



Scenarier for havvindutbygging og sameksistens i MARCO-prosjektet

Fisk og havvind-seminar,
Stavanger, 12.06.2024

Sigurd S. Pettersen
DNV, Group Research & Development

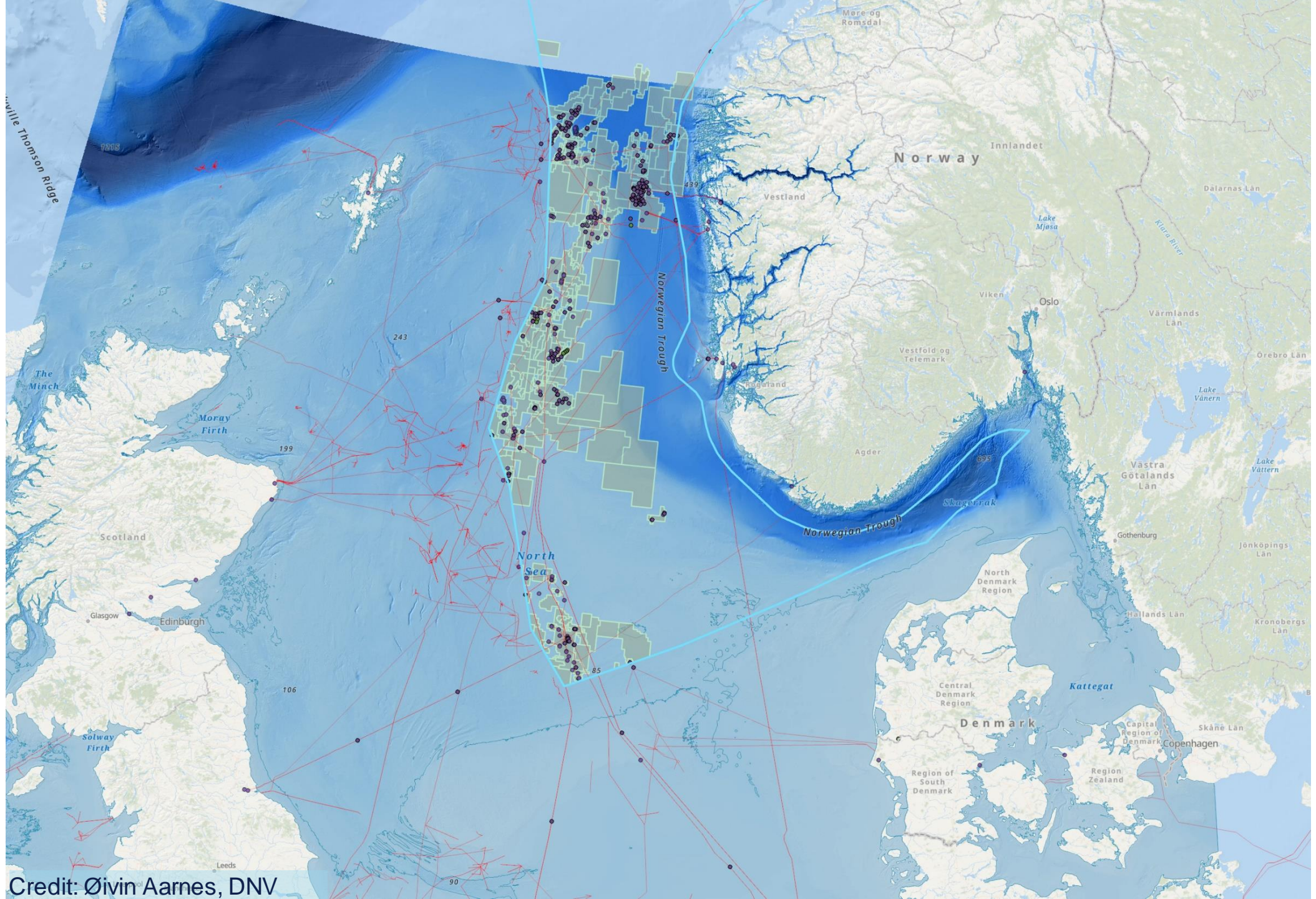
Øivin Aarnes, Mari V. Bjordal, Caryl Benjamin, Anna K. Ervik, Bente Pretlove,
Øivind Bergh, Solfrid S. Hjøllo, Marte Strømme, Karl Strømsem, Morten Lyssand,
Karen Brinchmann, Jan Henrik Sandberg

12 June 2024

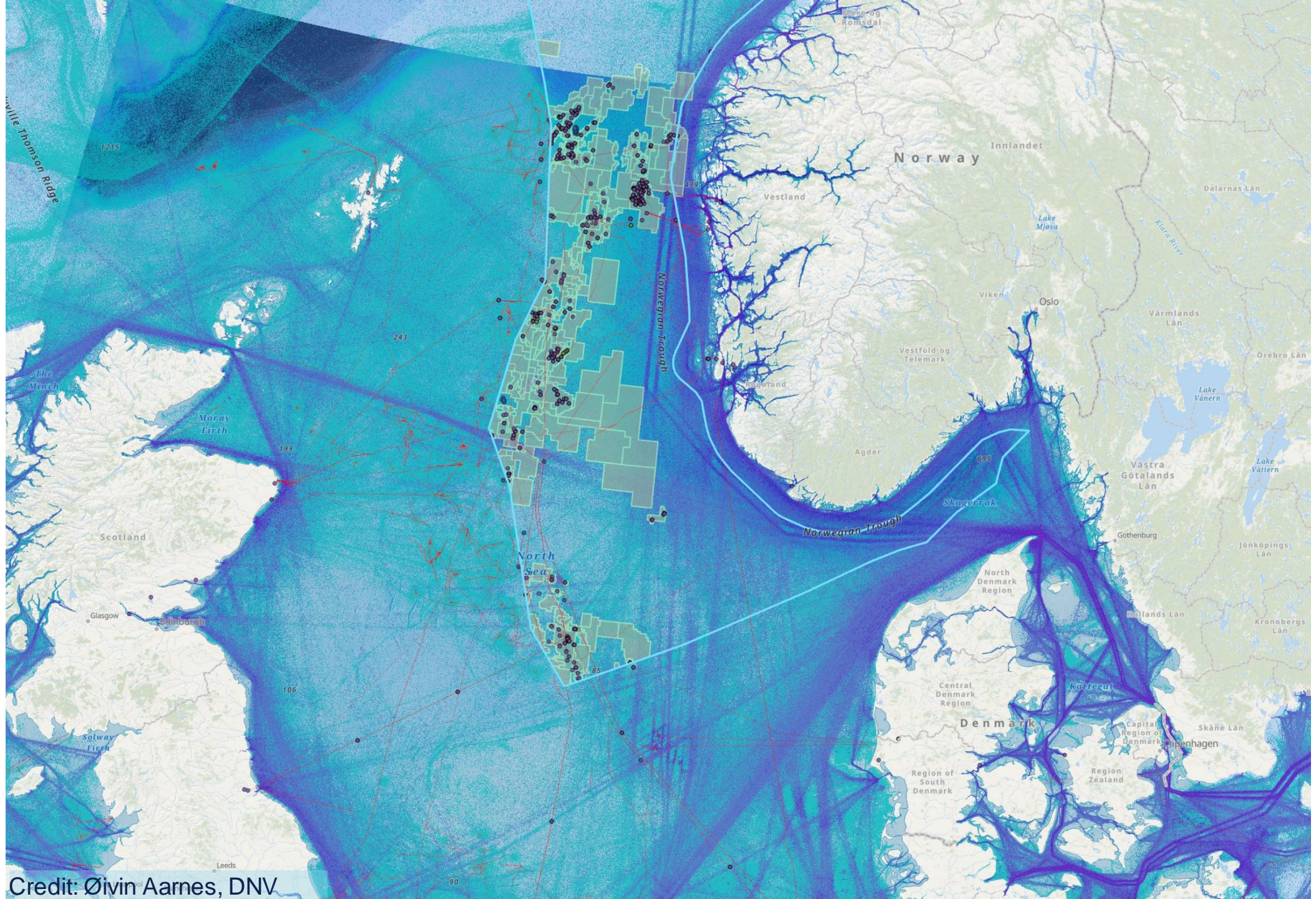
The North Sea is the busiest
among European sea basins



