

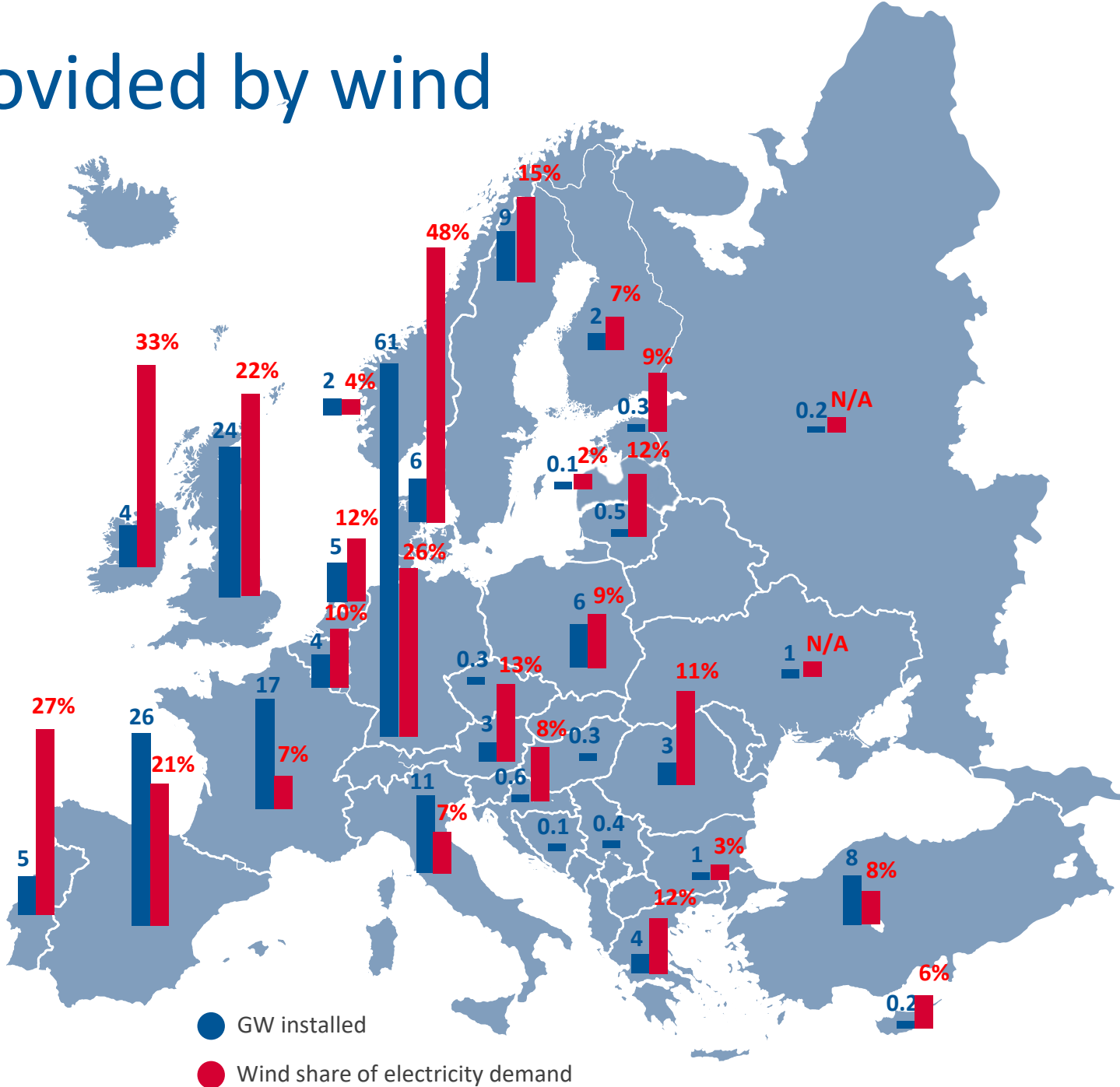
Offshore energy : how can wind contribute?

