OFFSHORE WIND IN S.E. EUROPEAN SEAS
Challenges & Opportunities

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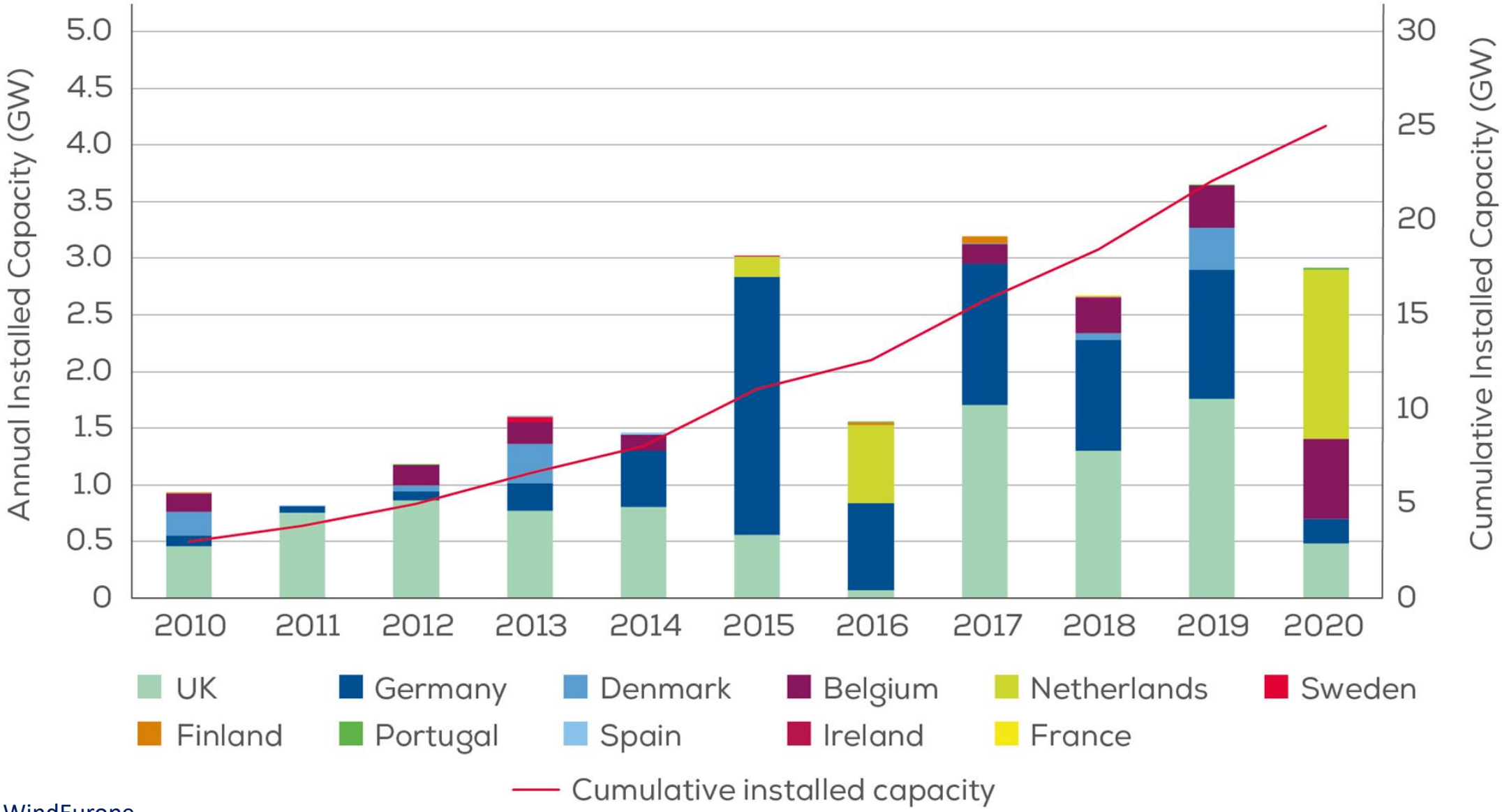
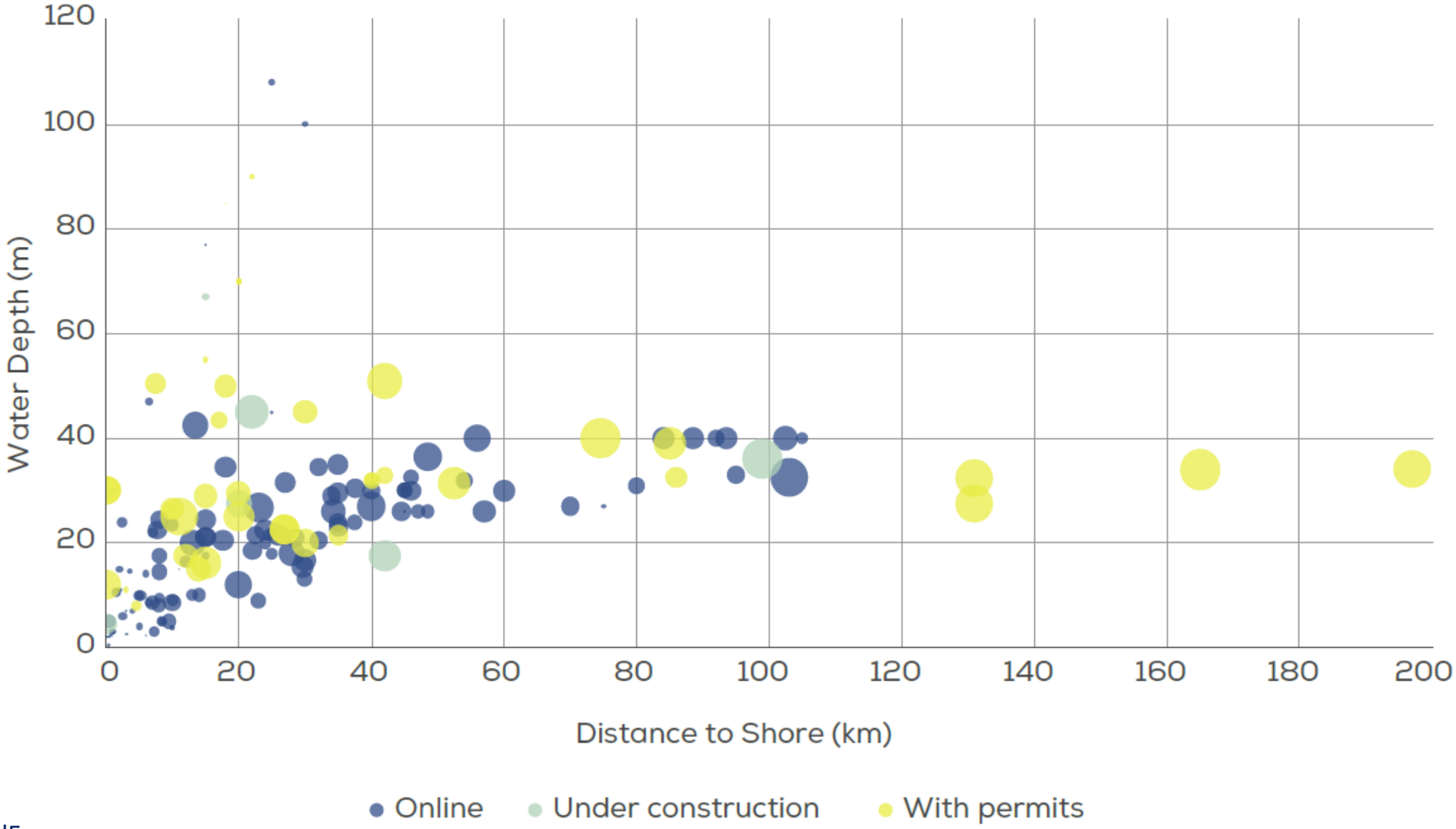
Photo: Poseidon Rising, Rachael Talibat