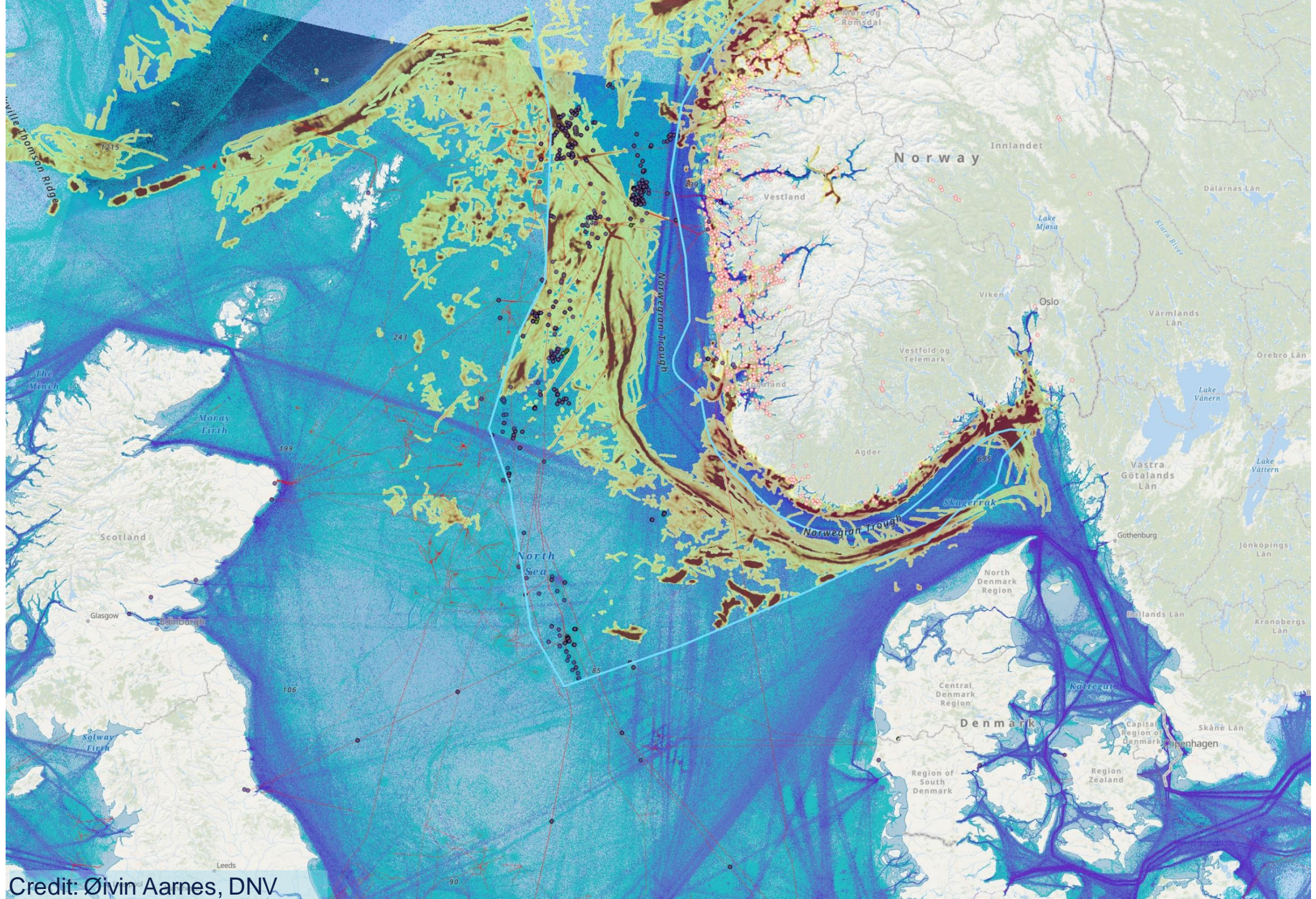
Credit: Øivin Aarnes, DNV



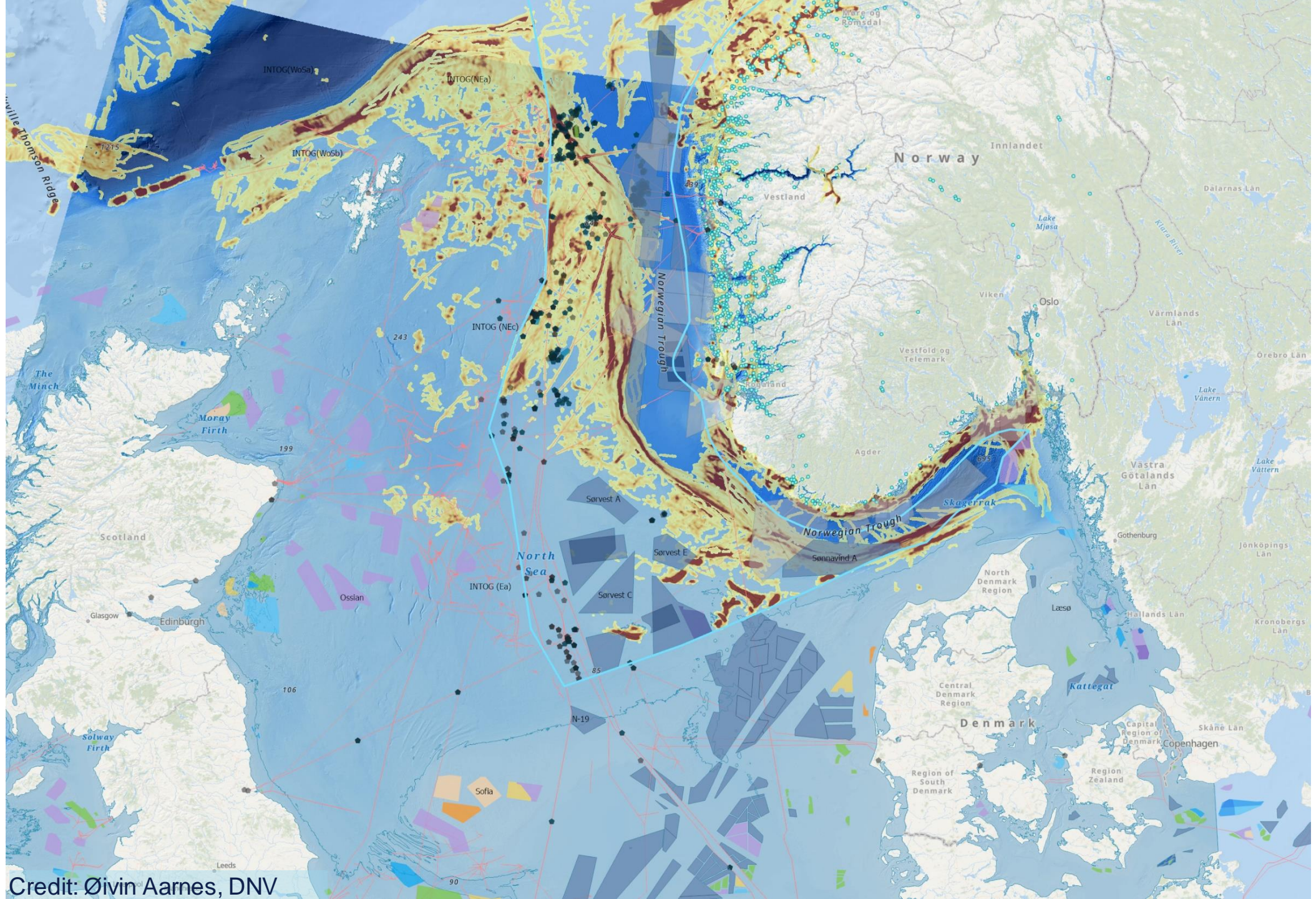
Credit: Øivin Aarnes, DNV



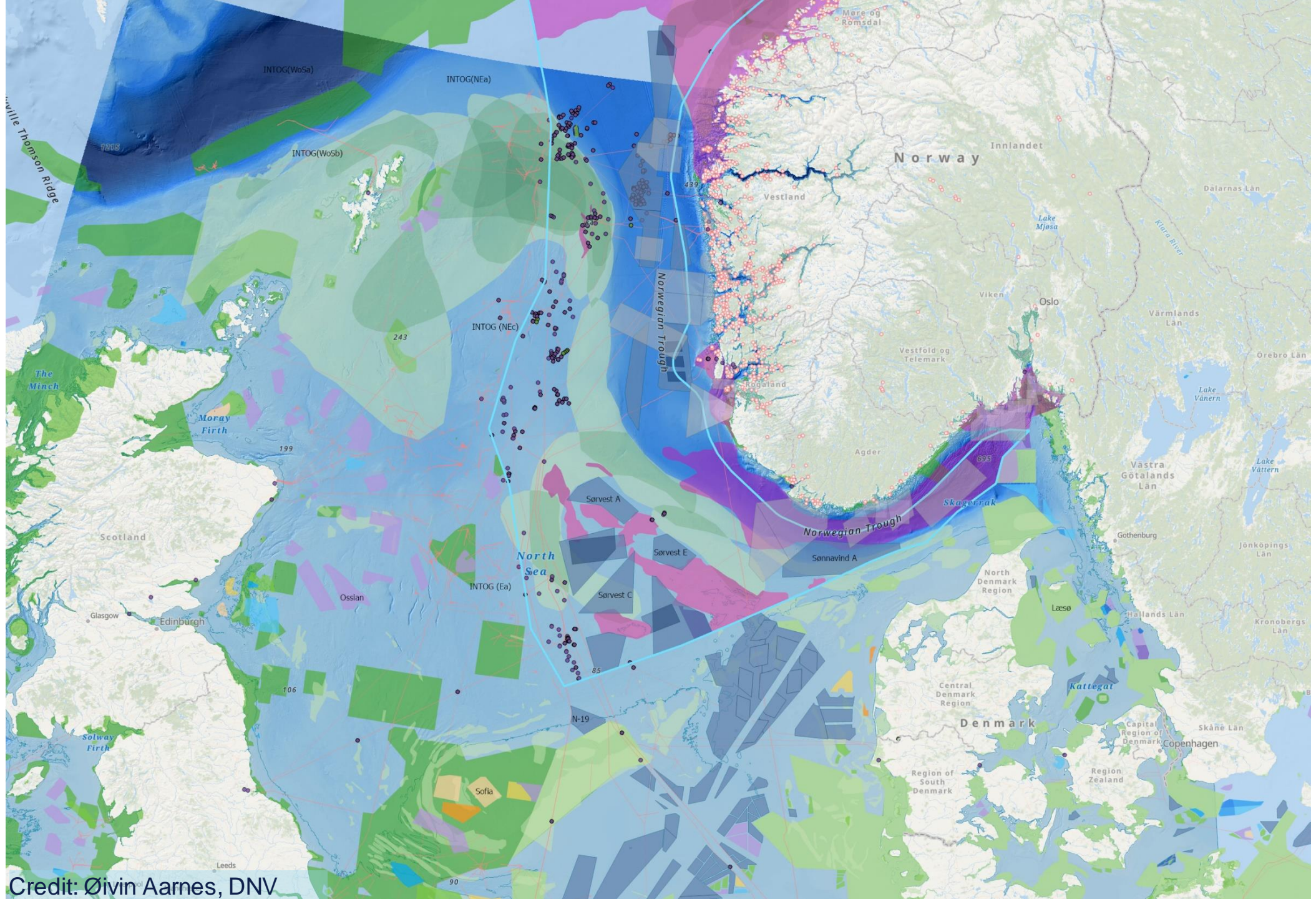
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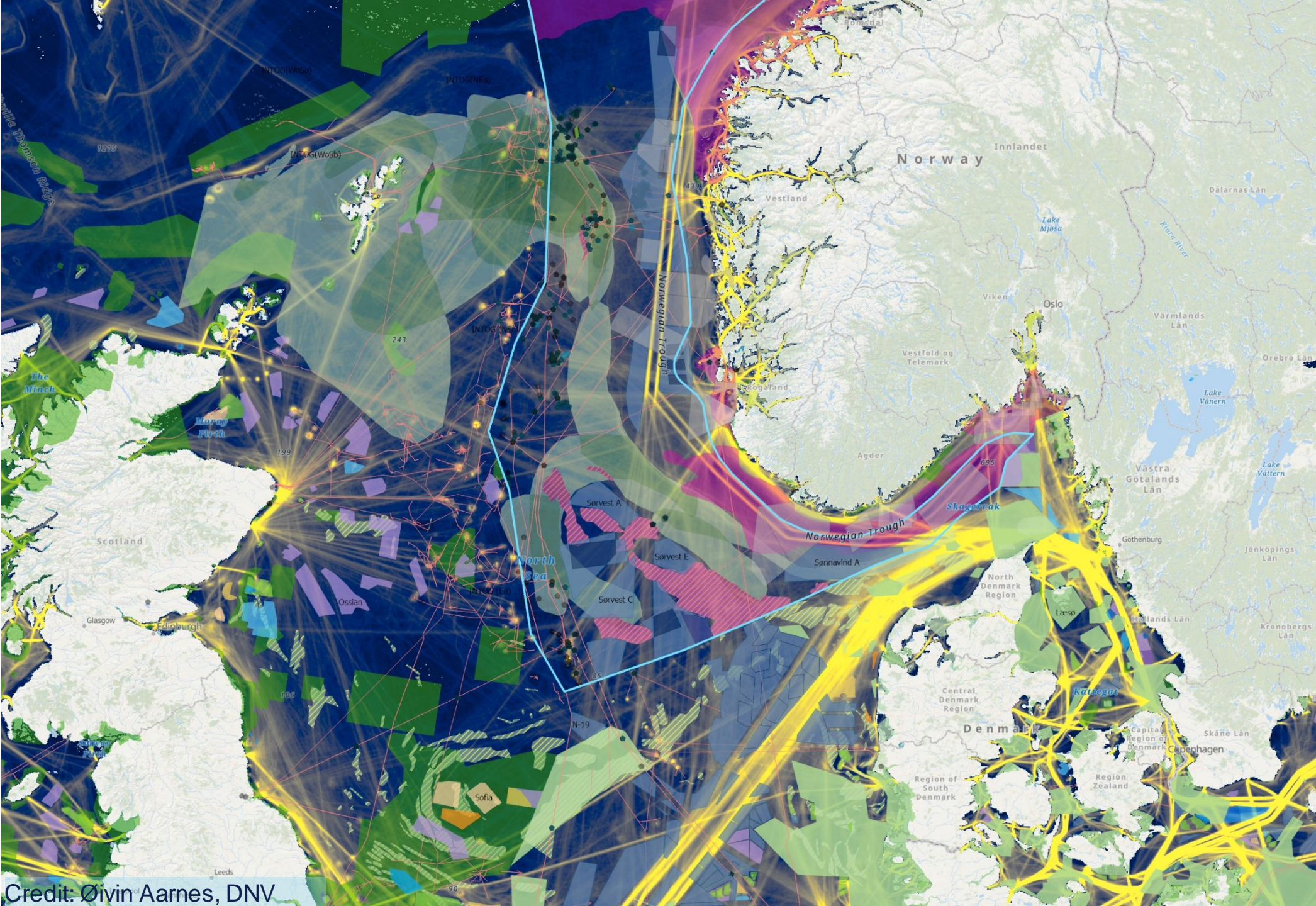
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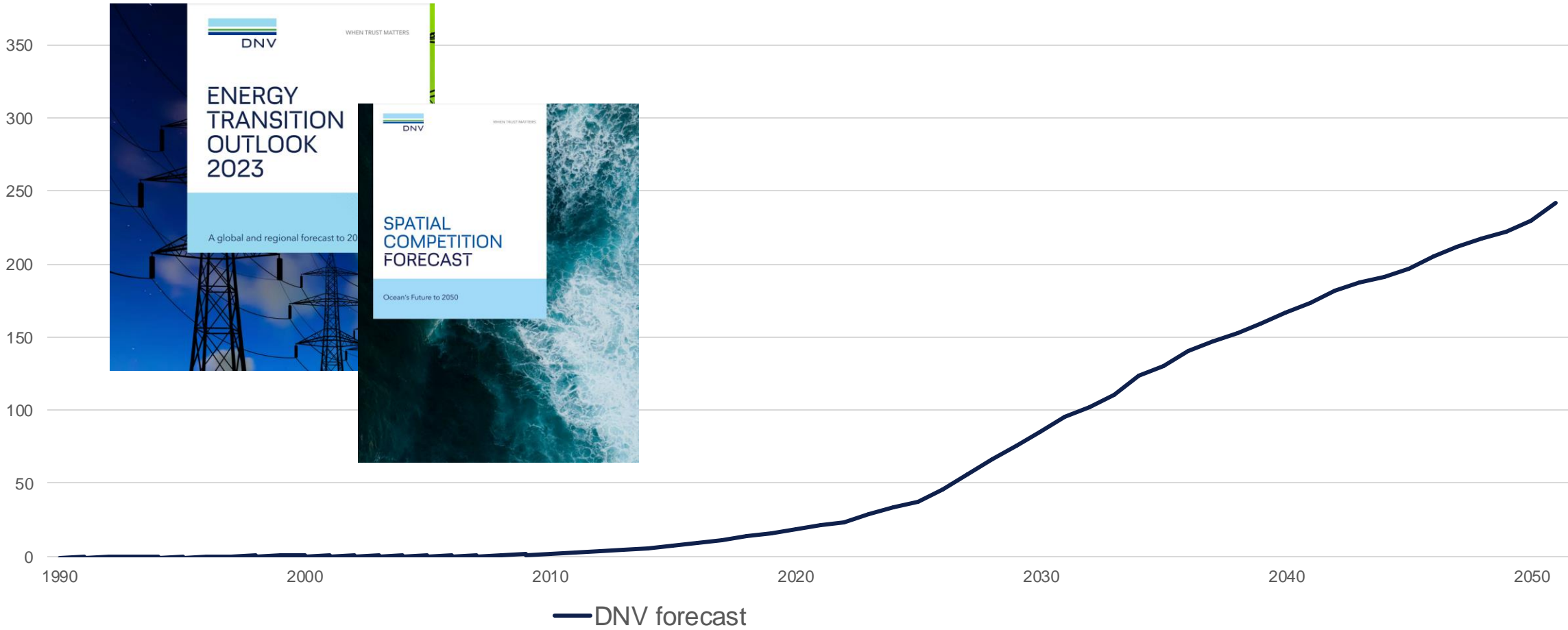


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Pressure on space will
increase to 2050