Giles Dickson, WindEurope

15% of EU power is provided by wind

205 GW

15%
of Europe's
electricity demand

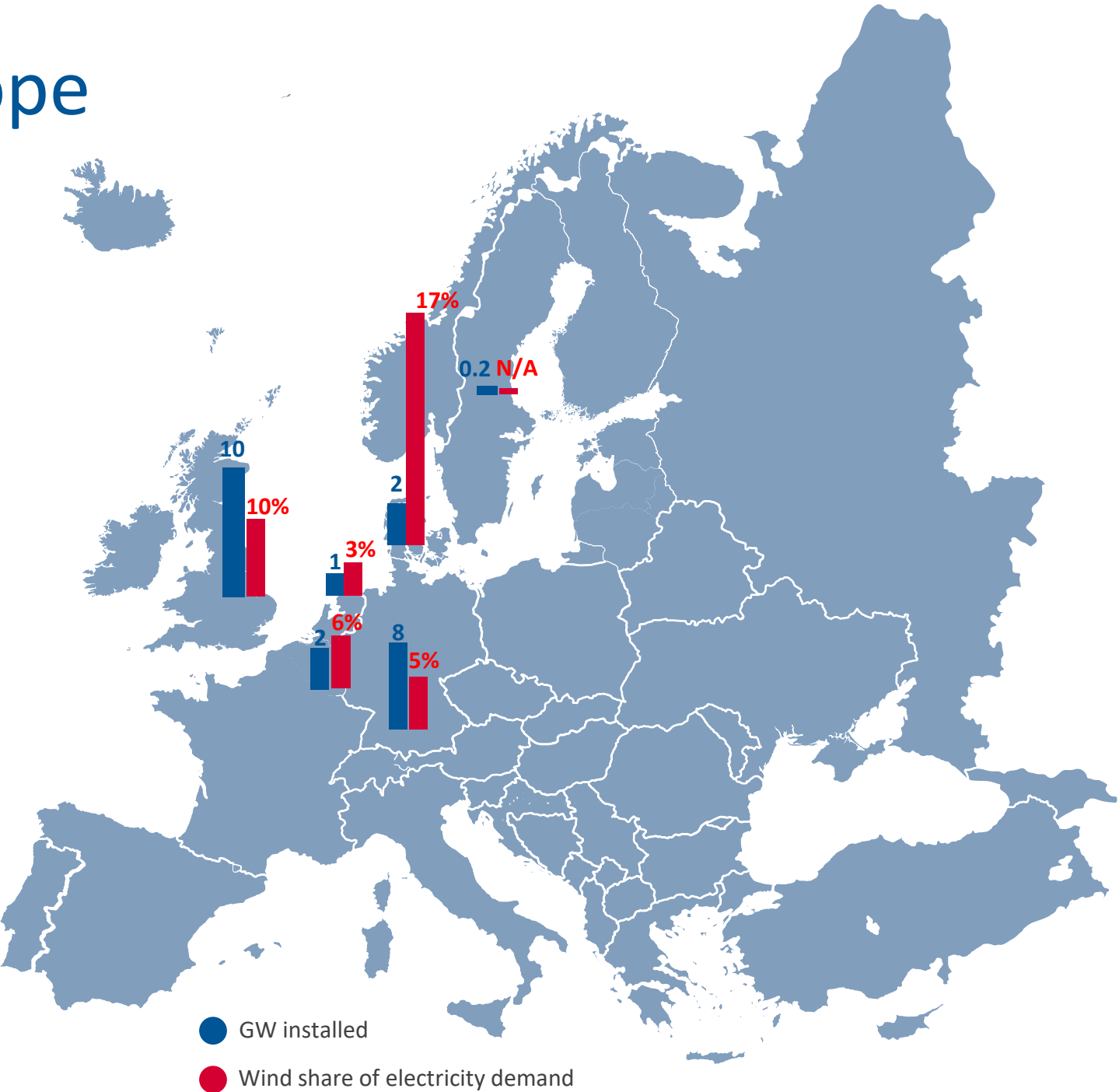


Offshore wind in Europe

22 GW

2%

of Europe's
electricity demand





€7.5bn
EU GDP
contribution

1 new offshore
wind turbine
=
€15m
to the economy

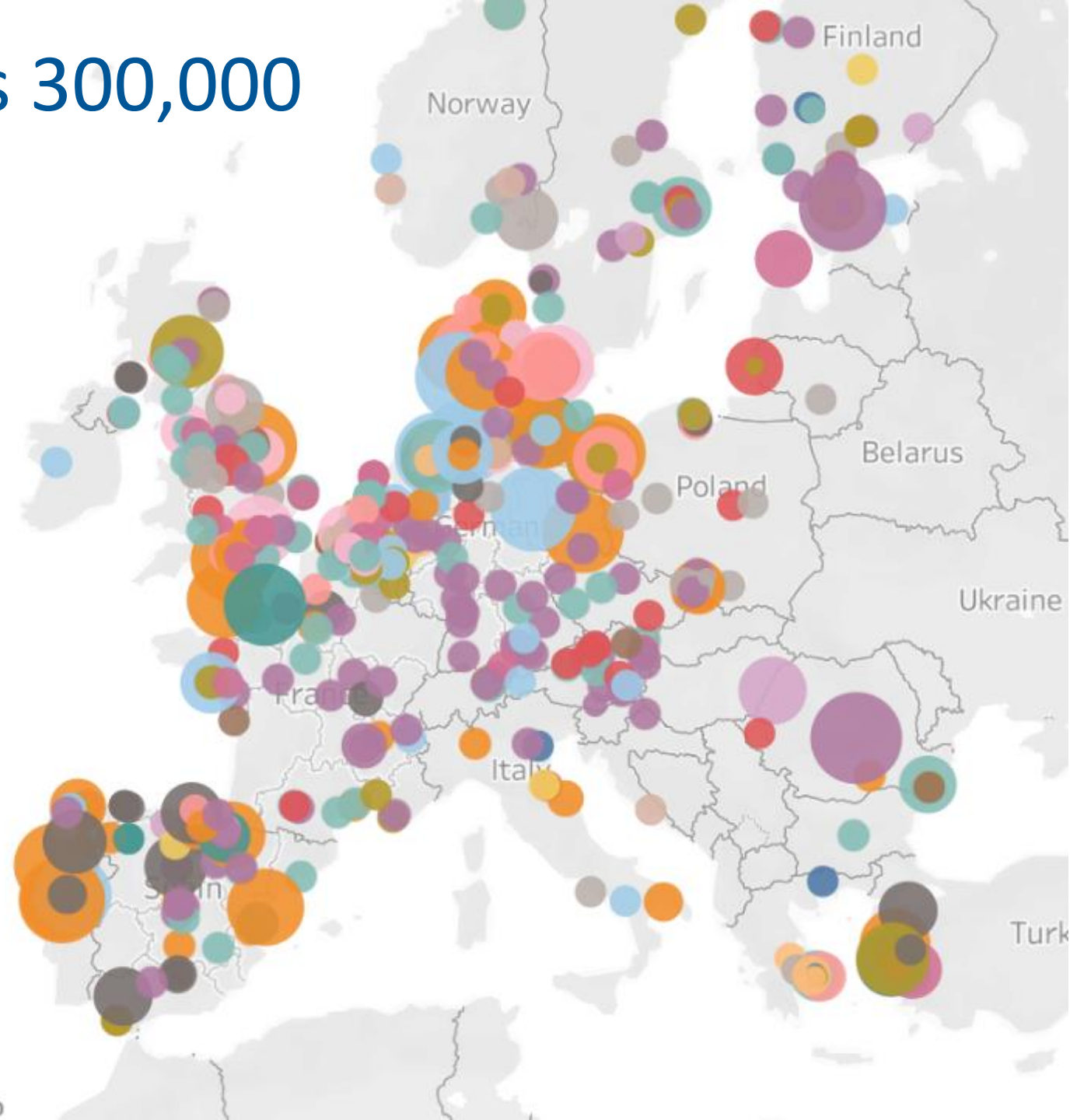


77,000
offshore jobs
in Europe
today

200,000
offshore jobs
in Europe in
2030

The full industry employs 300,000 people in Europe

- Components
- Assembly
- Blades
- Foundations
- Gearboxes
- Nacelles
- O&M
- Other
- R&D
- Towers
- Cables
- Generators
- Logistics
- Port



The offshore supply chain

Wind energy manufacturing Components

Wind sector

- Offshore*
- Onshore

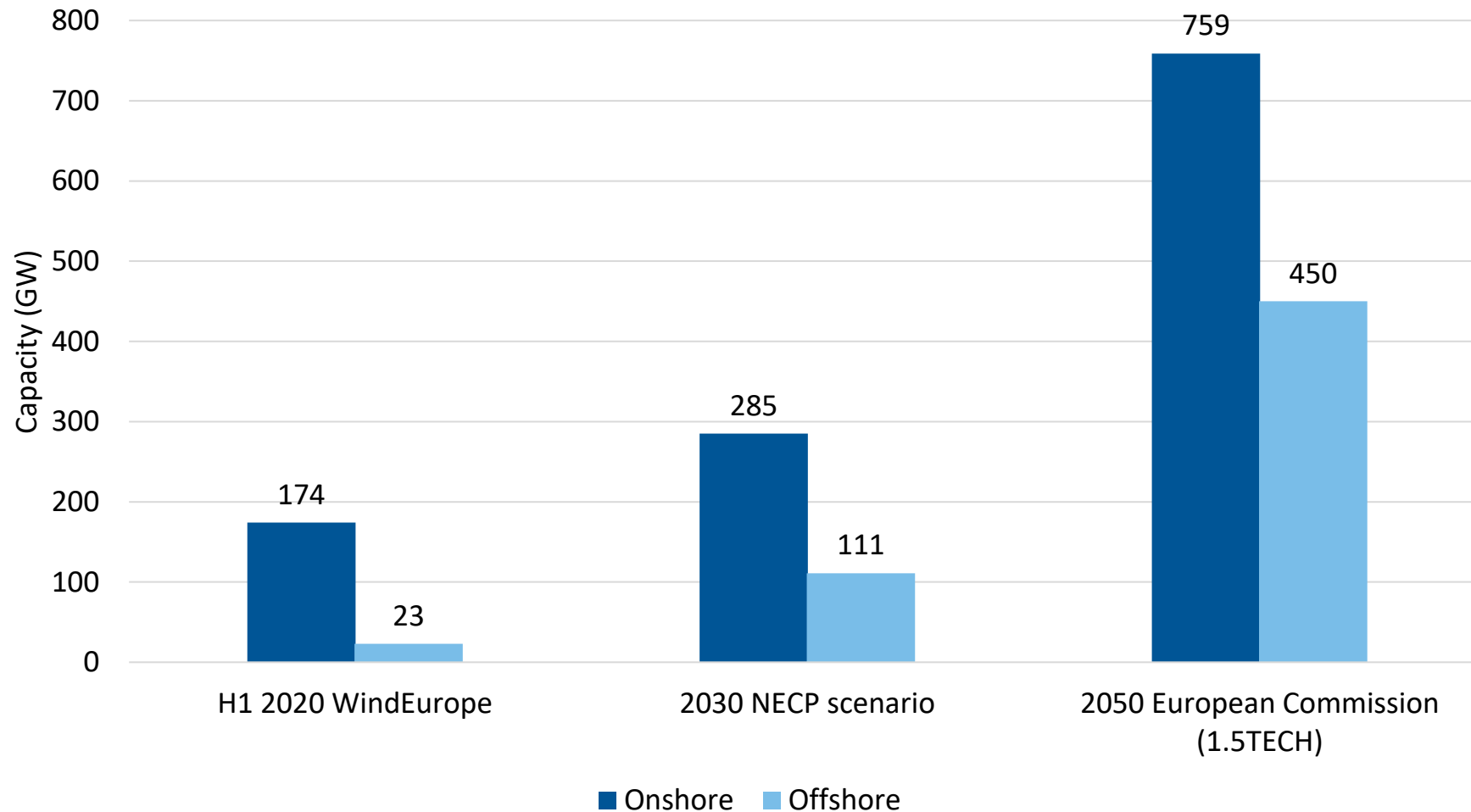
*includes facilities with joint onshore and offshore production

Components

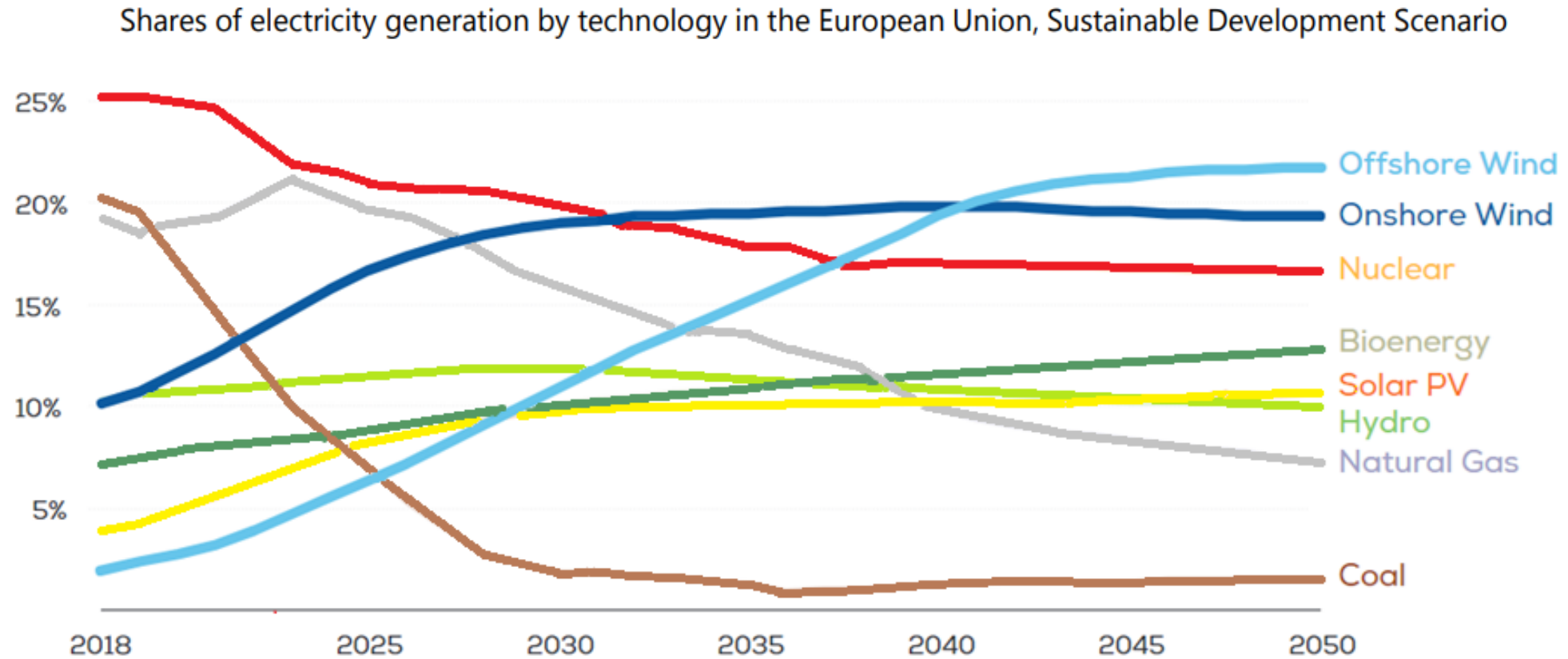
- Bearings
- Blades
- Blades & Generators
- Blades & Nacelle Assembly
- Blades & Towers
- Control Systems
- Foundation
- Foundry
- Gearboxes
- Generators
- Generators & Nacelle Assembly
- HV export cables
- Hubs & Shafts

- Inter-array cables
- Nacelle Assembly
- Offshore substations
- Power converters
- Spare Parts & Repair
- Spare Parts & Repair & Nacelle Assembly
- Towers

