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Environmental impacts of marine multi-use, a perspective from offshore wind farms and fisheries



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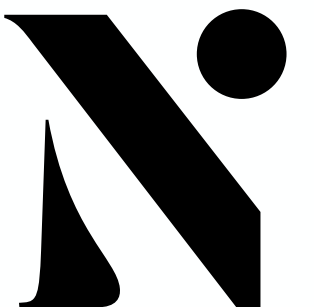
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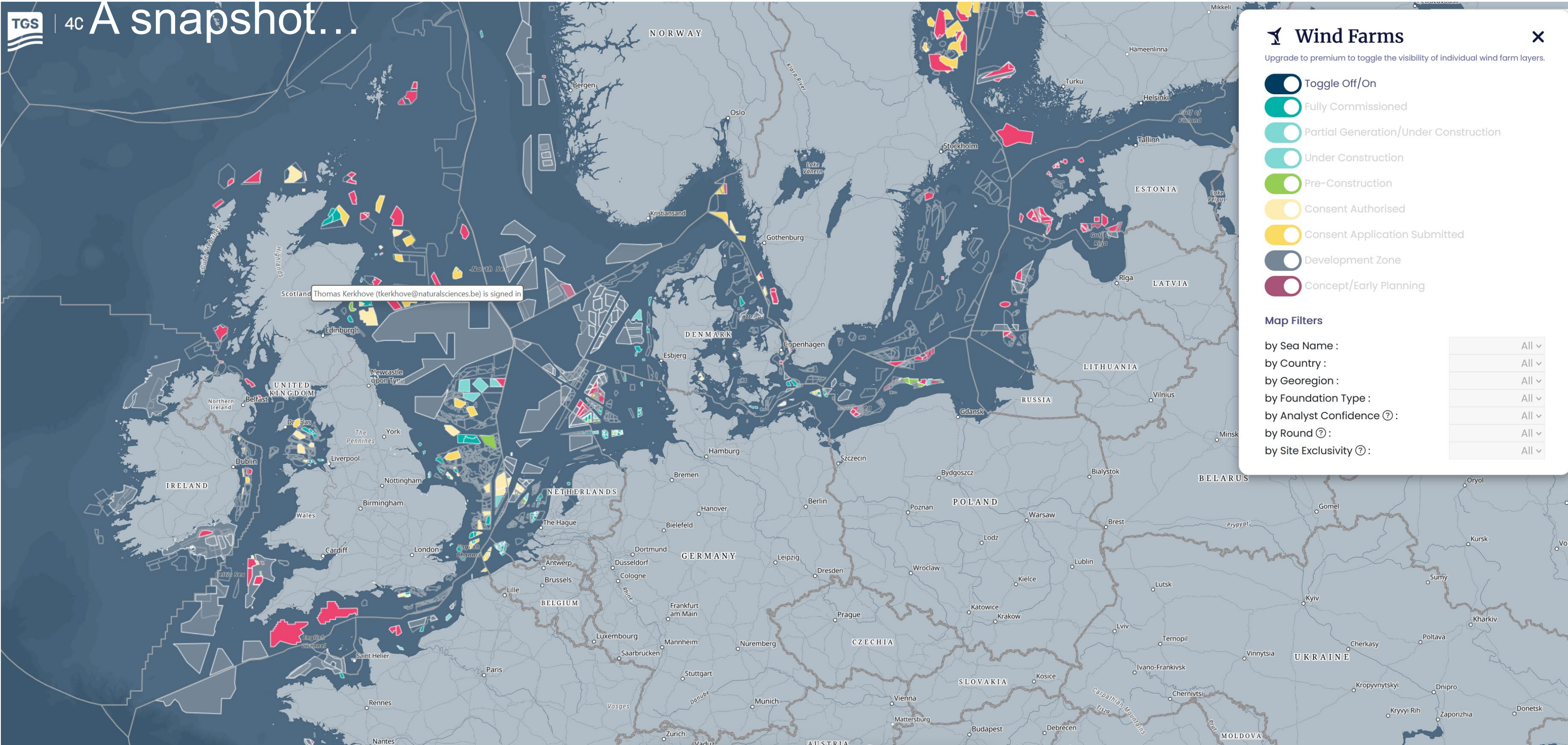
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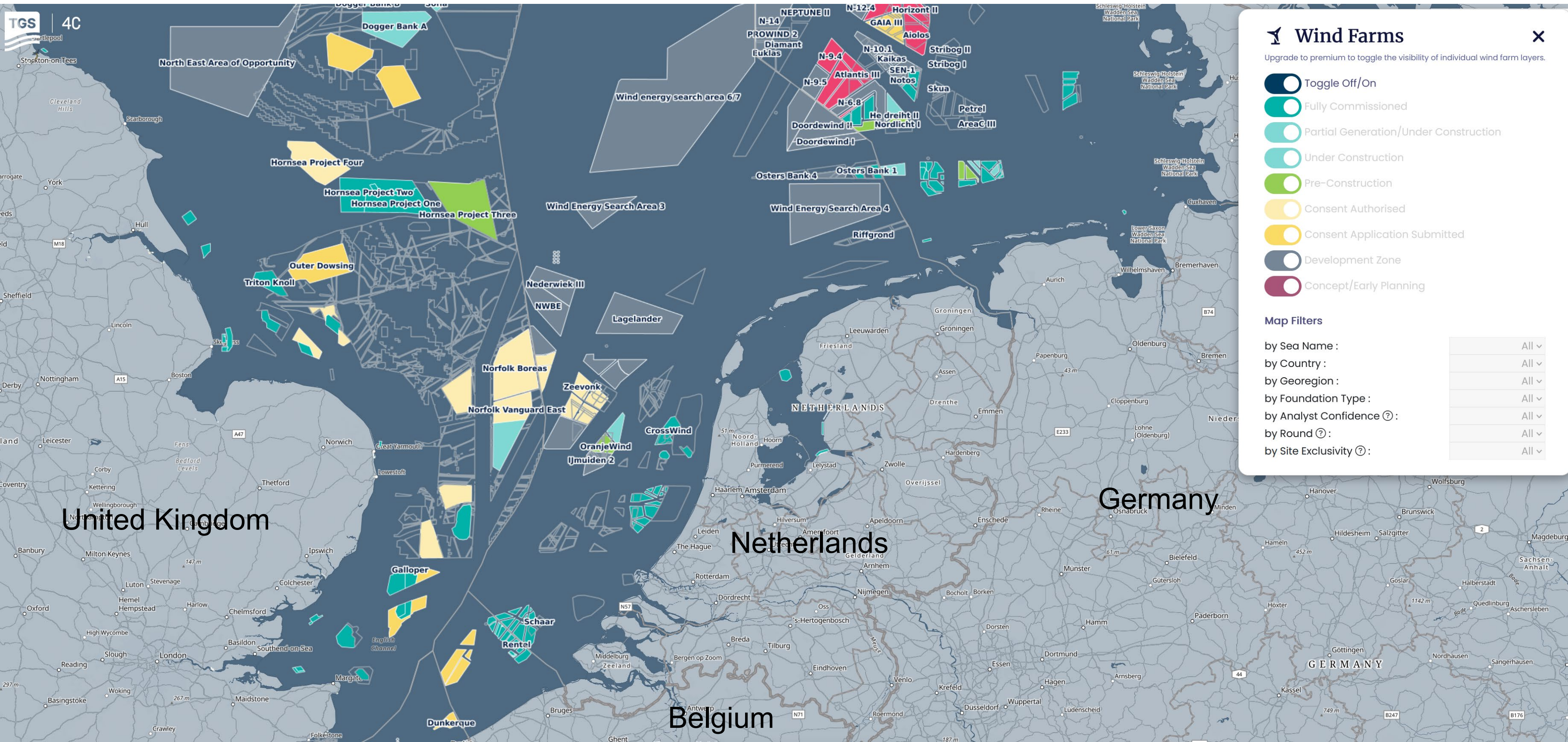
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Offshore wind farms in Europe



