



The expansion of offshore wind:

**Opportunities for multi-use and
marine conservation**

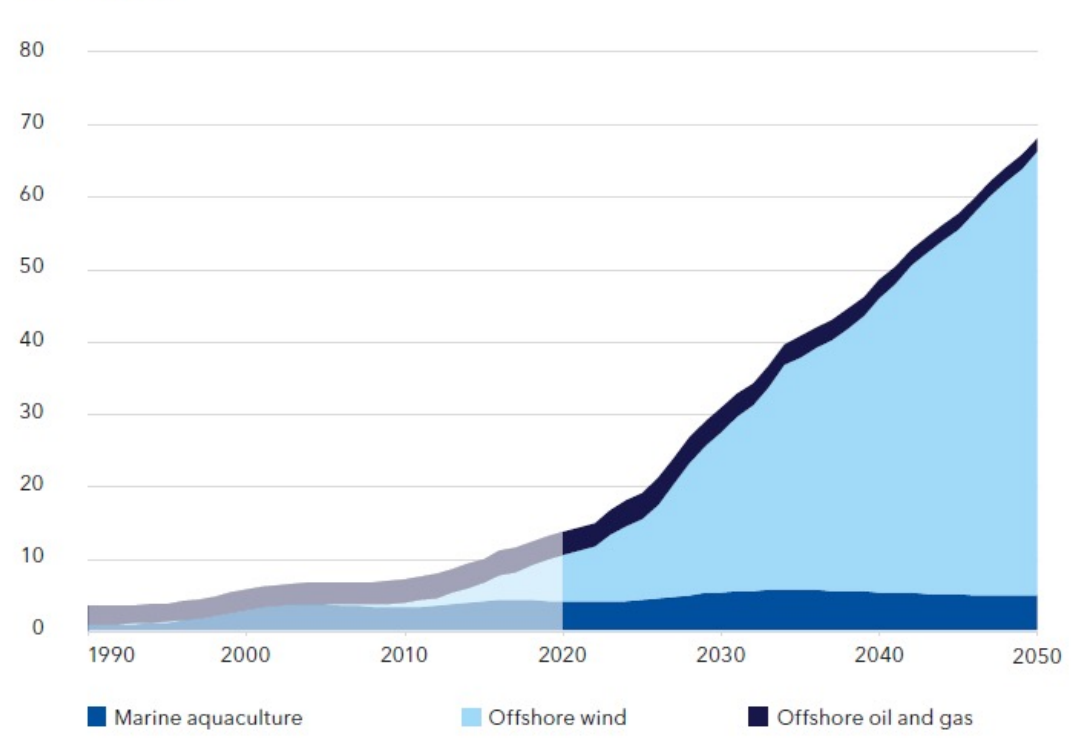
**Tim Wilms
Bioscience Expert
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**Wind Finland Offshore
14-05-2024**

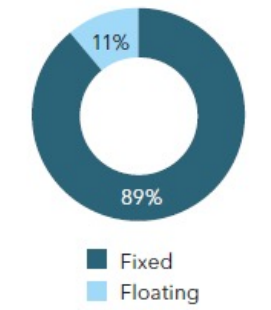
The ongoing offshore wind expansion

- Offshore wind development expected to cause 5-fold increase in EU's ocean area use by 2050
- 'Race for space' in North Sea, Baltic Sea and Celtic-Biscay shelf → 90% of EU offshore wind capacity in 2050
- Marienberg declaration: 19.6 GW by 2030 (currently <5 GW)
- Rapid increase in offshore wind in the Baltic Sea (increase from 3% to 17% of EU area by 2050)