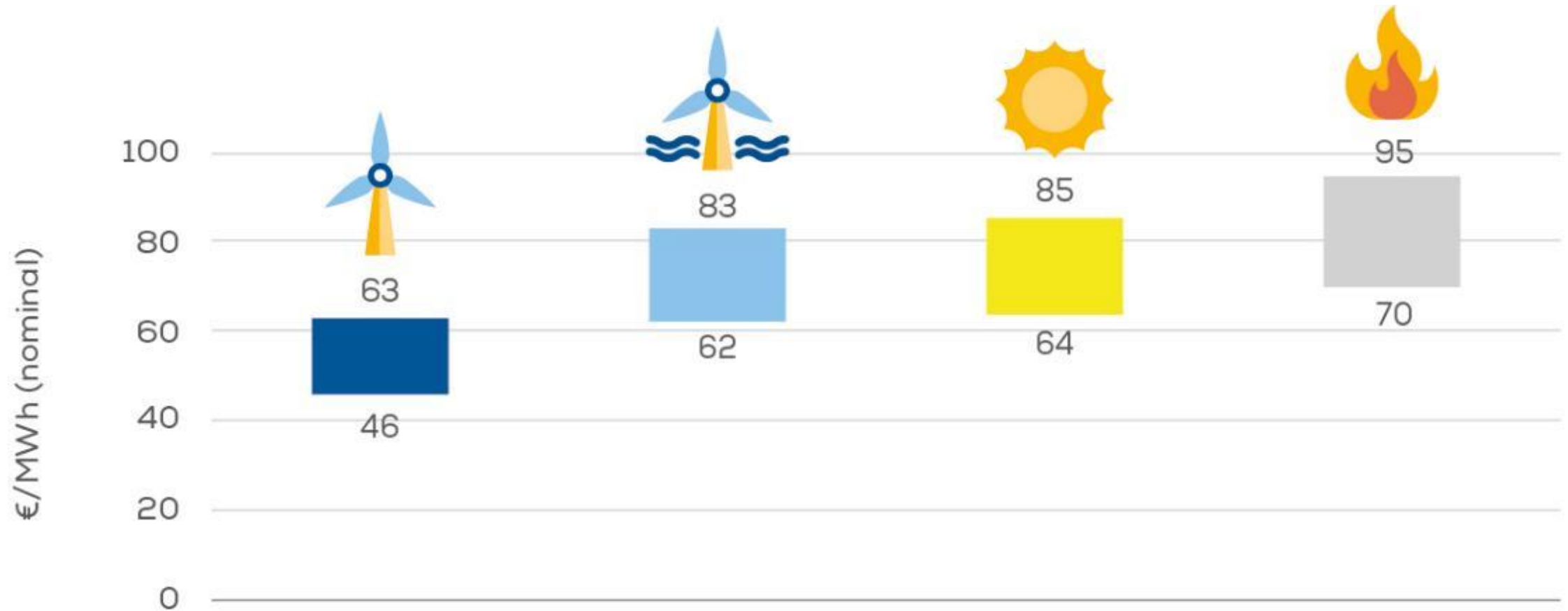
Both onshore and offshore wind will grow by a lot



Onshore & offshore wind will be the main sources of electricity generation by 2040

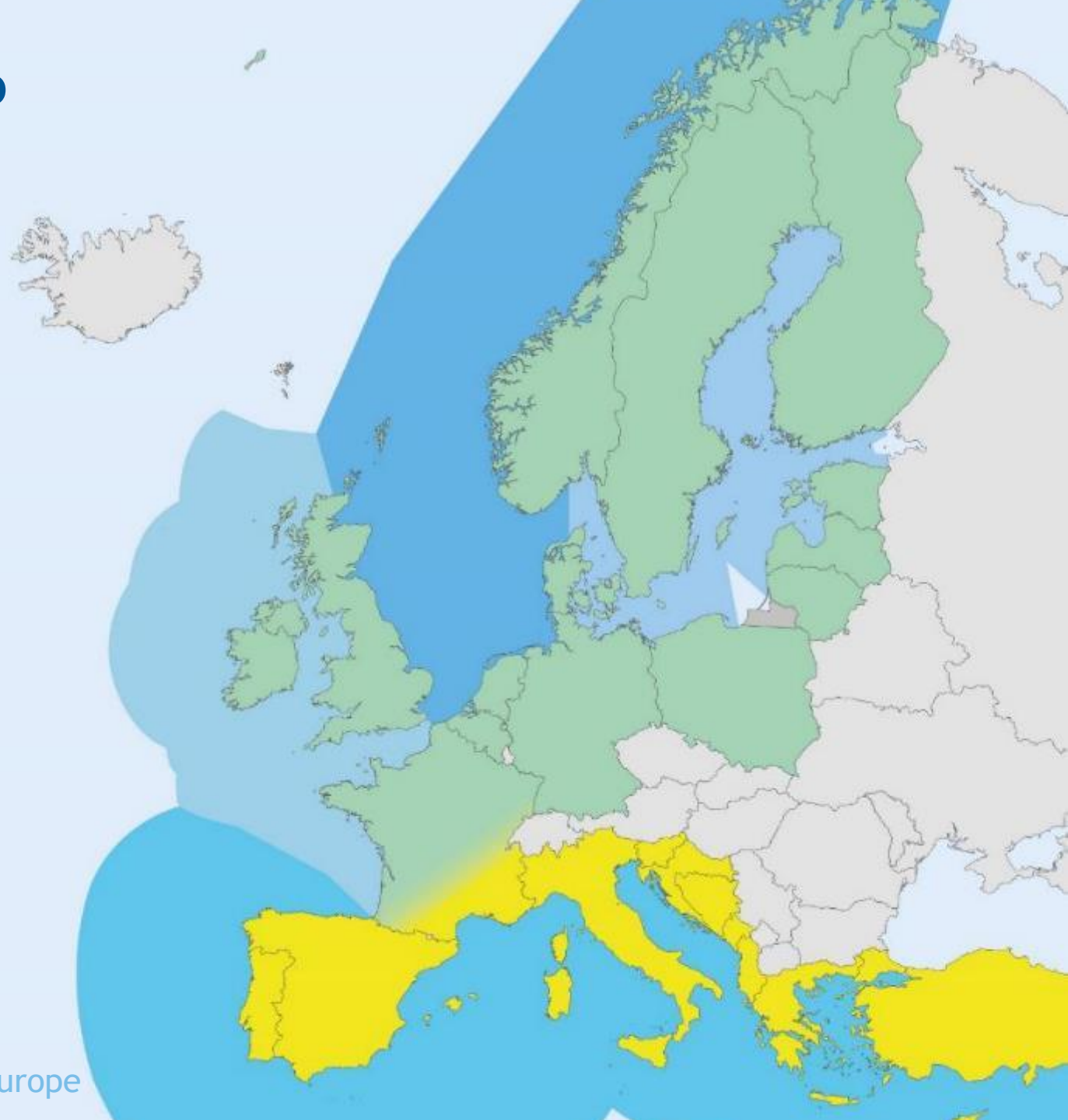


Wind the cheapest form of new power generation

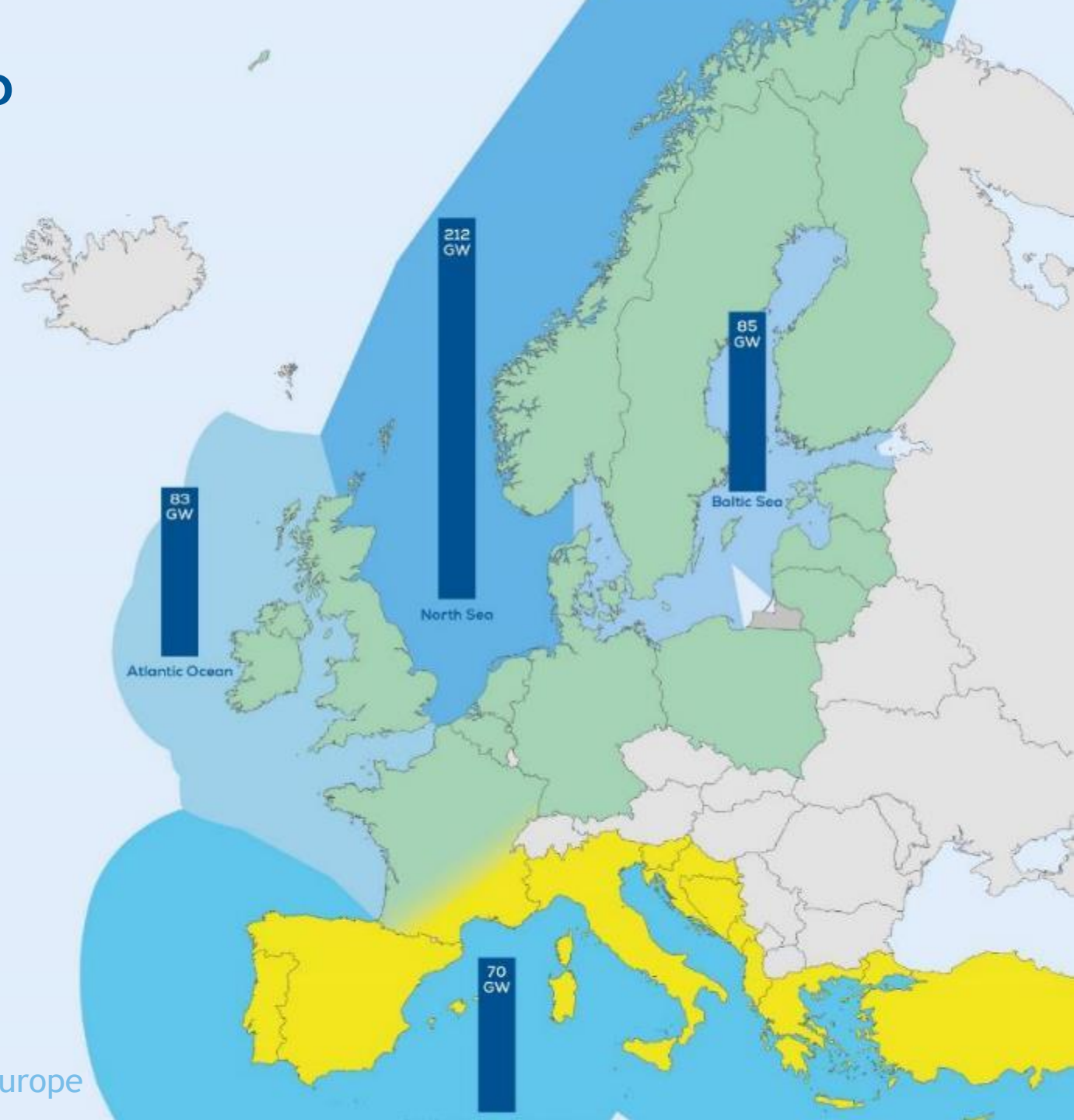


Based on BNEF 2019 data for North West Europe.