Annual Offshore Wind in Europe by country (GW)



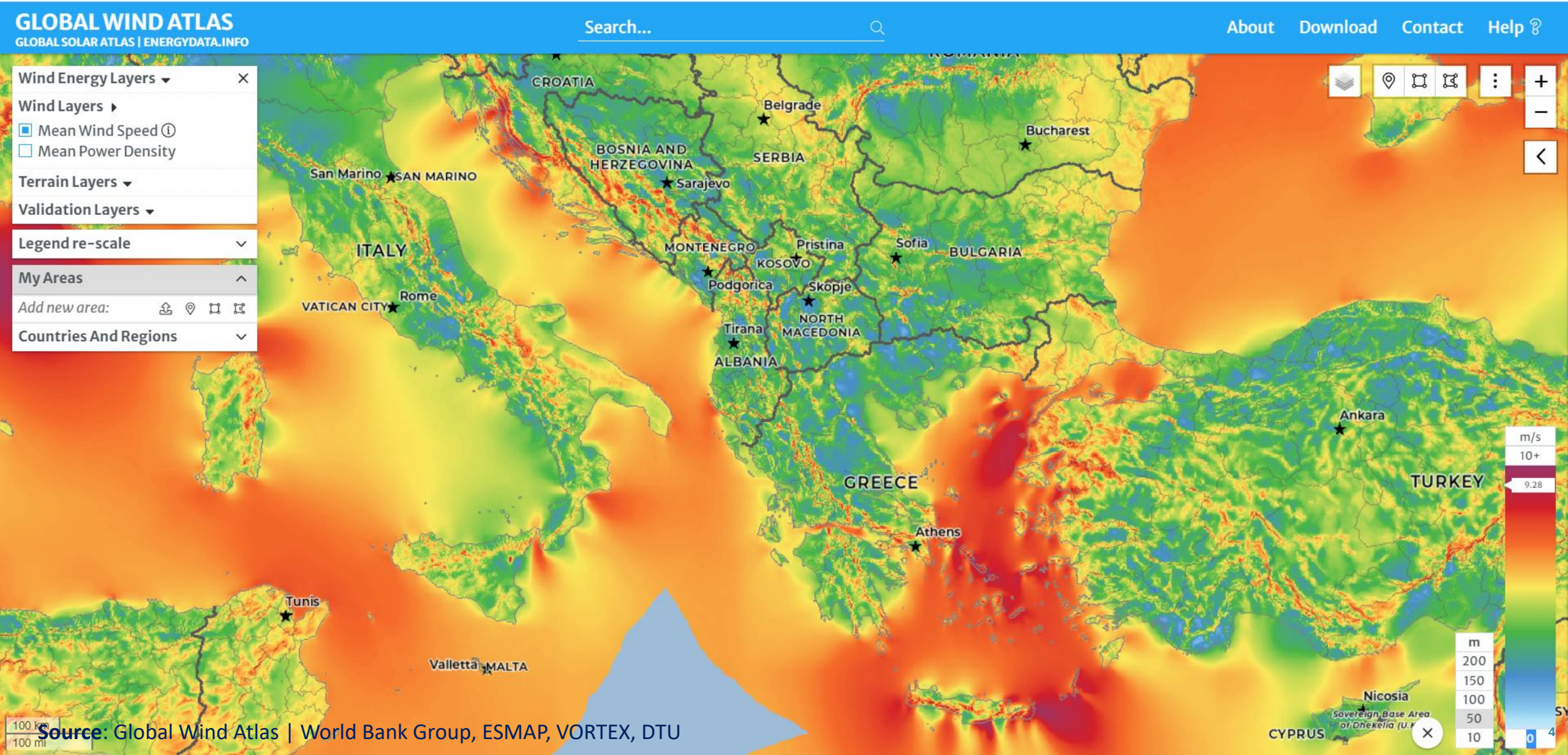
Source: WindEurope

The development has been driven by bottom-fixed offshore wind



Source: WindEurope

The opportunity of the S.E. European seas



Source: Global Wind Atlas | World Bank Group, ESMAP, VORTEX, DTU

Why offshore wind at S.E. European seas

Hywind FOW, Scotland, 5x6MW

- Significant resource potential
- Limited impacts or potential conflicts with other human activities
- Opportunity for further developing existing maritime industries and supply chains
- Increase energy independence and security of supply
- Renewable energy expansion with simultaneous protection to marine ecosystems