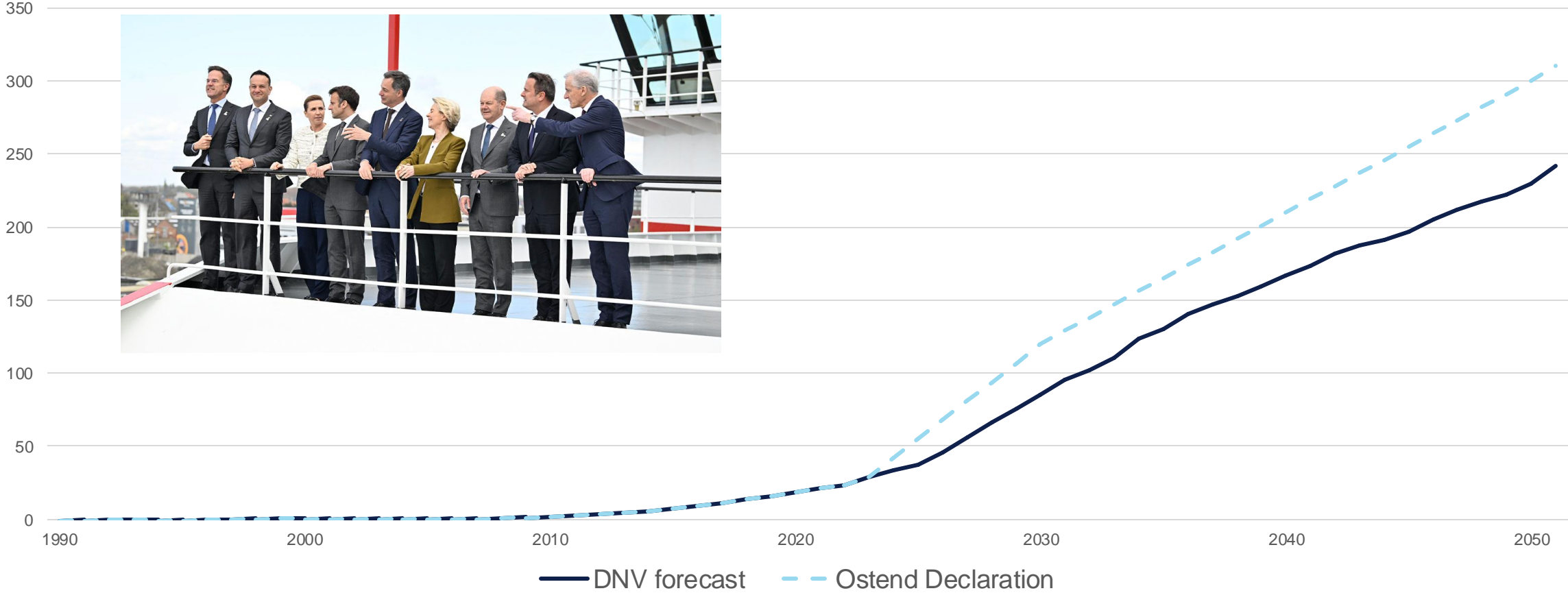
Fixed and floating wind – North Sea

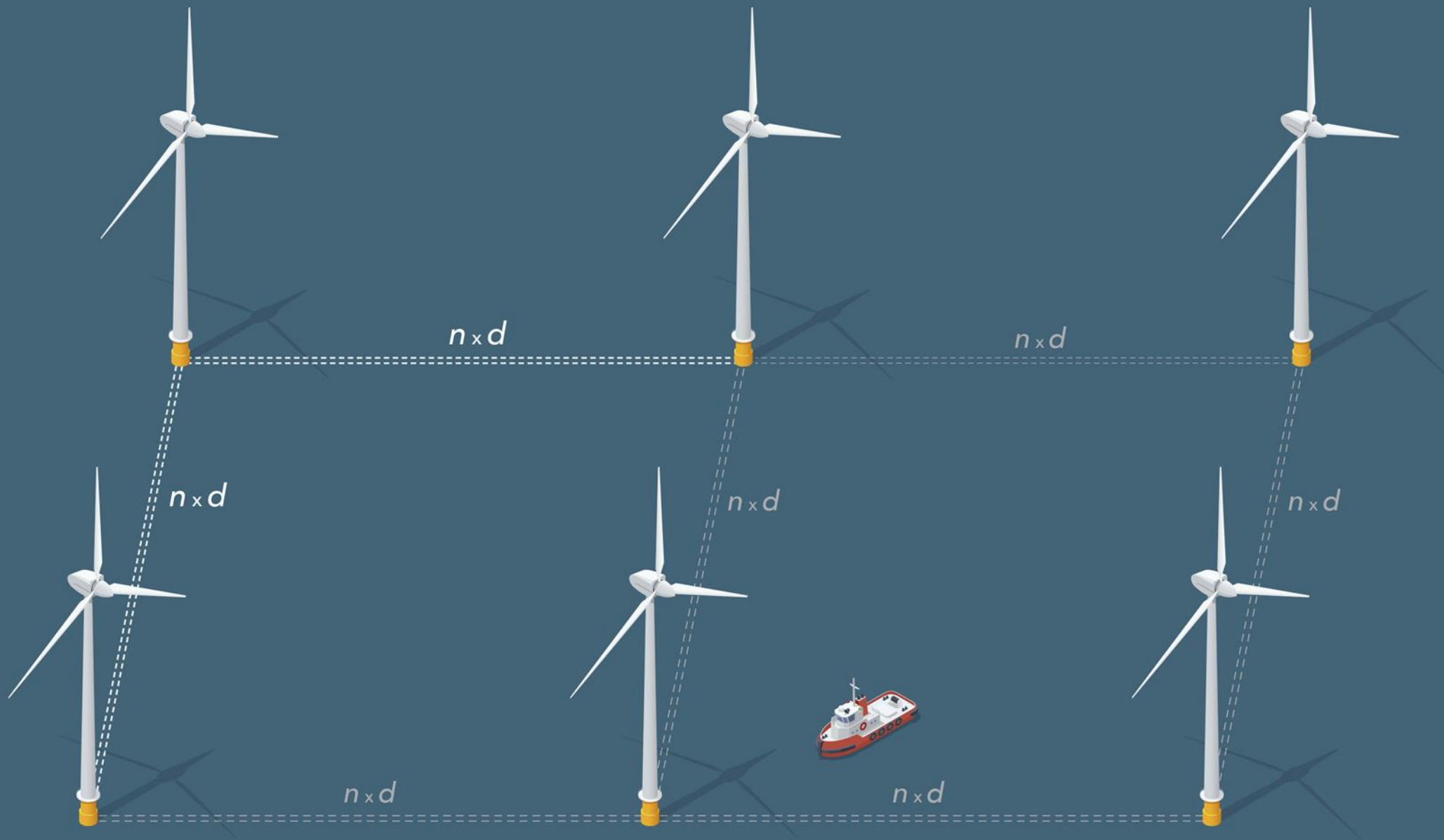
GW installed capacity



Fixed and floating wind – North Sea

GW installed capacity

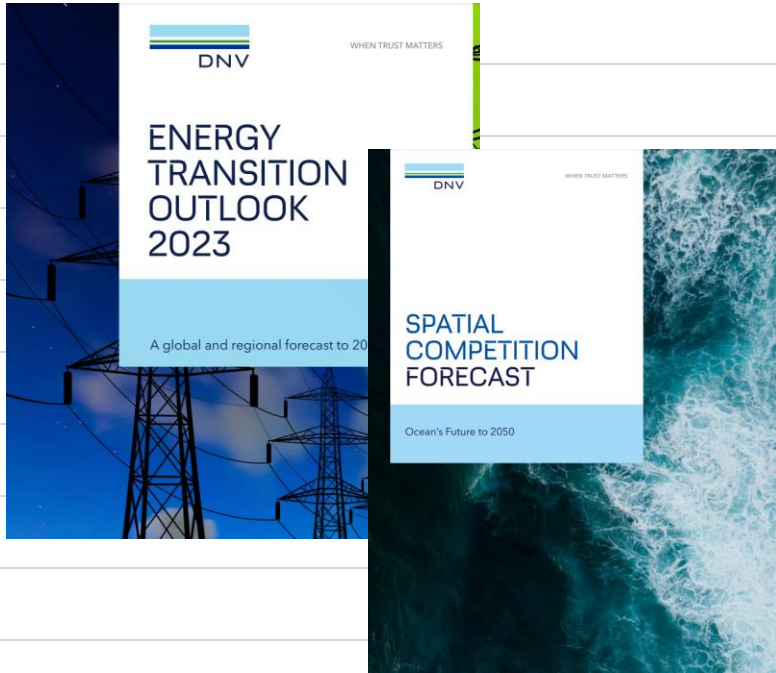
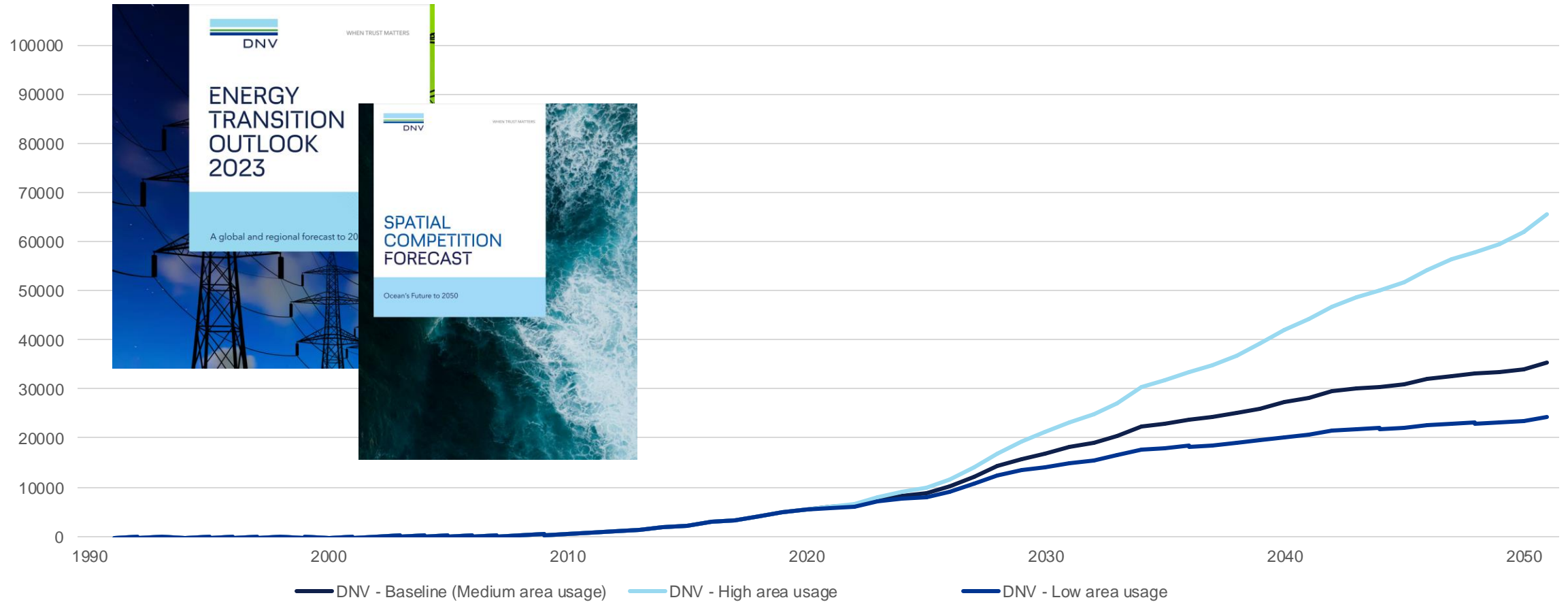




d - turbine rotor diameter (connected with capacity) n - number of d between turbines

