

# Offshore wind:

# Accommodating biodiversity and stakeholders

Preliminary results from Nordic Energy Research study

# About the project

Customer: Nordic Energy Research, platform under the Nordic Council of Ministers

Aim:

- To identify key elements and recommend actions for further offshore wind developments in the Nordics
- To illustrate key elements by case studies

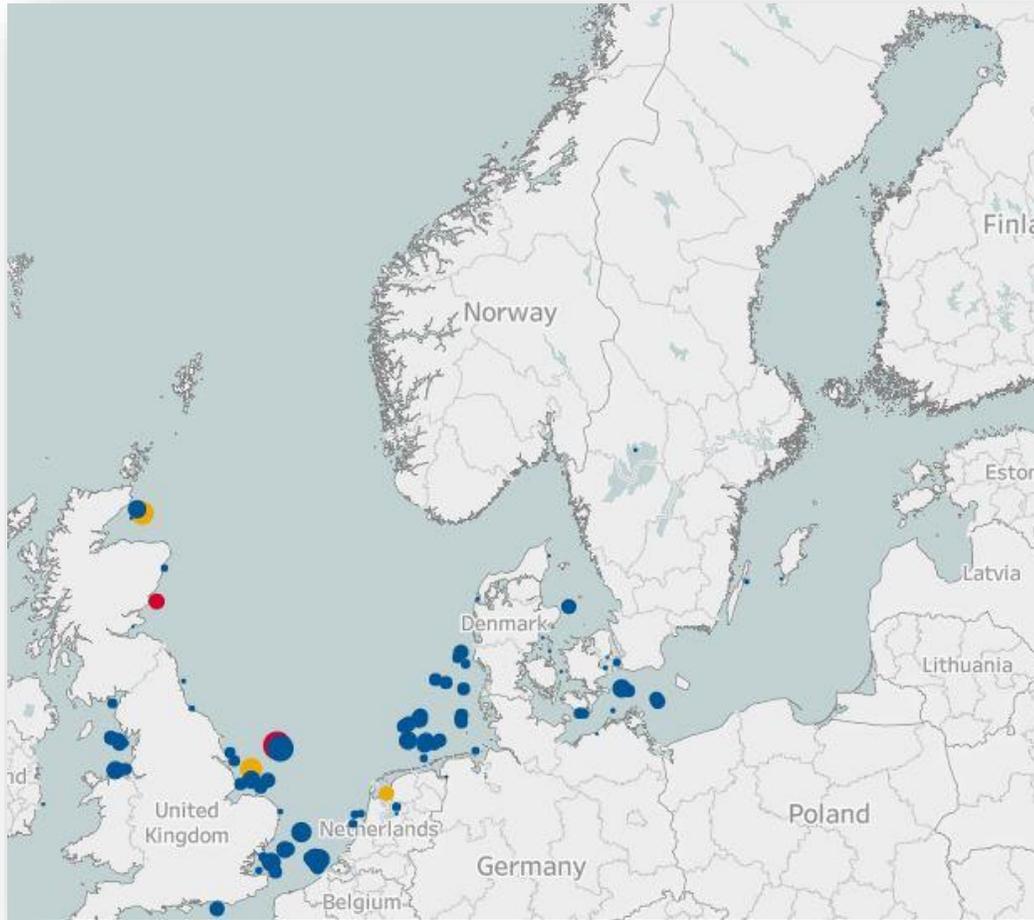
Process:

- Review of authoritative literature and reports
- Discussions with stakeholders

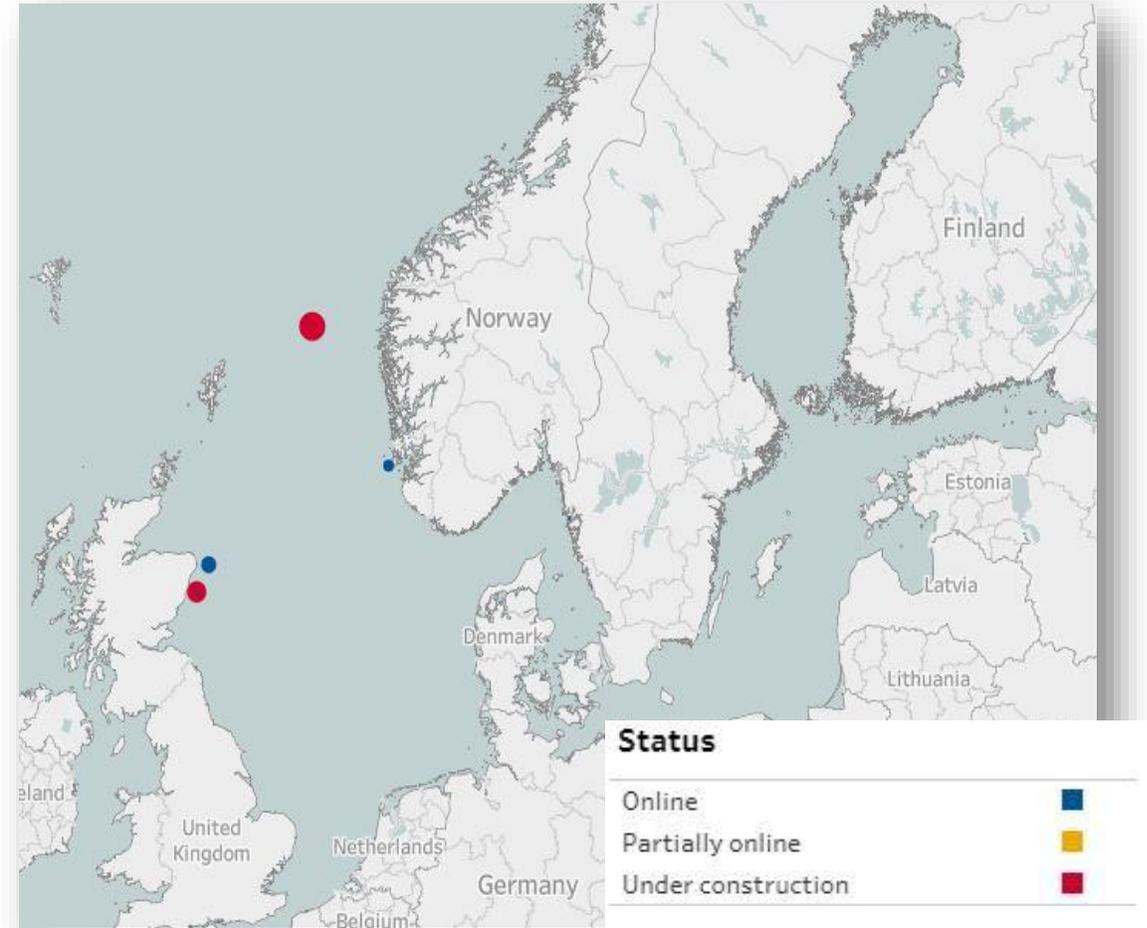


# Current situation

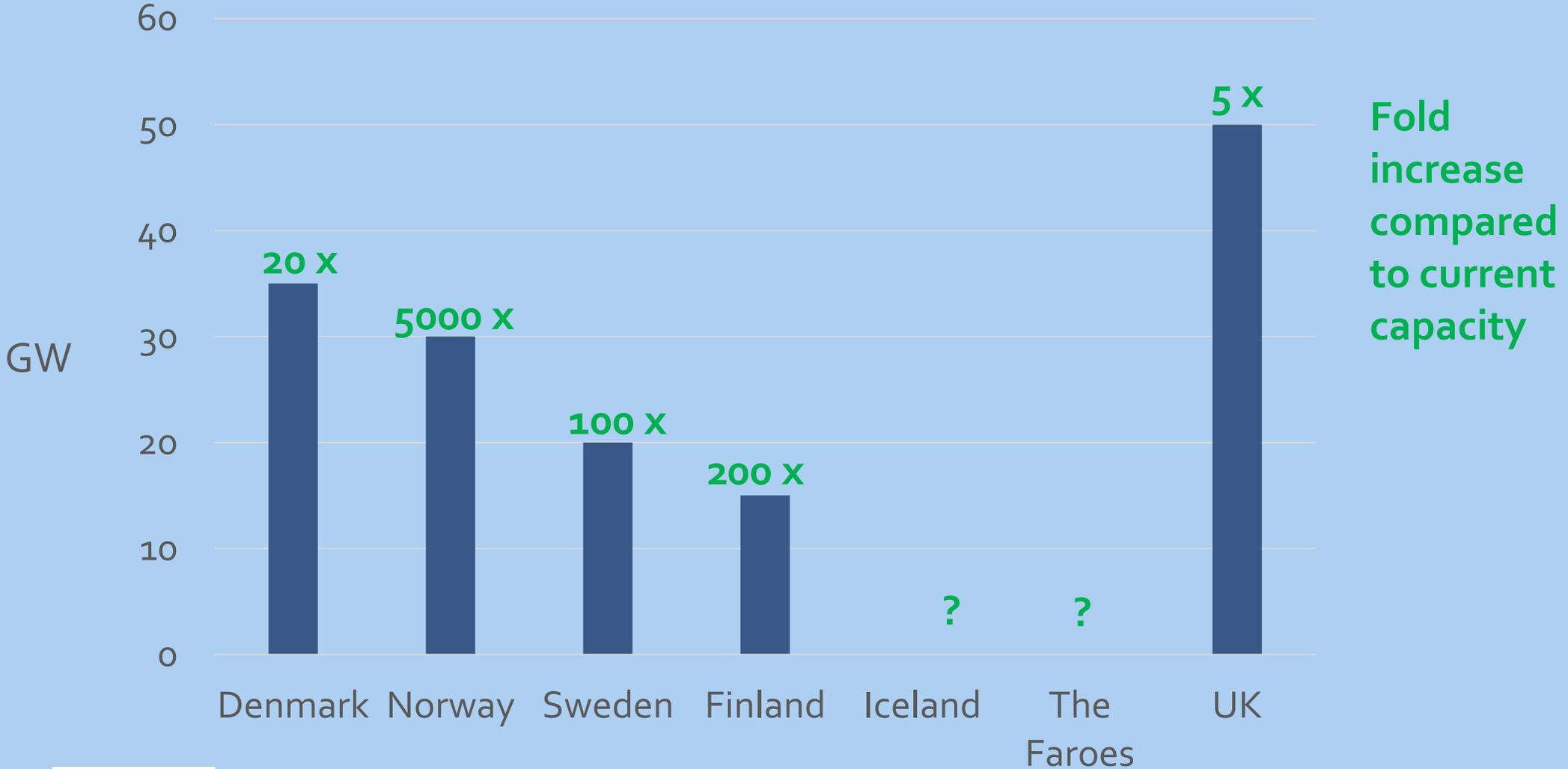
## Bottom fixed



## Floating

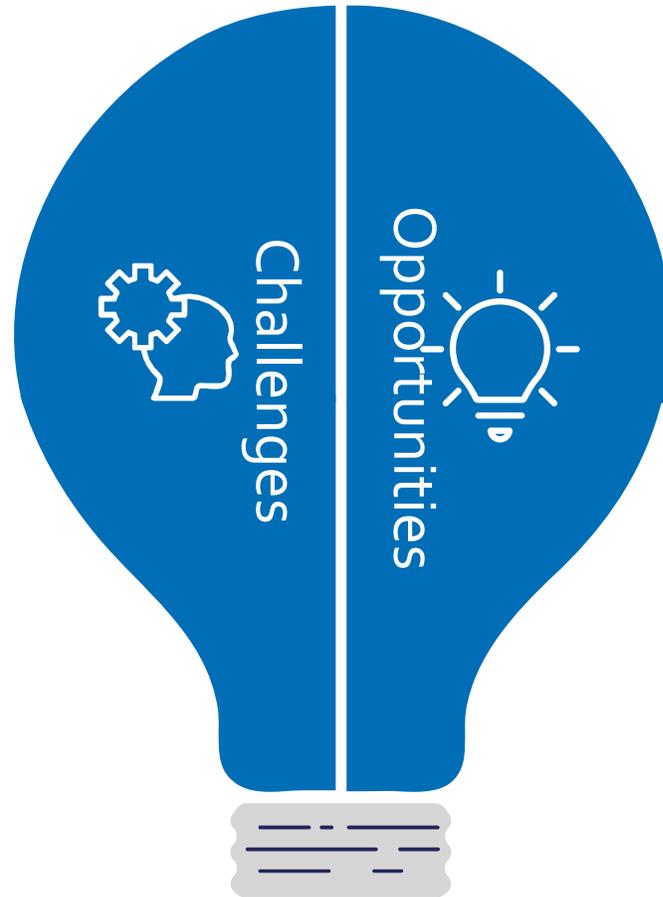


# Connected capacity in 2050



# Expansions entails challenges and opportunities

- Additional pressure on ecosystems
- Lack of data on ecosystems and impact
- Conflicts for space (fisheries)
- Complex stakeholder engagement processes



