



The Norwegian Energy System towards 2050

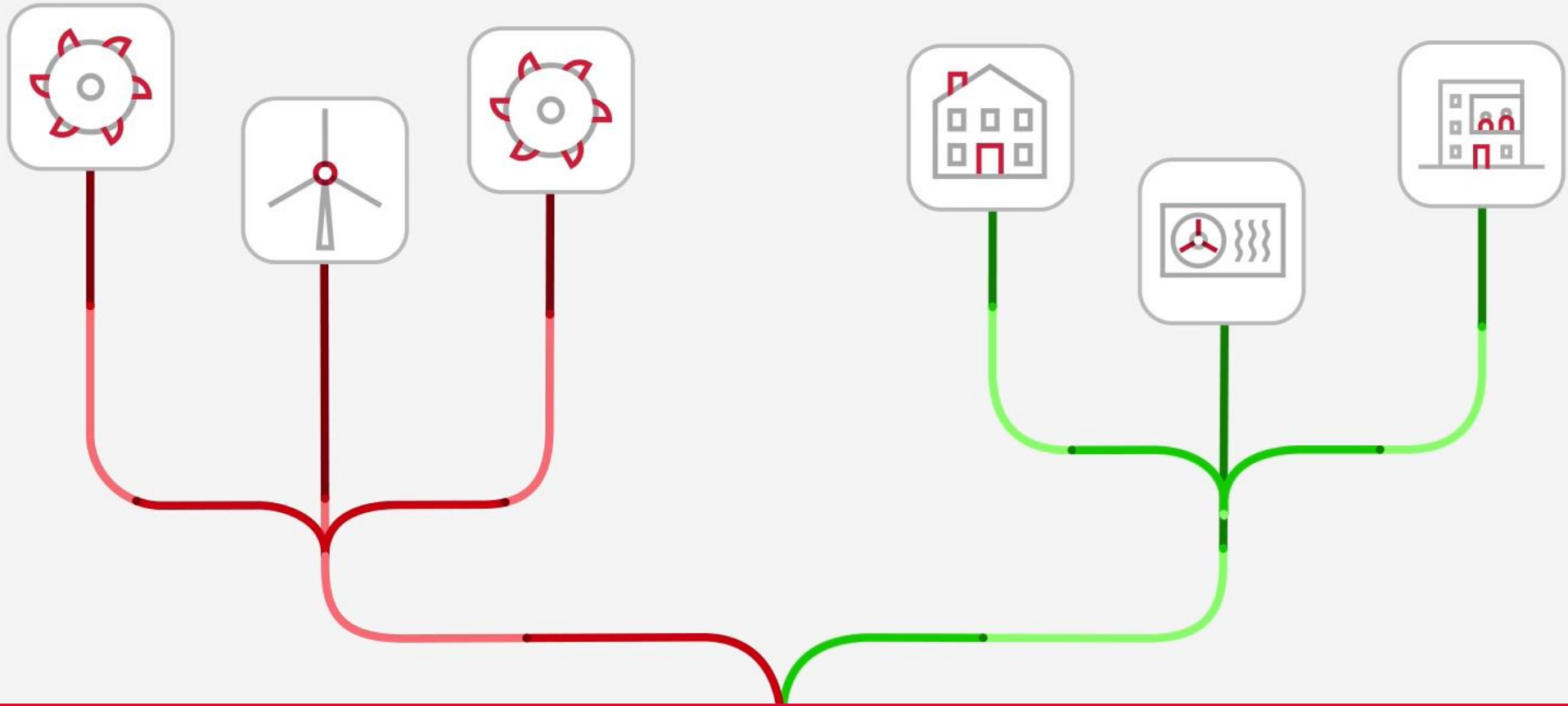
The importance of offshore wind

Ane Torvanger Brunvoll



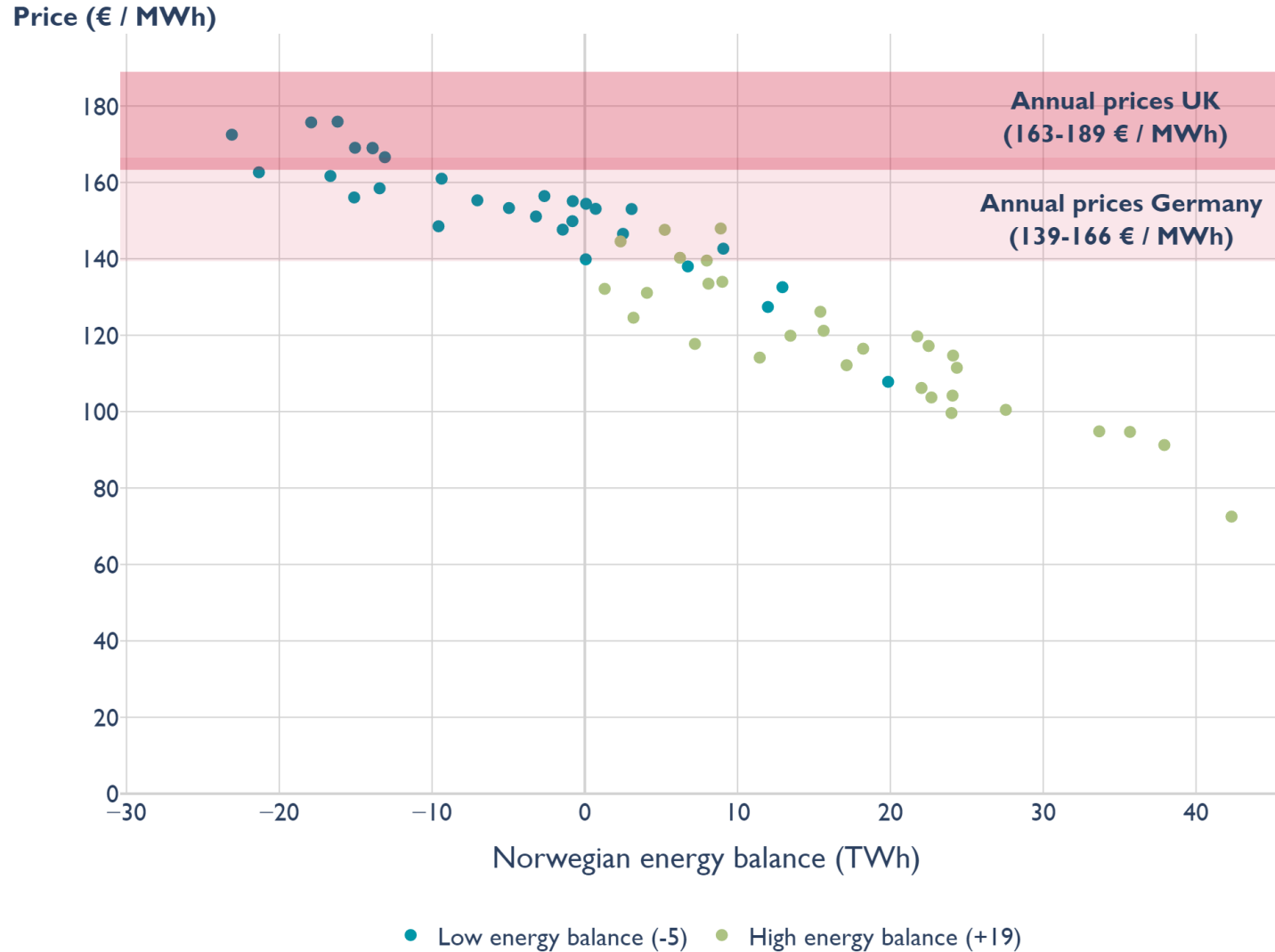


The energy balance



The energy balance

The energy balance affects prices in Norway





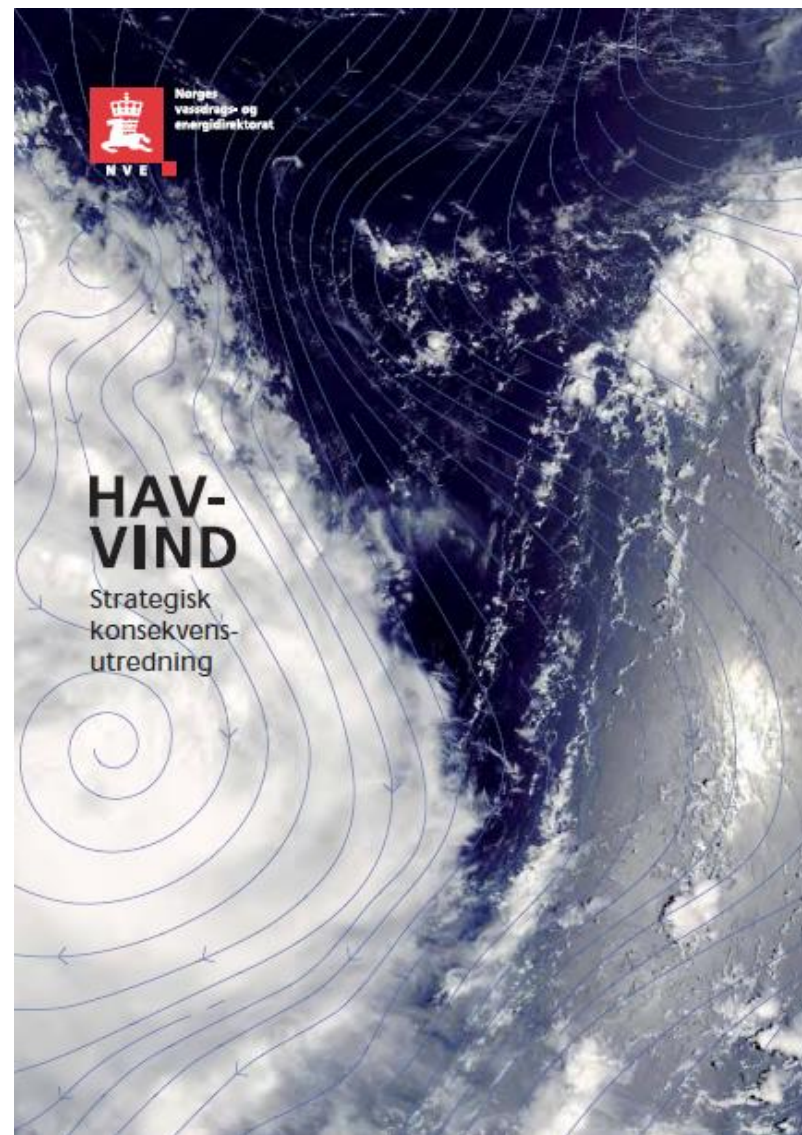
Offshore wind in Norway – today



2010



2012



2010/ 2012 results:
15 areas «most suitable»
for offshore wind



Two of these areas opened for offshore wind power in 2020



Utsira Nord

- Average depth 265 meter
- Floating technology
- 1500 MW

Sørlige Nordsjø II

- Average depth 60 meter
- Bottom fixed technology
- 3000 MW



Norges vassdrags- og energidirektorat
Postboks 5091 Majorstuen
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Bistand fra NVE til departementets utredning av virkninger på kraftsystemet av ulike nettløsninger for vindkraft til havs



Reguleringsmyndigheten for energi - RME
Postboks 5091 Majorstuen
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Bistand til departementets vurderinger knyttet til regulering av nett til havs



Norges vassdrags- og energidirektorat
Postboks 5091 Majorstuen
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Oppdrag om identifisering av nye område for fornybar energiproduksjon til havs



Identifying new areas for offshore renewable energy production

Re-assessment of areas from 2012

Increased capacity of Sørlige Nordsjø II and Utsira Nord?

