

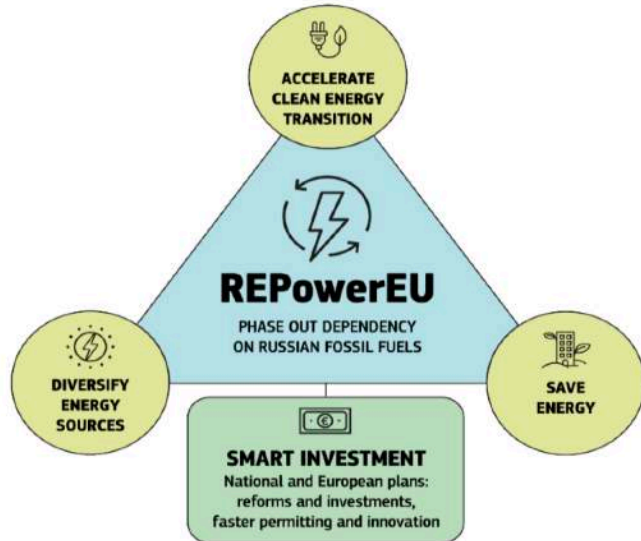
Offshore wind power as a long term decarbonisation option



COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN
PARLIAMENT, THE EUROPEAN COUNCIL, THE COUNCIL, THE EUROPEAN
ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE
REGIONS

REPowerEU Plan

{SWD(2022) 230 final}



- “A massive speed-up and scale-up in renewable energy in power generation, industry, buildings and transport.
- “The Commission is proposing to increase the target in the Renewable Energy Directive to 45% by 2030, up from 40% in last year’s proposal. This would bring the total renewable energy generation capacities to 1,236 GW by 2030, in comparison to 1,067 GW by 2030 envisaged under Fit for 55 for 2030.
- “Solar photovoltaics (PV) is one of the fastest technologies to roll out. That is why the Commission sets the REPowerEU target of over 320 GW of solar photovoltaic newly installed by 2025, over twice today’s level, and almost 600 GW by 2030.
- “Wind energy, **in particular offshore wind** represents a significant future opportunity: resources are stable, abundant and public acceptance is higher. Europe is the global leader in offshore wind. To further strengthen the EU wind sector’s global competitiveness, and achieve the REPowerEU ambition with fast wind energy deployment, supply chains need to be strengthened and permitting drastically accelerated.”



Four EU countries set a massive offshore wind target of 65 GW by 2030

Michelle Lewis · May, 19th 2022 2:39 pm PT [@michelle0728](#)



26 Comments



Four EU countries – Belgium, Denmark, Germany, and the Netherlands – jointly announced yesterday that they have set an offshore wind target of at least 65 gigawatts (GW) by 2030 and then intend to more than double that combined total to 150 GW by 2050.

For perspective, according to the Global Wind Energy Council, as of September 2021, there were **35.3 GW** of global offshore wind capacity.