The winds of EastMed & Black Sea: Still an unexploitable source

WindFloat Atlantic, Portugal, 3x8.4MW

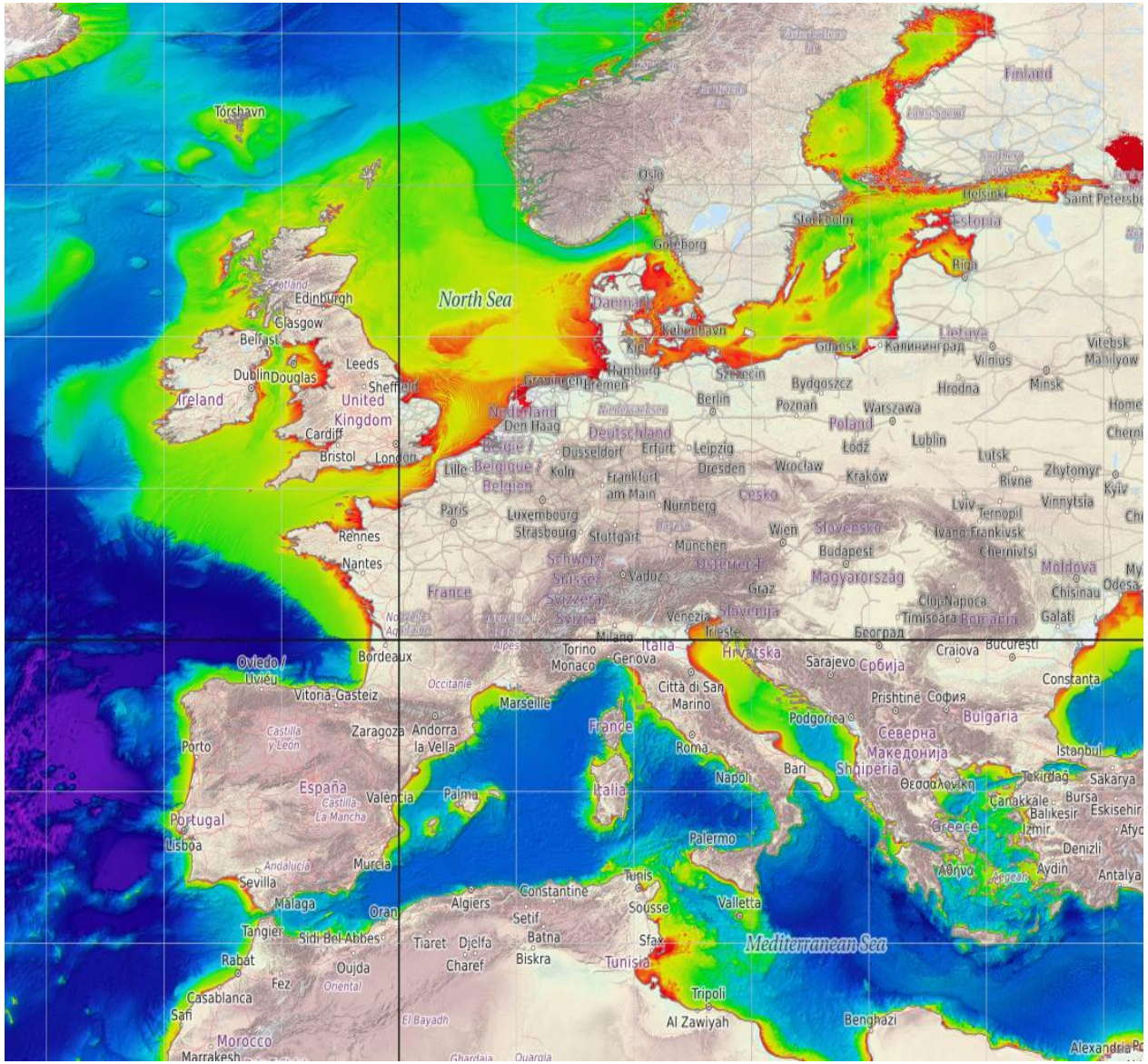
Main challenges for Offshore wind in SE Europe

- Depth of waters
- Transmission Capacity
- Maritime spatial planning
- Infrastructure (ports, shipyards)
- Political - Geostrategic challenges
- Scale-up to reduce costs

