















































RISE AND POTENTIAL OF OFFSHORE WIND ENERGY IN THE BALTIC SEA

Mattia CeCchinato

Senior Advisor for Offshore Wind, WindEurope

Our members make wind energy work

600+ MEMBERS

Wind turbine manufacturers	e.g.	 ENERCON ENERGY FOR THE WORLD	 GE Renewable Energy	 NORDEX	 SIEMENS Gamesa RENEWABLE ENERGY	 Vestas	
Wind farm developers	e.g.	 acciona energia	 equinor	 Orsted	 Shell	 REPSOL	 res powering change
Power utilities	e.g.	 edf renewables	 ERG EVOLVING ENERGIES	 enel Green Power	 Iberdrola	 RWE	 VATTENFALL
Component manufacturers	e.g.	 LM WIND POWER	 Prysmian Group	 EIFFAGE SMULDERS	 tpi COMPOSITES	 ZF	
Digital solutions & service providers	e.g.	 Atos	 HITACHI Inspire the Next Hitachi Energy	 Schneider Electric	 sereema	 UL Solutions	
EPC, Installation and logistics	e.g.	 DJN Jan De Nul GROUP	 MAERSK SUPPLY SERVICE	 Port of Amsterdam	 SAIPEM	 Van Oord Marine Ingenuity	
Financial & legal services	e.g.	 Allianz	 Amiens	 AQUILA CAPITAL	 MACQUARIE Green Investment Group	 DENTONS	
Research institutes	e.g.	 CATAPULT Offshore Renewable Energy	 DTU Danmarks Tekniske Universitet	 Fraunhofer IWES	 eit InnoEnergy	 TU Delft	
Energy Buyers	e.g.	 ArcelorMittal	 aws	 BOREALIS Keep Discovering	 covestro	 Google	