Identifying new areas

Result: 30 GW
(awarded by 2040)

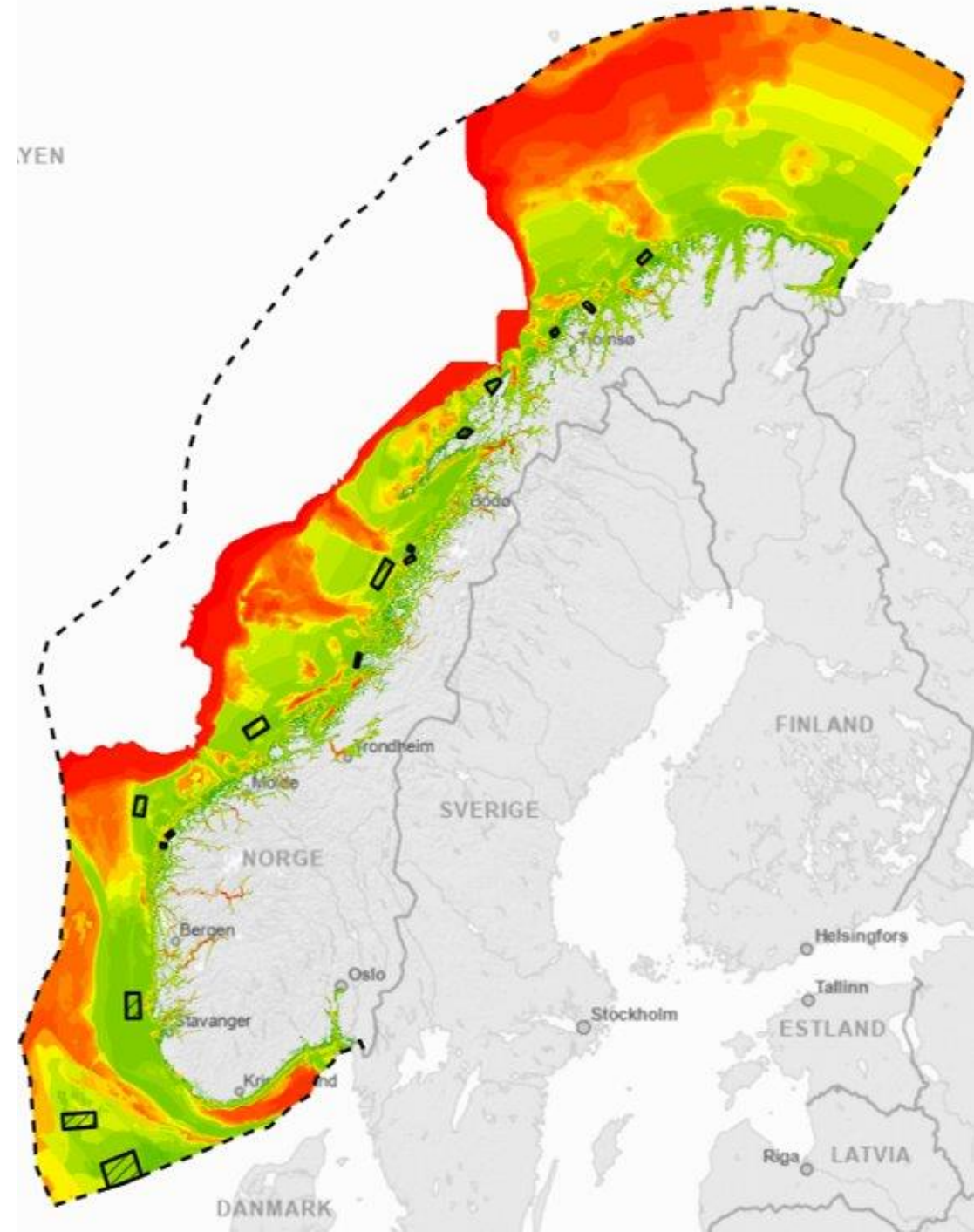


Delivery April 30th 2023

Method

- Technical map, including:
 - Water depth
 - Distance from shore
 - Wind resources
 - Waves