Offshore wind farms in the southern North Sea



Changes in the marine environment

Original situation: sandy sediments

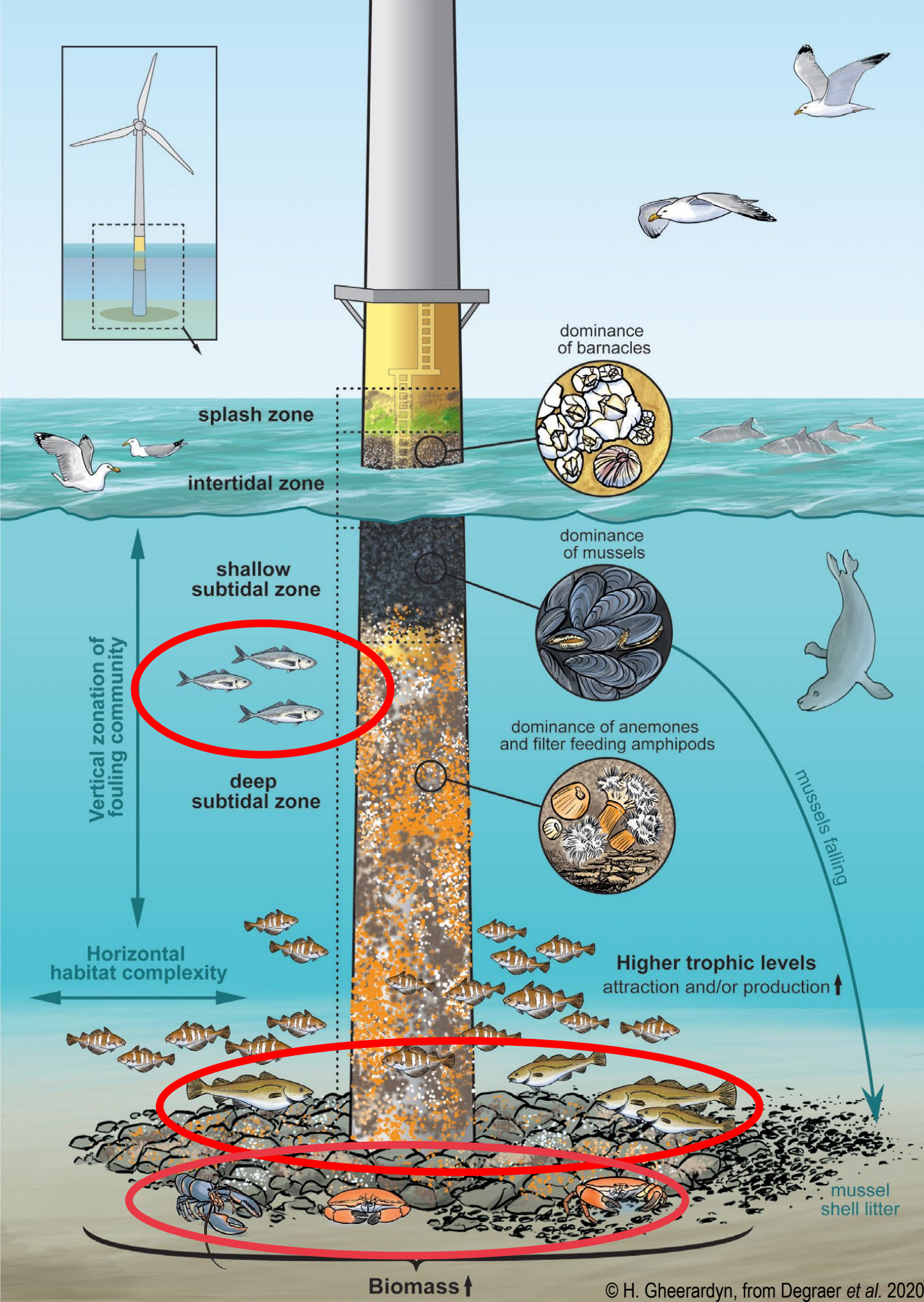


Offshore wind farm: artificial hard substrates

- Habitat diversity
- Often closed for shipping (incl. fisheries)

