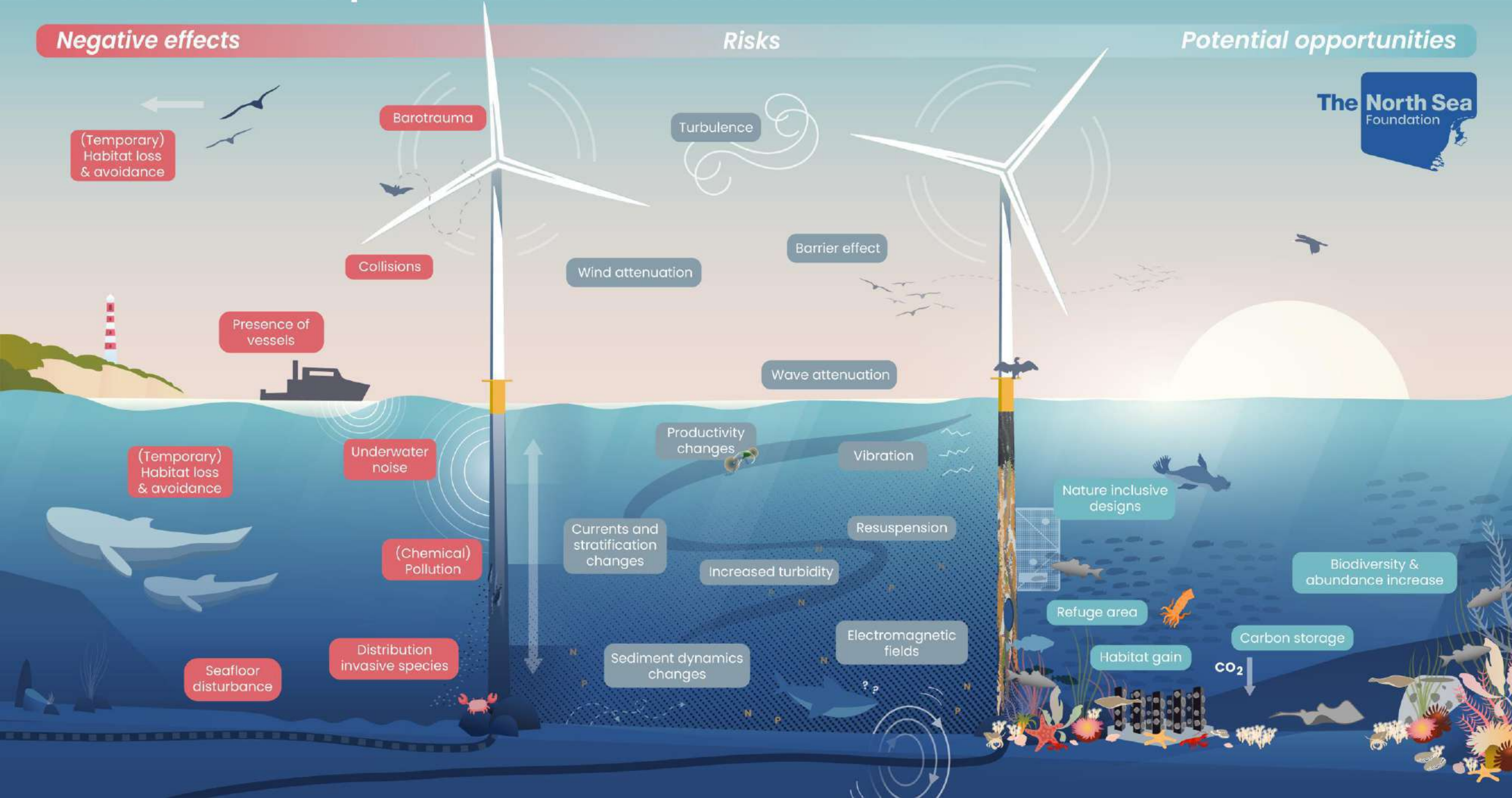


The Rich North Sea

Monitoring to advance Nature-Positive Offshore Wind Development



Environmental impacts of wind farms in the North Sea



Environmental impacts of wind farms in the North Sea

Negative effects

Risks

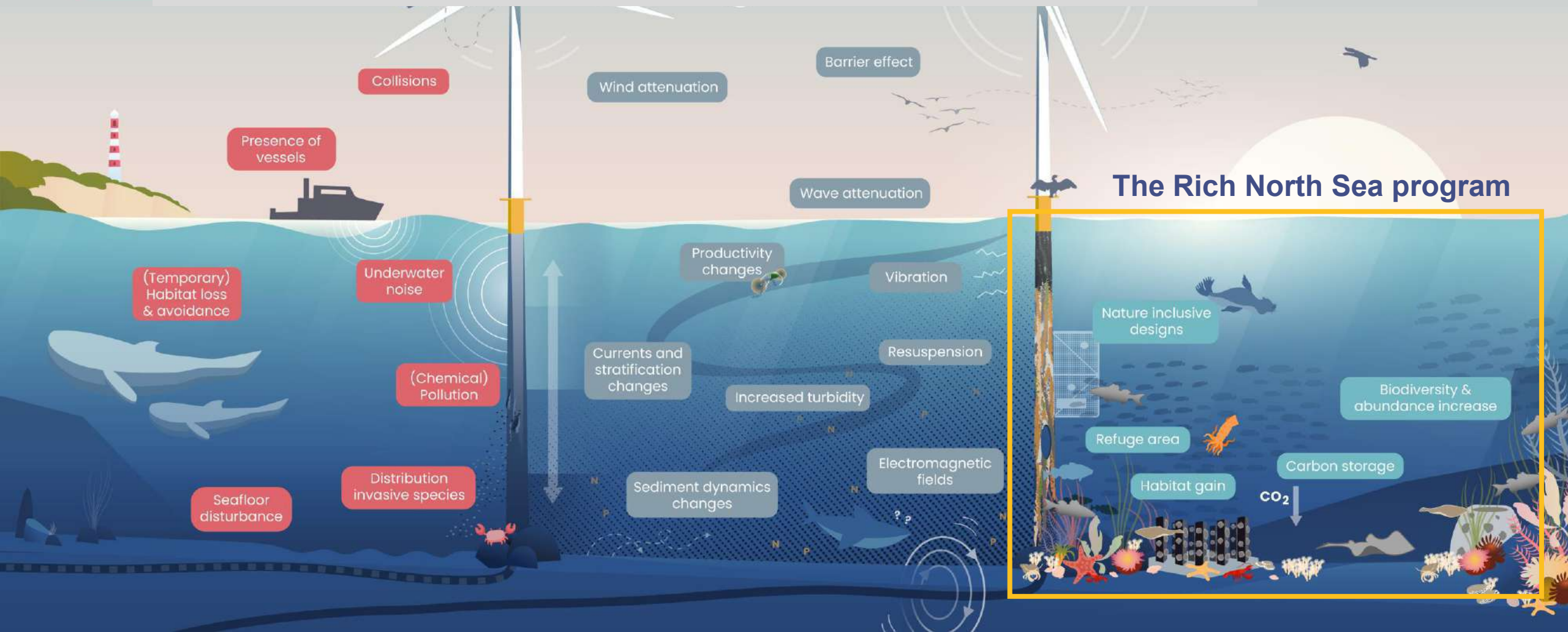
Potential opportunities

WOZEP = Offshore wind ecological program

(Temporal
Habitat lo
& avoidan

MONS = Monitoring-Research-Nature restoration & Species protection

The North Sea
Foundation



The Rich North Sea program

The North Sea
Foundation

Vision:

Nature-positive offshore wind

Mission:

Offshore wind & ecosystem restoration

Approach:

