LANICE
Mitigation practices for cables and pipelines crossing the Wadden Sea

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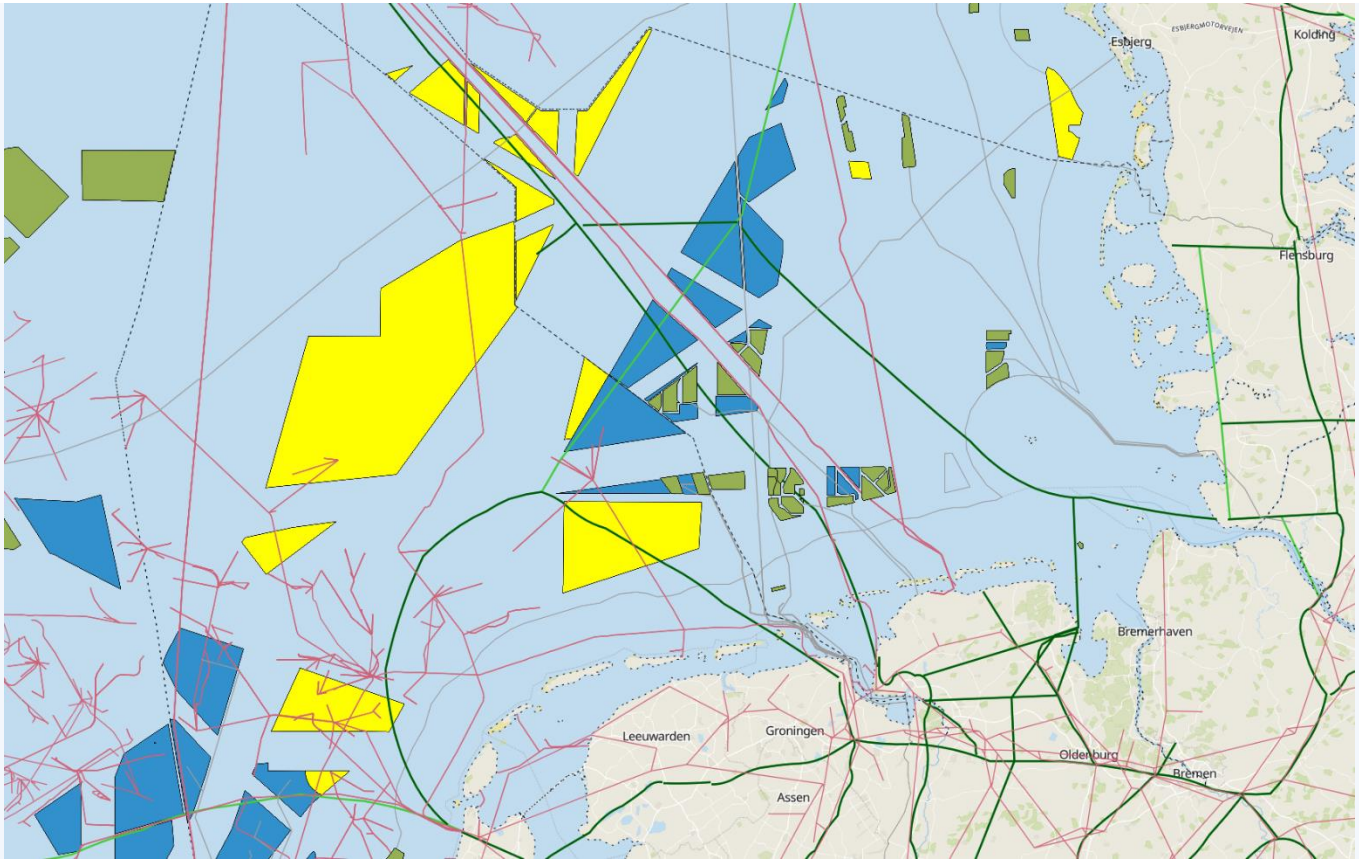
Wadden Sea Day 2024, Wilhelmshaven



Growing need for energy infrastructure

- Electricity Grid
- Oil and Gas
- Offshore Wind
- Hydrogen
- CCS

Environmental impact of cables and pipelines

- Seabed / tidal flat / salt marsh degradation or loss;
- Increased turbidity and (re)sedimentation;
- Disturbance above and below water;
- Pollution and emissions;
- Heat and electromagnetic fields (EMF) during operation.