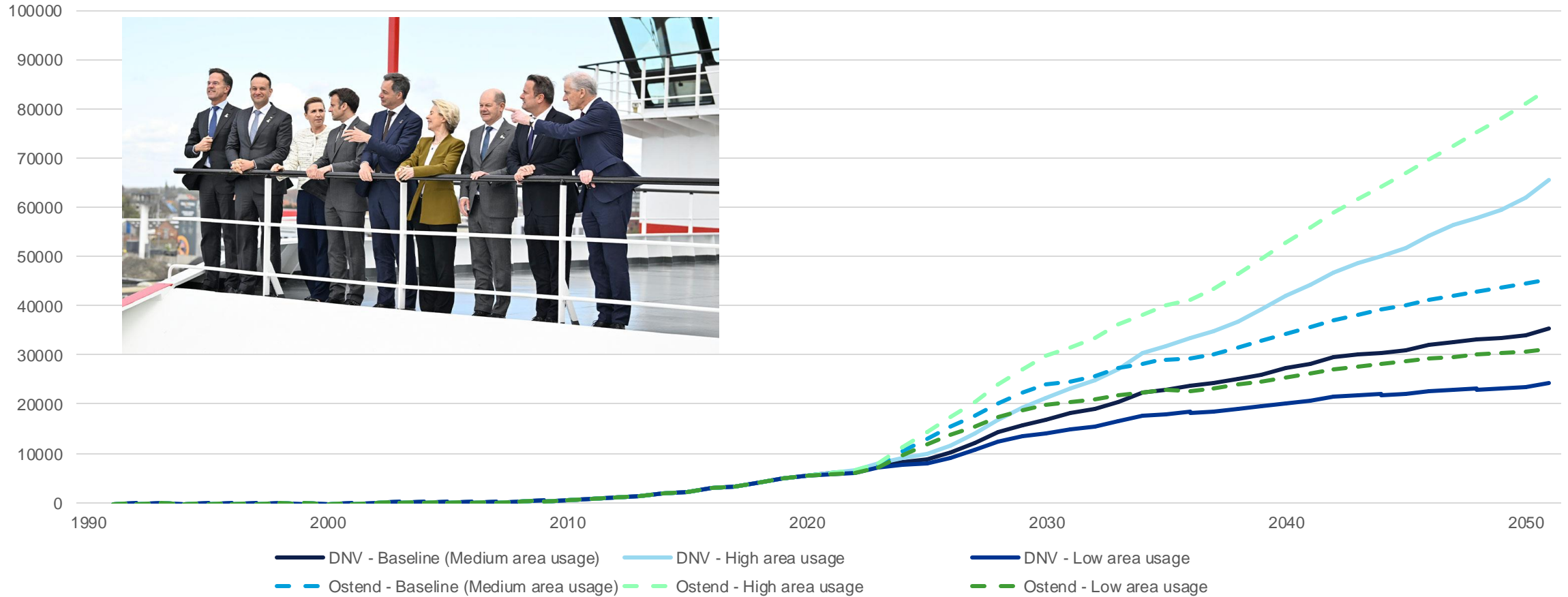
Area usage – North Sea

square km



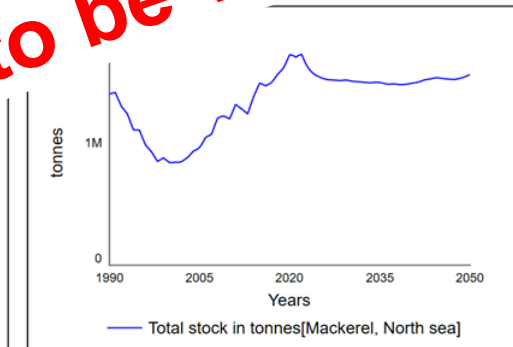
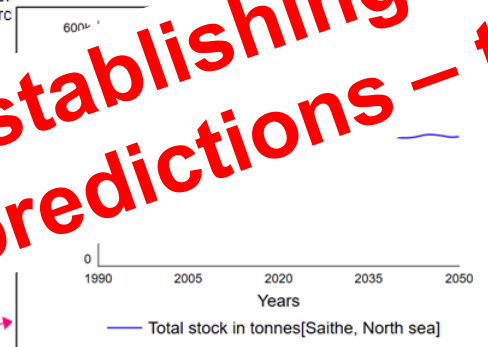
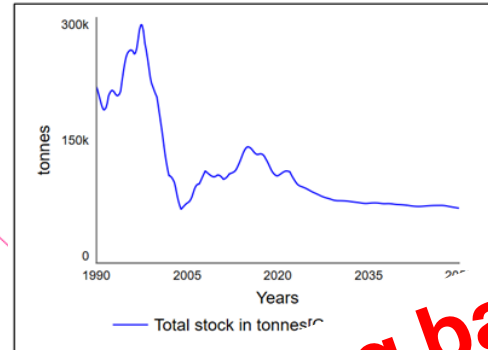
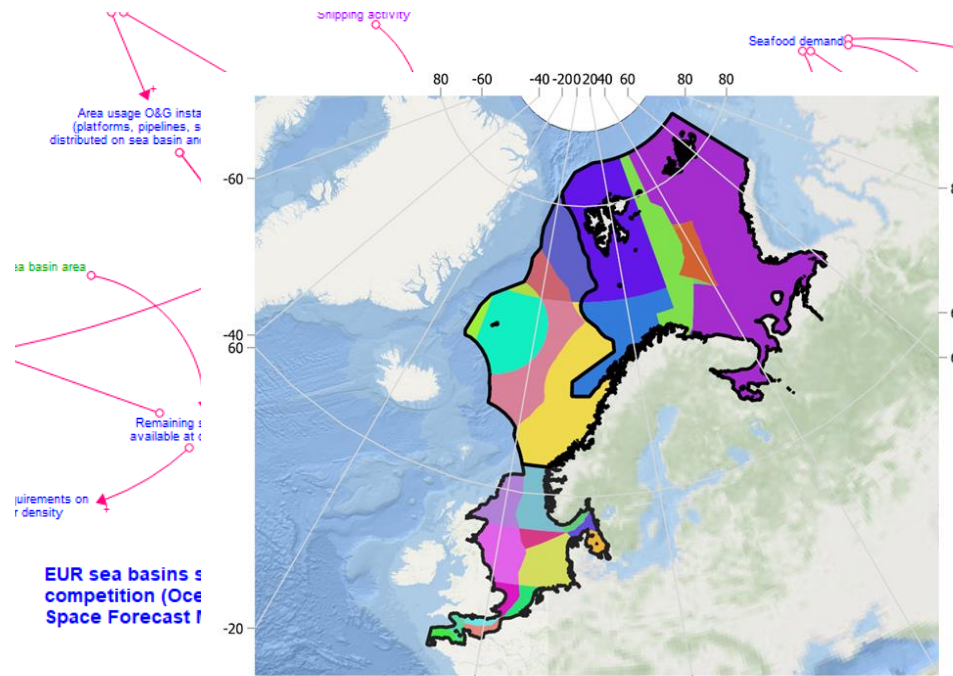
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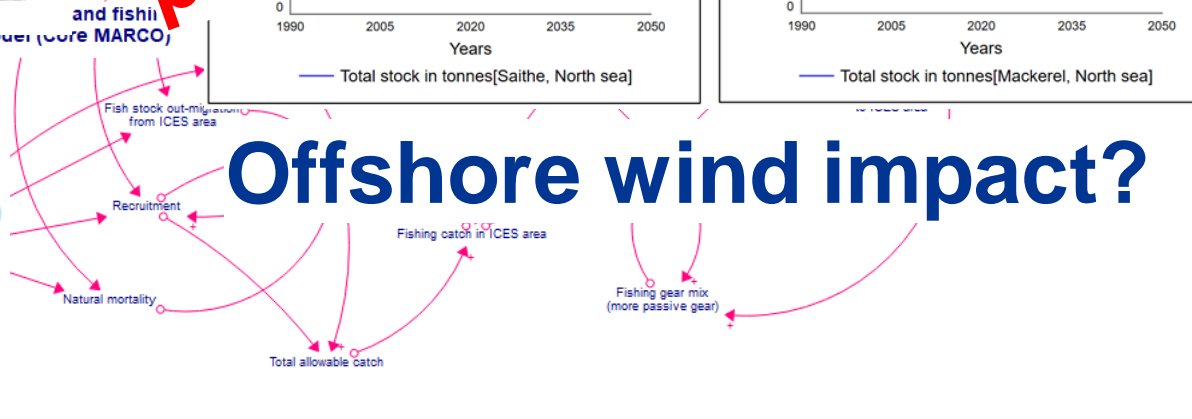
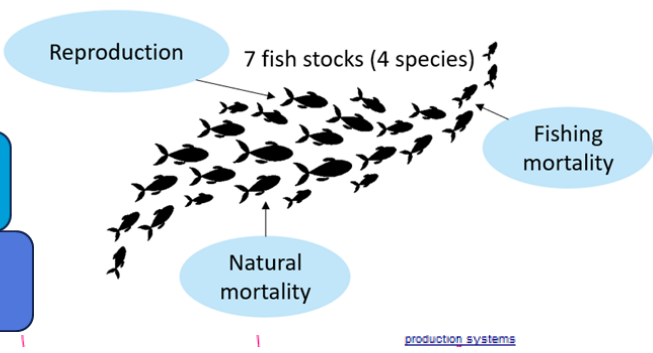
How to reduce the uncertainty for other ocean stakeholders?