+ NATIONAL WIND ENERGY ASSOCIATIONS

Offshore wind in Europe

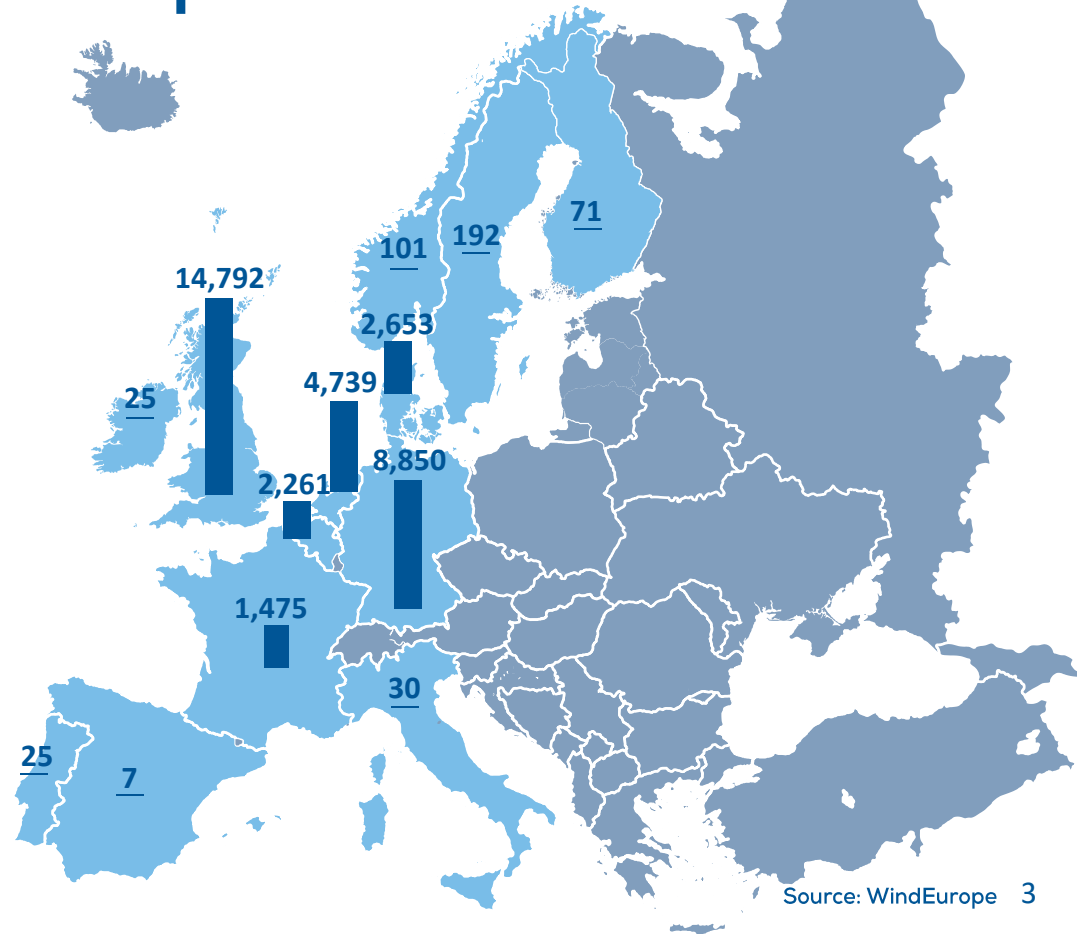
Cumulative

35,221 MW
connected to the grid*

13 countries

6,463 turbines

136 wind farms
connected to the grid



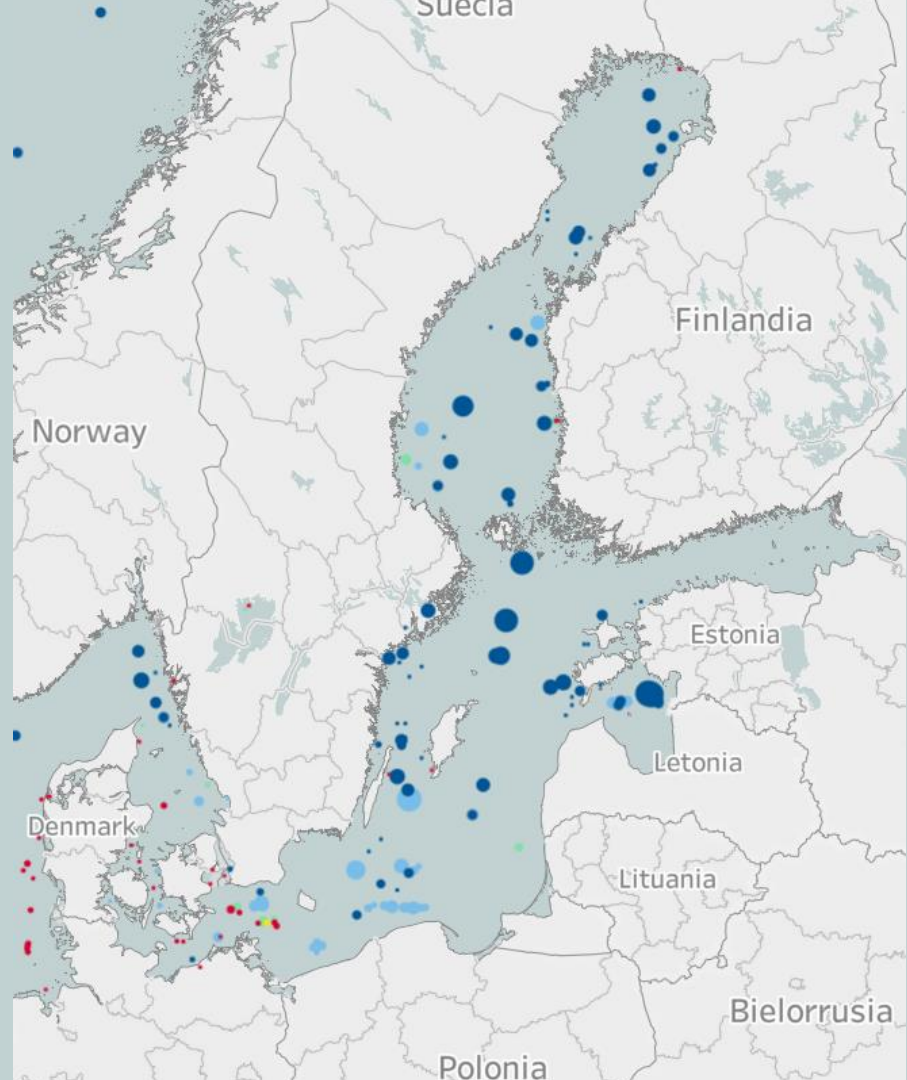
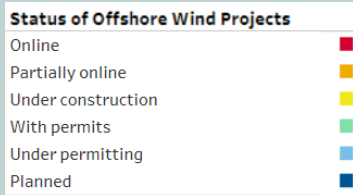
Overview of grid-connected offshore wind power projects at the end of H1 2024

Country	NO. OF WIND FARMS CONNECTED*	NO. OF TURBINES CONNECTED	CUMULATIVE CAPACITY (MW)
UK	45	2,771	14,792
Germany	33	1,603	8,850
Netherlands	10	670	4,739
Denmark	17	672	2,653
Belgium	11	399	2,261
France	4	214	1,475
Sweden	5	80	192
Norway	3	13	101
Finland	3	19	71
Italy	1	10	30
Ireland	1	7	25
Portugal	1	3	25
Spain	2	2	7
Total	136	6,463	35,221 MW