→ Artificial Reef Effect

Artificial reef effect



Artificial reef effect



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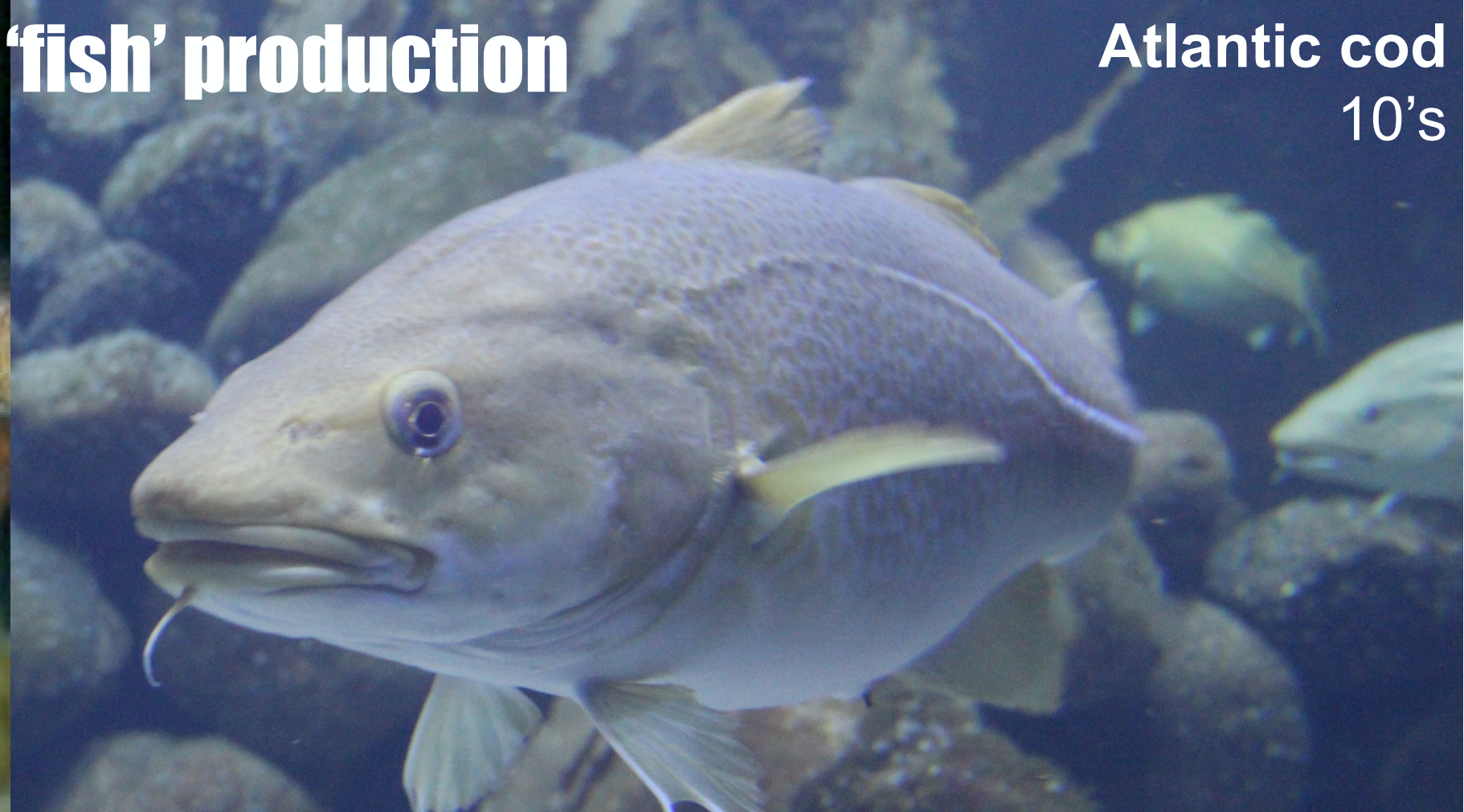
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Pouting
1000's