DAILY WIND ENERGY



YESTERDAY'S TOP 20 COUNTRIES



HOURLY ELECTRICITY MIX



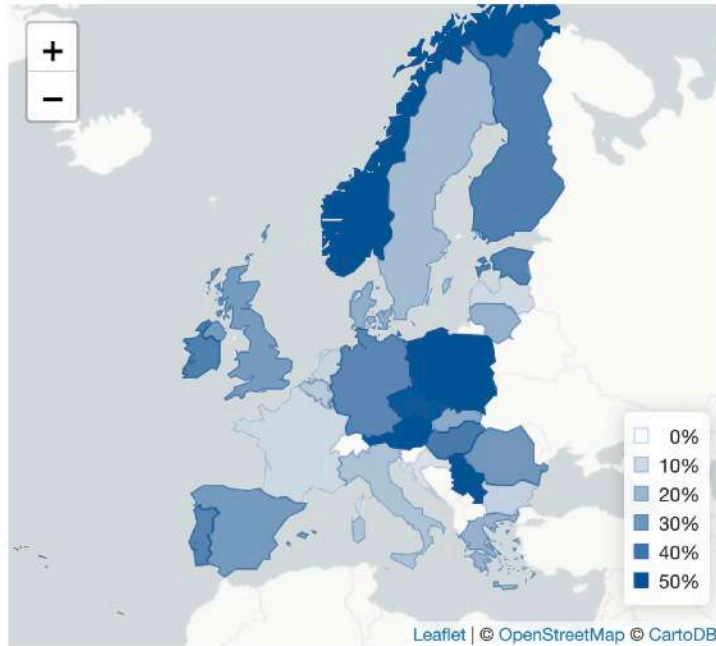
HOURLY WIND ENERGY GENERATION



CAPACITY FACTORS

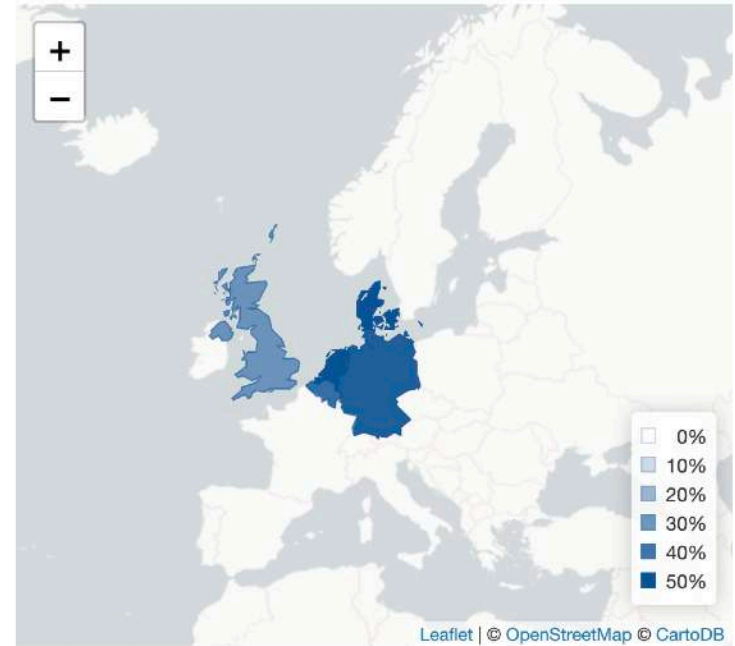
Onshore wind

29.7%



Offshore wind

42.2%



The capacity factor is the average power generated by wind divided by its peak capacity.

