Map. Source: © UNESCO

Scope

As part of the EU Horizon 2020 Green Deal project REST-COAST[1], the Wadden Sea is one of the 9 pilot sites. The objectives of REST-COAST within the Living Lab Wadden Sea include:

- Exploring Nature-Based Solutions at various spatial and temporal scales to enhance natural dynamics and connectivity
  → focus on Ecosystem services (i.e. sediment and seagrass)
  → coastal erosion protection and localized climate scenarios
- Develop new early warning and climate warning systems
- Promoting the mutual development and sharing of models to support nature conservation and development:
  → schism, x-beach, EUNIS maps
- Strengthening the commitment of scientists, citizens, policymakers, and other stakeholders toward long-term coastal conservation:
  → pilot core meetings & stakeholder workshops

These objectives contribute to the broader goals of REST-COAST, which aim for sustainable coastal management practices and encourage the implementation of nature-based solutions across coastal regions in Europe

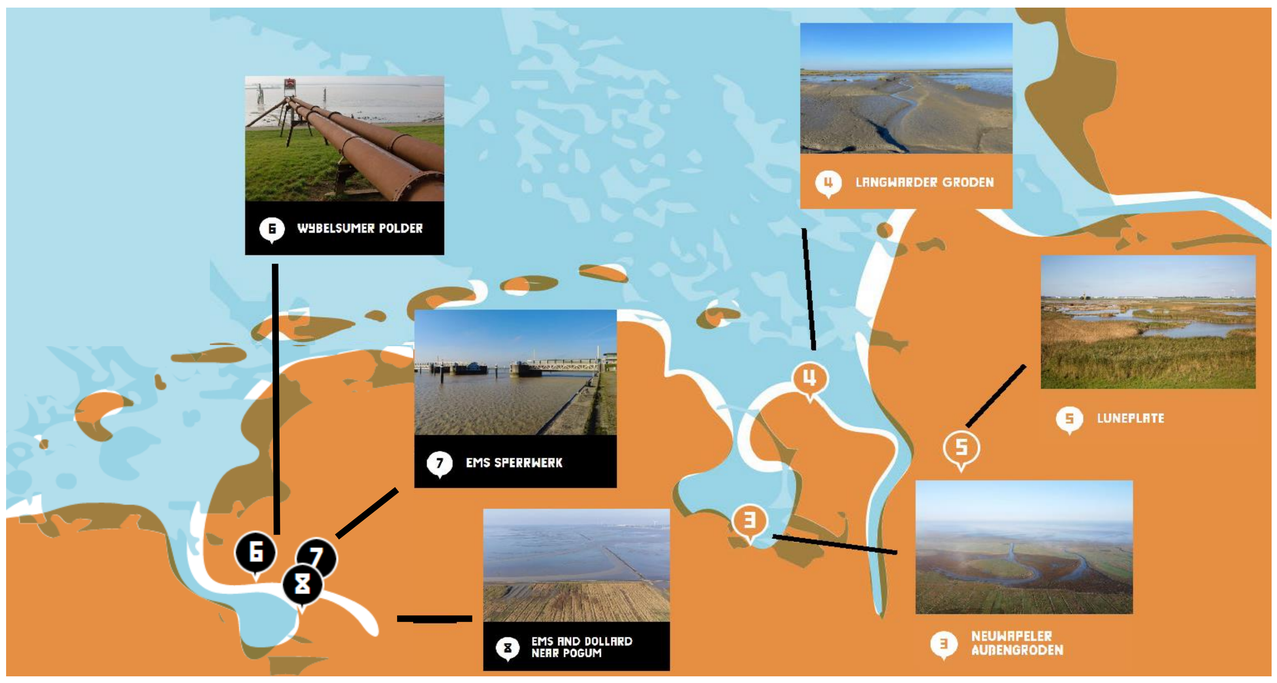

Figure 2. Sediment Solutions in Elbe, Weser and Eems-Dollard: Trilateral level adaptation and management of sediment, silt and sand[4].

Figure 3. Ems-Dollard 2050 pilot projects for transboundary collaboration towards climate adaptive coastal zone[2]

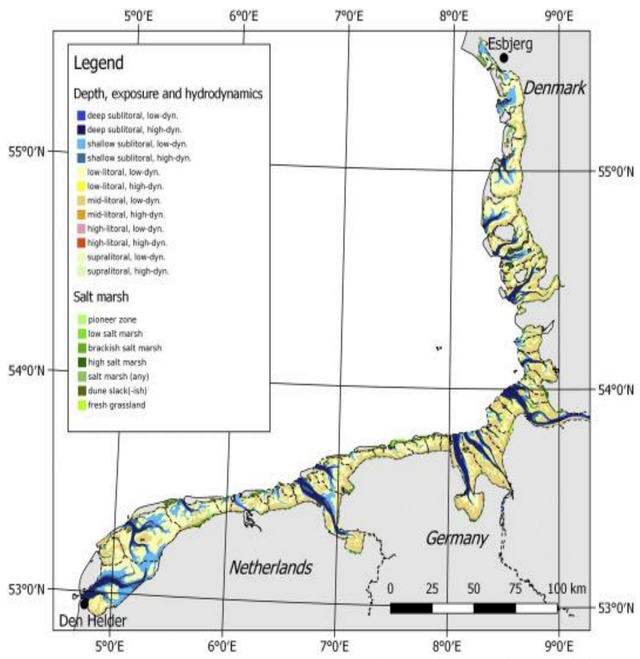

Figure 4. Ecotope map of the trilateral Wadden Sea as defined by the combination of depth, exposure, hydrodynamics, and salt marsh types[5]

Outlook

Being one of the largest tidal flat systems in the world with largely undisturbed natural processes, the Trilateral Wadden Sea requires a holistic, whole-system approach to efficiently and effectively conserve and restore its nature. Accordingly, the REST-COAST project aims to develop:

- Joint network and joint activities e.g., Community of Understanding[4] on sediment management (See Figure 2)
- Joint tools, e.g., Ecosystem mapping of target species and habitats[5] (See Figure 4)
- Scaling out: transfer/replicability of restoration for risk reduction beyond the Pilots

Supplementary Information

[1] REST-COAST (Large scale RESToration of COASTal ecosystems through rivers to sea connectivity) is an EU Horizon 2020 Green Deal Project aiming for healthy and climate resilient EU coastal regions. https://rest-coast.eu/
[2] Eems-Dollard 2050. Programme Plan 2021-2026. https://eemsdollard2050.nl/
[3] WaterLANDS (Water-based solutions for carbon storage, people and wilderness) is an EU Horizon 2020 Green Deal project. https://waterlands.eu/
[4] Sediment Solutions Excursion 2021, Program Towards a Rich Wadden Sea. https://rijkewaddenzee.nl/SedimentSolutionsExcursion2021/
[5] Baptist, M.J; Van der Wal, J.T.; Folmer, E.O.; Gräwe, U.; Elschot, K.; An ecotope map of the trilateral Wadden Sea, J. Sea Res., 152 (2019)

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