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# Offshore renewable energy vs. high seas freedoms: The need for Marine Spatial Planning in areas beyond national jurisdiction

Suzette V. Suarez<sup>1</sup> Paul Elsner<sup>2</sup>



**OPPORTUNITIES AND CHALLENGES IN THE GOVERNANCE OF THE PLANET OCEAN  
ABLOS X, 8-9 October 2019, IHO, Monaco**

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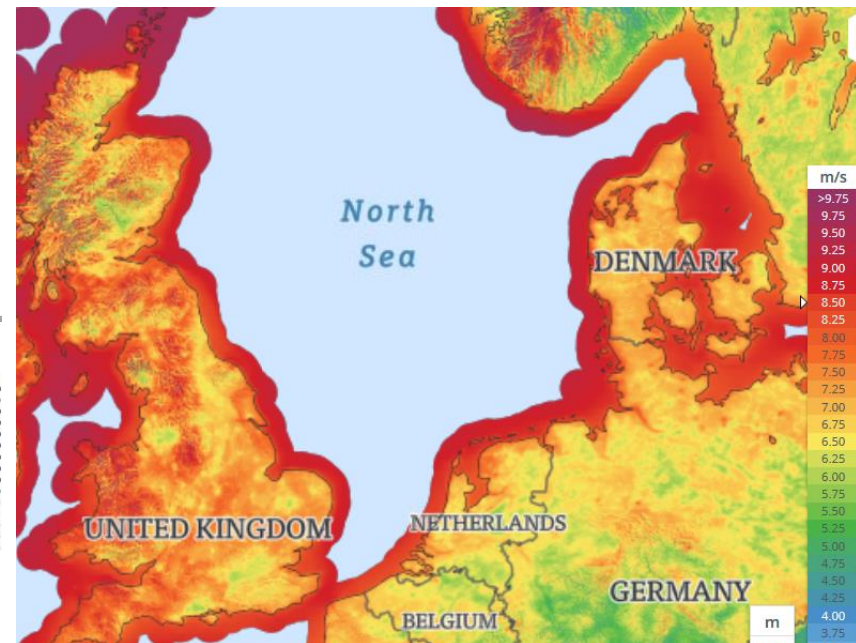
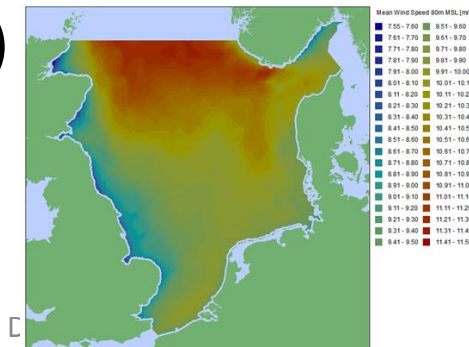
# Wind Energy – why going offshore?

- Better resource, stronger and more stable winds
- Cubed relationship between wind speed and

wind power:

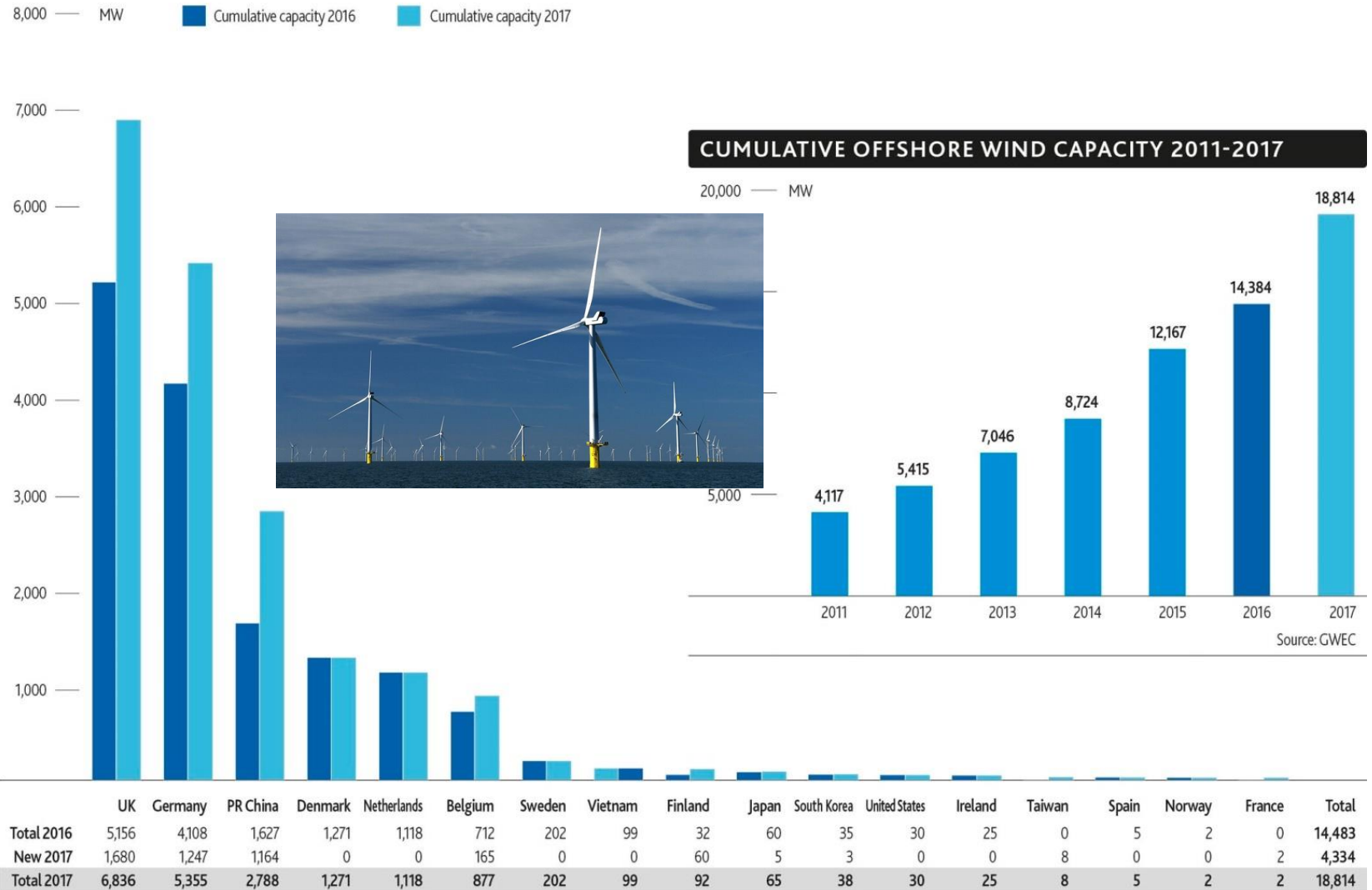
$$P_w = \frac{1}{2} \rho A v^3$$

- 25% increase of wind speed from 8m/s to 10 m/s results in 100% increase in power extraction.
- Larger project scale:  
onshore wind farms 20-50 MW  
offshore 300 to >1000 MW
- Less planning restrictions
- More space (?)