Source: WindEurope



Offshore wind farm and turbine size

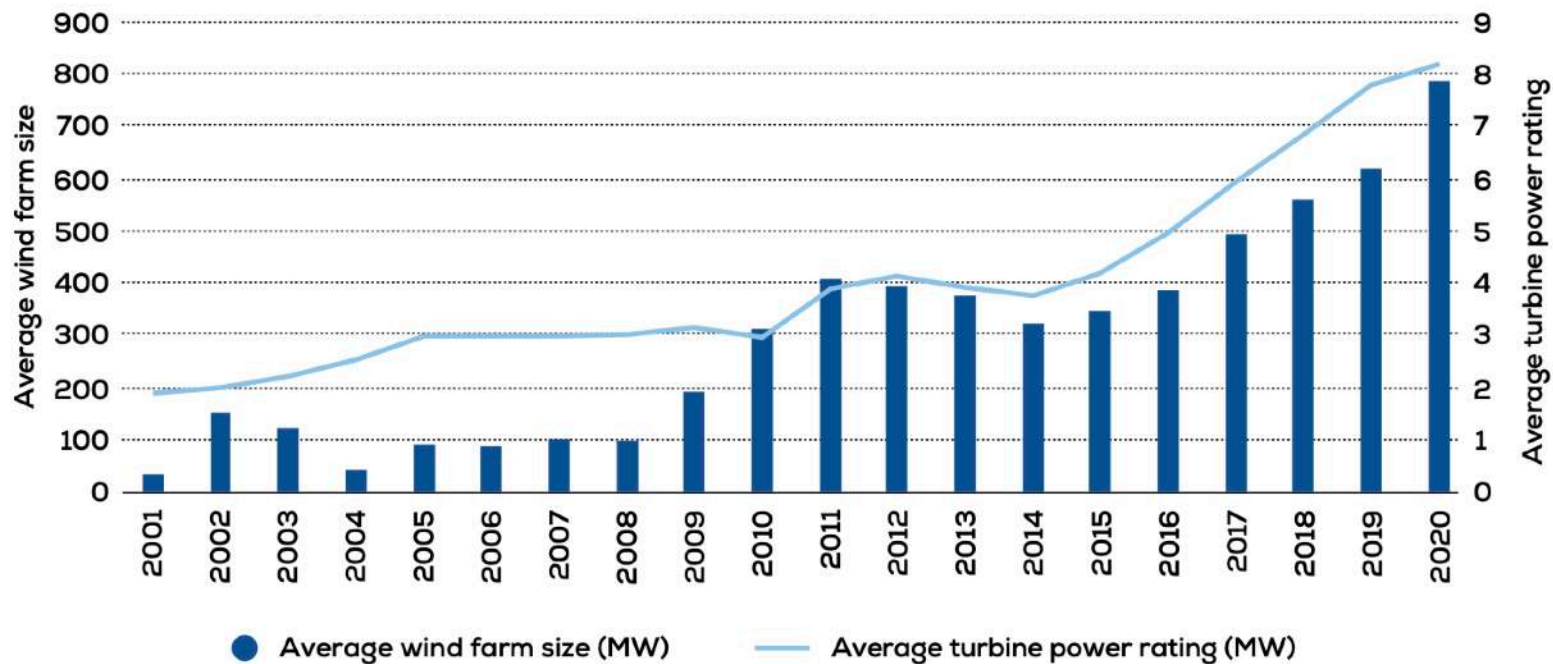
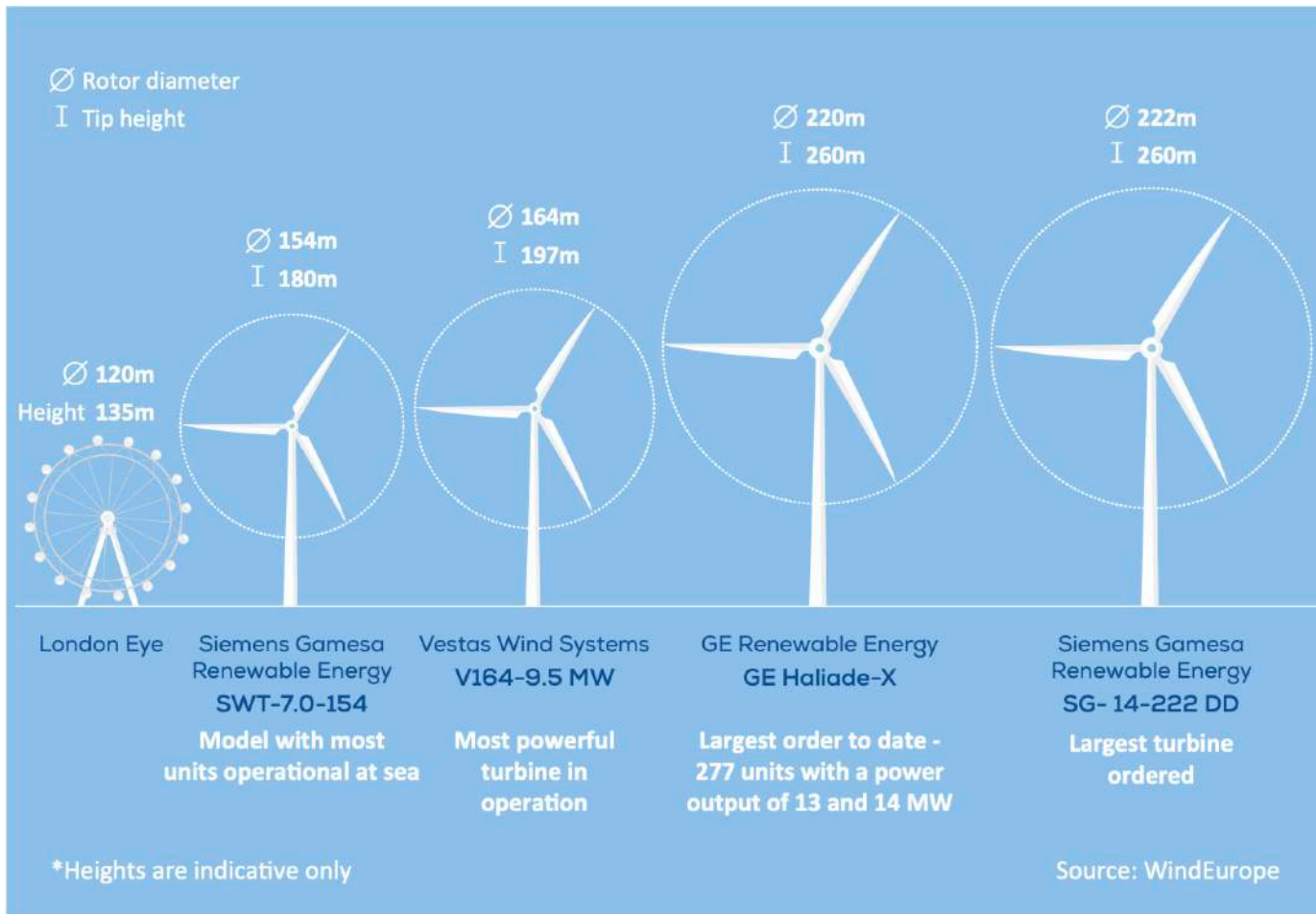