Baltic Sea offshore wind farms

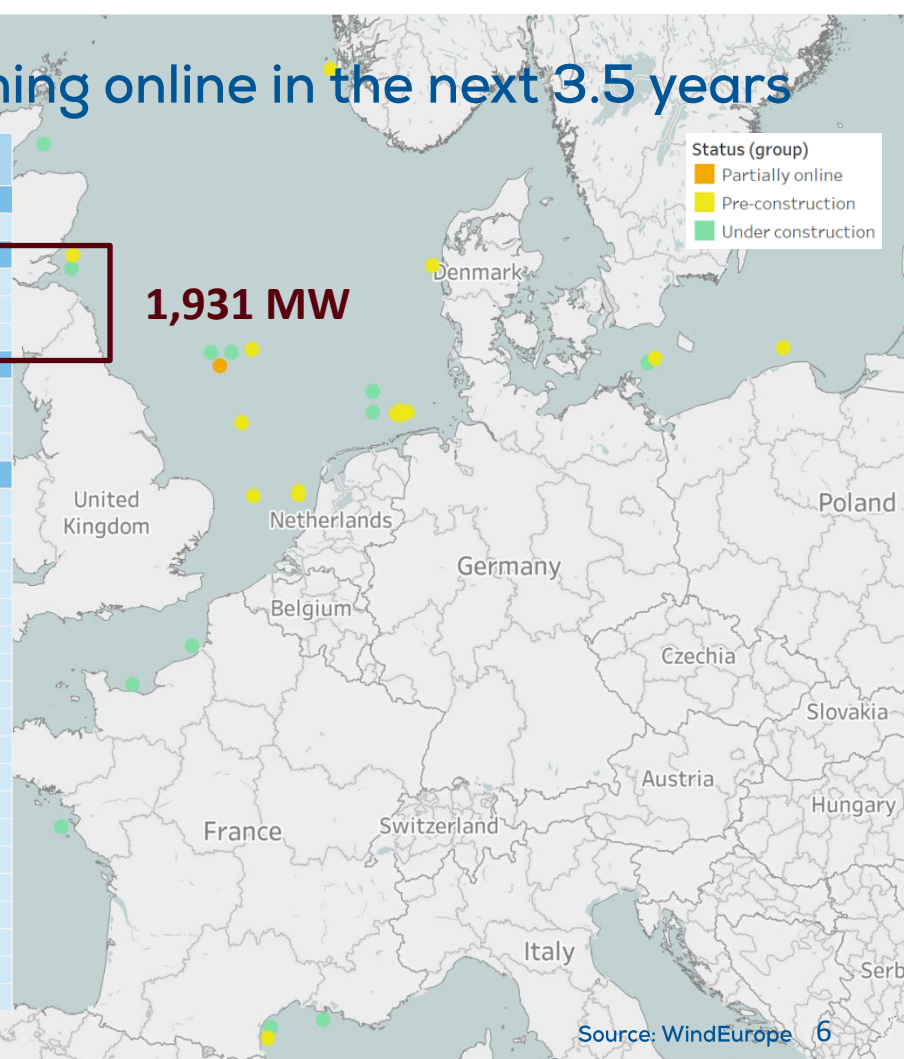
Denmark (1,487 MW)
Germany (1,545 MW)
Sweden (192 MW)
Finland (71 MW)

Total: 3,295 MW



Wind farms under construction* coming online in the next 3.5 years

Wind farm	COMMISSIONING DATE	PROJECT CAPACITY
Atlantic Ocean		
Isles of Yeu / Noirmoutier	2025	496 MW
Baltic Sea		
Baltic Eagle	2024	476 MW
Baltic Power	2026	1,140 MW
Windanker	2026	315 MW
Mediterranean Sea		
Provence Grand Large	2024	25 MW
EFGI	2024	30 MW
EolMed	2025	30 MW
North Sea		
Gode Wind 3	2024	253 MW
Dogger Bank (phase A)	2025	1,200 MW
Nearst na Gaoithe	2025	448 MW
Borkum Riffgrund 3	2025	913 MW
Courseulles-sur-Mer	2025	448 MW
Dogger Bank (phase B)	2025	1,200 MW
EnBW He Dreiht	2025	960 MW
Moray West	2025	882 MW
Dogger Bank (phase C)	2026	1,200 MW
Dieppe / Le Tréport	2026	496 MW
Sofia	2026	1,400 MW
East Anglia Hub (Three)	2026	1,400 MW
Nordseecluster - phase A (N-3.7)	2027	225 MW
Nordseecluster - phase A (N-3.8)	2027	433 MW
Ecowende	2027	760 MW
Hornsea Three	2027	2,900 MW
Inch Cape	2027	1,080 MW
Thor	2027	1,000 MW
TOTAL	-	19,710 MW