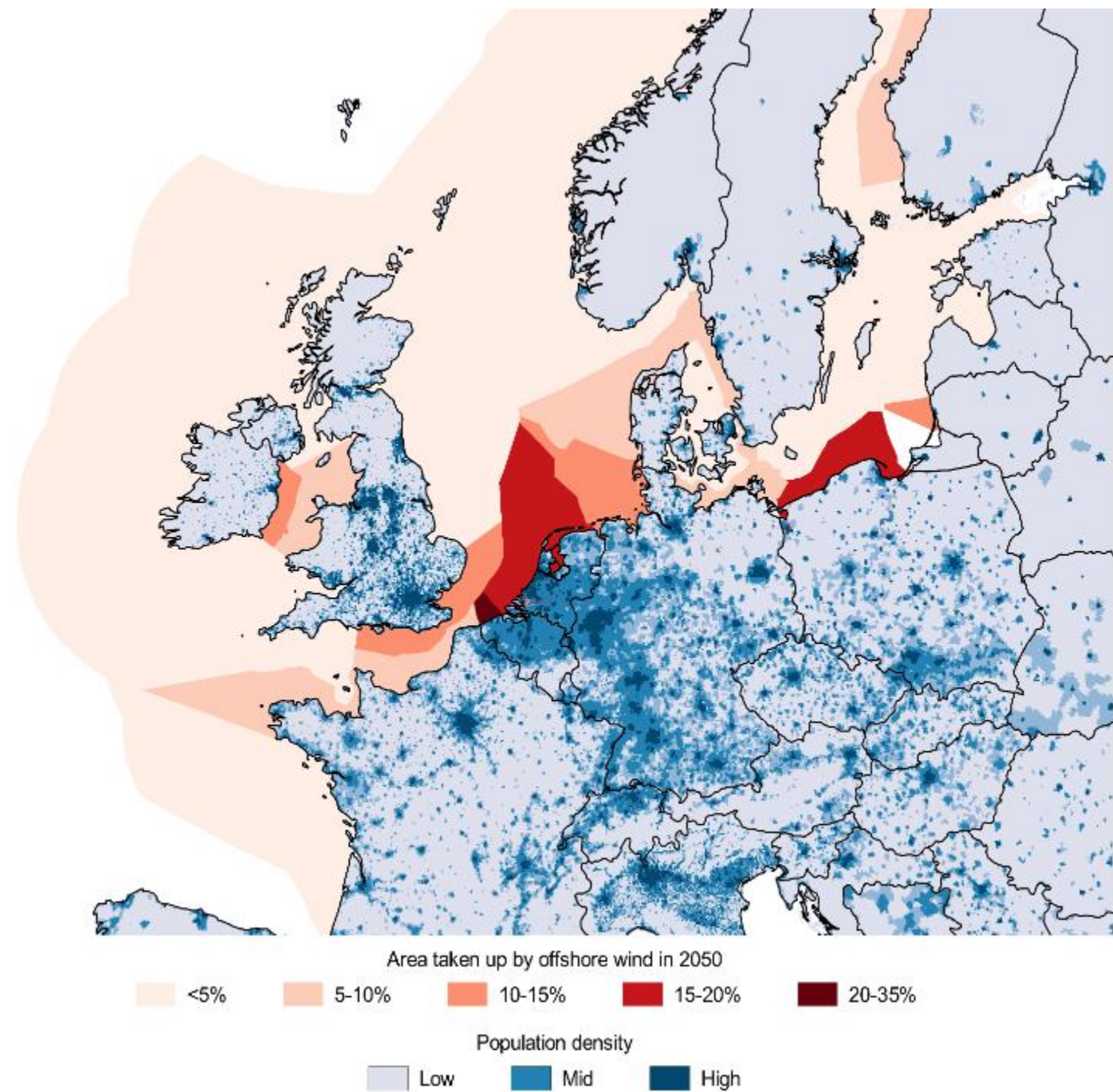
Where to build 450 GW?



Where to build 450 GW?



Where can we install it?



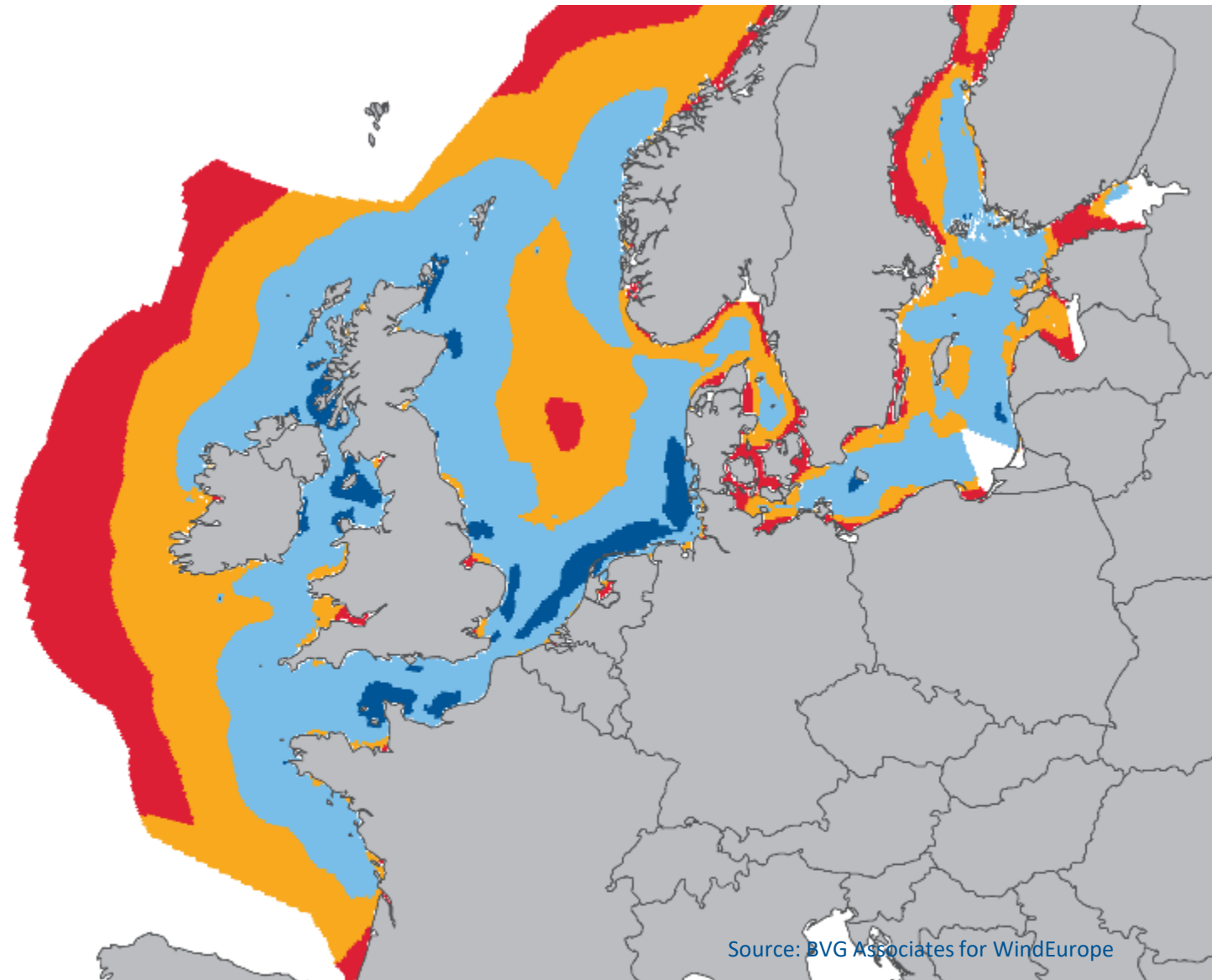
Where can we install it?