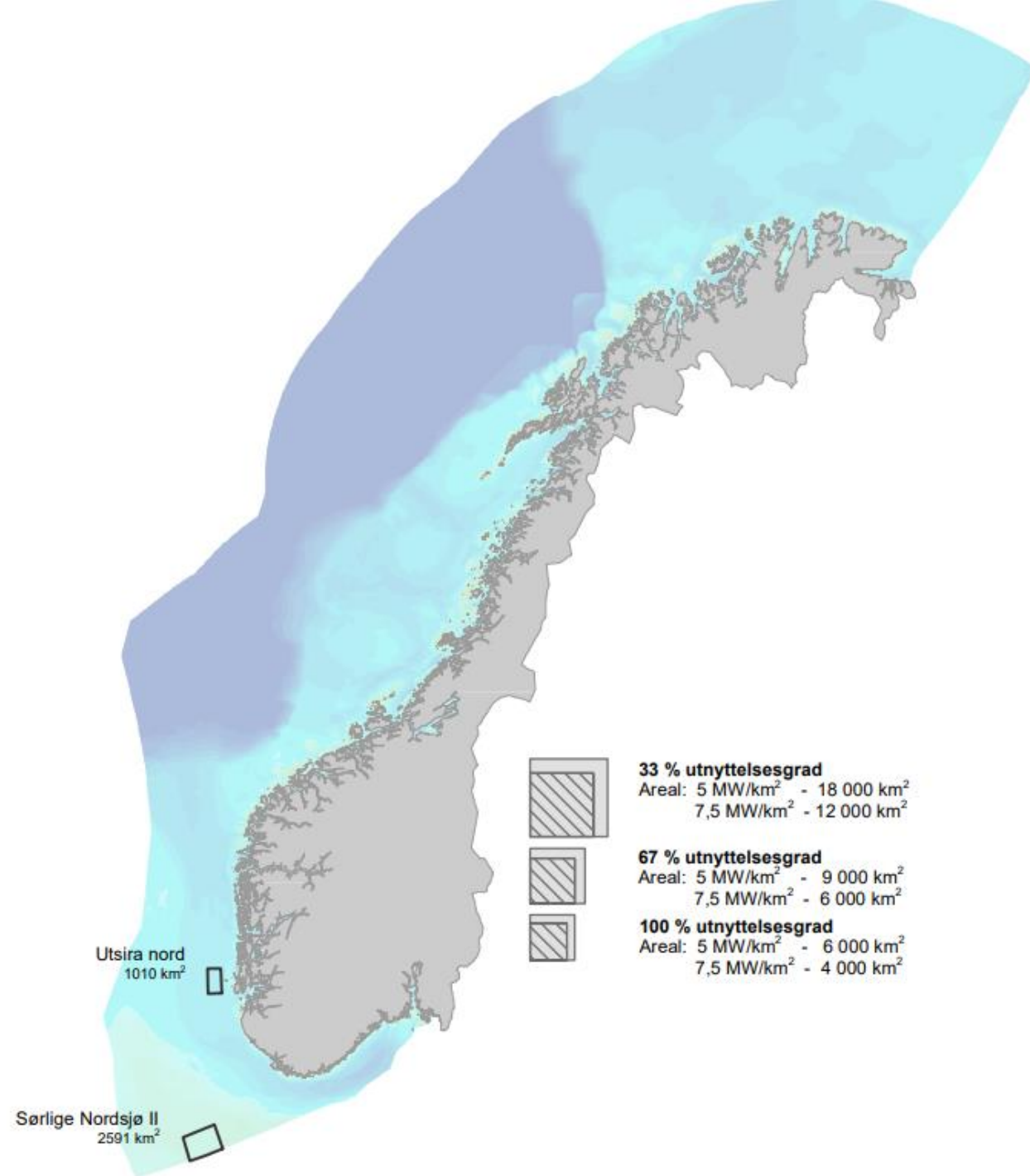
- Map showing most suitable areas with regards to conflict of interests



How much area is needed?

- Particularly depends on two factors:
 - Capacity/density of the **design**
 - Utilization rate of the opened areas

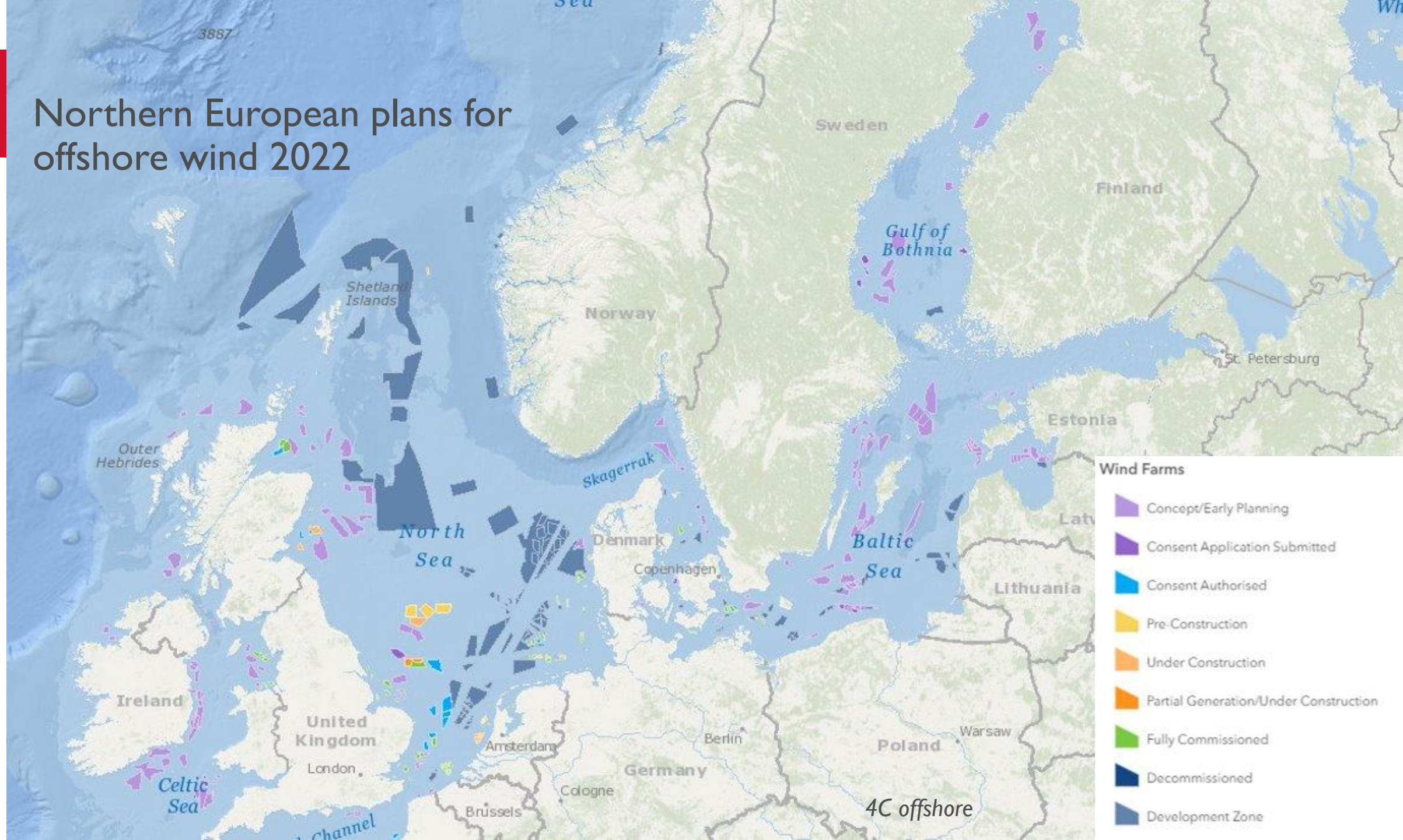
- Inside the opened areas there will be area that cannot be development
 - Area for buffer zones
 - Adaptations for other industries
 - Discoveries from **site investigations**