Increased local 'fish' production

Atlantic cod
10's



European lobster
10's





Edible crab
100's

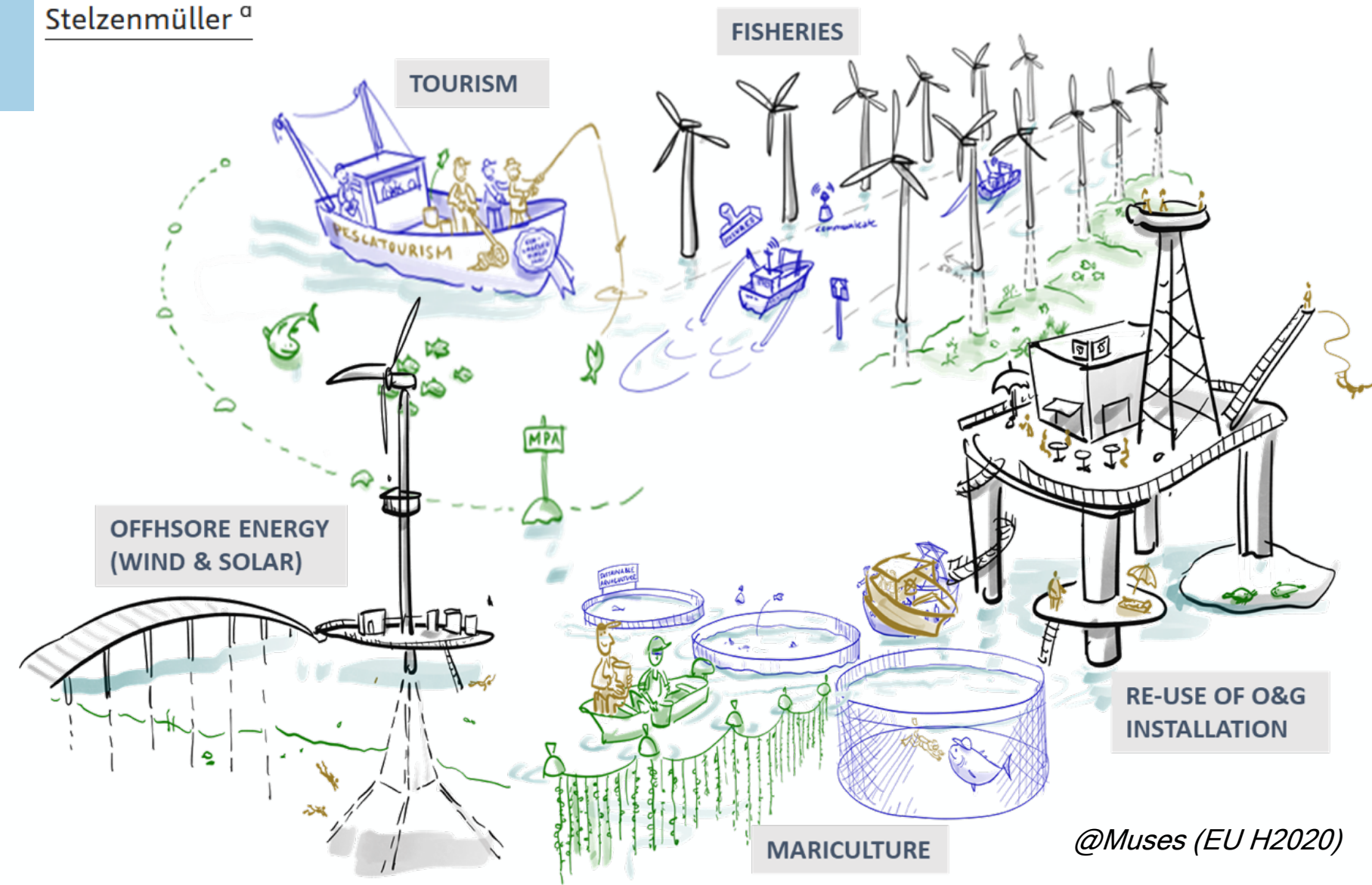


Co-location of offshore wind and small-scale (passive) fisheries

- **Why?**
 - Artificial reef effect
 - Reduced demand for space
- **Why not?**
 - Lack of spatial access
- **Location & country dependant**