# Offshore Wind: From experimental technology to maturing industry in 15 years

## GLOBAL CUMULATIVE OFFSHORE WIND CAPACITY IN 2017



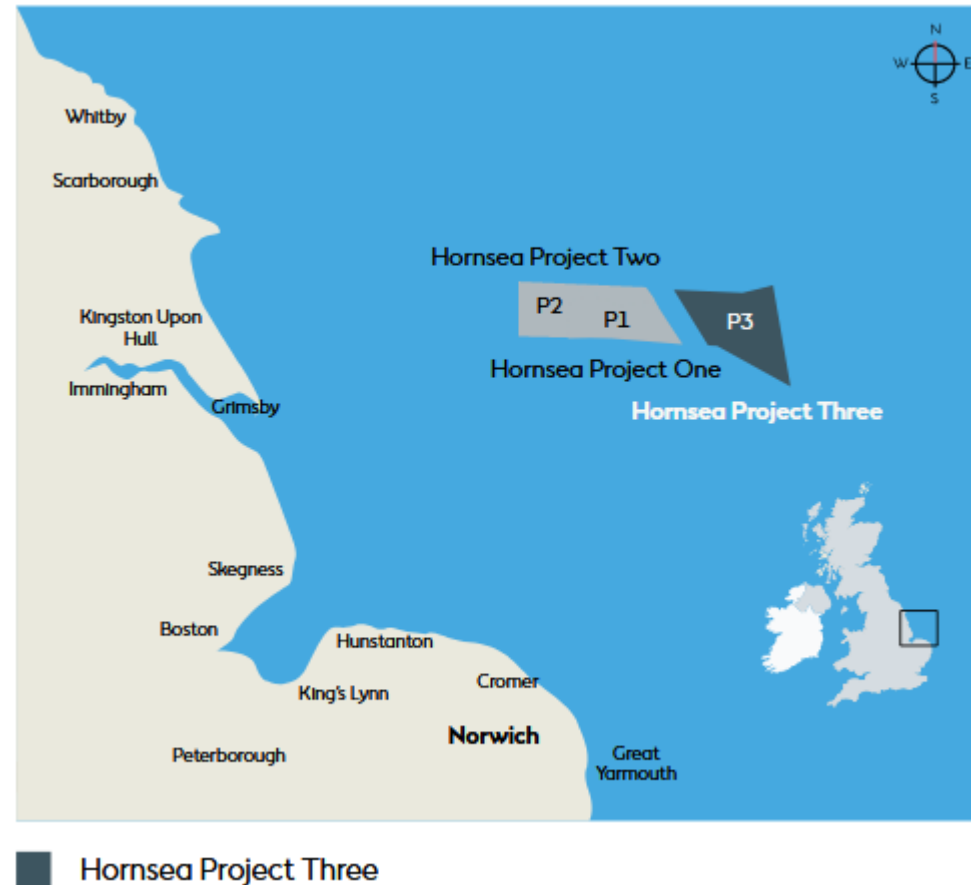
# Wind energy – need for space

Example Hornsea wind project

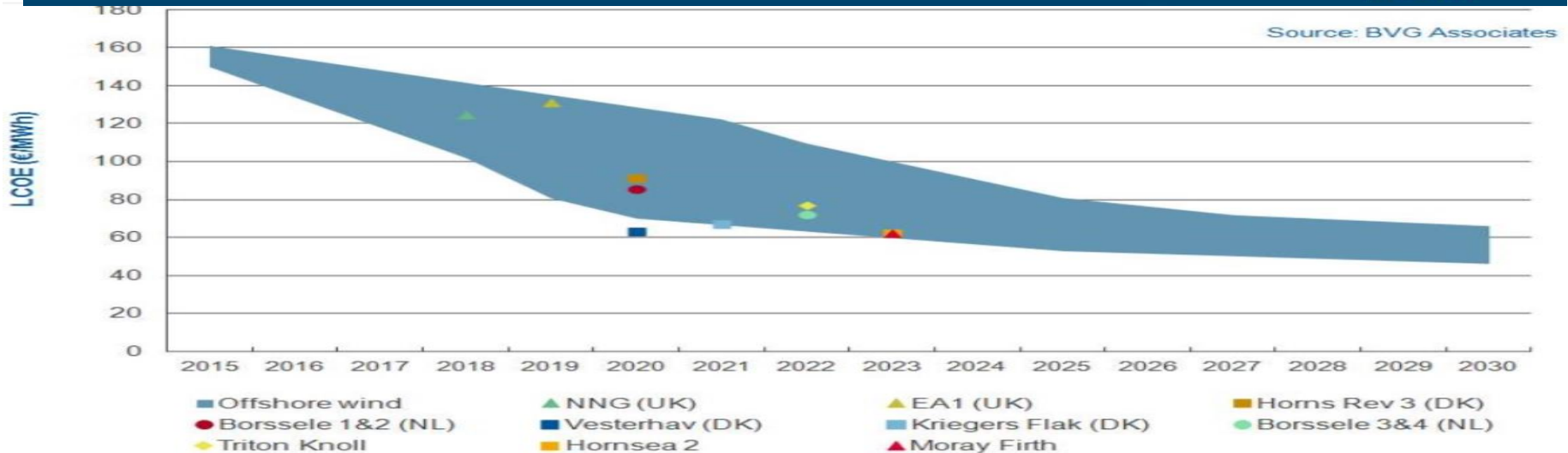
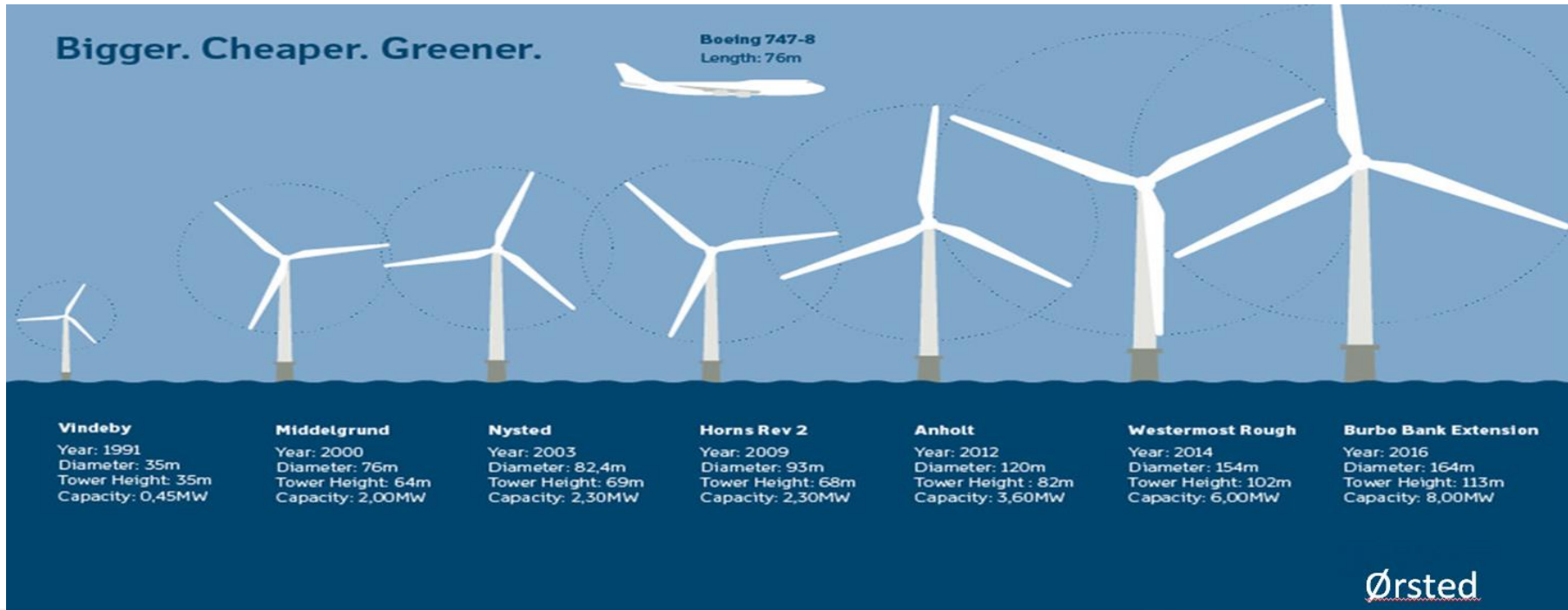
- Hornsea 1 (2017):  
1.2 GW, 400 km<sup>2</sup>
- Hornsea 2 (2022):  
1.3 GW, 420 km<sup>2</sup>
- Hornsea 3 (2025):  
2,4 GW, 670 km<sup>2</sup>