Offshore wind in Norway – towards 2050

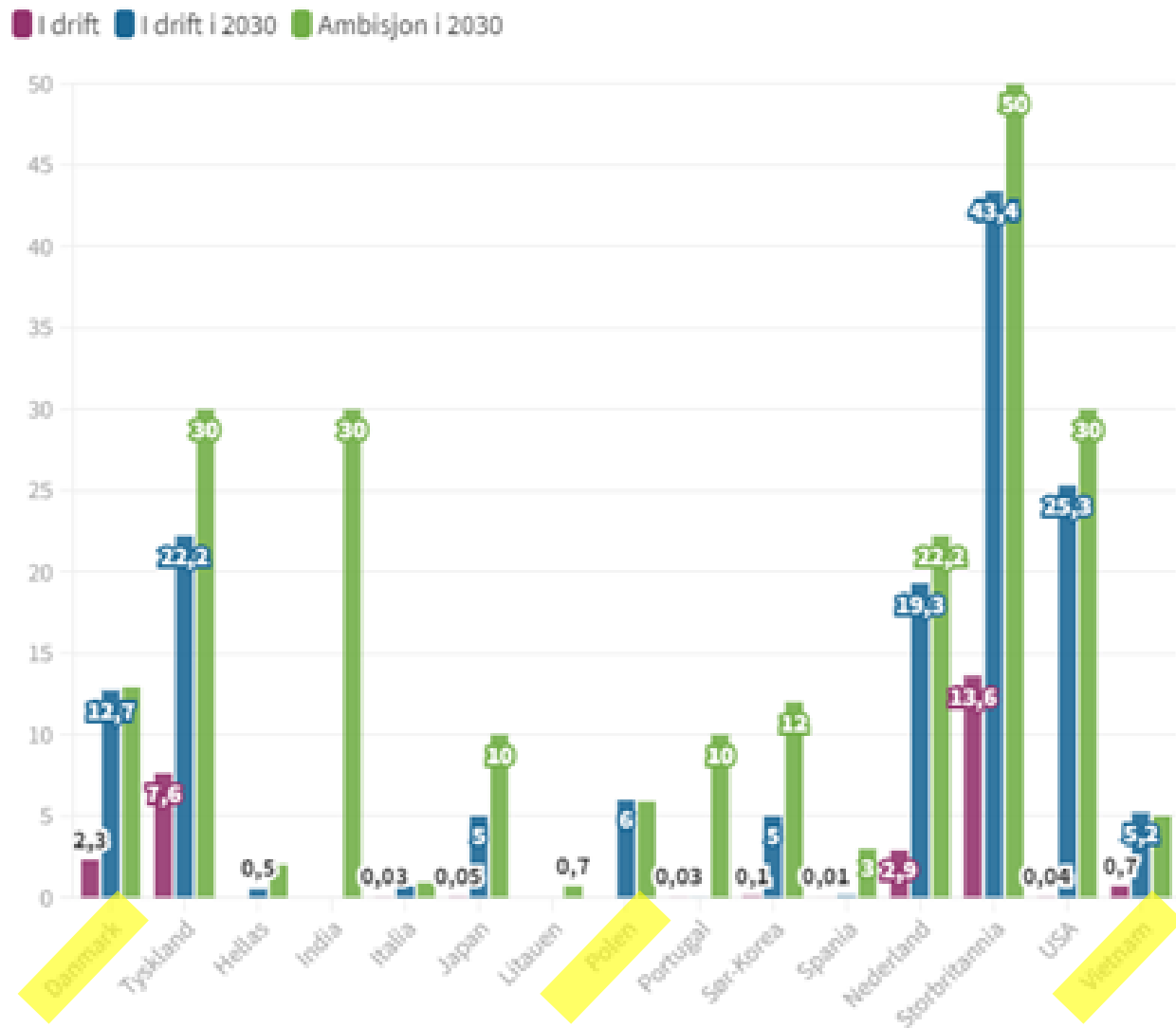
Northern European plans for offshore wind 2022