- Knowledge-base increasing
- Certain flexibility for siting
- Opportunities for coexistence
- Opportunities for ecosystem restoration/ enhancement
- Significant offshore experience

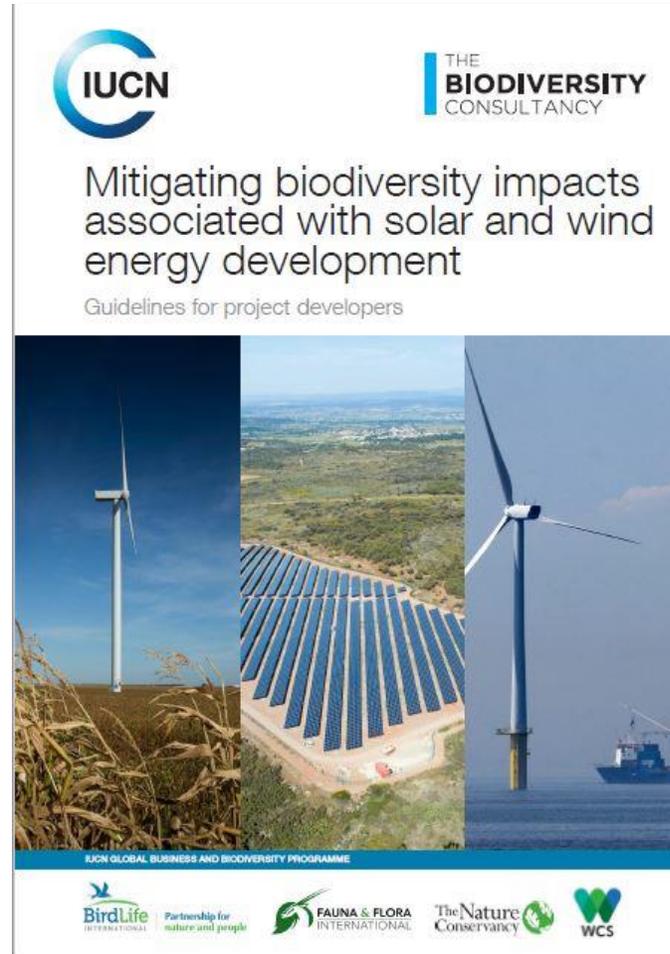
# Biodiversity impacts

- Indirect: conserve biodiversity by reducing GHG emissions
- Direct:
  - Physical changes (habitats, barriers, hydrodynamics)
  - Underwater noise (disturbance)
  - Electromagnetic fields (disturbance?)
- Cumulative: total impact arising from all activities in an area over time



# Mitigating impacts

- Avoid
- Minimize
- Offset
- Restore



# Key elements to accommodate biodiversity and stakeholders

- ✓ Strategic planning
- ✓ Environmental data
- ✓ Cumulative impacts
- ✓ Underwater noise
- ✓ Stakeholder engagement



# Case studies

Strategic planning process	Environmental data	Cumulative impacts	Underwater noise
Stakeholder engagement			
Danish Process of Opening Areas Continuous stakeholder process			
Hywind Scotland Pilot Park Continuous stakeholder process		Sound Mitigation by Bubble Curtains Stakeholder trust	
Coordinated Environmental Monitoring : Examples from Belgium and O&G in Norway Stakeholder involvement, transparency of data , trust			
Research on Cumulative Effects: CEF (Scotland) and MARCIS (2021-2025) (Norway) Stakeholder trust			



# Concluding remarks

Large planned expansion in the Nordics entails challenges and opportunities

Significant offshore experience to build upon

Important to leverage existing Nordic frameworks for data collection and cumulative impact assessments

Important to establish dialogue and multi national processes for marine spatial planning at sea basin-wide scales to understand and accommodate biodiversity and stakeholders



# What's next



Organizer: *Nordic Energy Research*

Partners:

- International Union for Conservation of Nature (IUCN)
- World Wide Fund for Nature (WWF)
- The Biodiversity Consultancy
- DNV
- SSE

[GLASGOW: Wind Win – Communities & Conservation | Nordic cooperation \(norden.org\)](https://norden.org)

## GLASGOW: Wind Win – Communities & Conservation



Photographer: Cor Loffra Photography

Publication at [Norden.org](https://norden.org) in January 2022

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# Thank you