Cross-sector, science-based, scalable



ROV & eDNA

1. Gemini – ZeeEnergie



2. Eneco – Luchterduinen



3. Vattenfall – Hollandse Kust Zuid



4. North Sea Farmers – Offshore Test Site



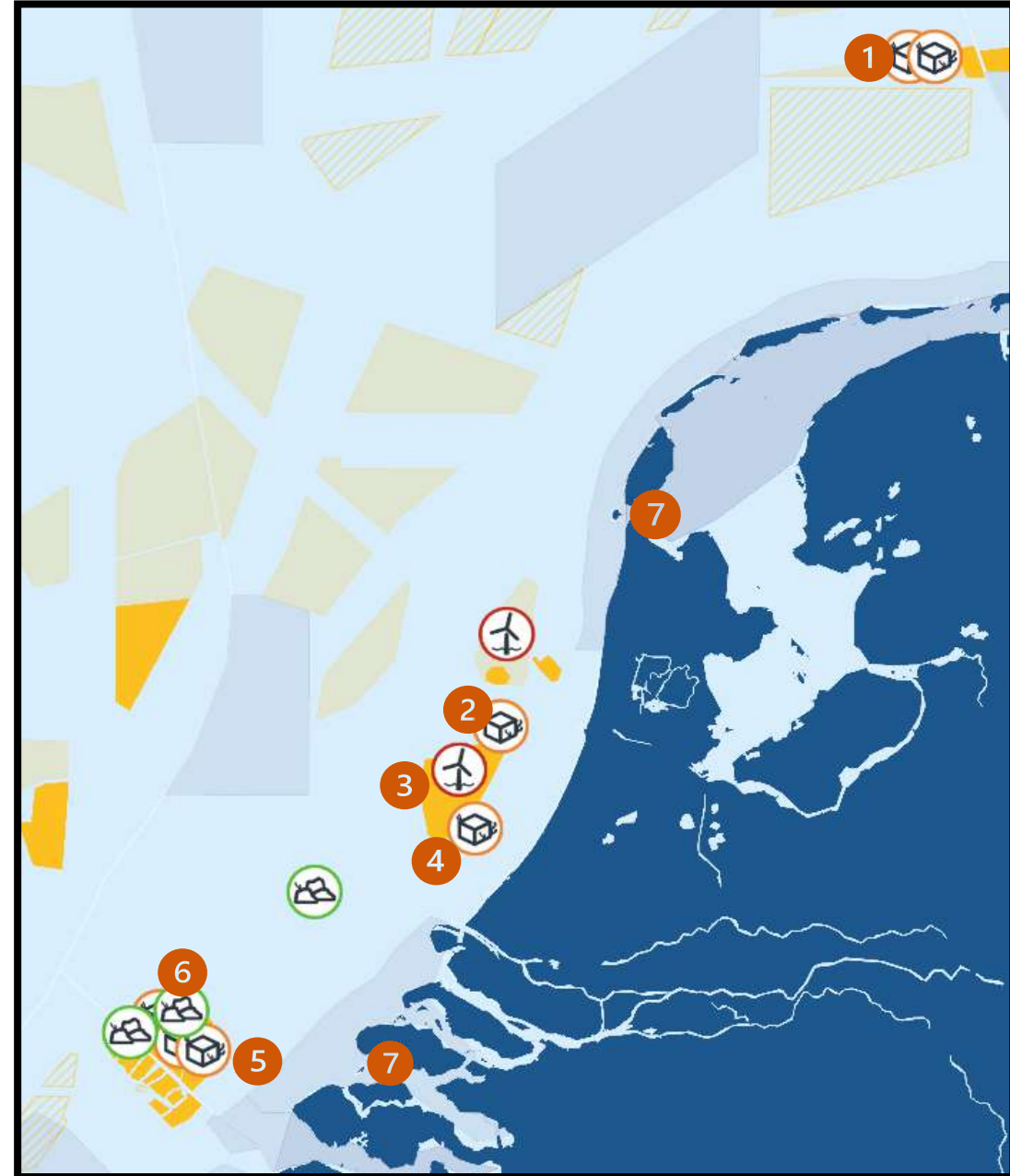
5. Ørsted – Borssele I&II



6. Blauwwind – Borssele III&IV



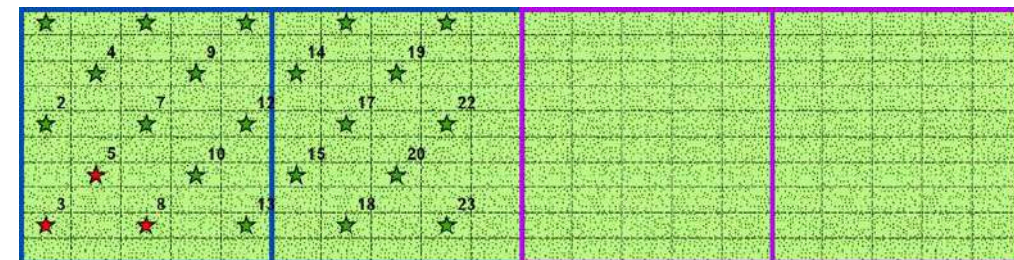
7. Oyster hatcheries



Thresholds for self-sustaining oyster reefs

Seabed changes & hydrodynamics related to:

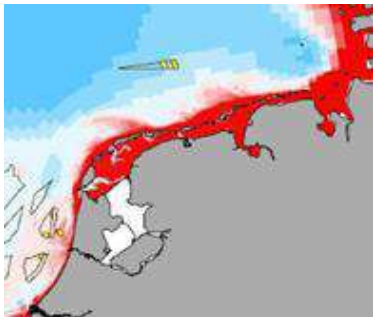
- Oyster Feeding, Survival, Growth,
Reproduction & Settlement
- Oyster stability
- Substrate stability (loose and clumps)



Gemini WINOR – models -> measurements

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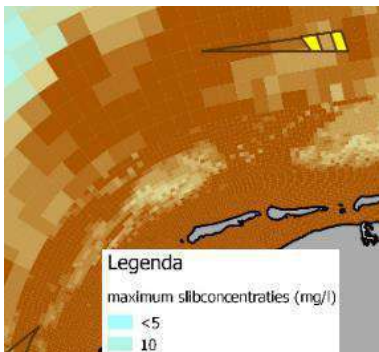
Seabed shear stress



Larval dispersal



Sediment load

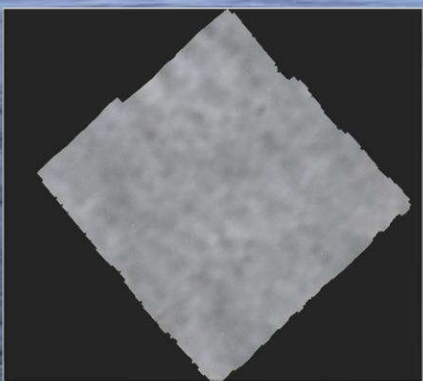


Gemini WINOR – lessons learned

- ✓ Coupling of abiotics and biotics
- ✓ Too many oysters were buried or washed away
→ need for stable substrate
- ✓ Results = models + good plans + good logistics + technological failures, human error, safety & bureaucratic hiccups, and then weather
- ✓ Bottlenecks: Substrate stability
- ✓ Vessel suitability and availability



Models are models



BeWild

The Rich North Sea, Fugro, Wageningen University, MECAL, Seekable & Crosswind

Remote ecological inspection methods

True integration with technical surveys:

- Planning
- Scope
- Health & Safety
- Costs

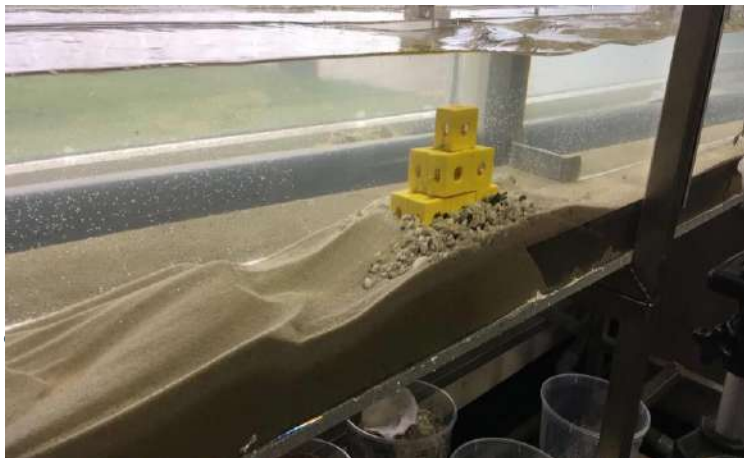
Licensing & standardized monitoring

1. Area selection: government
2. Preparation phase: government provides critical support
 - a. **Geographical**, Environmental Impact Analyses (Surveyors/consultancy)
 - b. Designation exact sites
 - c. Grid connection
3. Government tenders
 - a. Financial bids: central government & national nature restoration fund
 - b. Non-price criteria: EU 30%, since 2022.
 - c. In NL: innovation & research such as: system integration, corporate social responsibility, circularity & **ECOLOGY**.
4. Environmental measures
 - a. Winning ecological plan
 - b. **Obligations in wind site decisions**

Lessons & opportunities

- Integration in technical offshore work is key
 - Upfront in site surveys & tendering
 - During asset monitoring & maintenance
 - Need for standardized procedures
- We're right in an (monitoring) industrial revolution
- Share the beauty & richness of the sea





Thank you!

c.vansluis@noordzee.nl



Scan me



Visit & join our Toolbox: The platform for active nature restoration



www.toolbox.therichnorthsea.com