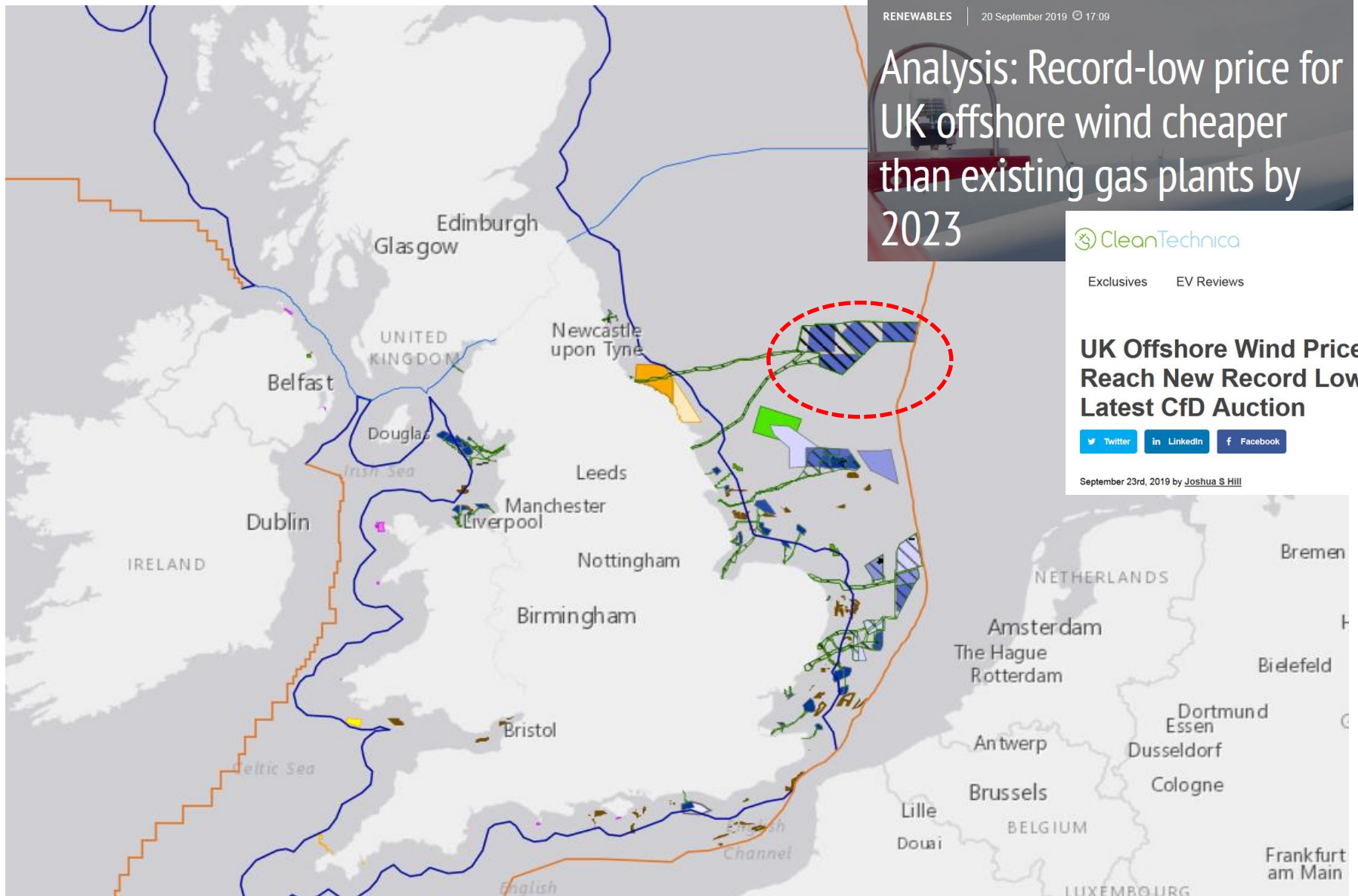
Hornsea Total: ~1500 km<sup>2</sup>

Malta: 316 km<sup>2</sup>



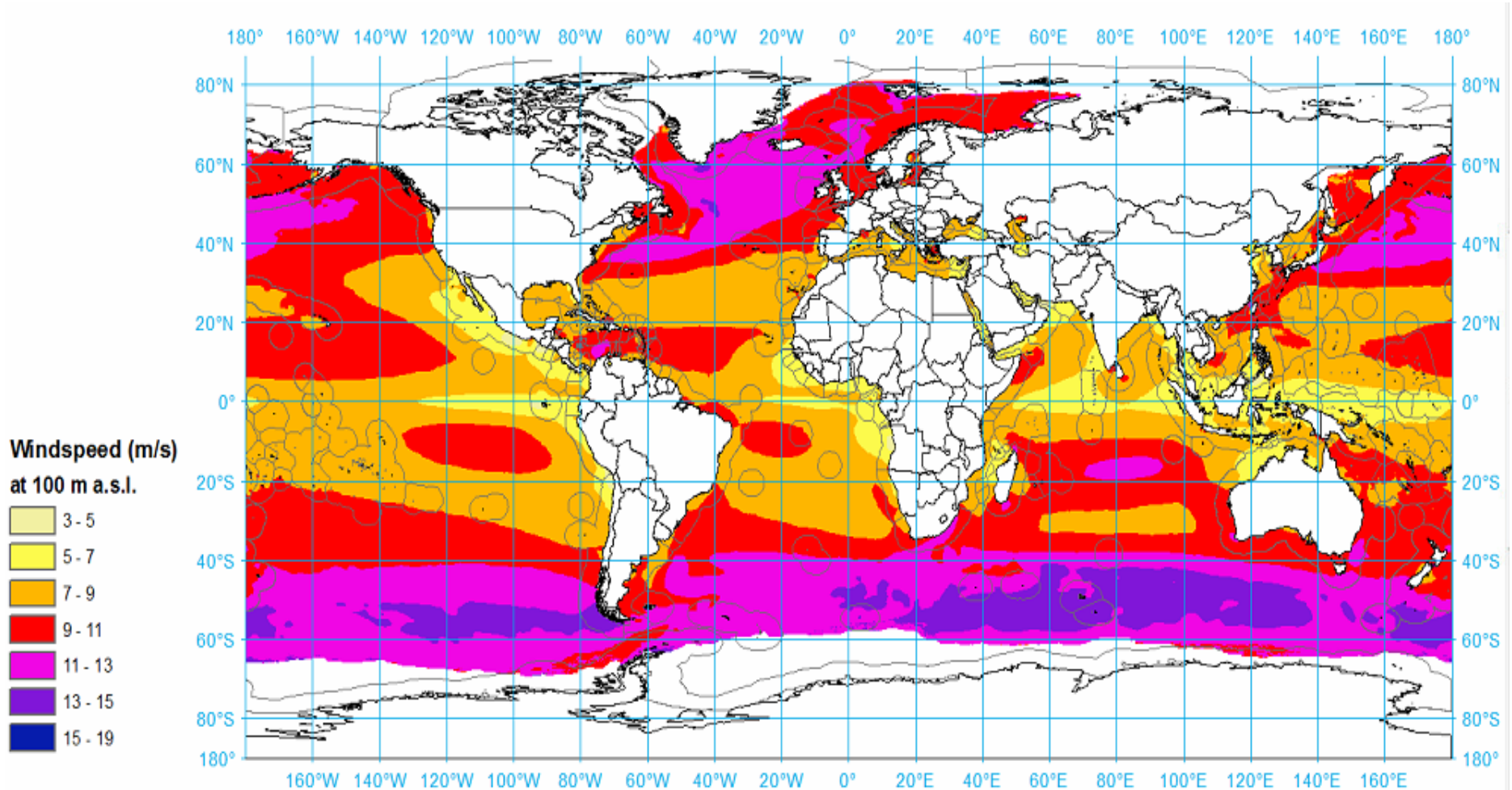
# Turbine size and cost reductions





- Offshore wind: from highly-subsidized proof of concept technology in 2000s to mature and cost-competitive industry