System dynamics to model interactions and impacts



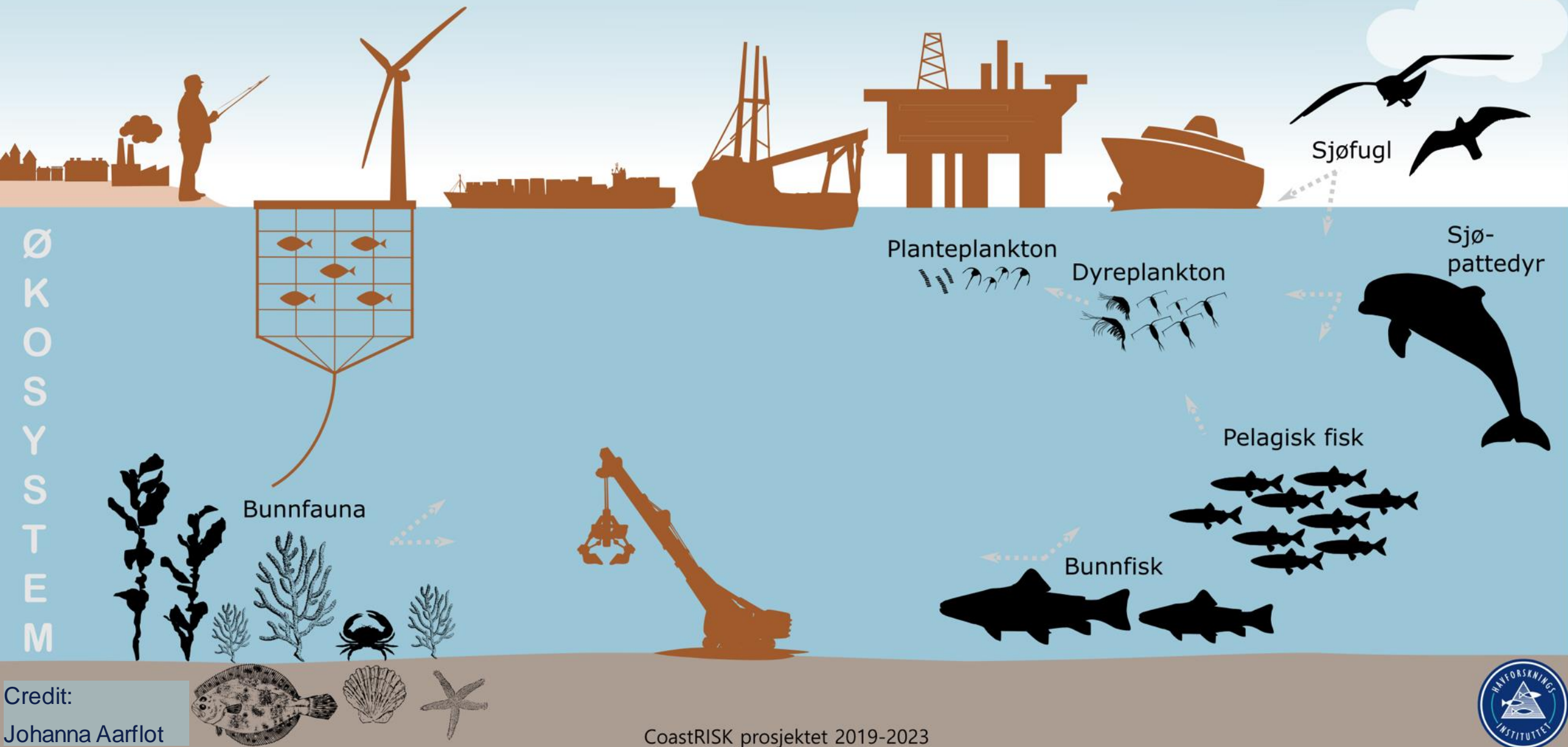
Establishing baseline stock predictions – to be validated

- Quota mechanisms
- Fishing activity
- Area use for installations
- Spatial competition



Offshore wind impact?

Samlet avtrykk?



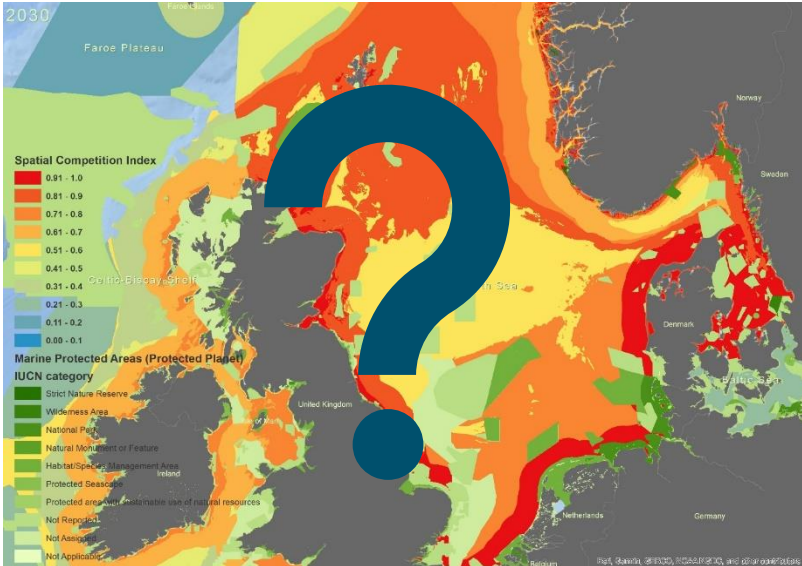
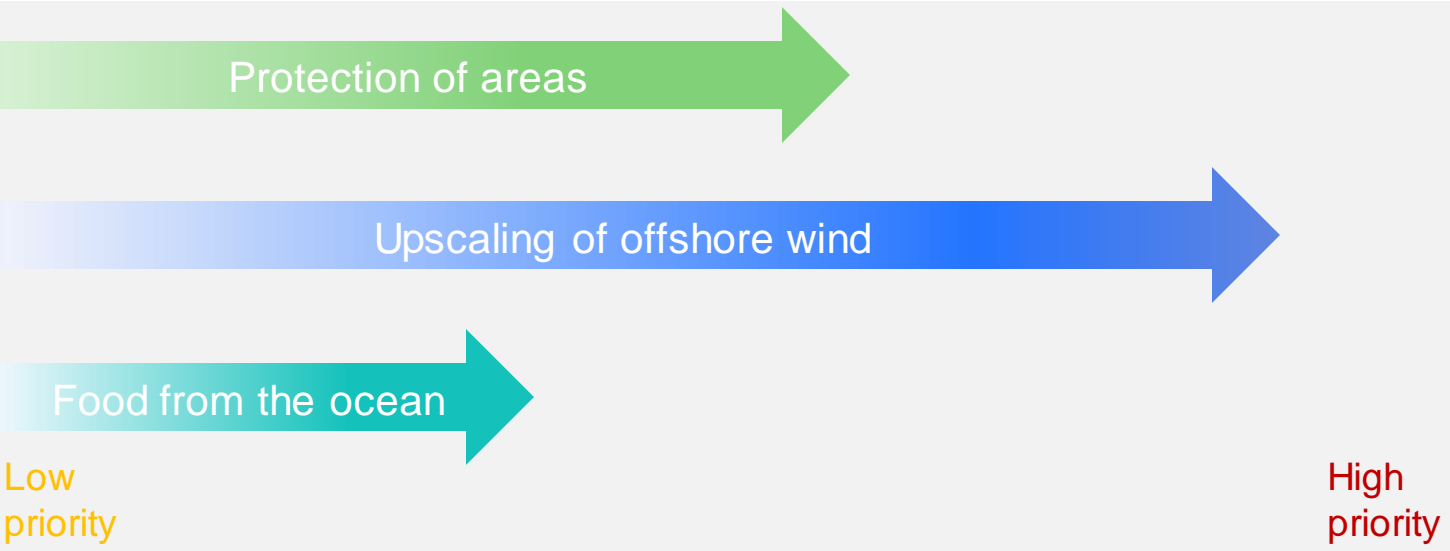
Scenarios for exploring impact on co-existence

Protection of areas

Upscaling of offshore wind

Food from the ocean

User-defined scenarios combining societal objectives in different ways:



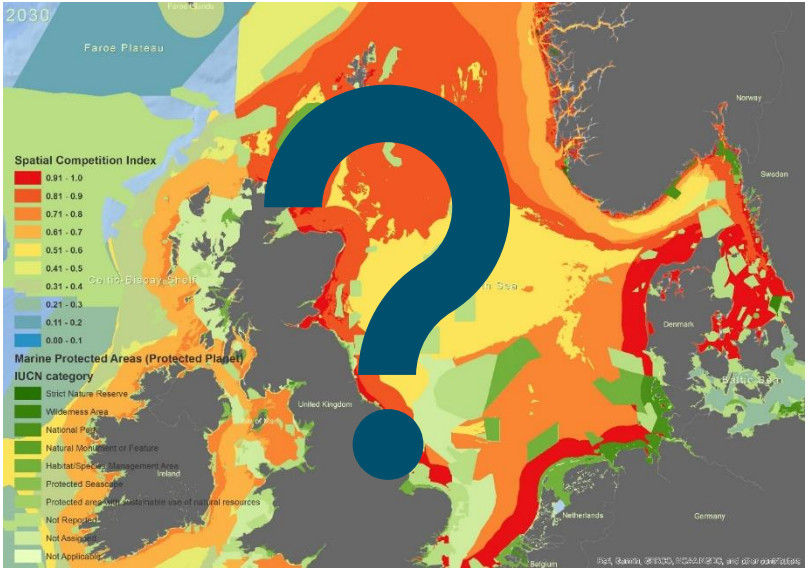
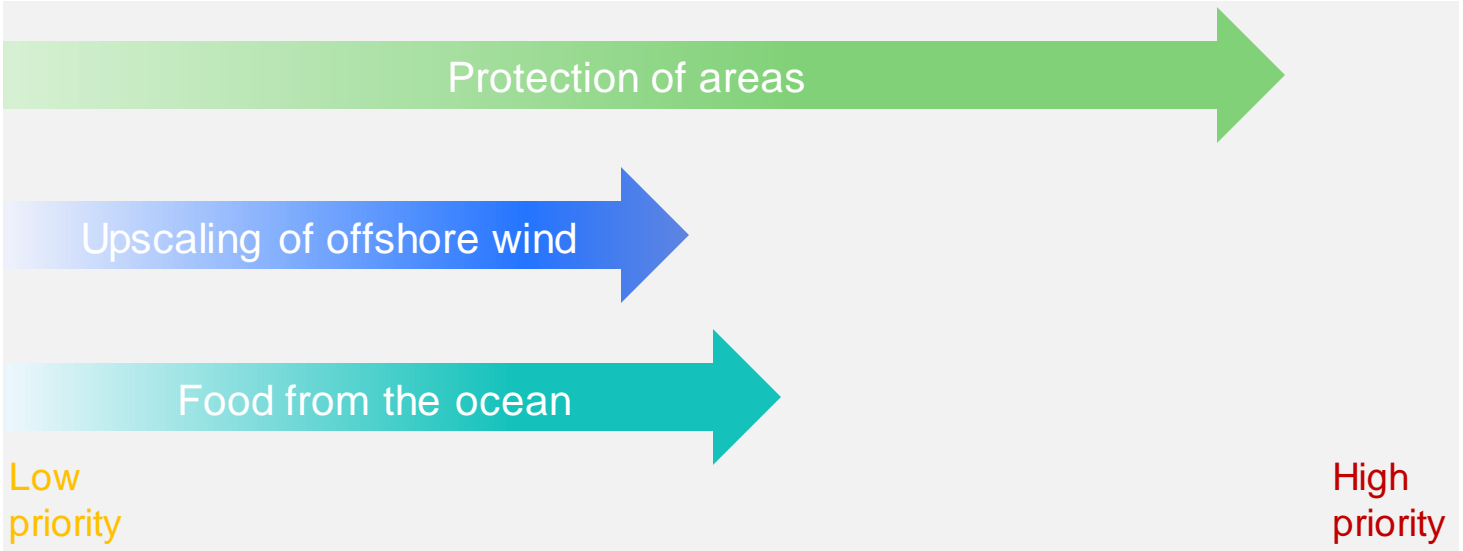
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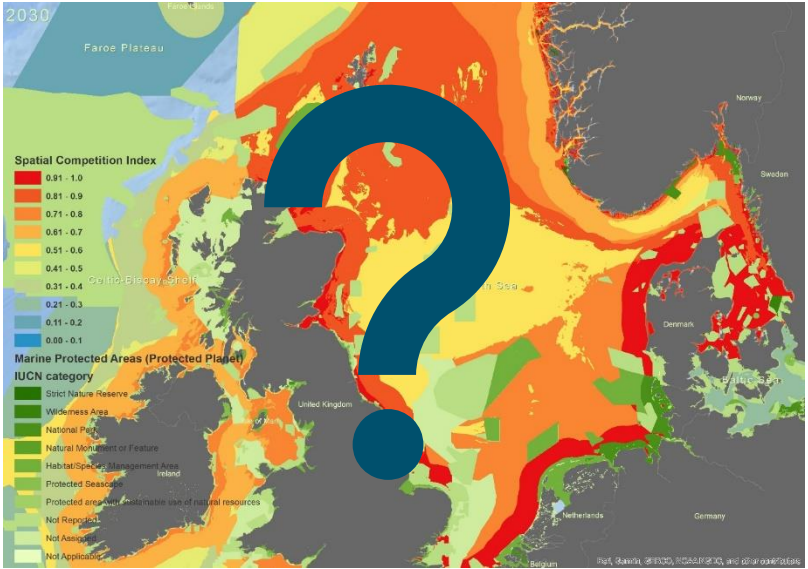
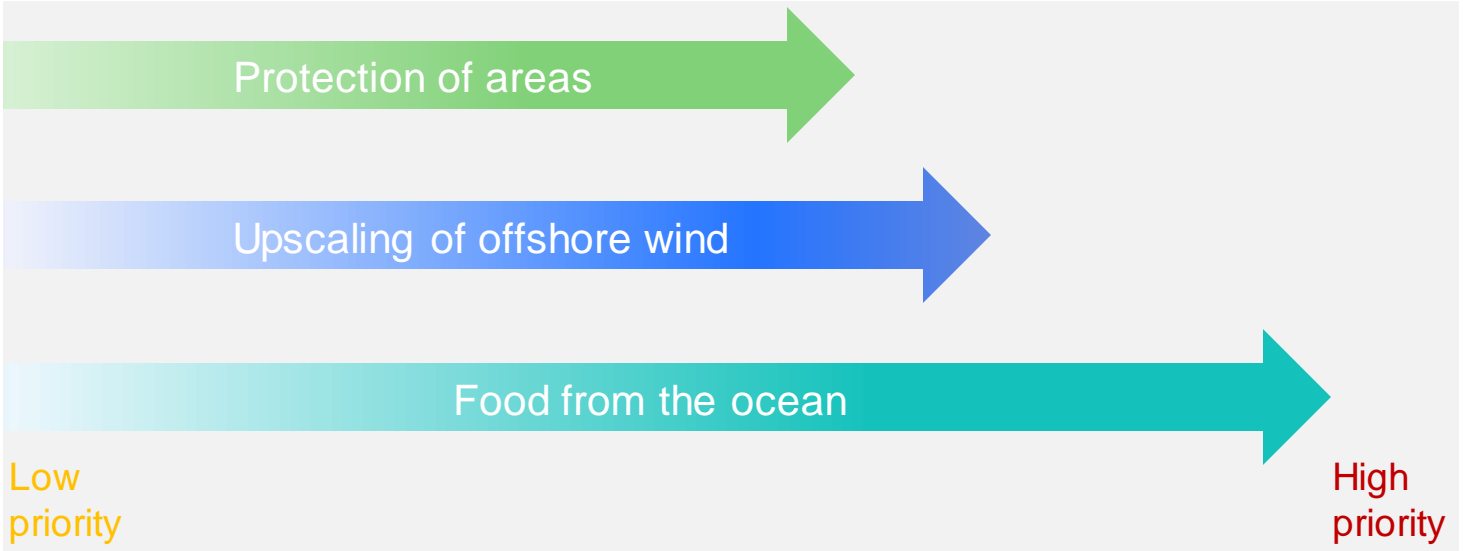
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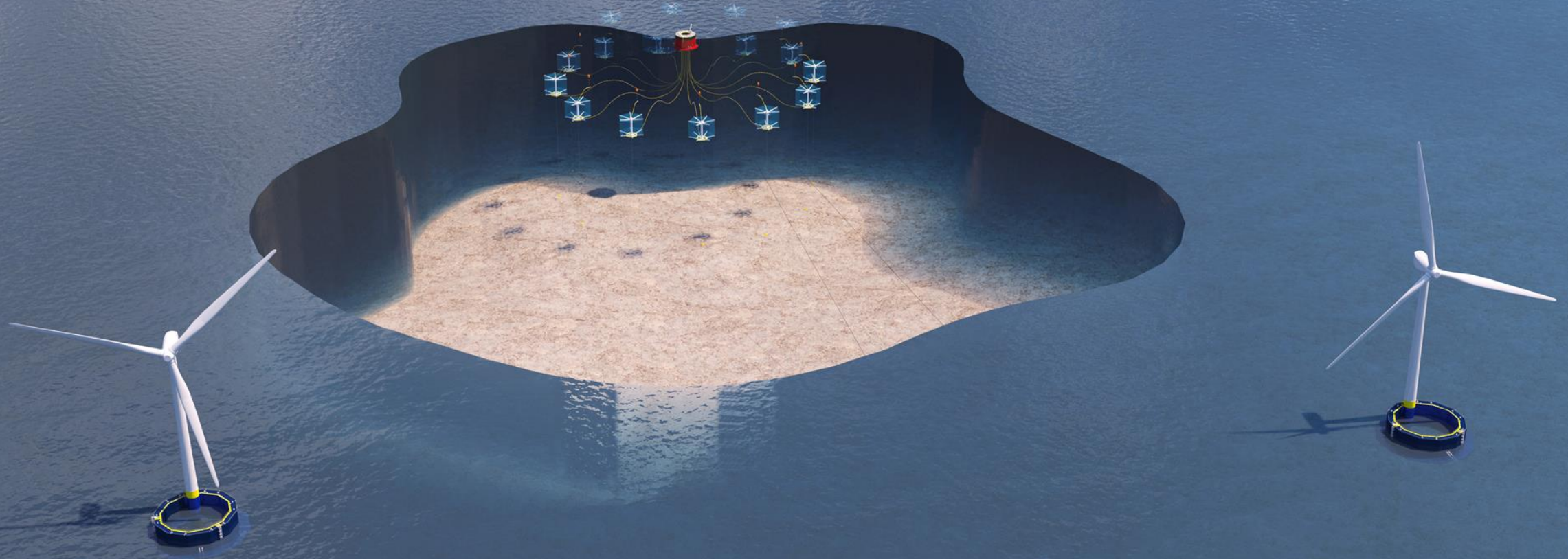