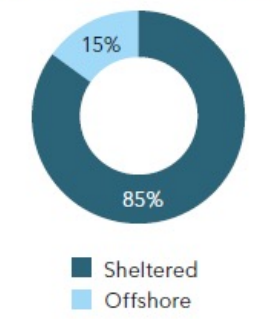
Units: 1,000 km²



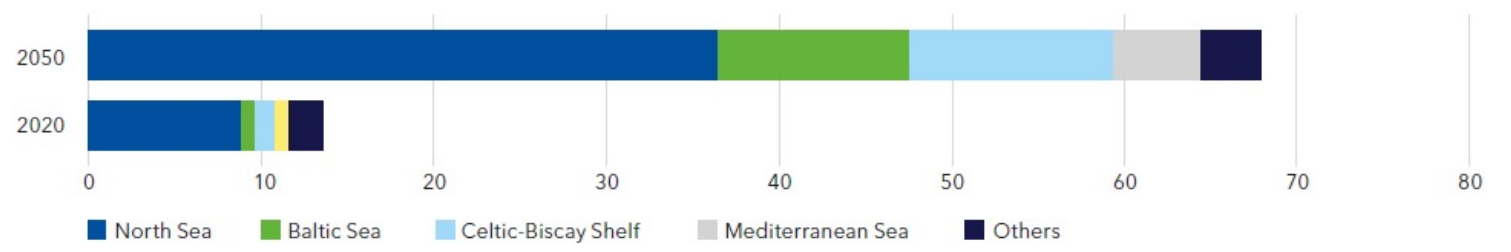
Offshore wind in 2050



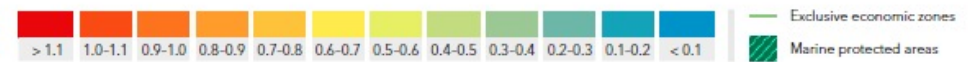
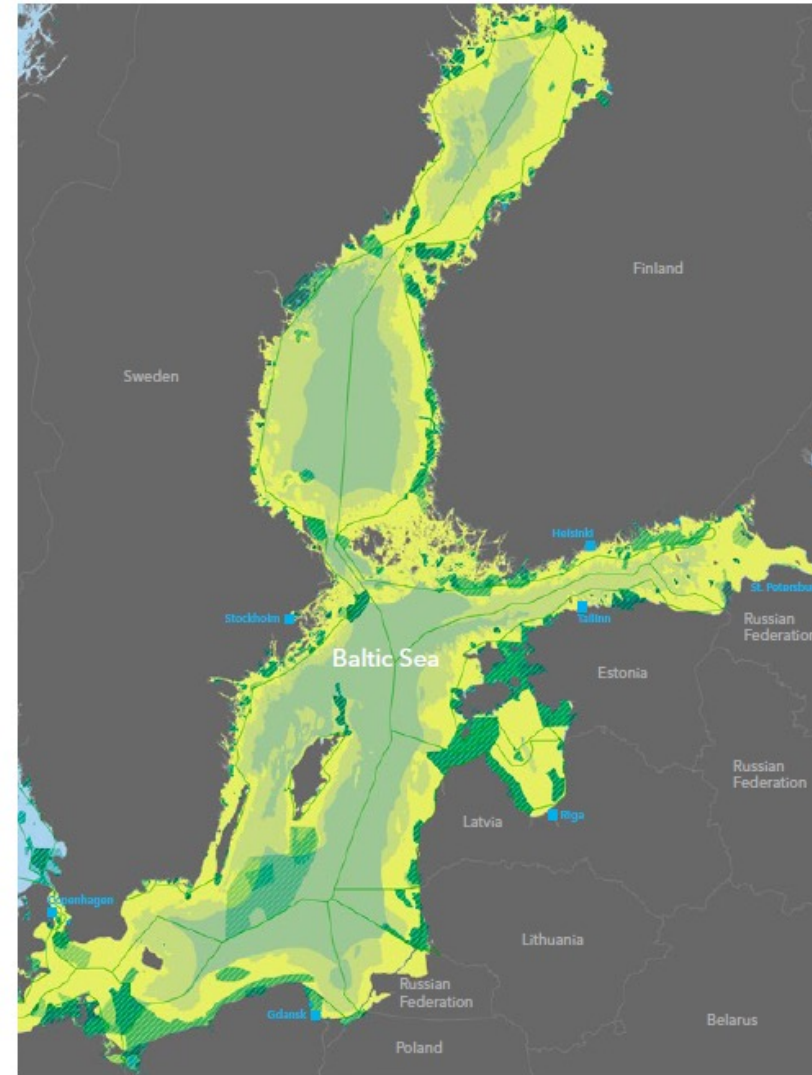
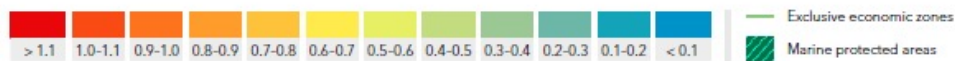
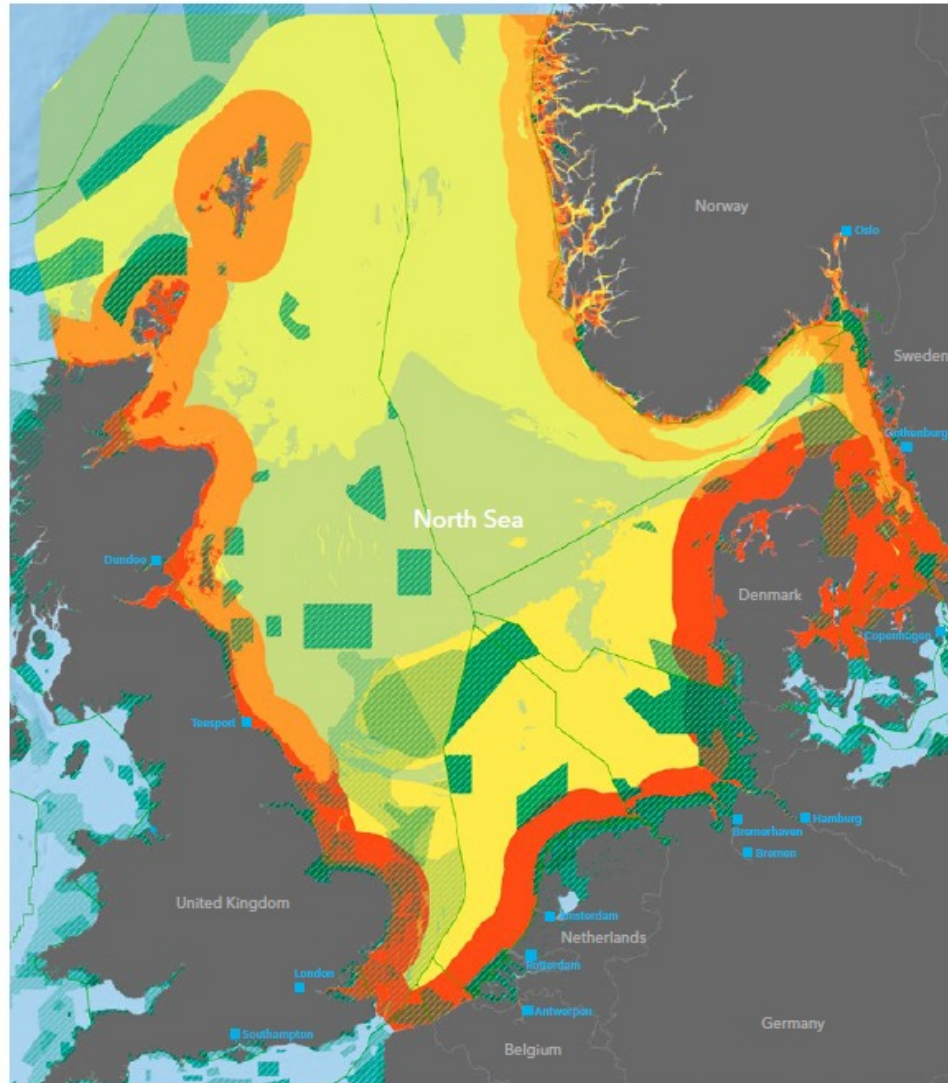
Marine aquaculture in 2050