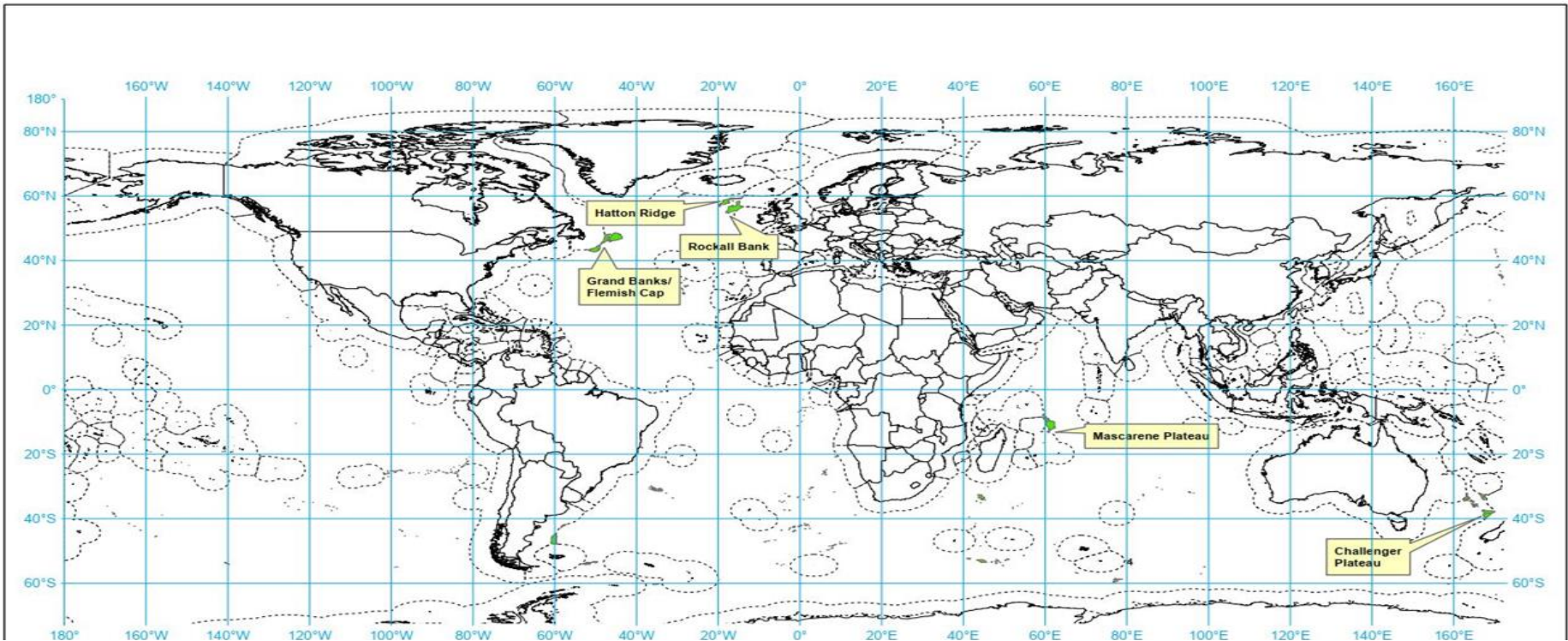
# Global offshore wind resource



Elsner (2019)



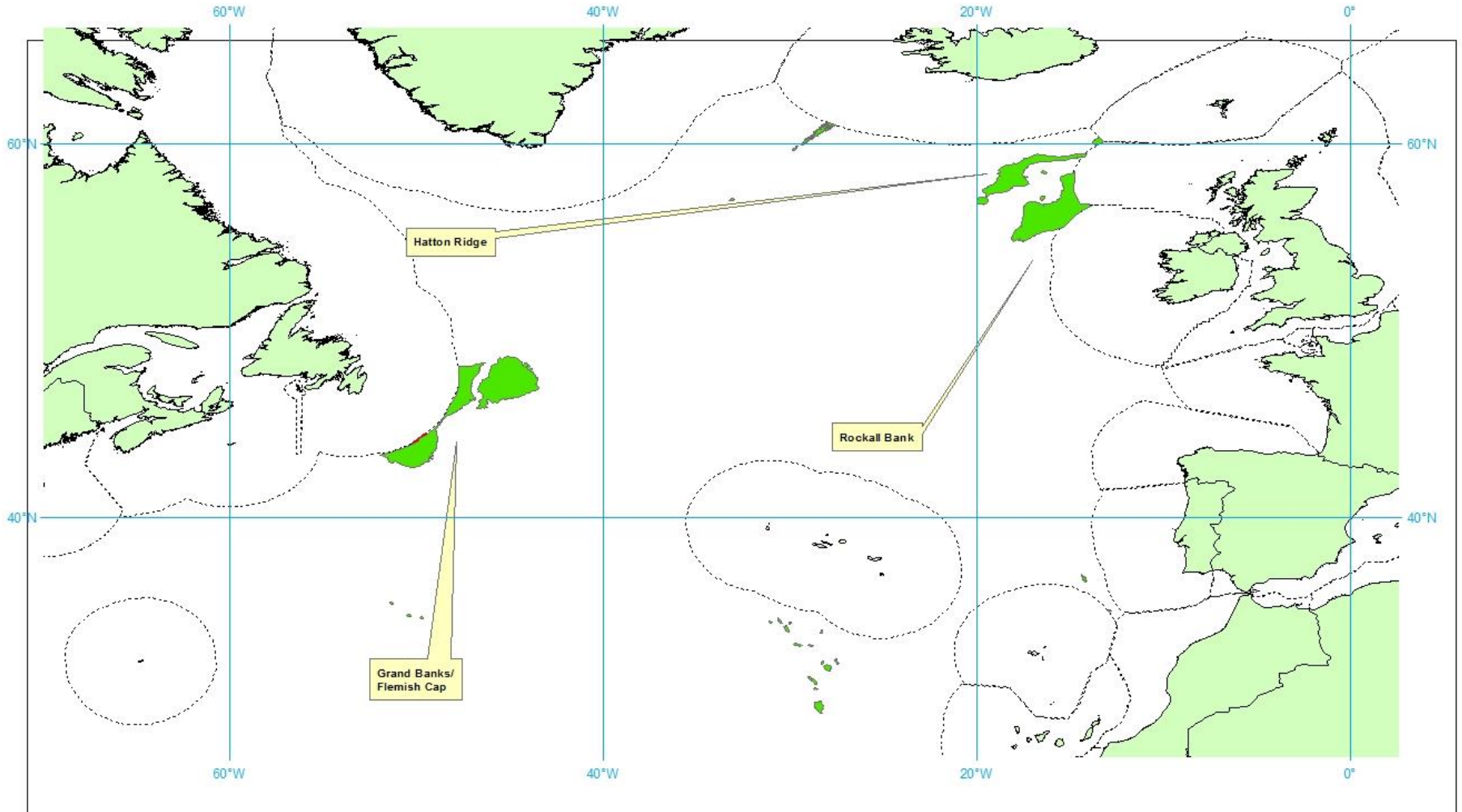
# Offshore wind potential on high seas



The five largest areas with offshore wind energy potential on the high seas in the *deep water* case, i.e. having water depths of < 1000 m.