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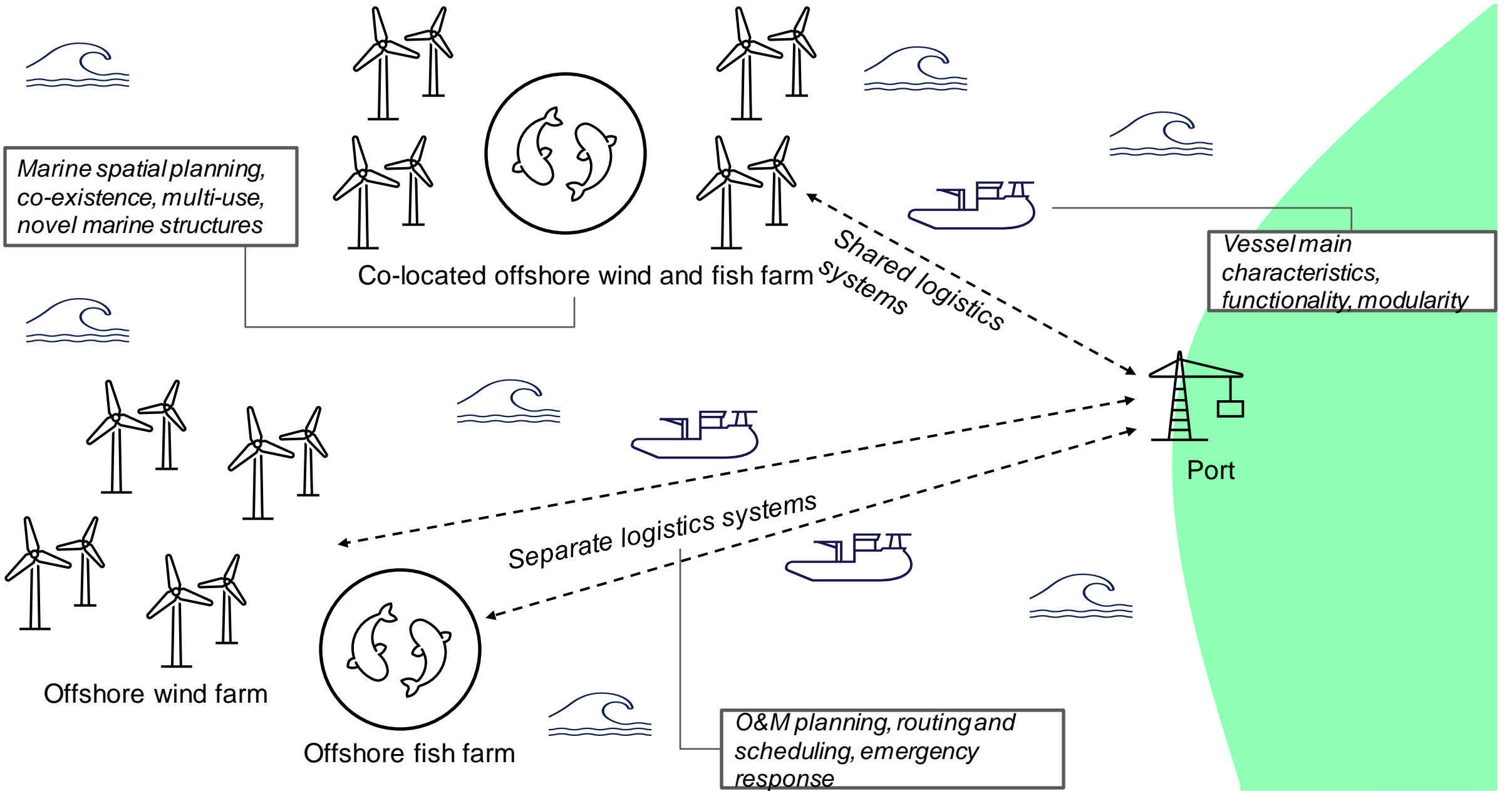
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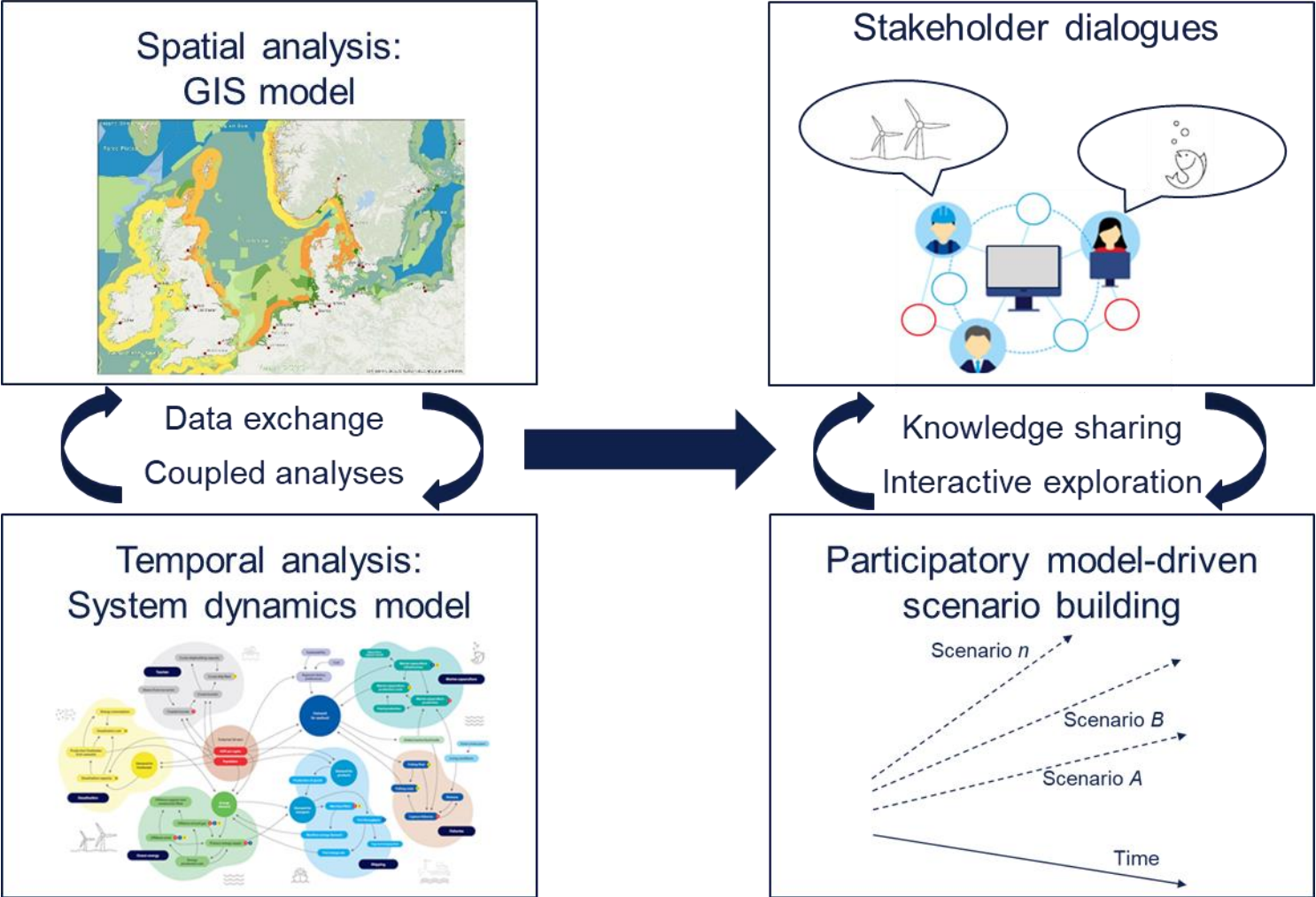
Multi-use: Subfarm – Submerged fish farm concept