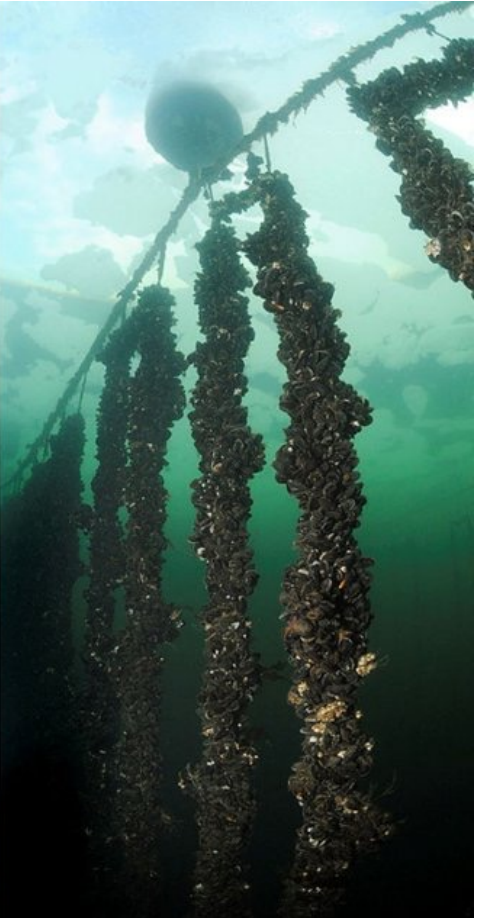
Marine area occupied within each sea basin (LME) [Units: 1,000 km²]