Feature	Size (km <sup>2</sup> )	Wind Speed at 100 m	Technical Capacity	Annual Energy Production	Extended Continental Shelf
Grand Banks/ Flemish Cap	90,413	8.9–10.7 m/s	271.2 GW	2025.3 TWh	Yes (Canada, claimed)
Mascarene Plateau	70,161	8.3–9.5 m/s	210.5 GW	928.1 TWh	Yes (joint submission of Seychelles and Mauritius, confirmed)
Rockall Bank	40,720	12 m/s	122.2 GW	799.6 TWh	Yes (claimed by Denmark/Faroe Islands, Iceland, Ireland, UK)
Challenger Plateau	35,504	9.8–10.1 m/s	106.5 GW	534.6 TWh	Yes (New Zealand, confirmed)
Hatton Ridge	21,055	12.1 m/s	63.2 GW	418.4 TWh	Yes (overlapping claims by Denmark/Faroe Islands, Island, Ireland, UK)

# Offshore wind potential areas in North Atlantic



# Offshore windparks on the high seas

## Triggers of legal questions

- Location of the windparks



- Size/area of windparks and life cycle

- Renewable (inexhaustible) nature of wind resource

# Offshore wind on the high seas

## Triggers of legal questions



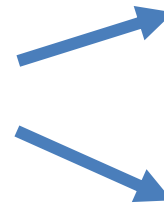
### Location of the windparks

- Legal regime – High seas

Issue: Legal status of windturbine – vessel/ship (floating windturbine) or artificial installation?

Issue: Conflicting or competing with other high seas freedoms

- Located on or connected to the seabed of another legal regime



Extended continental shelf

The Area

Issue: Exclusive flag State jurisdiction, no overarching management system

-Due regard principle applies - but this is not a management tool

# Offshore windparks on the high seas

## Triggers of legal questions

- Location of the windparks



- Size/area and scale of windparks and life cycle

- Renewable (inexhaustible) nature of wind resource

# Offshore windpark - Size and scale matter!!!



Economic life cycle – minimum 30 years; wind turbines can be replaced, so life cycle gets extended

**Issue: Is this semi-permanent?**

Huge area: e.g. Hornsea One, UK spans an area bigger than Malta!

**Issue: Will this practically be a sovereignty claim?**

*Article 89*

*Invalidity of claims of sovereignty over the high seas*  
No State may validly purport to subject any part of the high seas to its sovereignty.

# Offshore windparks on the high seas

## Triggers of legal questions

- Location of the windparks



- Size/area of windparks and life cycle

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# Offshore windparks on the high seas