Offshore wind in Europe: Technological options and costs

Photo: Poseidon Rising, Rachael Talibat

Global challenge for floating wind - Huge potential in deep waters

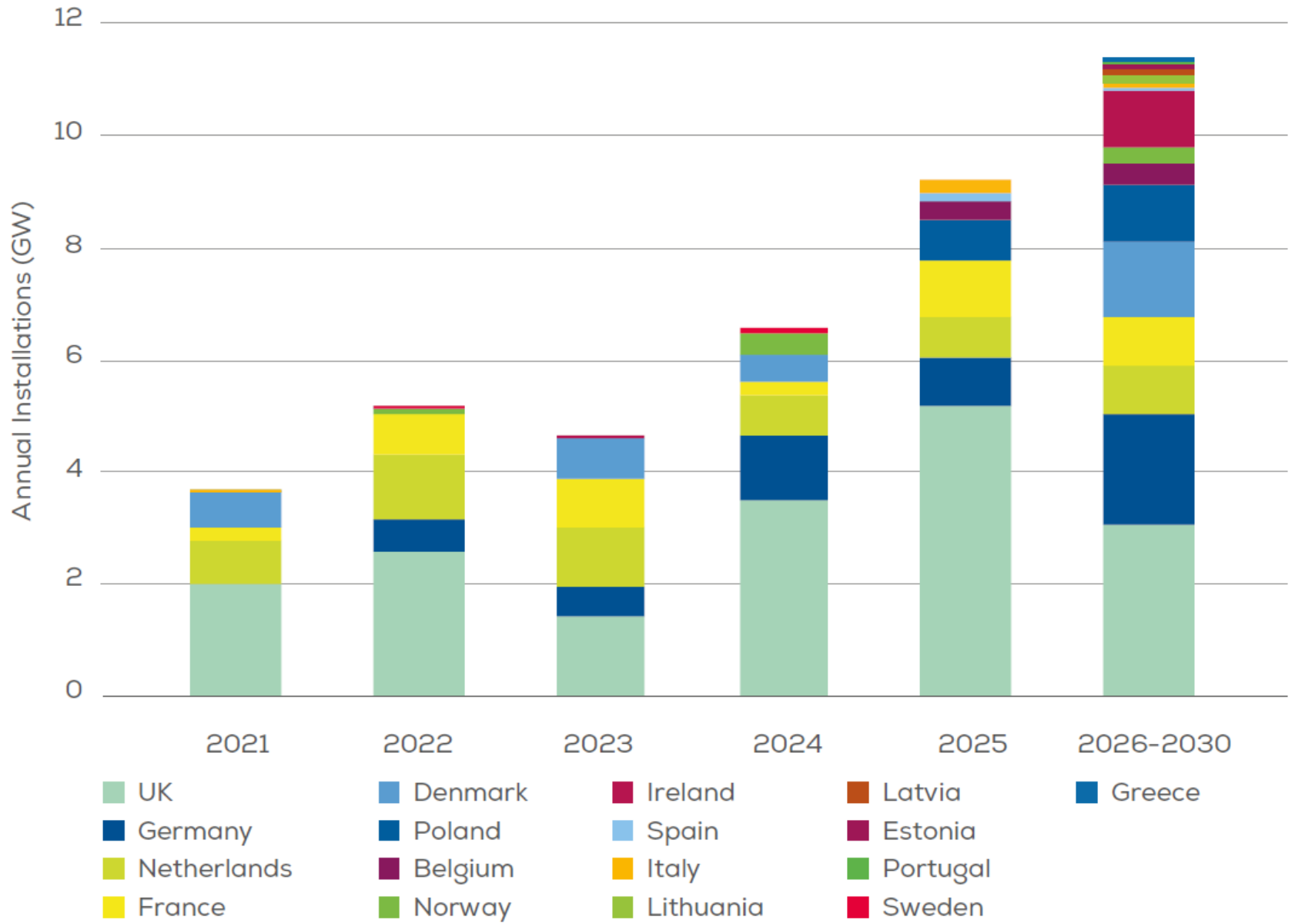


Source: EMODnet

Country/ Region	Share of offshore wind resource in +60m depth	Potential for floating wind capacity
Europe	**80%**	**4.000 GW**
USA	60%	2.450 GW
Japan	80%	500 GW