Spatial competition in 2050: North Sea vs Baltic Sea



Multi-use of ocean space

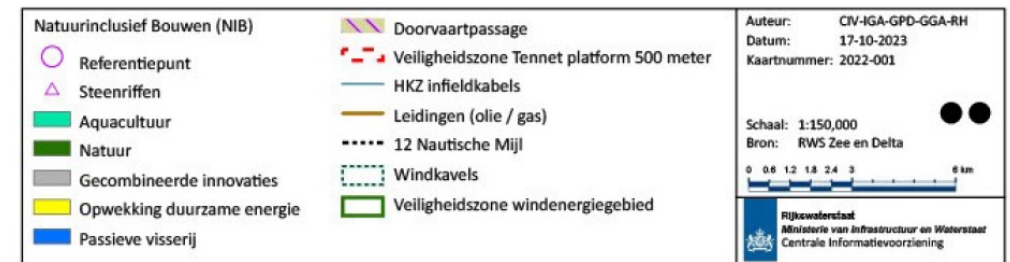


Schupp et al. (2019)

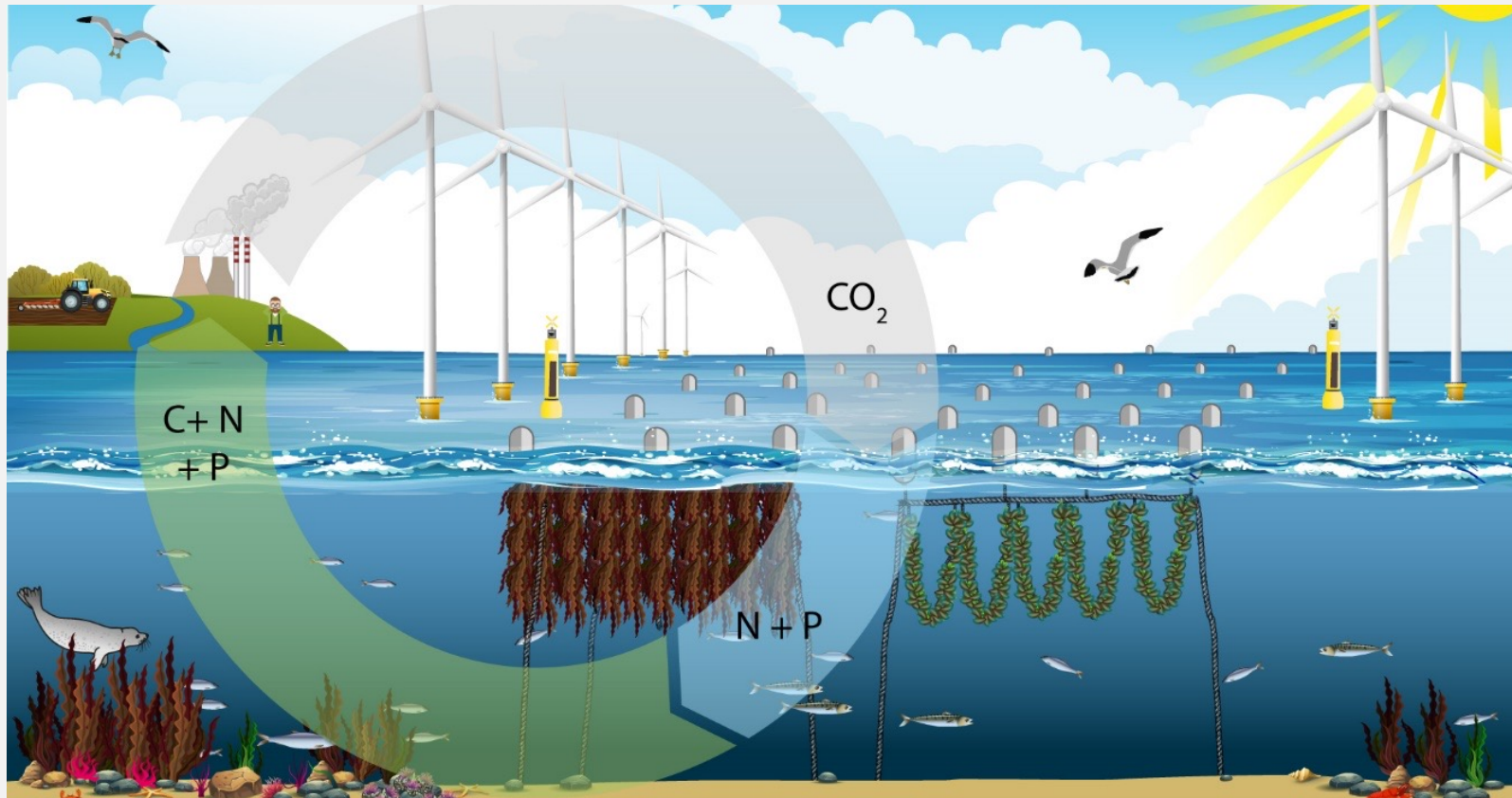
Ecological challenge: lessons from the North Sea