## Triggers of legal questions

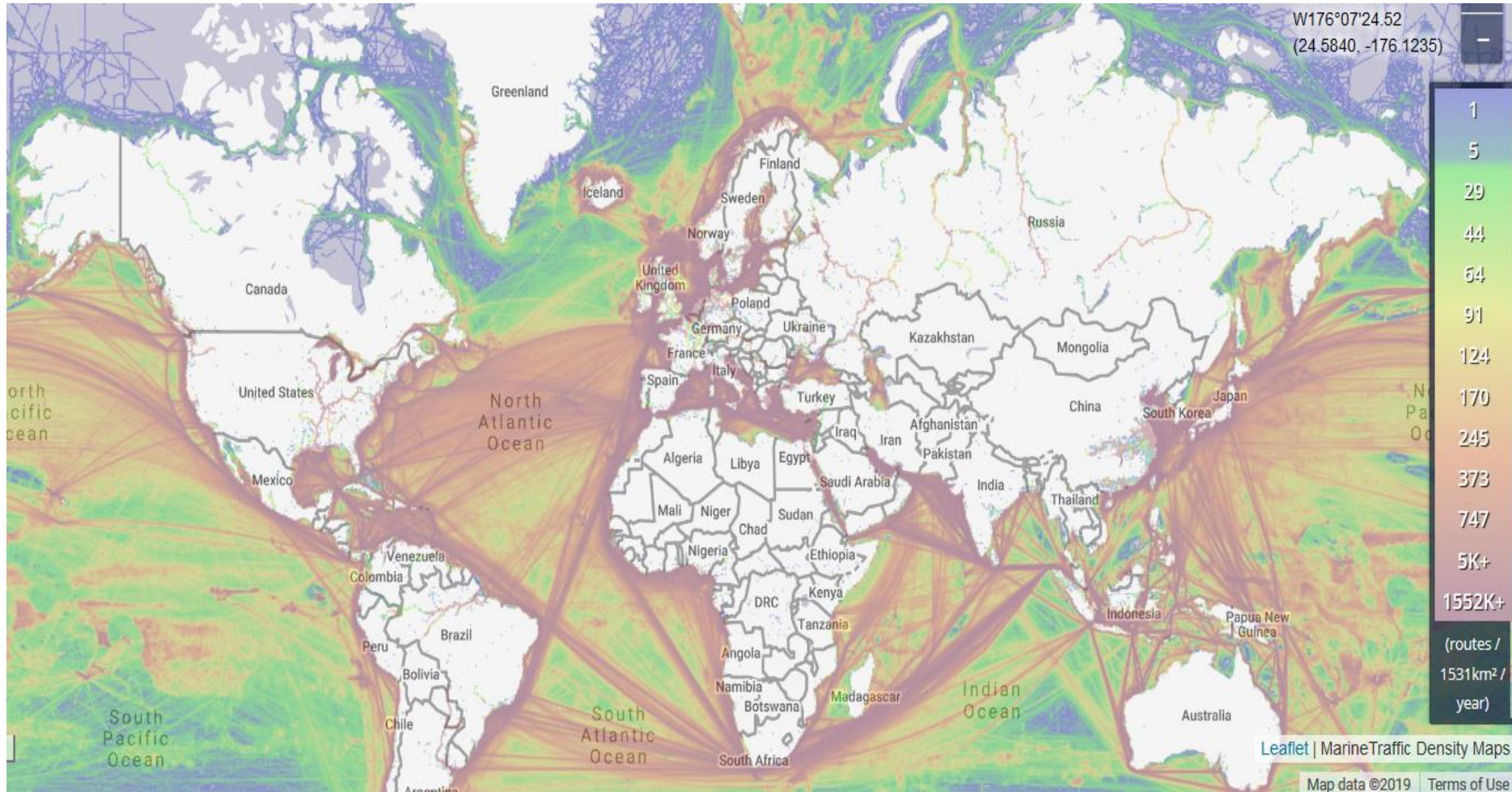


Renewable (inexhaustible) nature  
of wind resource

**Issue: Shouldn't wind resource in areas  
beyond national jurisdiction be classified as a  
common resource, common heritage of  
mankind?**



# Offshore windpark v. other high seas freedoms



Q: Will offshore windparks compete or conflict on other high seas freedoms?

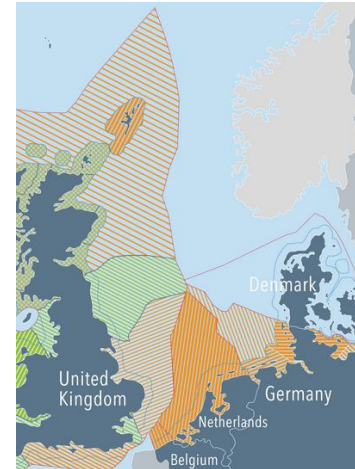
# Marine Spatial Planning (MSP)

‘Maritime spatial planning’ means a process by which the relevant Member State’s authorities analyse and organise human activities in marine areas to achieve ecological, economic and social objectives.

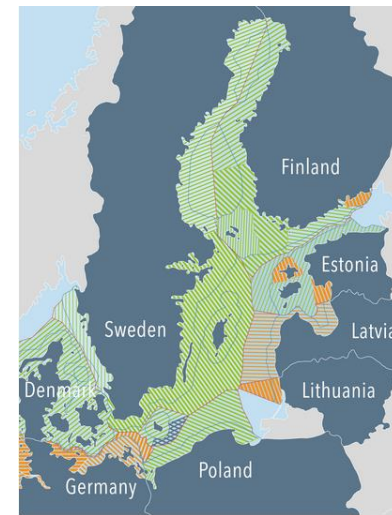
EU Directive for MSP  
Directive 2014/89/EU

MSP is a type of area-based management tool and is applied together with marine protected areas.

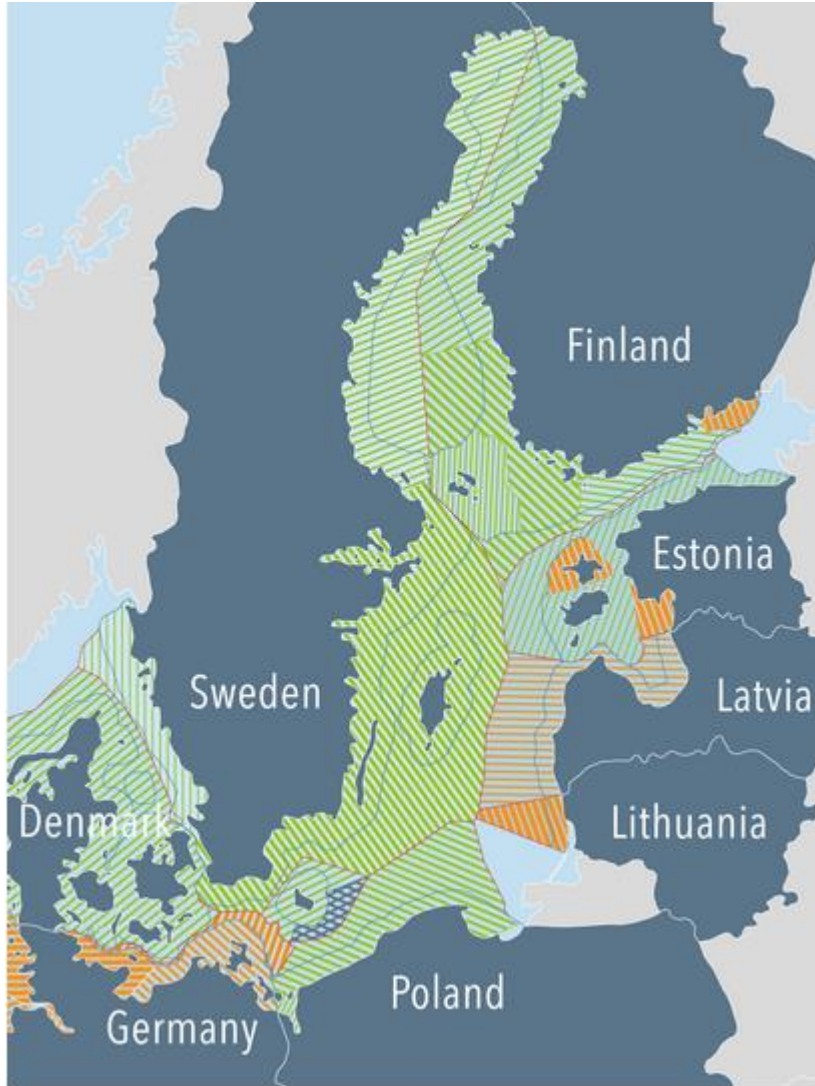
North Sea



Baltic Sea



# Baltic Sea MSP



- Baltic coastal system – is a breeding and nursery ground for many fish and invertebrates, and deeper waters provide habitat for pelagic fish, such as herring and sprat.