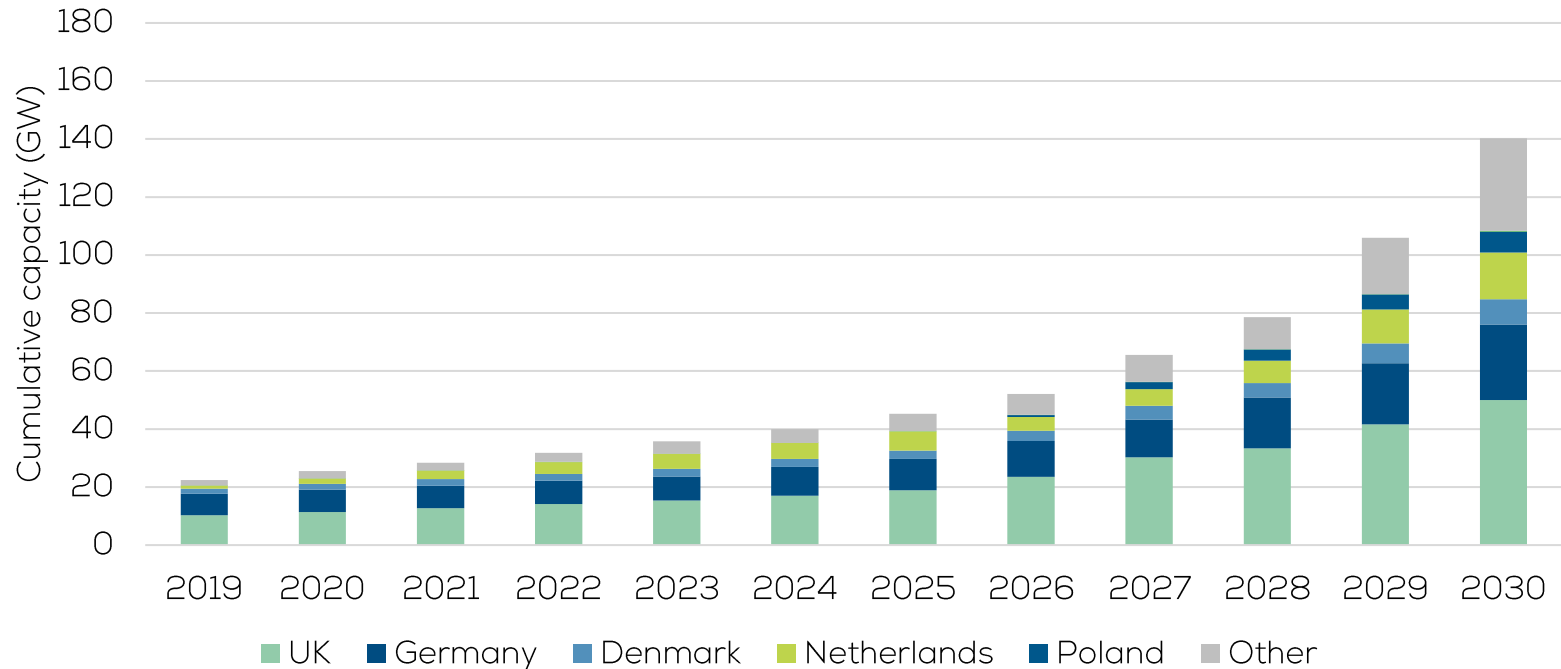
*Wind farms with FID in pre-construction, construction and partially online

Due to higher costs and interest rates, only three farms have reached Final Investment Decision (FID) in H1 2024 raising €6bn for almost 2 GW of new capacity

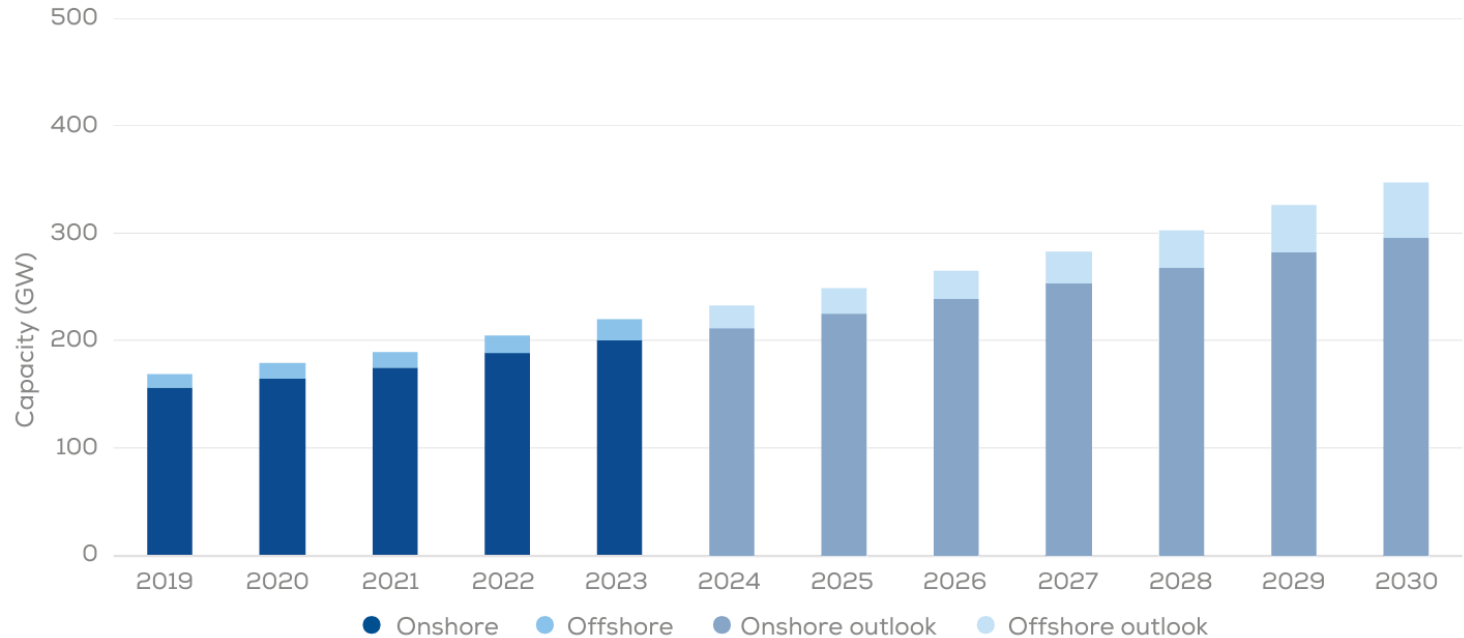
Final Investment Decisions for European offshore wind farms in H1 2024