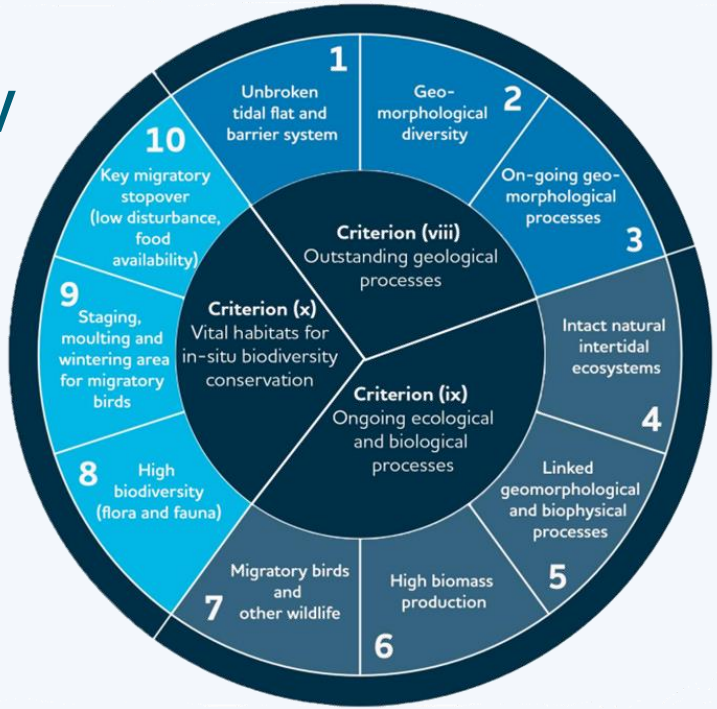
Concerns and unknowns

- The current conservation status is already under pressure (other activities: seabed disturbance, noise/movement, turbulence)
- Developments are often considered on a project-basis (while there is the potential of (cross-border) cumulation effects)
- Ecological impact during O&M and decommissioning not well understood

The Wadden Sea

How to safeguard the Wadden Sea OUV

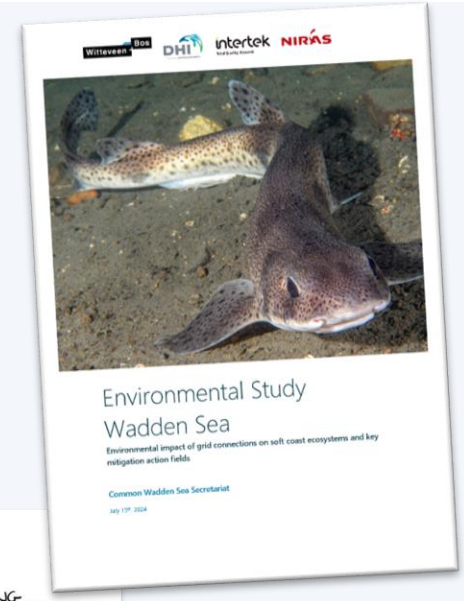
- Project objectives:
  - Gain insight into environmental impacts and ecological effects of pipelines and cables in the Wadden Sea
  - Provide an overview of the implementation of standards, best practices, differences between NL, GE and DK, and potential measures to avoid/reduce these impacts

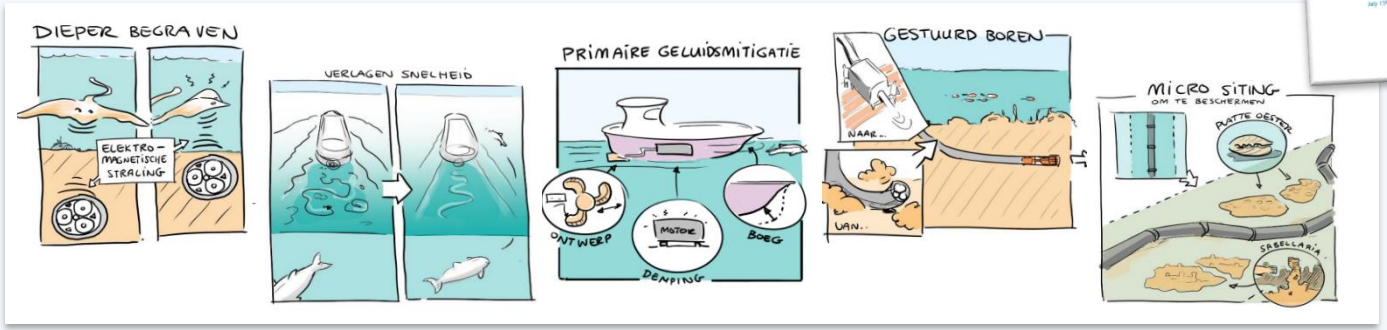


The largest tidal flat system in the world and one of the most important areas for migratory birds