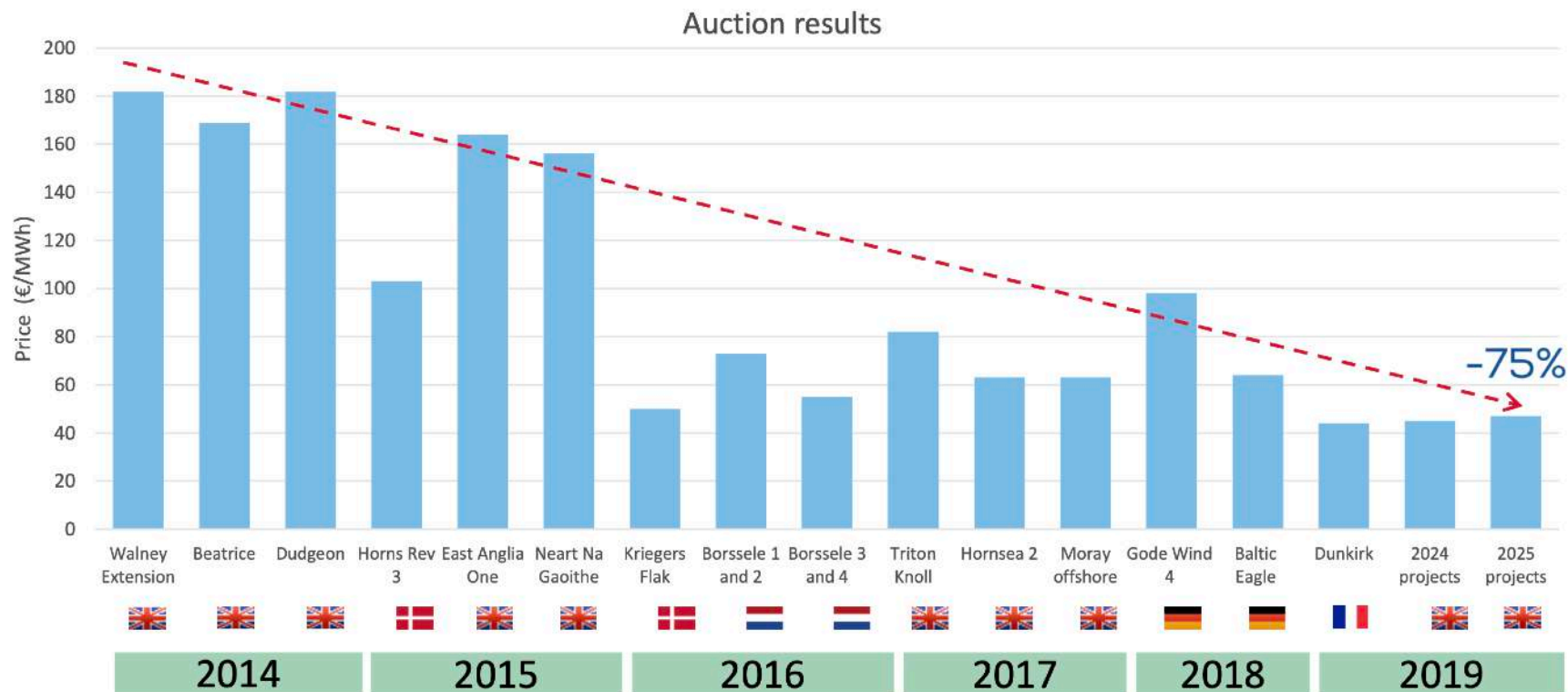