< 3%

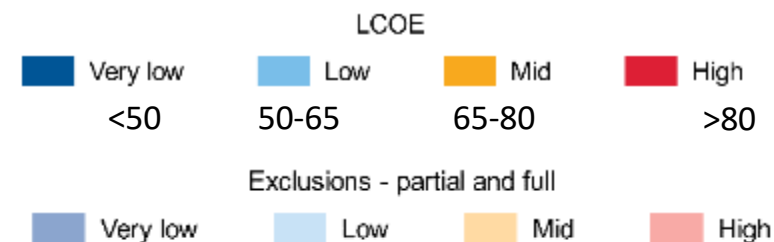
of total
sea area

60%

of sea area has spatial
exclusions



Source: BVG Associates for WindEurope



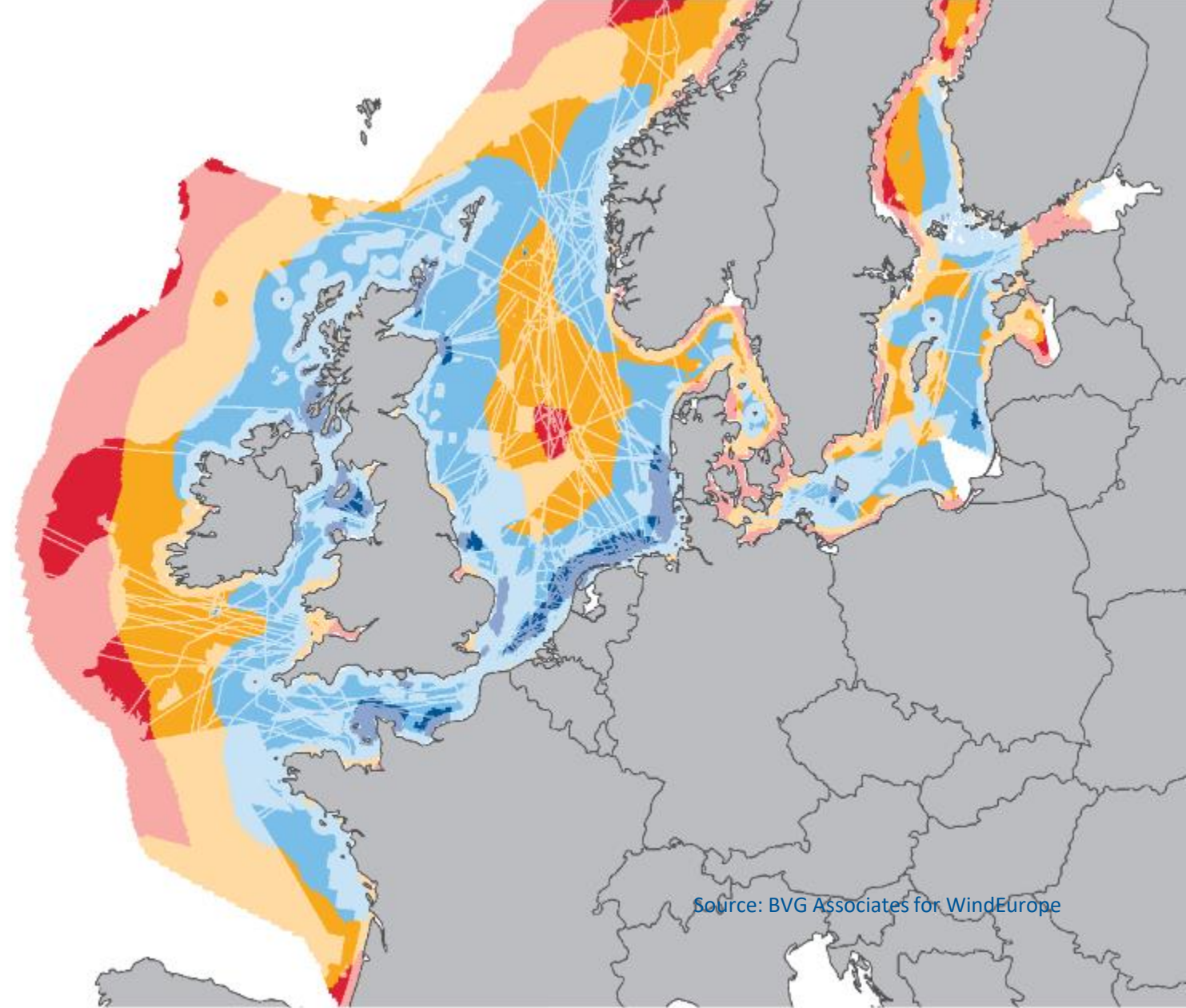
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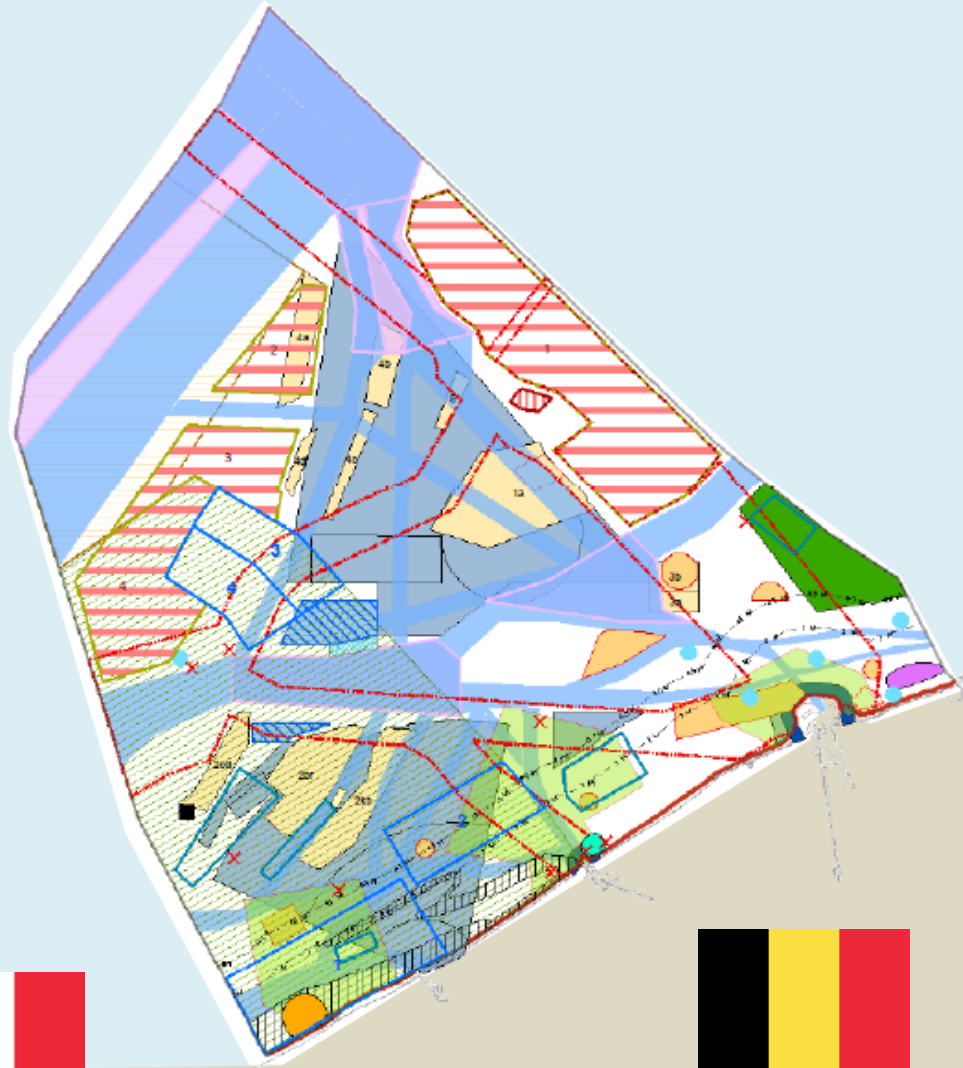