Co-location of fisheries and offshore wind farms: Current practices and enabling conditions in the North Sea

Prince Owusu Bonsu ^a  , Jonas Letschert ^a, Katherine L. Yates ^b, Jon C. Svendsen ^c, Jörg Berkenhagen ^a, Marcel J.C. Rozemeijer ^d, Thomas R.H. Kerkhove ^e, Jennifer Rehren ^a, Vanessa Stelzenmüller ^a



Barriers for co-location

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- Ecological knowledge
- Financing
- Safety and navigation risks
- Insurance costs

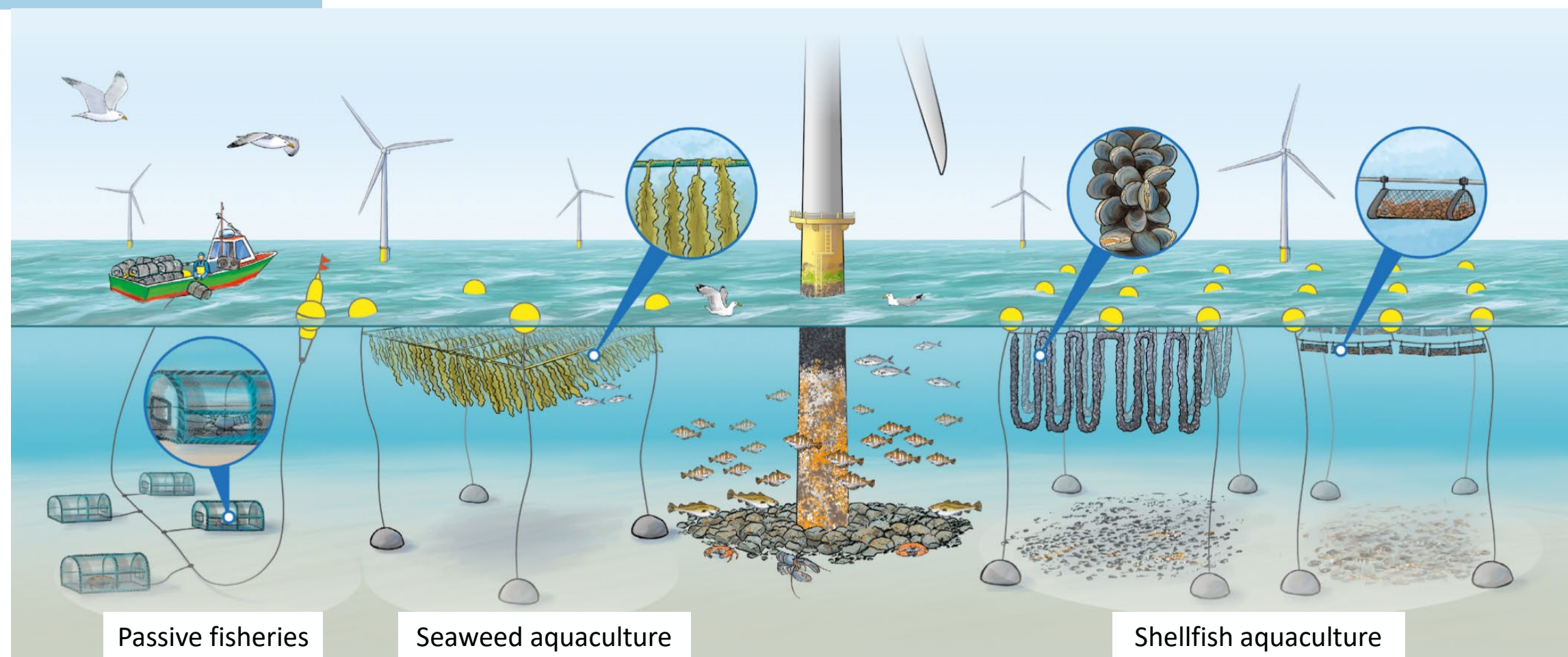


Recommendations

Co-location of fisheries and offshore wind farms: Current practices and enabling conditions in the North Sea