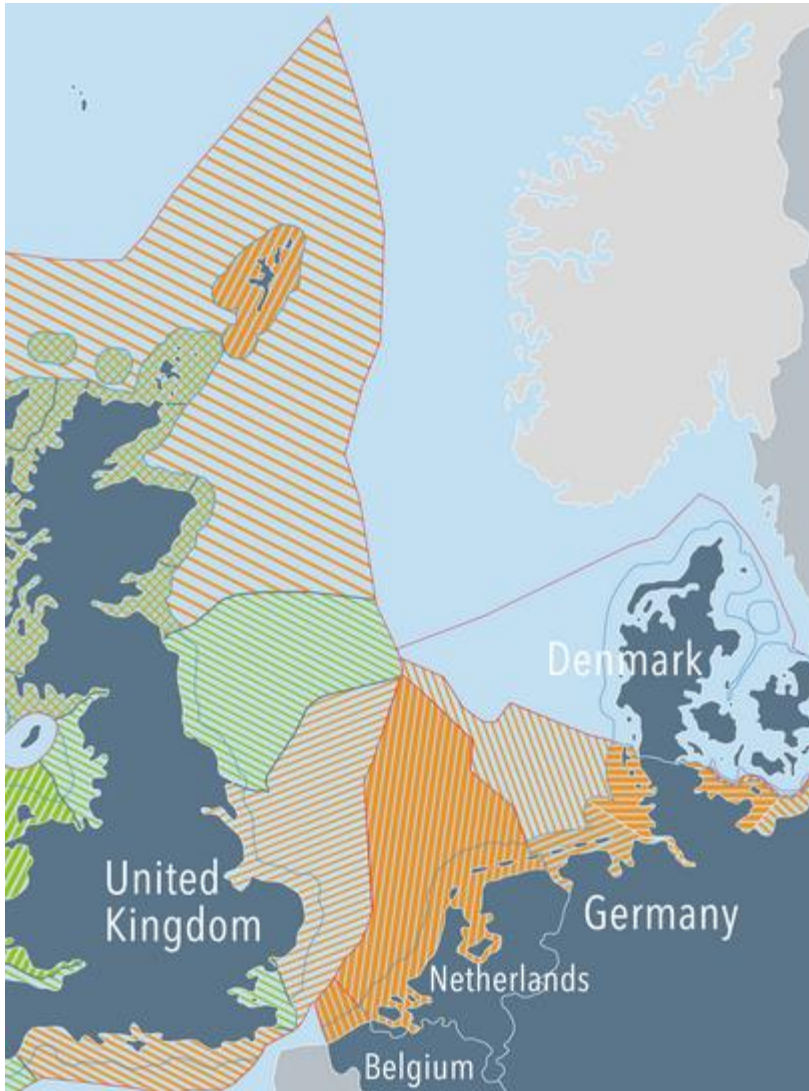
Competing uses: shipping, fisheries, wind farms or mineral extraction

MSP efforts since 2007

- HELCOM's Baltic Sea Action Plan – more coherent management of all human activities
- MSP Working Group – represented by governmental institutions in charge of MSP

Source: MSP Platform

# North Sea MSP



Source: MSP Platform

- Uses: extensive shipping, fishing, energy (hydrocarbon and offshore wind), aggregate extraction, defence, recreation and includes 2 of the world's largest ports (Rotterdam and Hamburg).
- Areas for conservation: includes the Dogger Bank in the southern North Sea, which is protected under the EC Habitats and Birds Directive (with different approaches) by the countries which include this area within their EEZ (UK, Netherlands, Germany and Denmark).
- The whole North Sea - a special area under Annex V of the MARPOL Convention (the International Convention for the Prevention of Pollution from Ships) where release and disposal of garbage and other domestic wastes from ships are prohibited.
- MSP Efforts – mostly individual MSPs to implement EU MSP Directive; recently a collaborative MSP pilot project for energy, shipping and nature protection

# MSP on the high seas - challenges

- No mentioned of any Area-based Management Tool (ABMT) such as MSP in UNCLOS
- Some UNCLOS provisions indicate support for ABMT, MSP: Preamble, Duty of cooperation, duty to protect and preserve marine environment, duty to conduct EIA
- But there is a need for a clear legal basis – similar to the EU Directive on MSP.
- Lack of central authority on the high seas
- Existence of discrete regional organizations and international organizations each with their own mandates
- How to address institutional challenge?  
Central authority or network of authorities?

# MSP on the high seas - prospects

Prospect for a clear legal basis of MSP on the high seas -

**HIGH**

**Intergovernmental Conference on an international legally binding instrument under the United Nations Convention on the Law of the Sea on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction (General Assembly resolution 72/249)**

Four major themes in the draft text (A/CONF.232/2019/6):

1. Marine genetic resources
2. **Area-based management tools, including marine protected areas**
3. Environmental impact assessment
4. Capacity Building and transfer of marine technology

Fourth and last session of the conference is scheduled in 2020! (most likely will be extended...)

# Conclusions

1. Offshore windparks on the high seas are technologically feasible and economically competitive.
2. Along with other established and emerging economic activities, offshore windpark on the high seas will cause conflicting and competing demands for space on the high seas.
3. The legal regime on the high seas based principally does not include an over-arching management system.
4. For the successful implementation of area-based management tools such as the MSP on the high seas, a strong legal basis is required. The ongoing negotiation for an implementing agreement on marine biodiversity on the high seas will hopefully result to an agreement and the provisions on area-based management tools will hopefully provide such clear legal basis for MSP on the high seas.
5. In addition to a strong clear legal basis, for an MSP to be successfully implemented, any new agreement must include a corresponding institutional support. The Baltic Sea practice as well as the cooperative project involving North Sea States are examples of best practices of cross-border cooperation on MSP.

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Thank you for  
your attention.

*Vielen Dank!*

Maayong  
Salamat!