<50 50-65 65-80 >80

Exclusions - partial and full

Very low Low Mid High

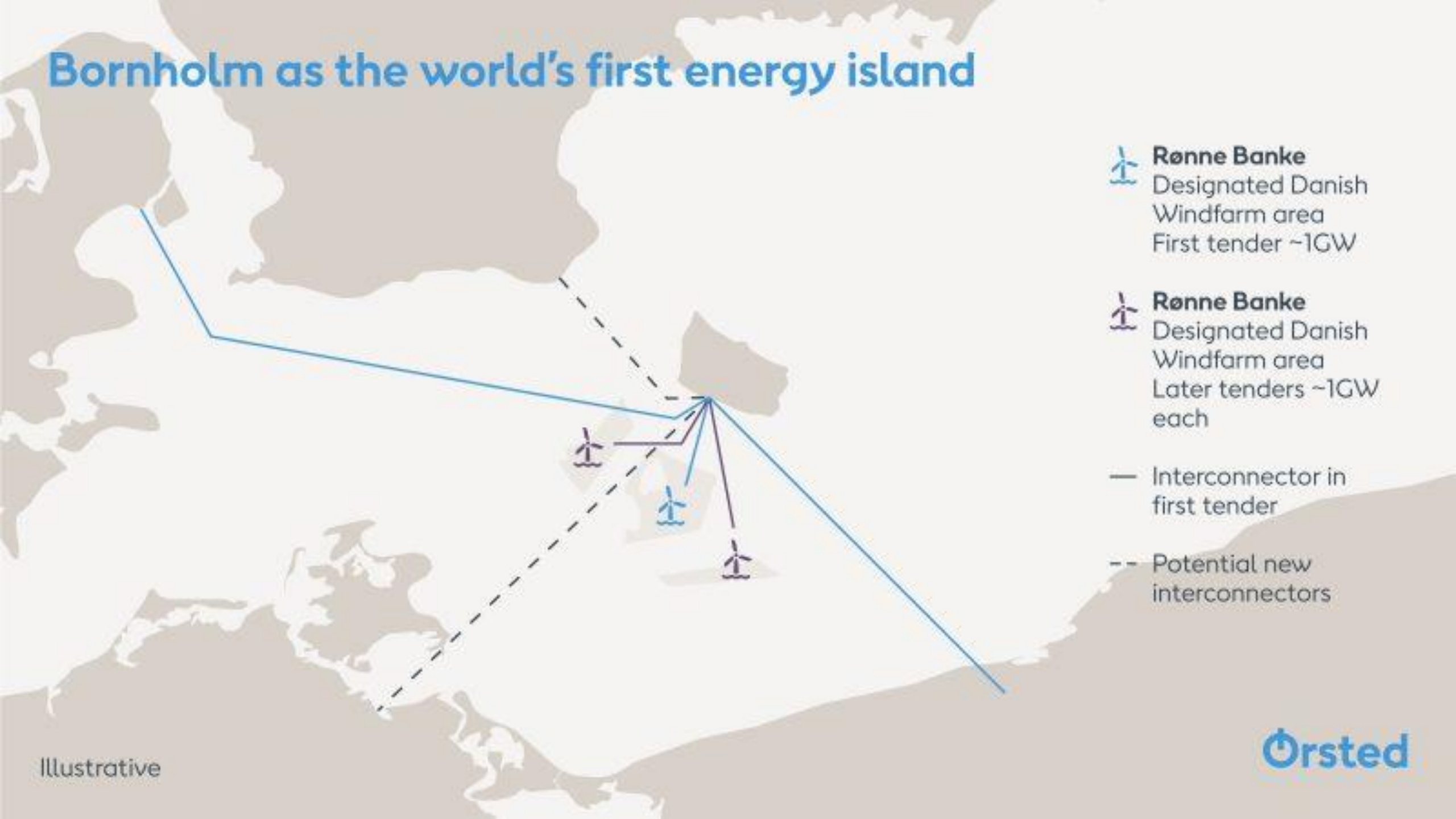


Maritime Spatial Planning will be crucial



Kriegers Flak combined grid solution



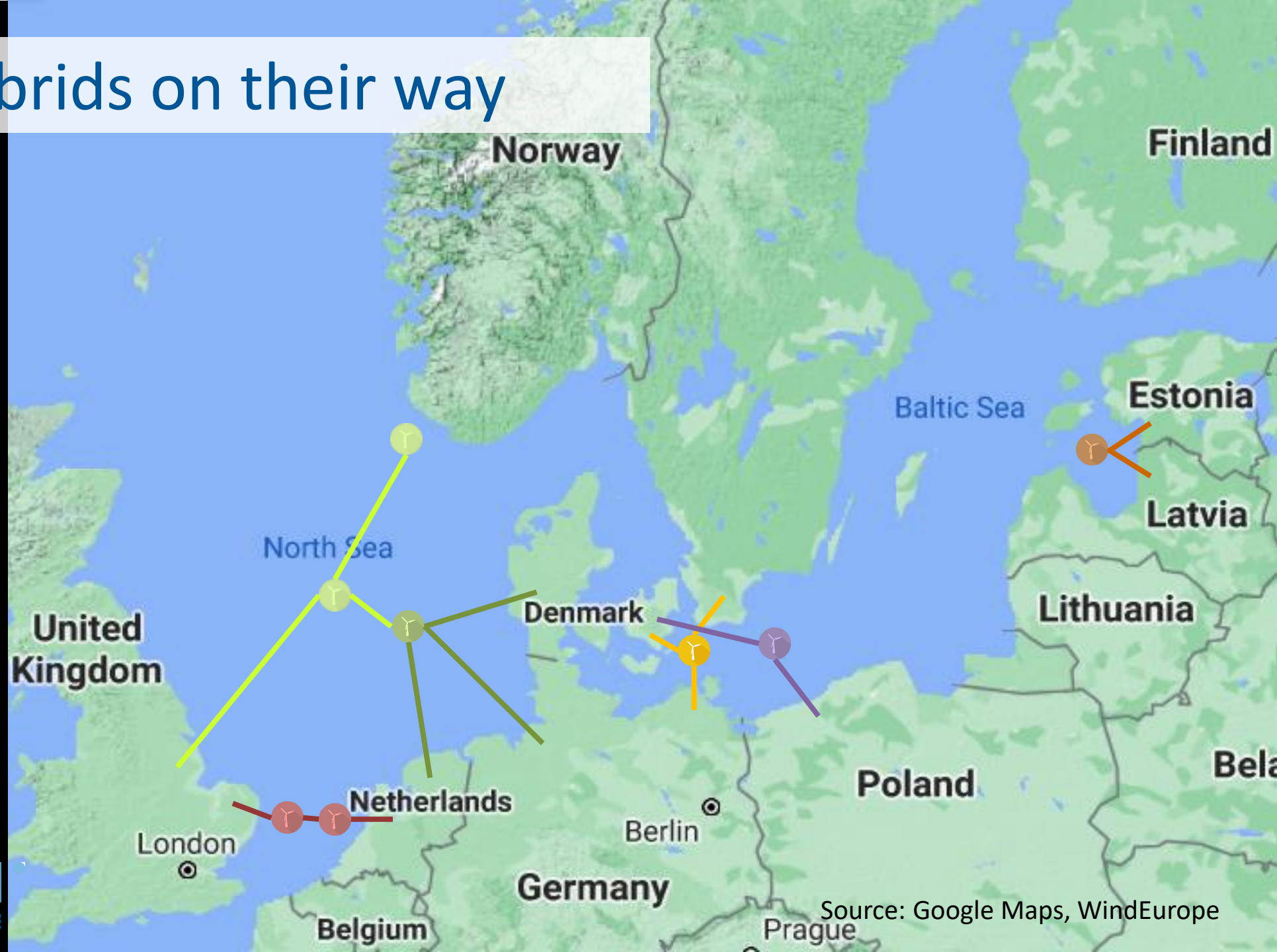
Bornholm as the world's first energy island

- 
- The map shows the island of Bornholm in the Baltic Sea. A solid blue line represents an interconnector in the first tender, connecting Bornholm to the European mainland. A dashed blue line represents a potential new interconnector, connecting Bornholm to the Russian coast. Several wind turbine icons are shown around Bornholm, indicating designated Danish windfarm areas. The legend on the right explains the symbols and lines used on the map.
-  **Rønne Banke**
Designated Danish Windfarm area
First tender ~1GW
 -  **Rønne Banke**
Designated Danish Windfarm area
Later tenders ~1GW each
 - Interconnector in first tender
 - Potential new interconnectors