Offshore wind ambitions for 15 countries with stated 2030 targets

Havvindambisjonene i 15 land

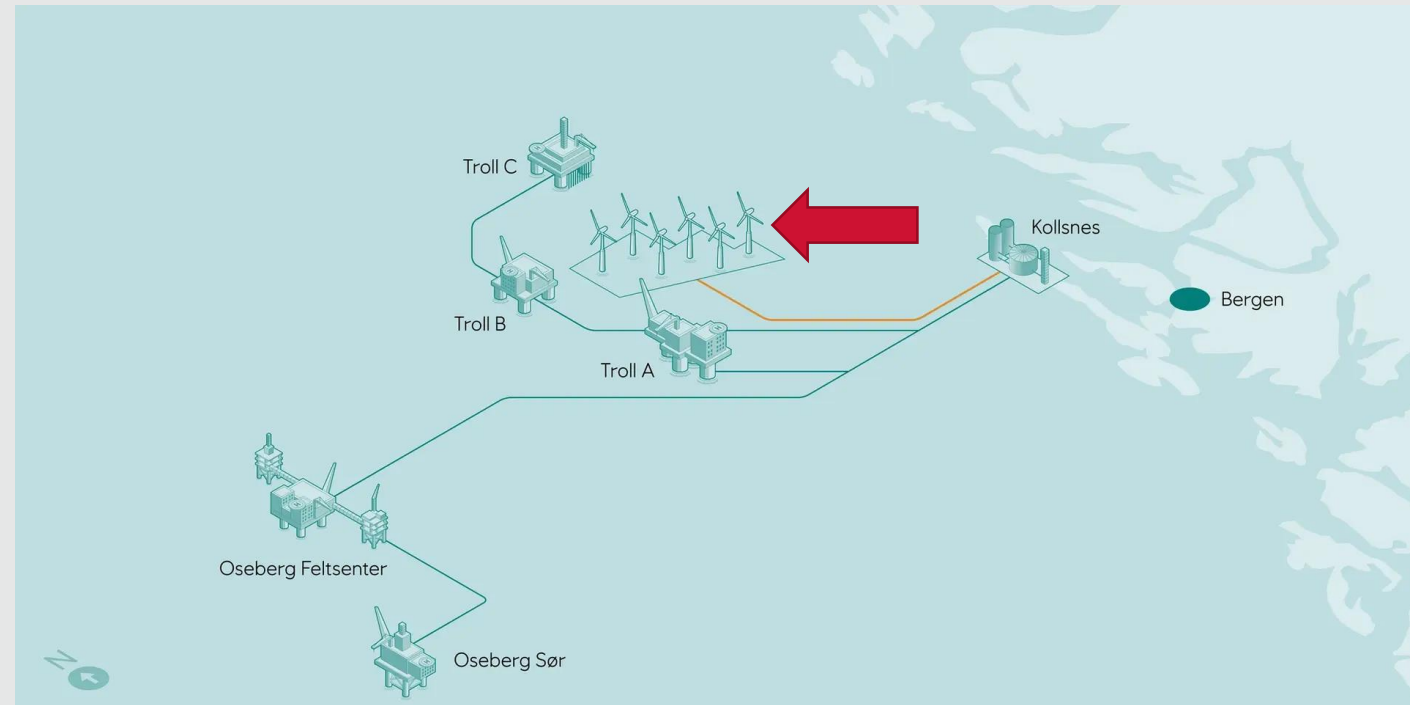


Europower/ ERM

A Flourish chart

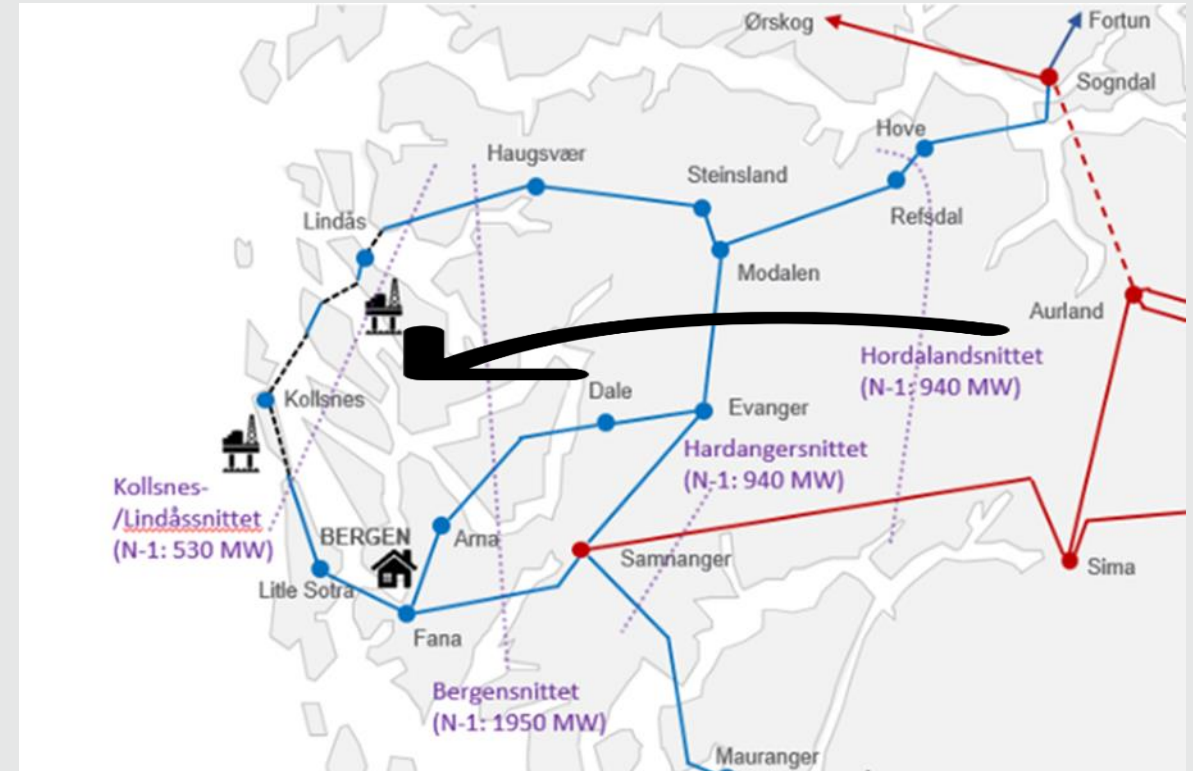
What is Trollvind ?