Country	WIND FARM	CAPACITY (MW)	FINAL INVESTMENT DECISION	TOTAL CAPEX (€bn)	COMMISSIONING DATE
Germany	Windanker	315	Q2 2024	1.0*	2026
Germany	Nordseecluster - phase A	658	Q2 2024	2.2*	2027
Germany	Nordseecluster - phase B	900	Q2 2024	3.0*	2029
Total	-	1,873 MW	-	€6.2bn	-

Governments want to do 140 GW of offshore wind by 2030



Revised WindEurope's outlook



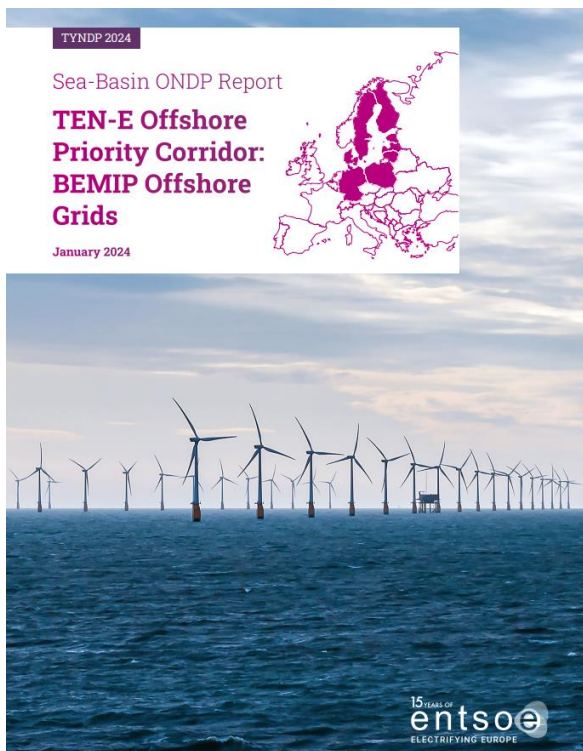
Source: WindEurope

Evolution of cumulative wind power capacity in the EU

REGIONAL COOPERATION IN THE BALTIC SEA

Regional cooperation from EU policies

Country targets based on the NECPs and ONDPs



Cooperation commitments:

RED III: Countries should establish cooperation on joint offshore/onshore projects with other MS:

- 1 by 2025
- 2 by 2030
- 3 by 2033

Trans-European Networks for Energy (TEN-E) cross-border offshore infrastructure projects:

- Hybrid interconnectors
 - Cross-border cost-sharing guidelines
- Connecting Europe Facility
- Projects of Common Interest
e.g., ELWIND, Bornholm Energy Island, PE Island

Regional cooperation highlights



NSEC Publishes:

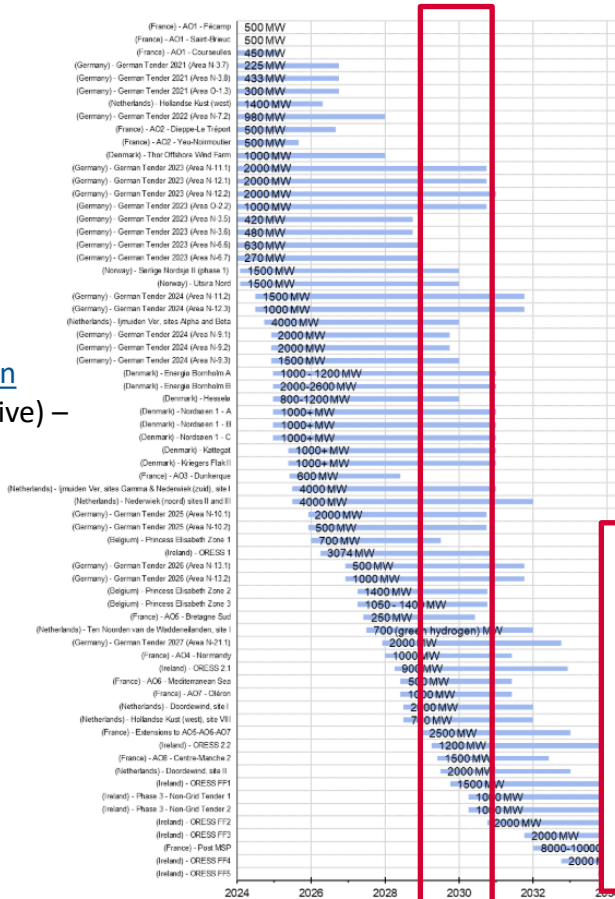
- Tender planning tool
- Ports' Study
- Cost-Benefits Costs-sharing Study