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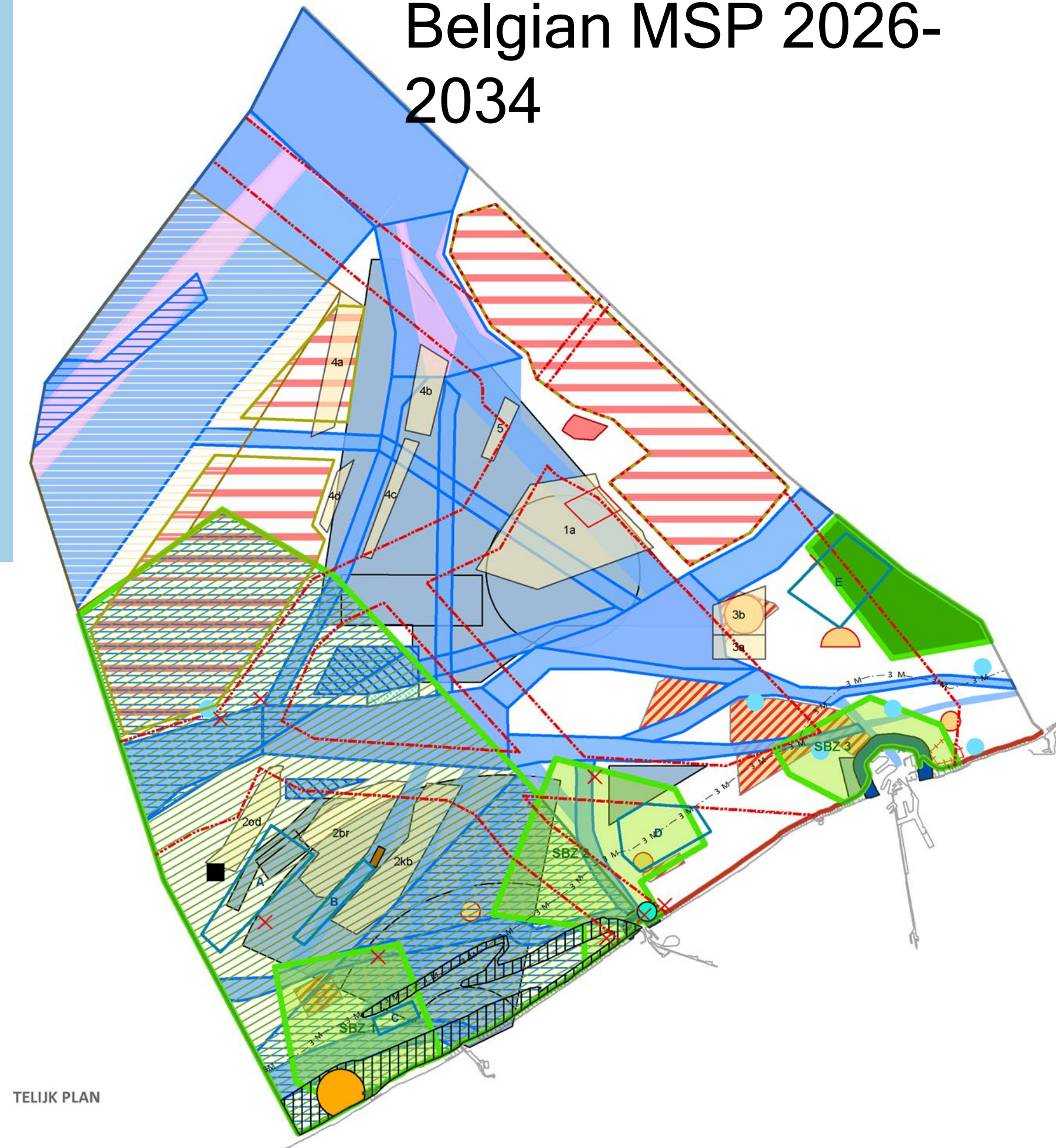
- Participation and information sharing
- Feasibility research
- Licensing (improved EIA)
- Environmental monitoring