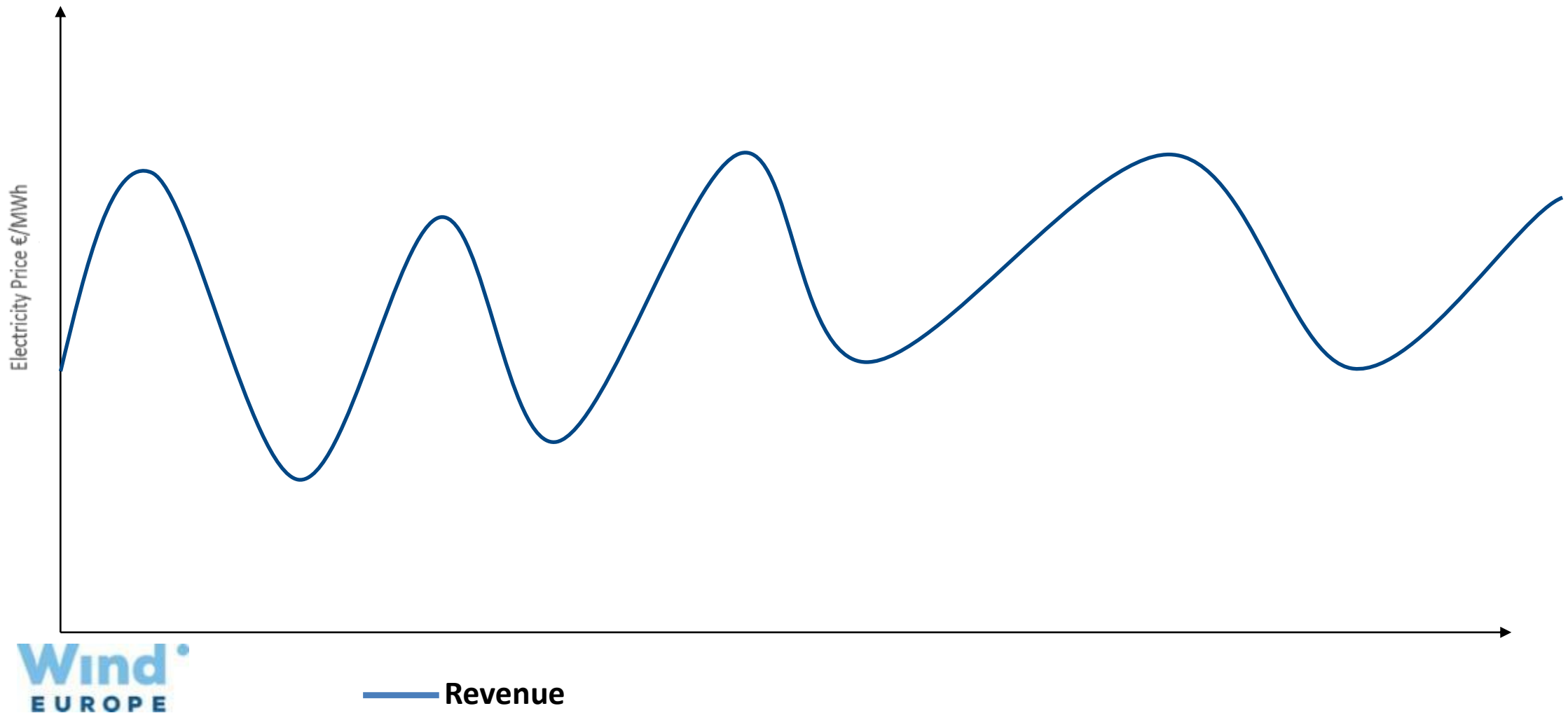
Illustrative

 Orsted

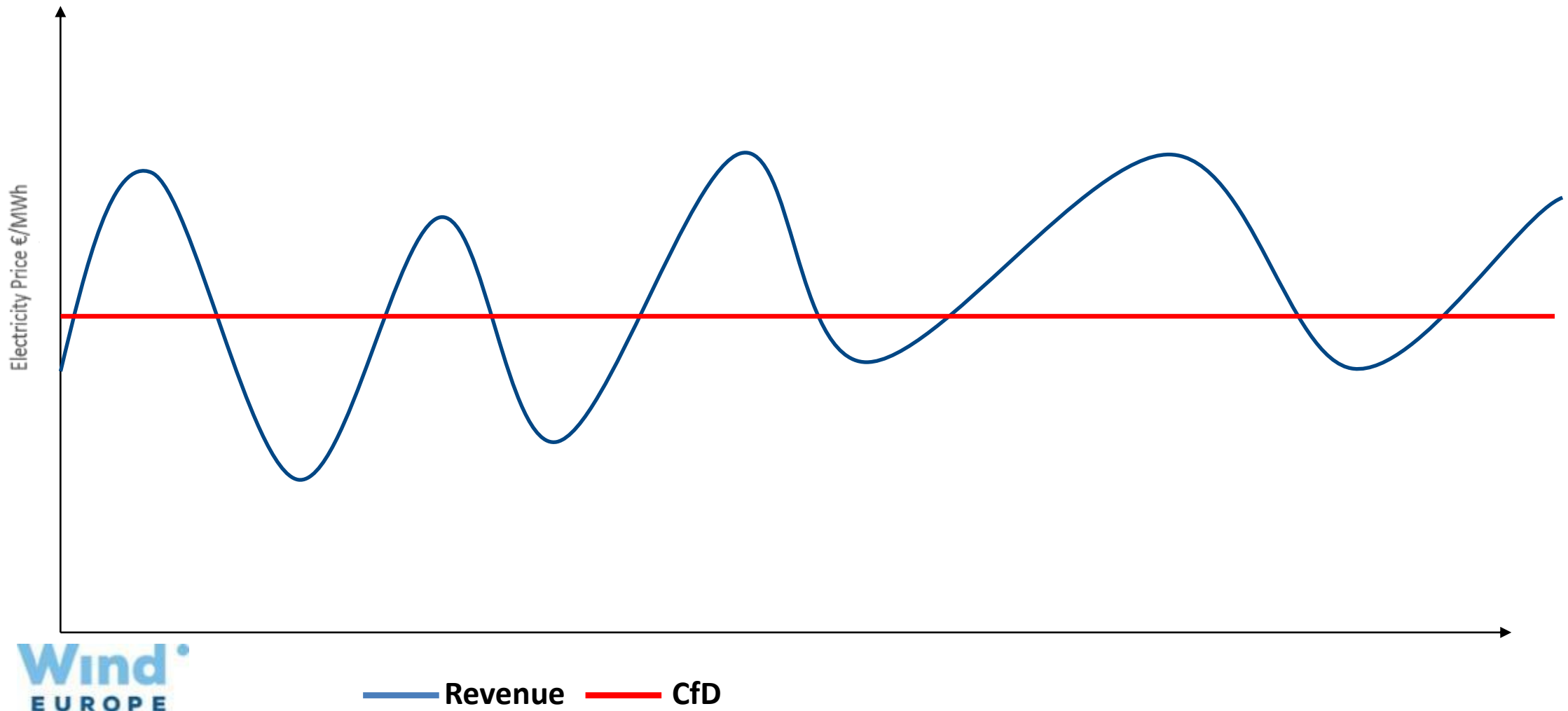
Hybrids on their way



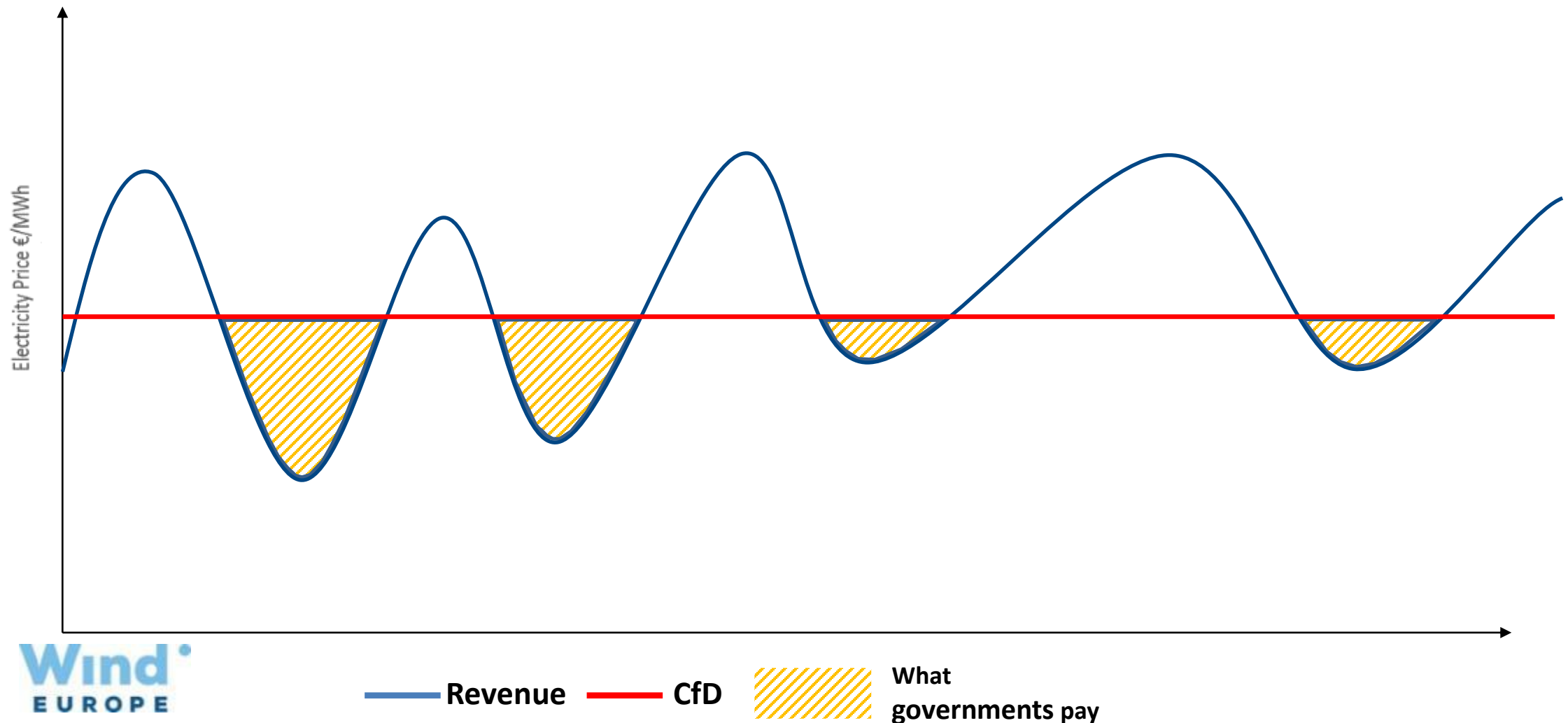
Delivering high volumes requires Contracts for Difference (CfD)



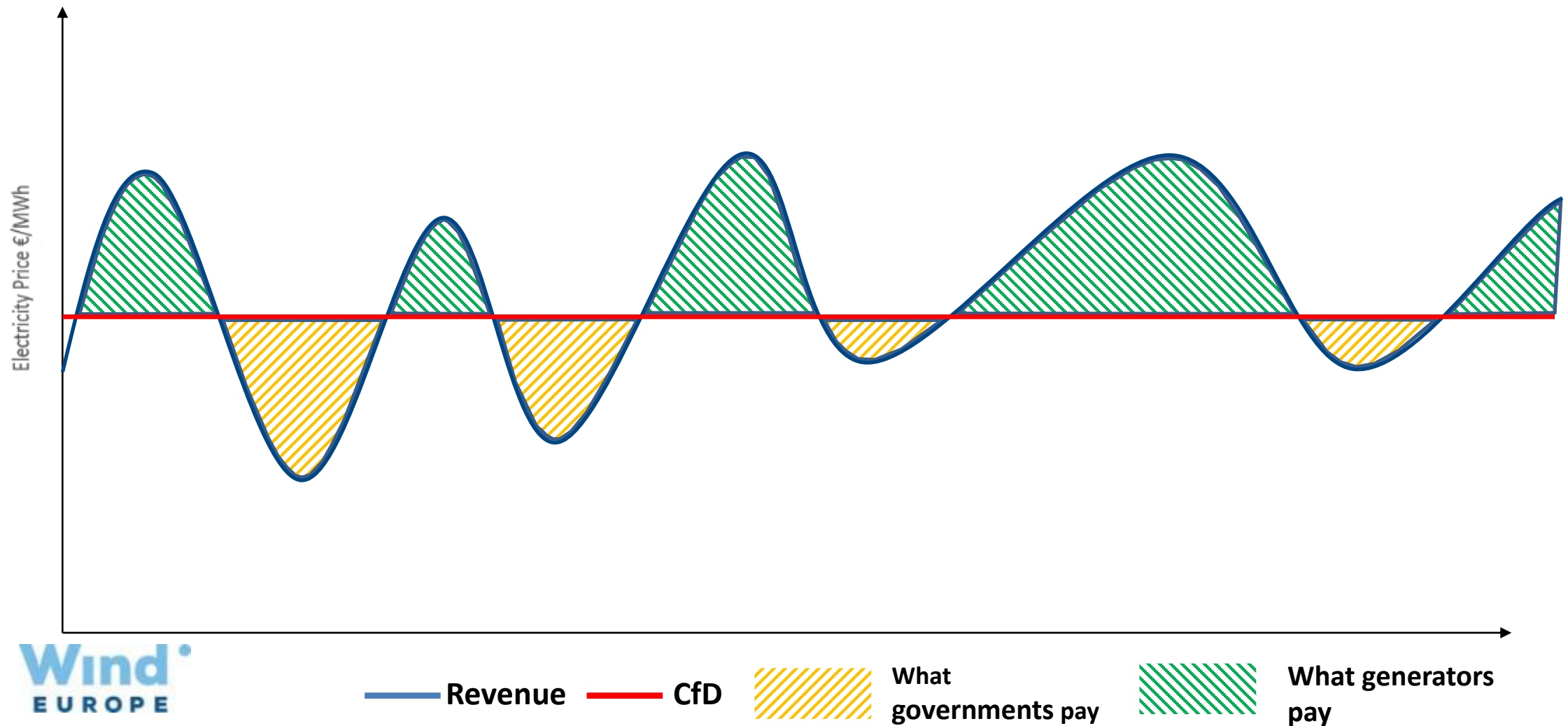
Delivering high volumes requires Contracts for Difference (CfD)