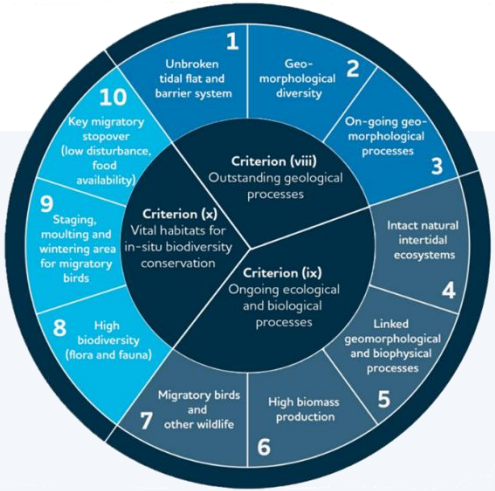
This document aims to

1. provide a comprehensive overview of effects and measures
2. highlight similarities and differences between countries
3. highlight relevant knowledge gaps





1. Effect overview and measures



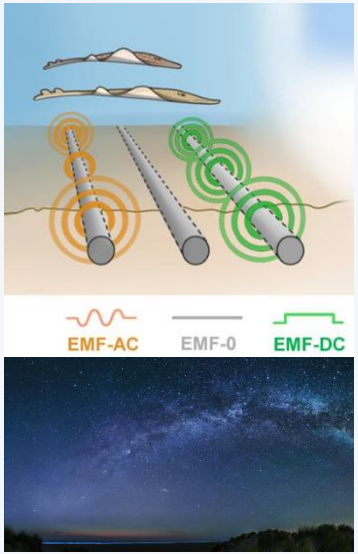
Connecting activities to environmental effects[1], ecological impacts[2], the criteria from the OUV[3], and the best mitigating measures[4]

TWO EXAMPLES

1 Pressures	Phase	2 Ecological impact	3 Connection to OUV	4 Specific mitigating measures
habitat destruction: seabed and tidal flat degradation/loss	construction	permanent or temporary destruction of benthic habitats with possible changes in species compositions	criterion viii, key values 1,2,3	Horizontal Directional Drilling
noise below water	all phases	temporal or permanent damage to mammals, fish, and zooplankton (larval stages fish and benthos); disturbance of marine mammals, fish, and foraging diving birds, possibly disturbance of benthos and other species at low trophic levels	criterion ix, key value 7, criterion x, key values 10	using specific frequencies, soft starts, reducing vessel speed, optimizing vessel design (hull, machinery, propellor), marine mammal deterrence

2. Similarities and differences between countries

- Many similarities
- Highlighting differences in relation to:
  - EMF (mainly NL/DK)
  - Nitrogen deposition (NL)
  - Light pollution (mainly NL/GE)
  - Heat (mainly GE/DK)

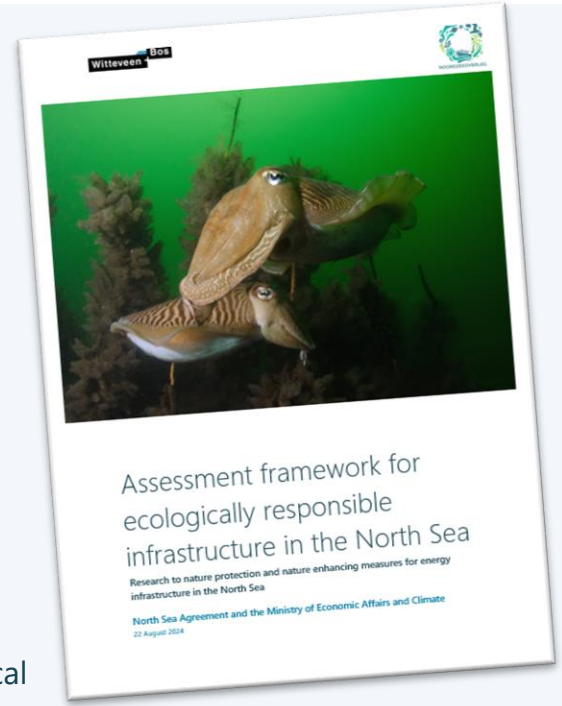


3. Important knowledge gaps

- Cumulative effects in space and time are only partly considered in EIAs. This is often reasoned with cable/pipeline laying being local, short-term and reversable, but not sufficient
- There are 4 topics that rely on insufficient data:
    1. Continuous noise
    2. EMF
    3. Heat
    4. Sensitivities of species
- Overall: there is little information/monitoring on effects during construction / O&M and effectiveness of mitigation measures

Next steps

1. Workshop Wadden Sea Secretariat, 18th Sept, on:
   - Licensing and the consideration of cumulation
   - Complete overview into best mitigation practices
2. Identify next steps with partners:
   - Develop a shared overview of the total ecological space and set up cross-border ecological monitoring programme
   - Continue developing ideas together to improve cross-border cooperation
   - Agree on relevant possible measures for NL, GE, DK
   - Develop a shared framework to assess expected ecological impact, technical feasibility, and costs, reach consensus on the added value of measures and their application. Such study has been performed by *Witteveen+Bos (2024)* for the North Sea

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