- European governments move to further enable co-use in new wind farms (e.g. The Netherlands)
 - Area passports & non-price criteria
 - **OSPAR QSR 2023:** cumulative pressure on North Sea ecosystem is alarmingly high!
- Co-use initiatives should not add to this pressure!
- Multiple opportunities going forward:
 - Protected areas: passive & active restoration
 - Habitat suitability mapping & connectivity
 - Sustainable fishing quotas
 - Adaptive management

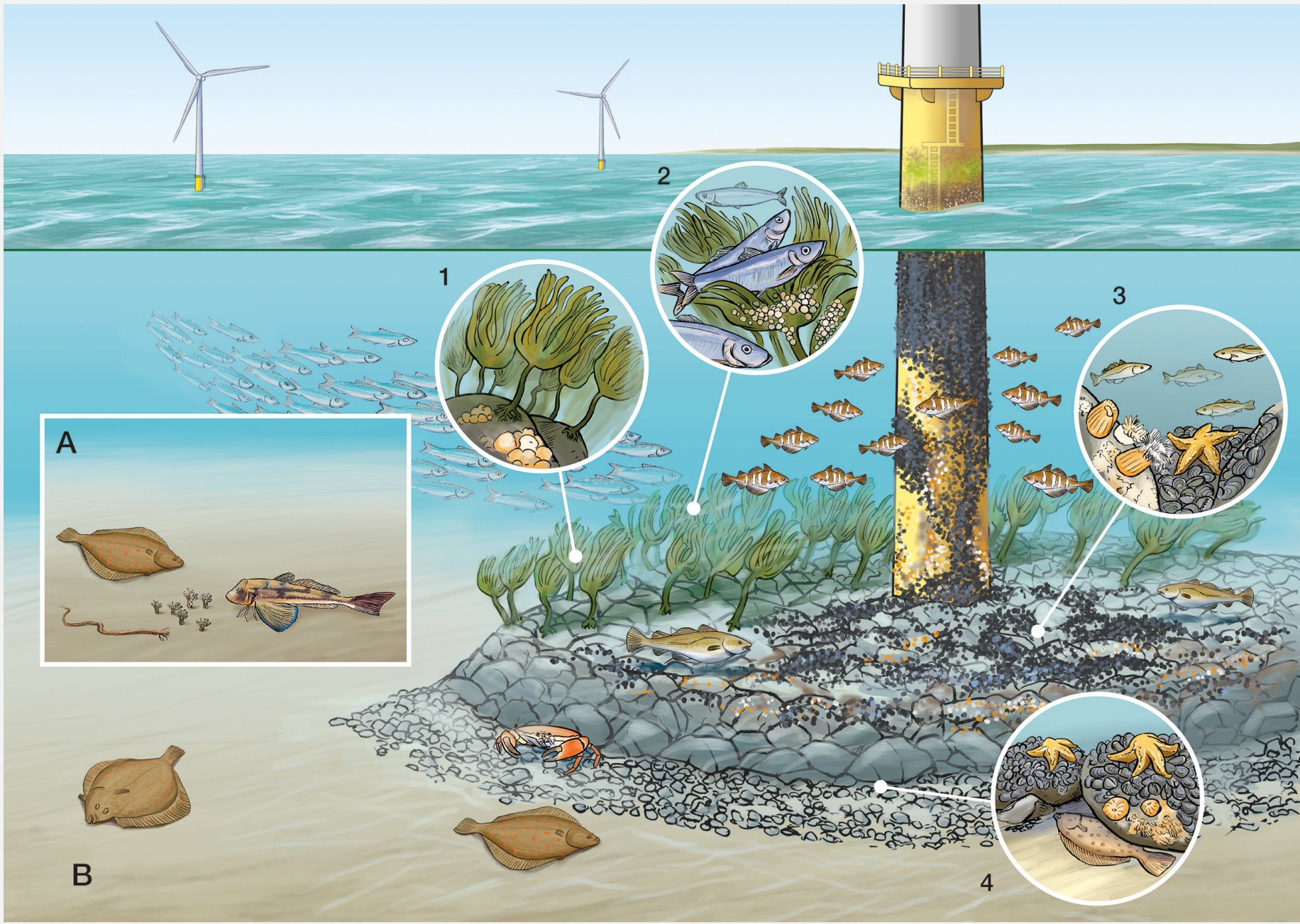
Medegebruik Windenergiegebied Hollandse Kust (zuid)