Source: CarbonTrust

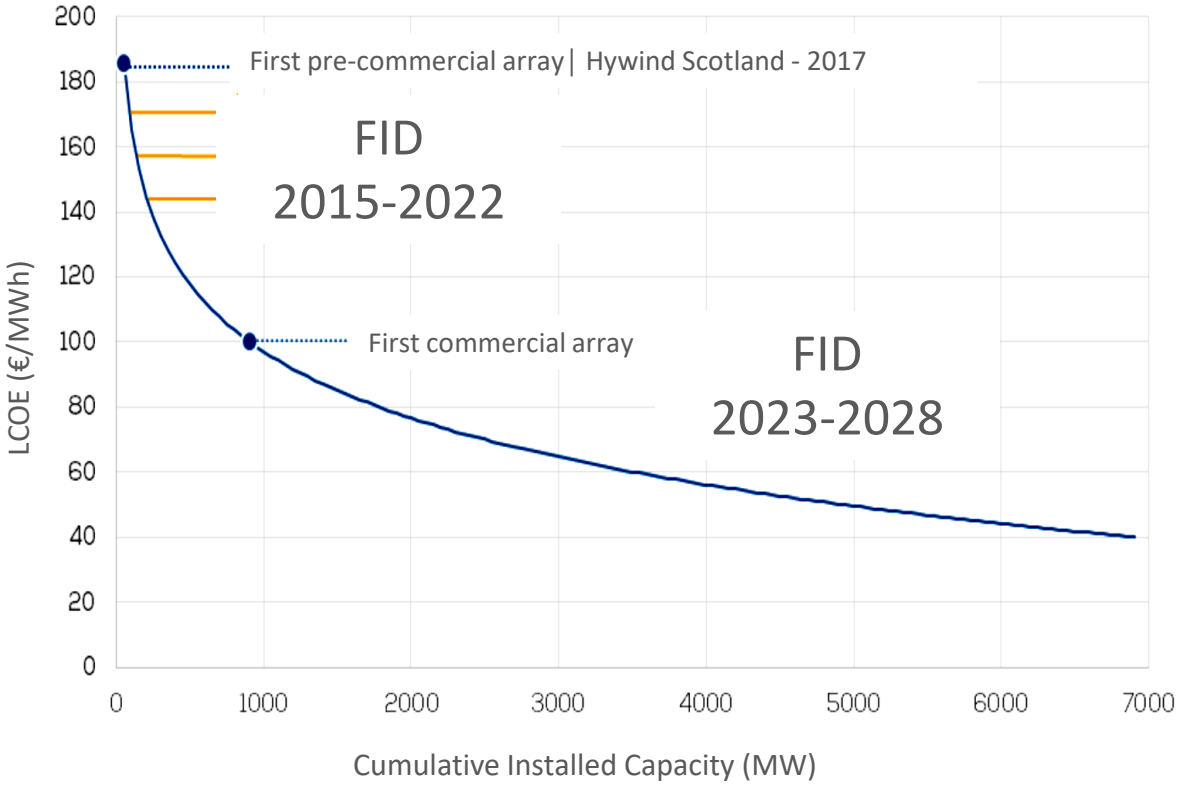
European Offshore wind outlook to 2030



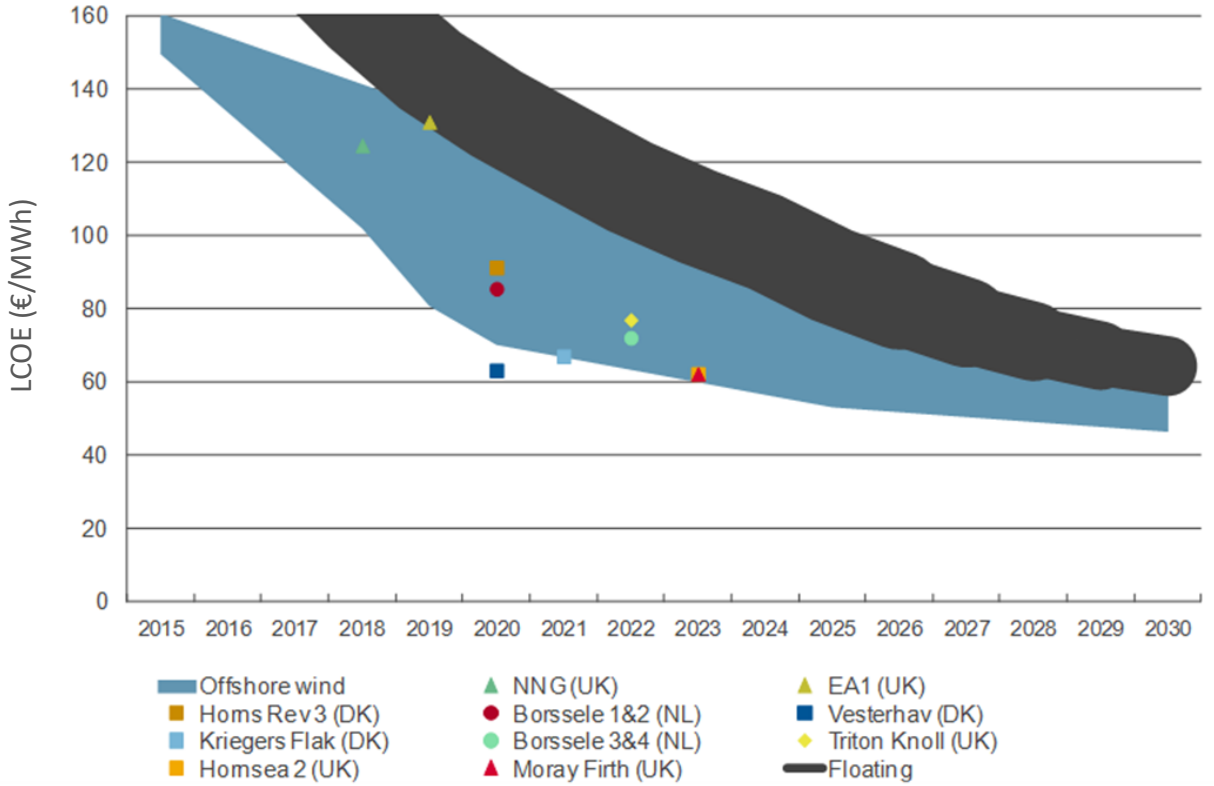
Source: WindEurope

Floating wind LCOE

LCOE decrease depending on capacity



Floating wind reaching parity with bottom fixed



Source: Wind Europe and BVG Associates

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Offshore wind in SE Europe: Four governments' challenges

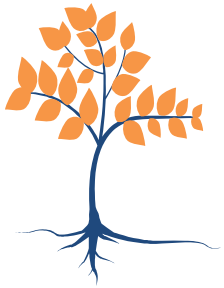
Photo: Poseidon Rising, Rachael Talibat

SE Europe offshore wind: The governments' challenge (I)

Use of maritime territories

Scaling up of offshore wind requires the use of large maritime territories and, by extension coordinated access to the seas with other users. **Coordinated spatial planning within the entire sea basins** – not only within the national borders – is crucial for wind offshore and offshore grid development. It ensures efficient use of the limited maritime space and the protection of the environment and biodiversity.

SE Europe offshore wind: The government's challenge (II)



Grid planning

Offshore wind power affects internal grid costs by affecting internal power flows and congestion patterns. This highlights the importance of **considering offshore wind power and network investment planning together.**

The importance of offshore wind can also be grasped in the context of the TEN-E Regulation. The EU's greater ambitions under the European Green Deal will require ambitious grid solutions (solutions to hybrid offshore projects, synergies with trans-European transport networks).

SE Europe offshore wind: The government's challenge (III)

Regulatory framework

Transparent criteria and clear commitments are needed for:

- ✓ the allocation of seabed and sea tenure and the granting of development rights,
- ✓ the licensing and grid connection processes,
- ✓ the remuneration schemes and the auctioned volumes.

SE Europe offshore wind: The government's challenge (IV)

Offshore wind will create synergies with other economic sectors, especially multiplying and reviving harbor, port and shipyard activities.

Significant investments in the relevant infrastructure will be required to support the construction, transport and servicing of the new installations including the floaters. To facilitate the decisions for such investments, clear and **detailed plans and national commitments** for the expected offshore wind MWs with adequate time horizon are of vital importance. Moreover, **cross-border coordination** will be needed to optimize the cost for the consumers.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Thank you!