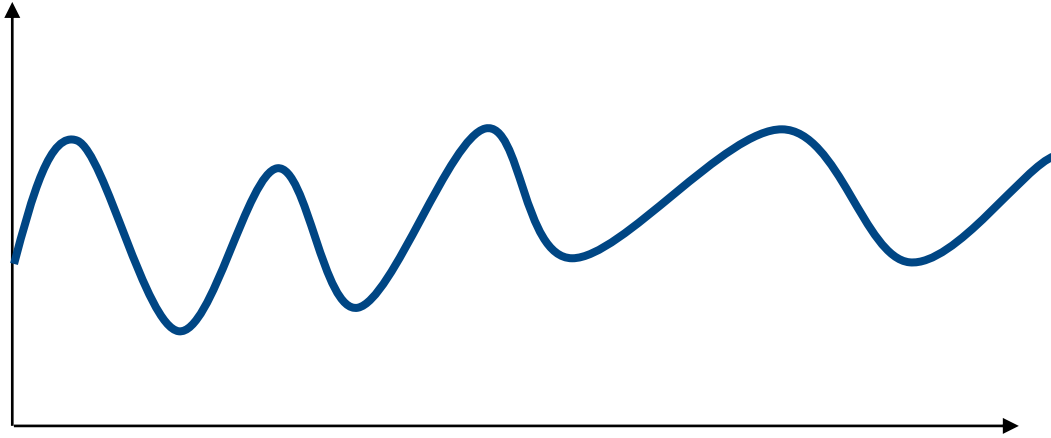
Delivering high volumes requires Contracts for Difference (CfD)



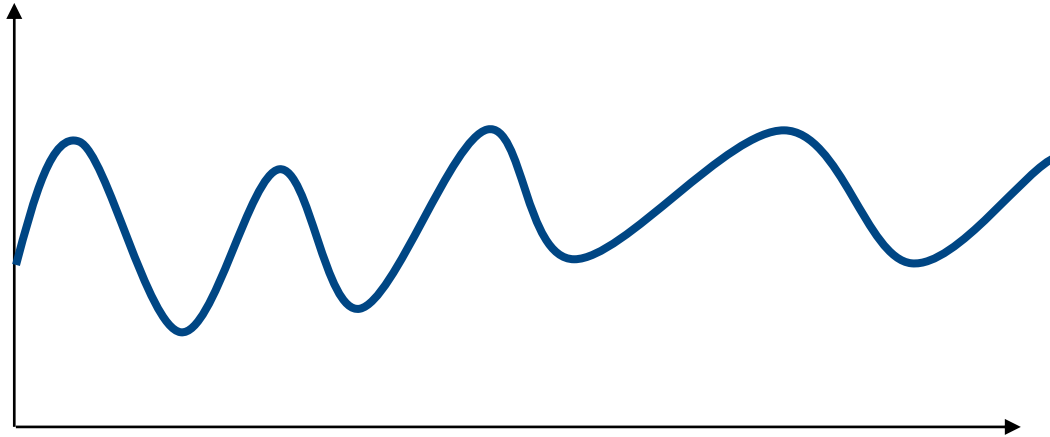
Delivering high volumes requires Contracts for Difference (CfD)



CfDs decrease costs

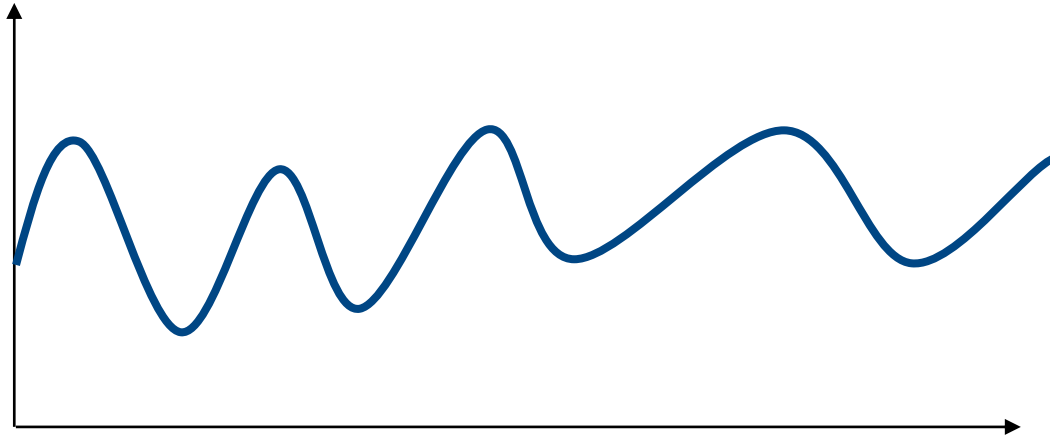


CfDs decrease costs

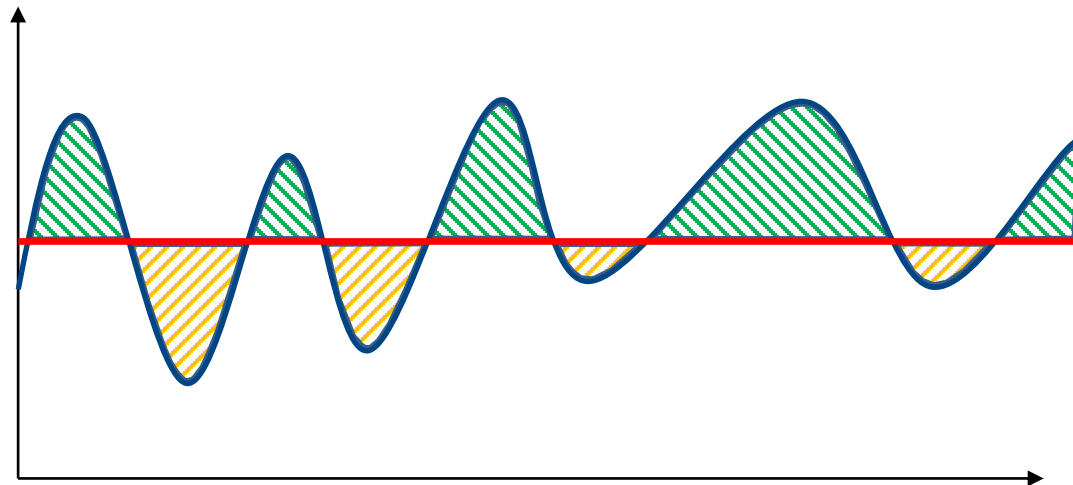


= €92/MWh

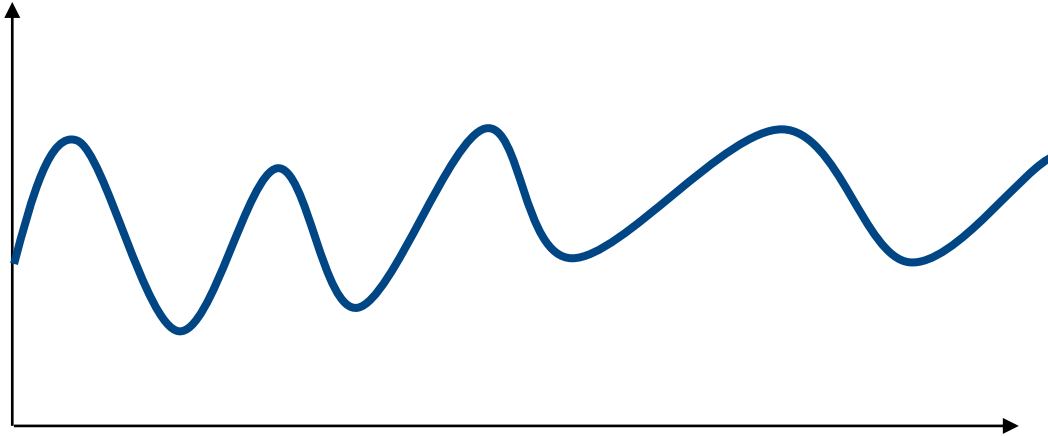
CfDs decrease costs



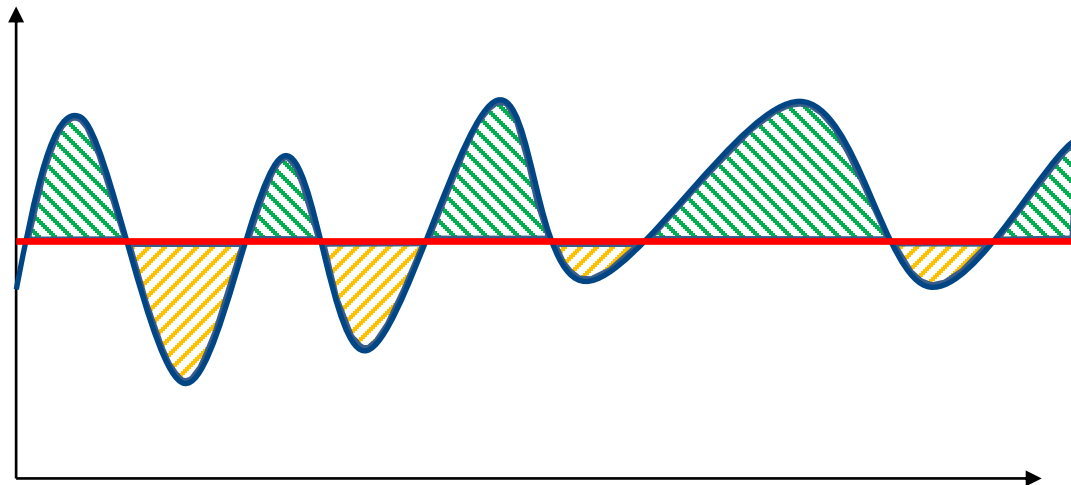
= €92/MWh



CfDs decrease costs



= €92/MWh



= €50/MWh



Thank you!

Wind[•]
EUROPE

windeurope.org