Multi-use concept in action: WIN@Sea pilot case study at Danish Kriegers Flak OWF



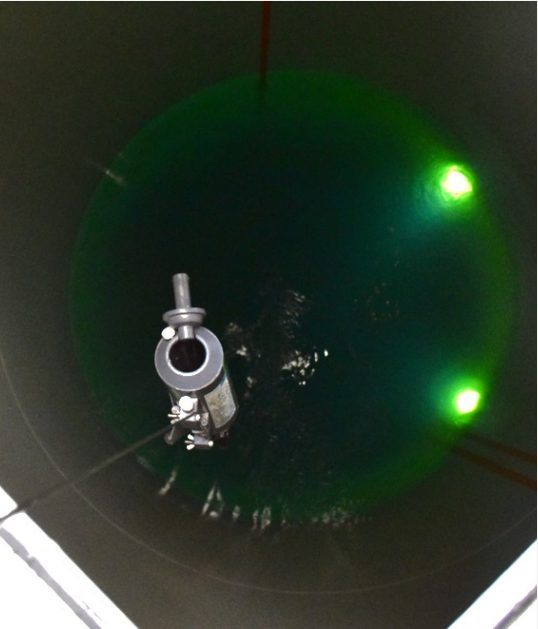
- Co-existence of several activities in the same space and time
- Sharing of services and infrastructure
- Potential for reducing pressure on other areas – Marine Protected Areas
- Uptake of nutrients and CO_2 = Emission Capture and Utilisation
- Production of marine resources
- More multi-use projects in DK and in the EU



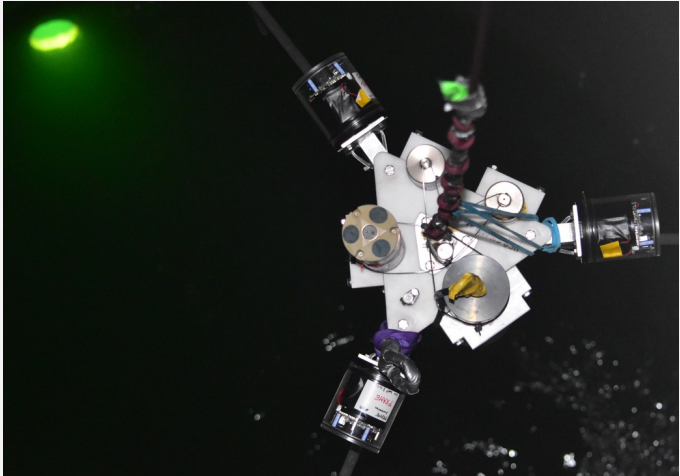
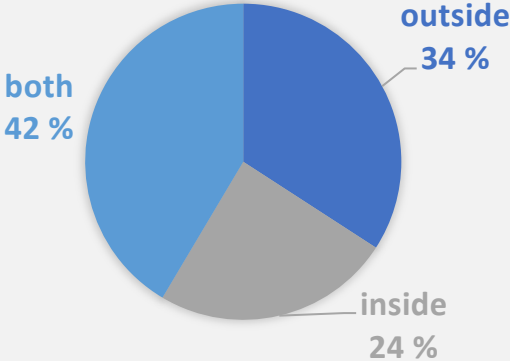
Nature-inclusive design at HKZ: water replenishment holes and rock reefs



- Optimized design based on ecological knowledge
- Cost-efficient & wide spatial extent
- Monitoring inside vs outside
- First indication WRHs: abiotic conditions are favorable and marine life observed inside the hollow foundations



VIDEO SPECIES LOCATION



An underwater photograph showing a dense bed of mussels on the ocean floor. The mussels are dark blue and black, with some yellowish-brown seaweed and other marine life visible in the background. The lighting is natural, coming from above, creating a slightly hazy, blue-tinted environment.

Questions?

Thank you for your attention!

Feel free to reach out: tim.wilms@vattenfall.com