- The world's largest floating offshore wind project (1 GW/ca 4,3 TWh)
- Equinor and others in the Troll- and Osebergfields are responsible. Public in June -22
- Planned to be operational by 2028, and connected in Kollsnes



The power situation in the Bergen-area

- Predominantly west-ward flow. Max. consumption of 2300 MW, of which Kolsnes constitute ca. 700 MW
- Big, but uncertain consumption plans for the entire area. Additional consumption of ca. 600 MW towards 2030
- Situation and relevant measures described in the concept study “Bergen og omland” (2020)



NVE's conclusion given to OED

- Trollvind will have an immediate and favorable effect on the power situation and security of supply in Kollsnes during 2027 – 2030.



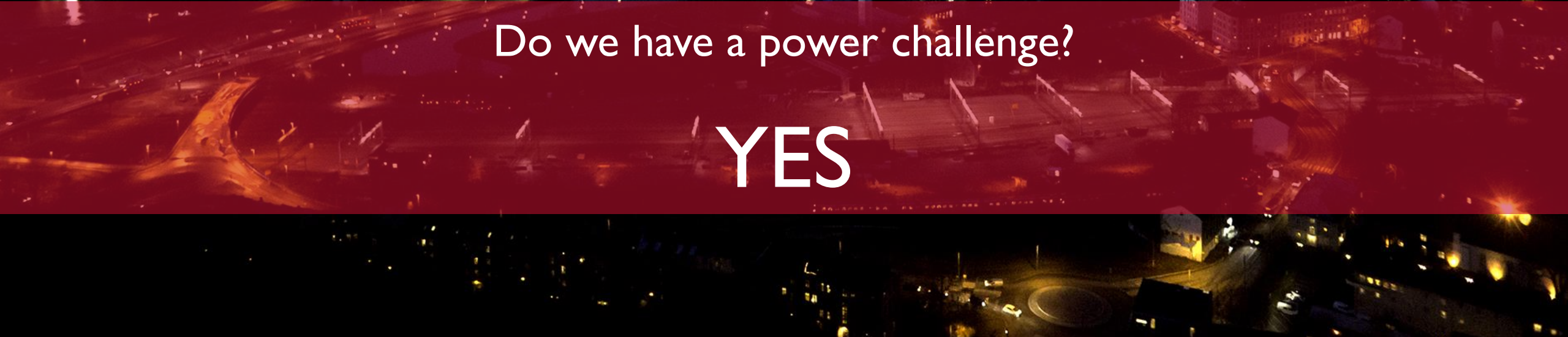


The power balance

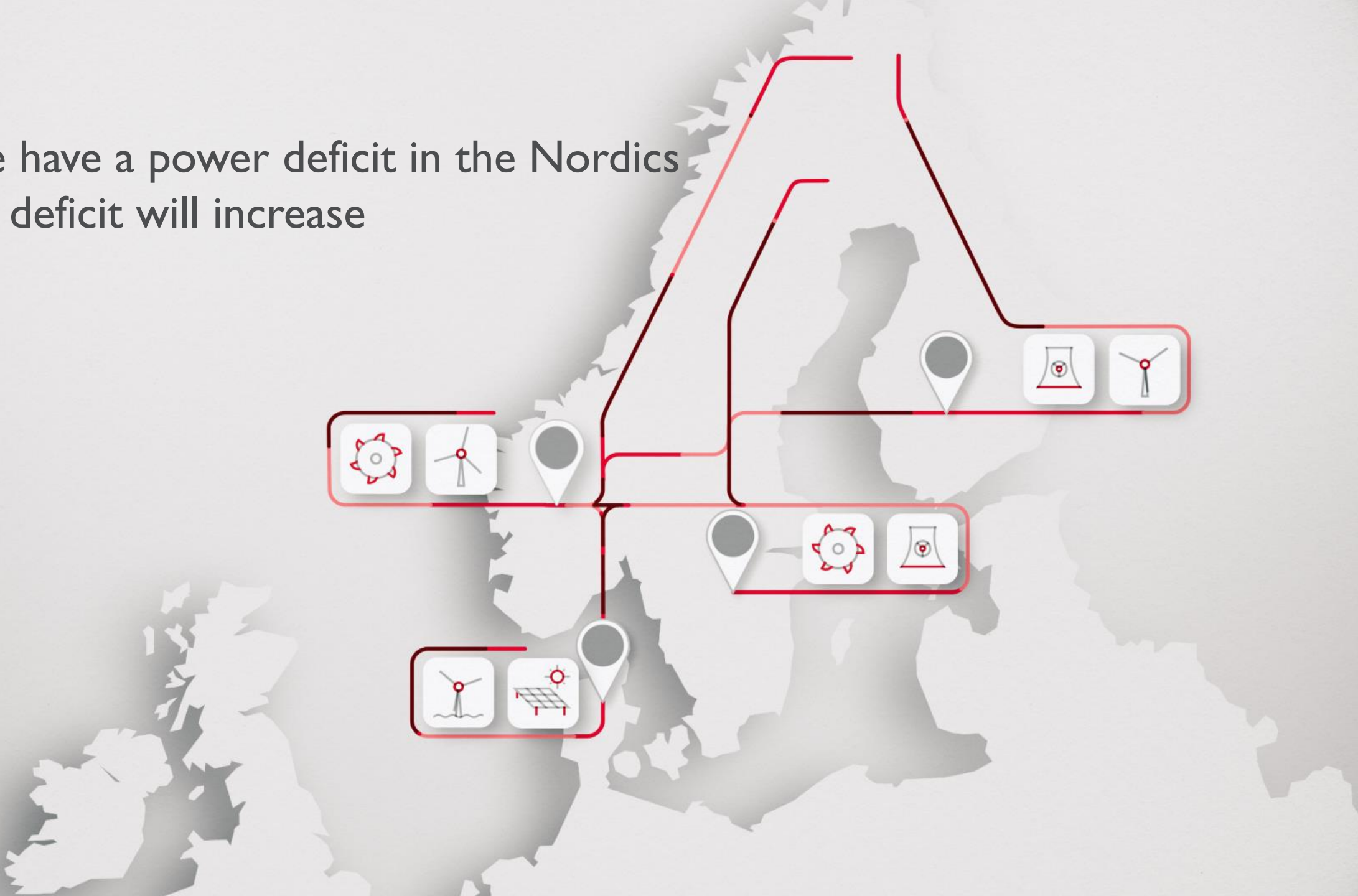


Do we have a power challenge?

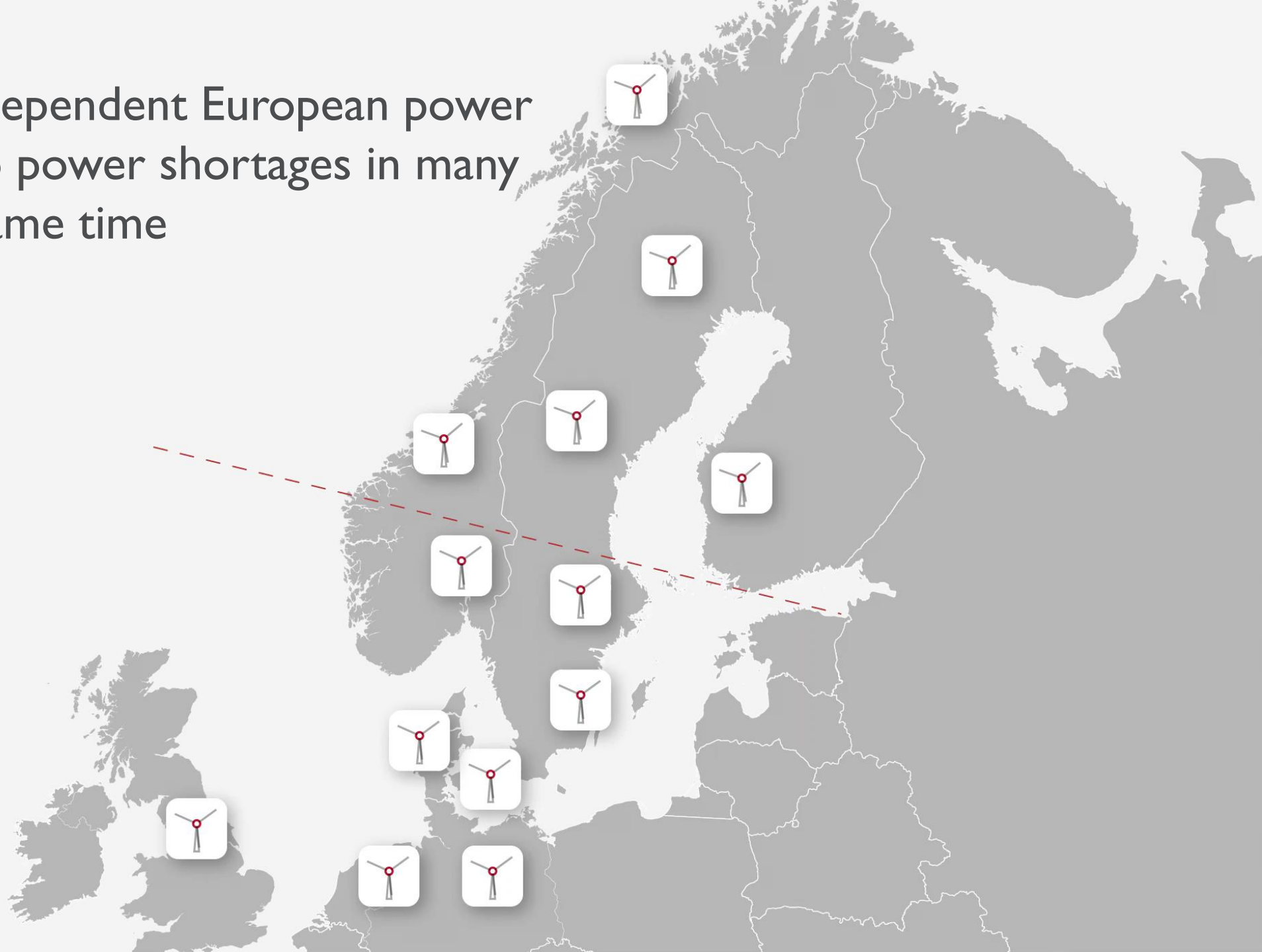
YES



Today, we have a power deficit in the Nordics
- and the deficit will increase



A more weather-dependent European power system can lead to power shortages in many countries at the same time



Offshore wind is not enough on its own





The right measures make us less vulnerable



hydropower



energy efficiency



grid



collaboration



analysis

Thank you!