IPN MARCO: MARine CO-existence scenario building

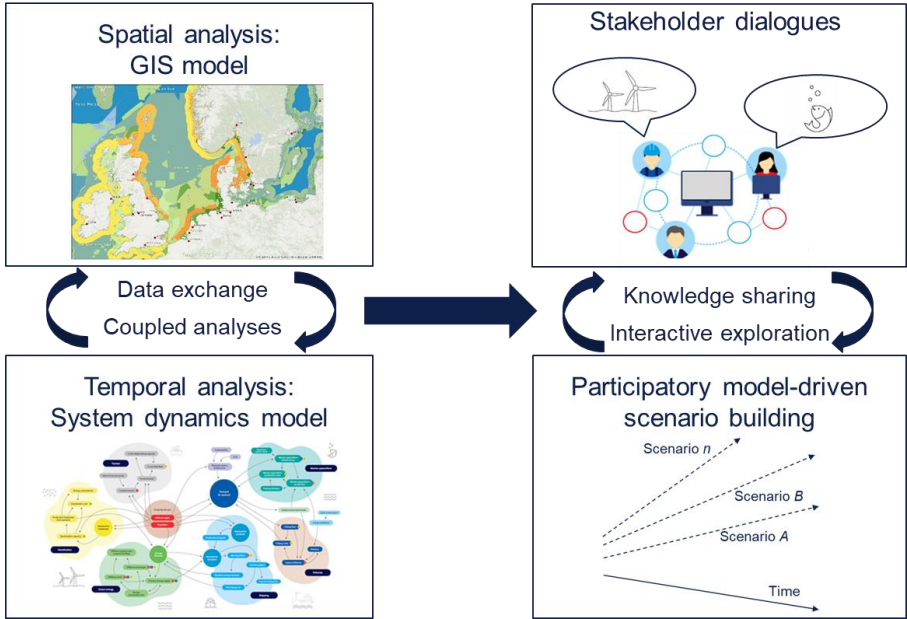
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Future scenarios for co-existence

- Toolbox that combines system dynamics and GIS
- Reflecting basic marine research in the models
- New methods for stakeholder involvement



NORGES FISKARLAG



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Forskingsrådet



Thank you!

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