NSEC Publishes work programme 2024

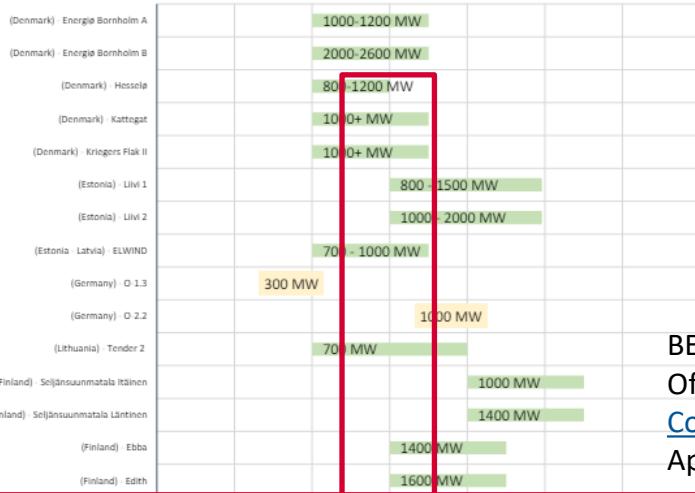
BEMIP Publishes:

- Work programme 2024
- Tender planning tool

NSEC/BEMIP auction schedule



[NSEC construction schedule](#) (indicative) – November 2023



BEMIP (indicative) Offshore Wind [Construction Schedule](#) – April 2024

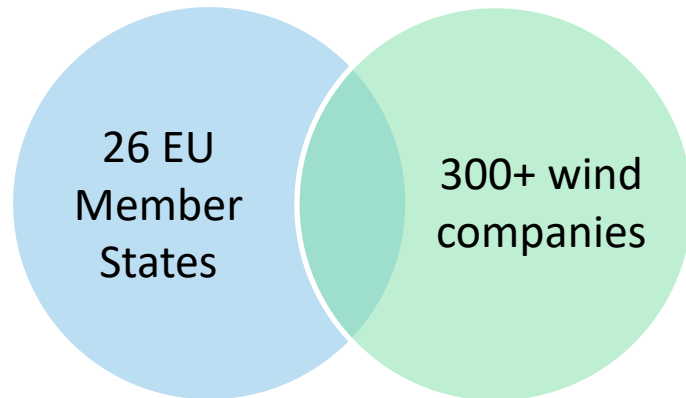
In 2030, under construction:
 36 projects = 35+ GW in the North Sea
 9 projects = 6+ GW (exc. Bornholm)
Total: 45 projects / 40+ GW

Wind Power Package



- ⇒ Faster permitting
- ⇒ Digitalise permitting
- ⇒ Raise the bar
- ⇒ Index auctions
- ⇒ Invest in supply chain
- ⇒ Give investors visibility

Wind Energy Charter signed by:



Recent European wind supply chain investments



Turbine factories

Hubs, nacelles, blades and towers



Offshore turbine foundation factories

In Cuxhaven, Esbjerg, Rotterdam and Teesside



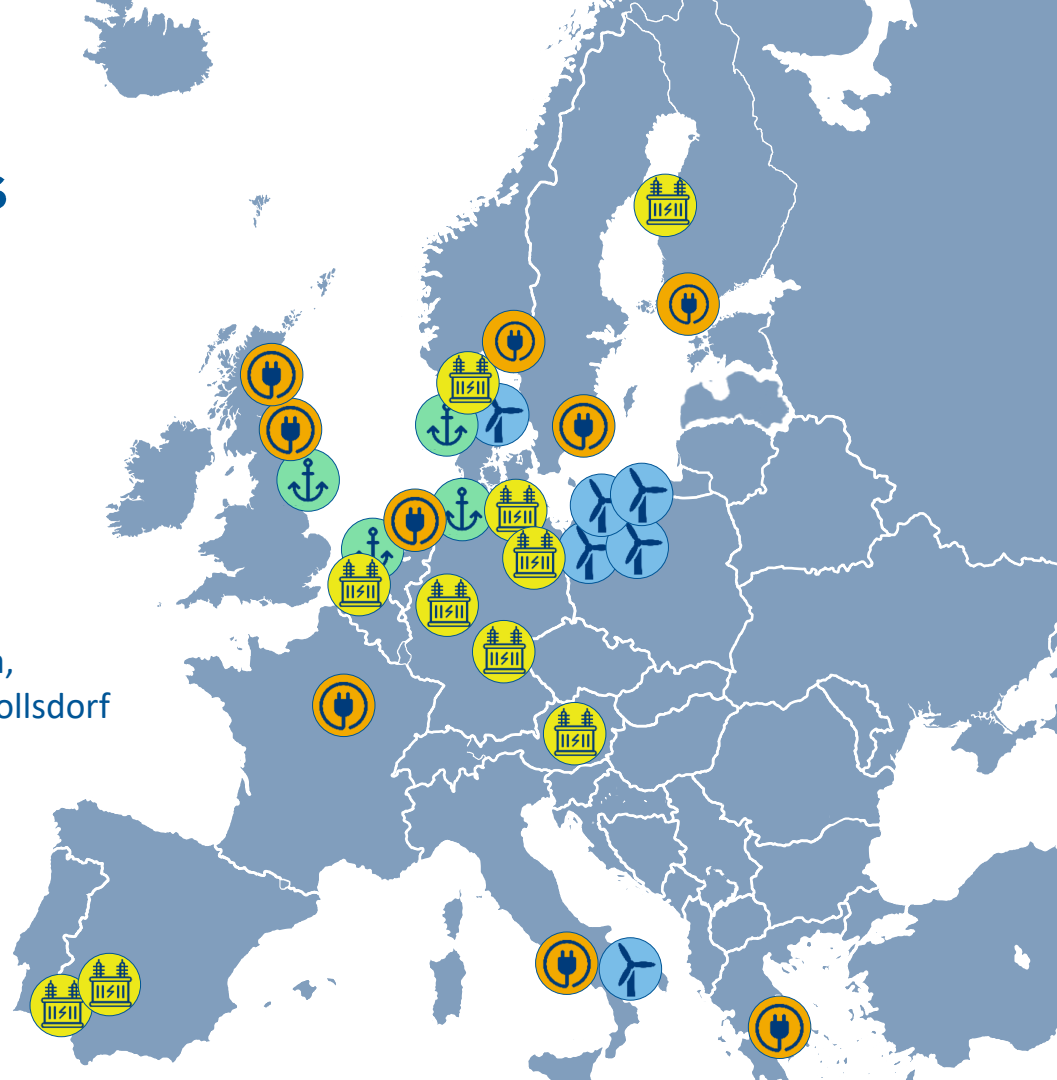
Grid equipment factories

In Aalborg, Bad Honnef, Berlin, Cadiz, Córdoba, Nuremberg, Rostock, Vaasa, Vlissingen and Wollsdorf



Cable factories

In Cambois, Corinth, Eemshaven, Gron, Halden, Karlskrona, Nigg and Pikkala, Pozzuoli



Investments in ports

An aerial photograph of a large-scale industrial construction site, likely a port or a wind turbine manufacturing hub. The foreground and middle ground are dominated by hundreds of long, white, conical wind turbine nacelle sections, neatly arranged in long rows on a paved or dirt surface. In the background, there are various industrial buildings, cranes, and other construction equipment. The sky is overcast, and the overall scene conveys a sense of massive industrial activity and infrastructure development.