Marine Spatial Planning considerations

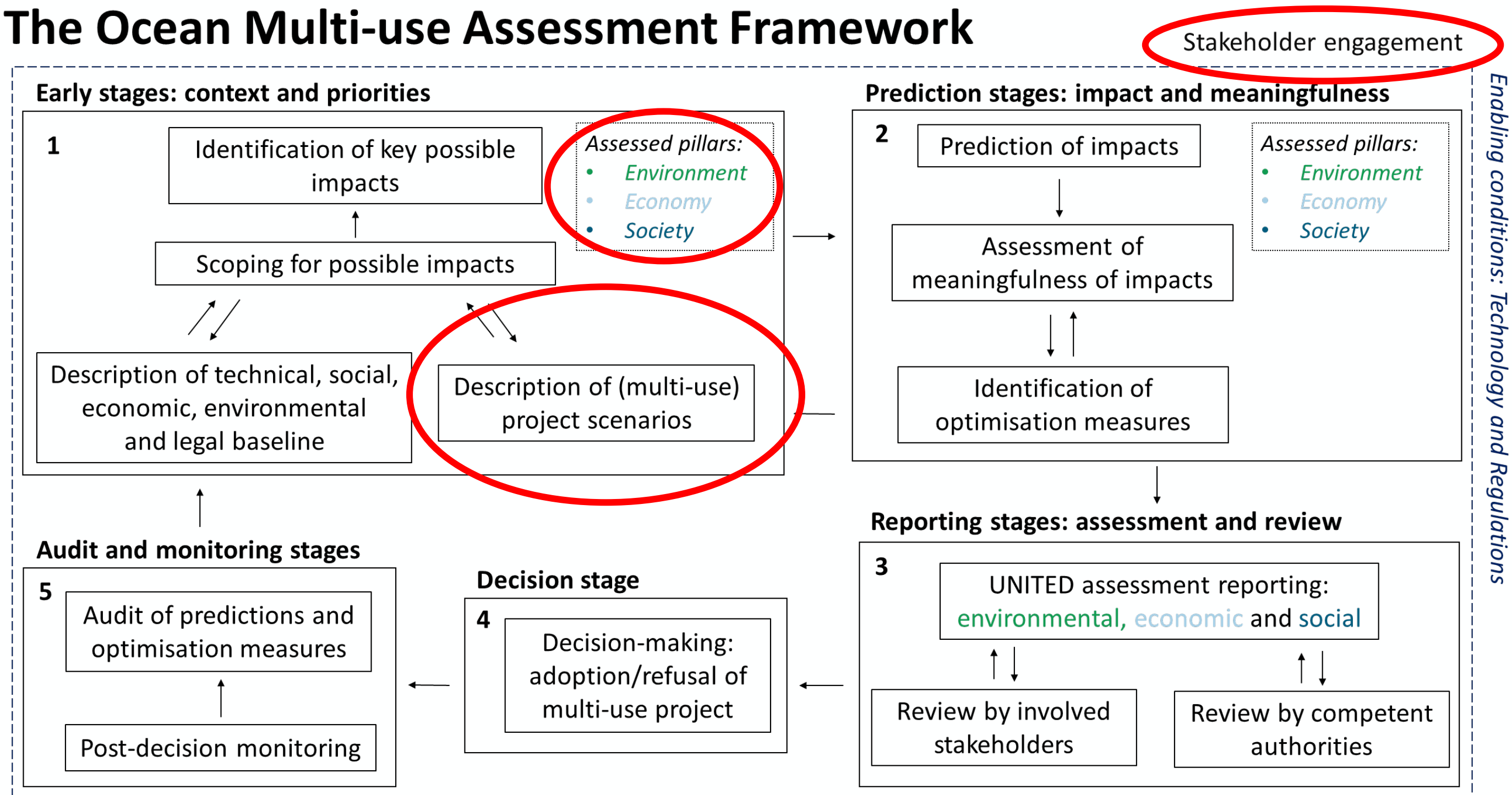
- Multi-use zones? (instead of OWF)
- Improved environmental assessments (SEA/EIA)
- Planning phase: co-design!

Belgian MSP 2026-2034



Improved environmental assessments

The Ocean Multi-use Assessment Framework



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