€8.5bn
by
2030

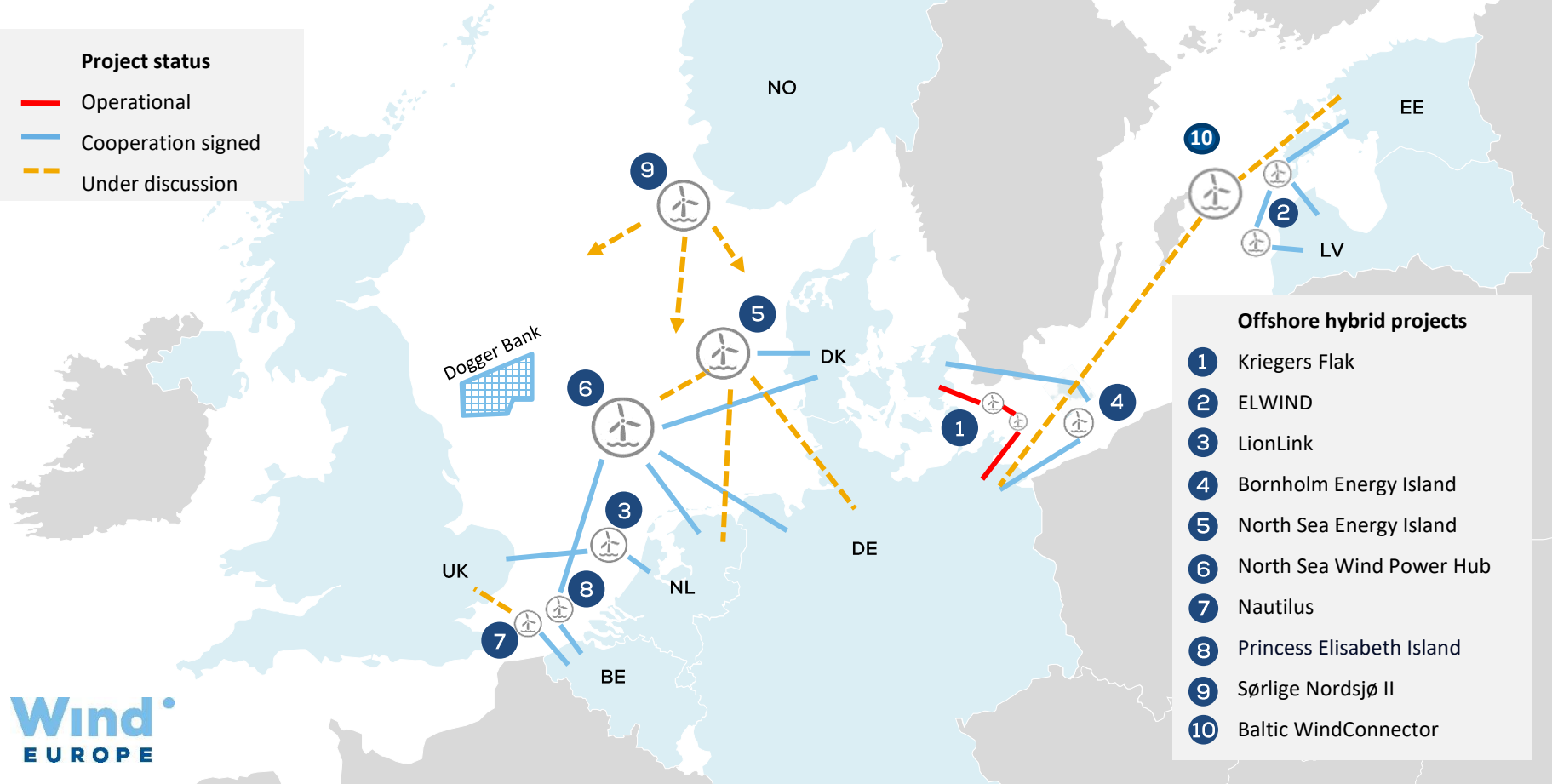
How much is it going to cost?

€450bn
by
2030

Offshore hybrids

Project status

- Operational
- Cooperation signed
- - - Under discussion



Offshore hybrid projects

- 1 Kriegers Flak
- 2 ELWIND
- 3 LionLink
- 4 Bornholm Energy Island
- 5 North Sea Energy Island
- 6 North Sea Wind Power Hub
- 7 Nautilus
- 8 Princess Elisabeth Island
- 9 Sørlige Nordsjø II
- 10 Baltic WindConnector

Offshore Wind Installations Vessels

Wind turbine Installation
Vessel (WTIV)

Foundation Installation
Vessel (FIV)

Offshore Support
Vessel (SOV)

Heavy Lift Vessel
for OSS

Cable Laying Vessel
(CLV)

Crew Transfer
Vessel (CTV)



Cable Laying Vessel (CLV)
2-3 years

Foundation Installation Vessel
(FIV)
3-4 years

Wind turbine Installation
Vessel (WTIV)
3-4 years

Status

- 28 vessels suitable today
- 32 vessels by 2026

Shortages

- 2024-25: 6 CLV (3.6 GW/year)
- 2028-30: 22 CLV (17 GW/year)

Status

- 17 vessels suitable today
- 24 vessels by 2026

Shortages

- 2024-25: 2-4 FIVs (2-4 GW/year)
- 2028-30: 9 FIVs (12 GW/year)

Status

- 10 vessels suitable today
- 15 vessels by 2026

Shortages

- 2025-26: 4 WTIV (3 GW/year)
- 2028-30: 12 WTIV (15 GW/year)

Coexistence with military activities



Protecting Critical Energy Infrastructure at Sea

Panel

17:30 - 18:30
Ensuring the security of
critical energy
infrastructure

- Panel discussion
- Daniel Mortensen, Ørsted
 - Kris Van der Vliet, Belgian Navy
 - Constantinos Kalliasavvas, EU Defence Agency
 - Samu Paukkunen, NATO



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EUROPE

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edp | Iberdrola | nationalgrid

REPSOL | RWE | SIEMENS Gamesa
RENEWABLE ENERGY

IN PARTNERSHIP WITH

AEE | EUROPEAN ENERGY EXCHANGE | ENERGY SOUTH AFRICA

Wind*
EUROPE
ANNUAL EVENT
2024
BILBAO
20-22 MARCH

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2024
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THANK YOU

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EUROPE

windeurope.org



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Finland	3	19	71	-	-
Italy	1	10	30	-	-
Ireland	1	7	25	-	-
Portugal	1	3	25	-	-
Spain	2	2	7	-	-
Total	136	6,463	35,221 MW	124	1,057 MW

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