Figure 6. Average annual installed wind farm size and average turbine power rating for offshore wind in Europe.







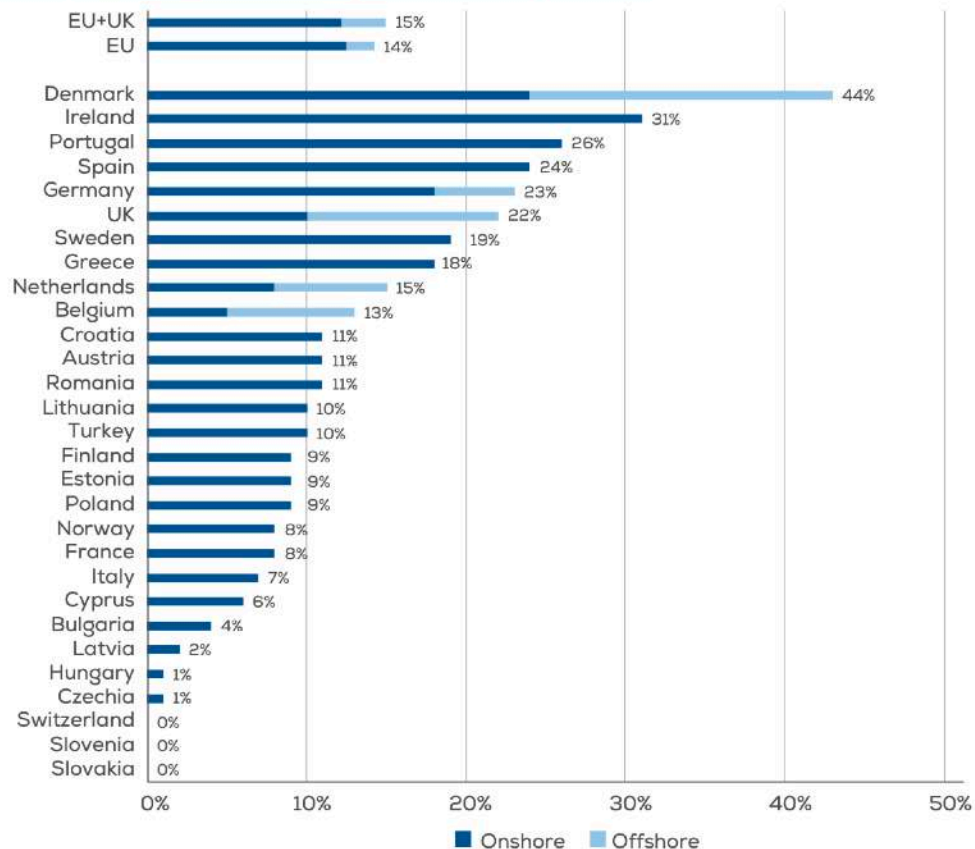
Source: WindEurope



STATUS & CHALLENGES



Percentage of the average annual electricity demand covered by wind in 2021¹⁴



Source: WindEurope

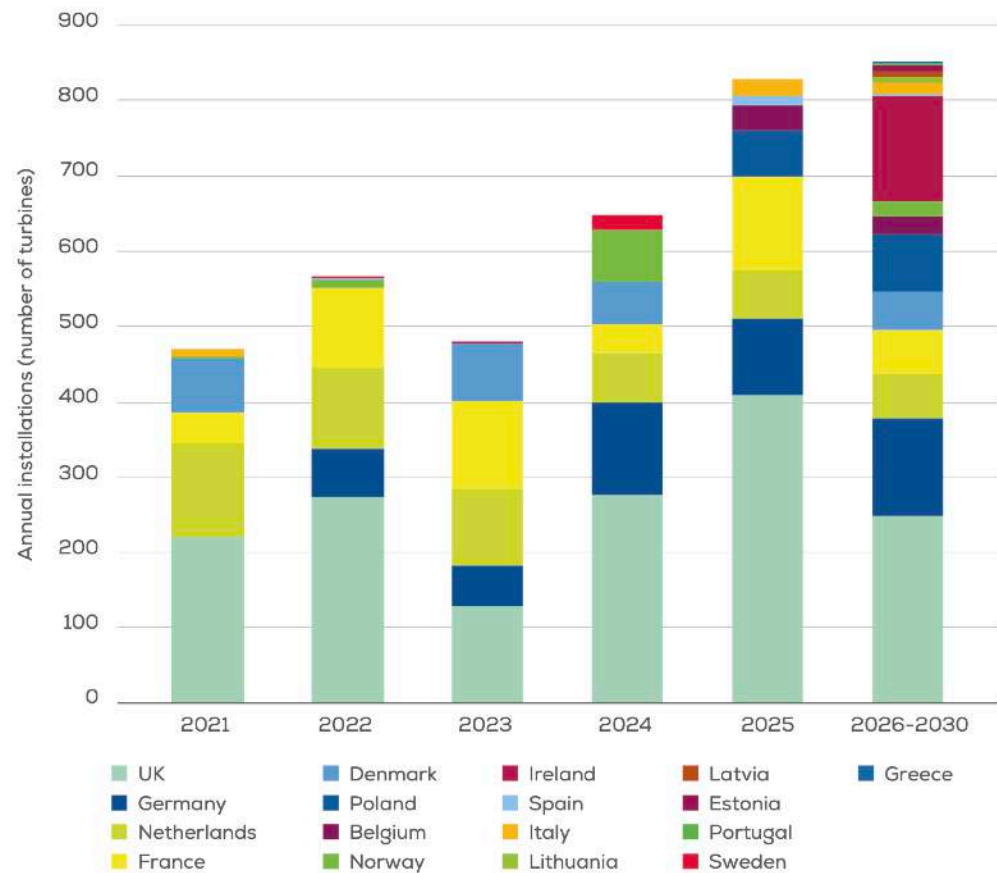


Expected new installations 2022-26 - Realistic Expectations Scenario



Source: WindEurope



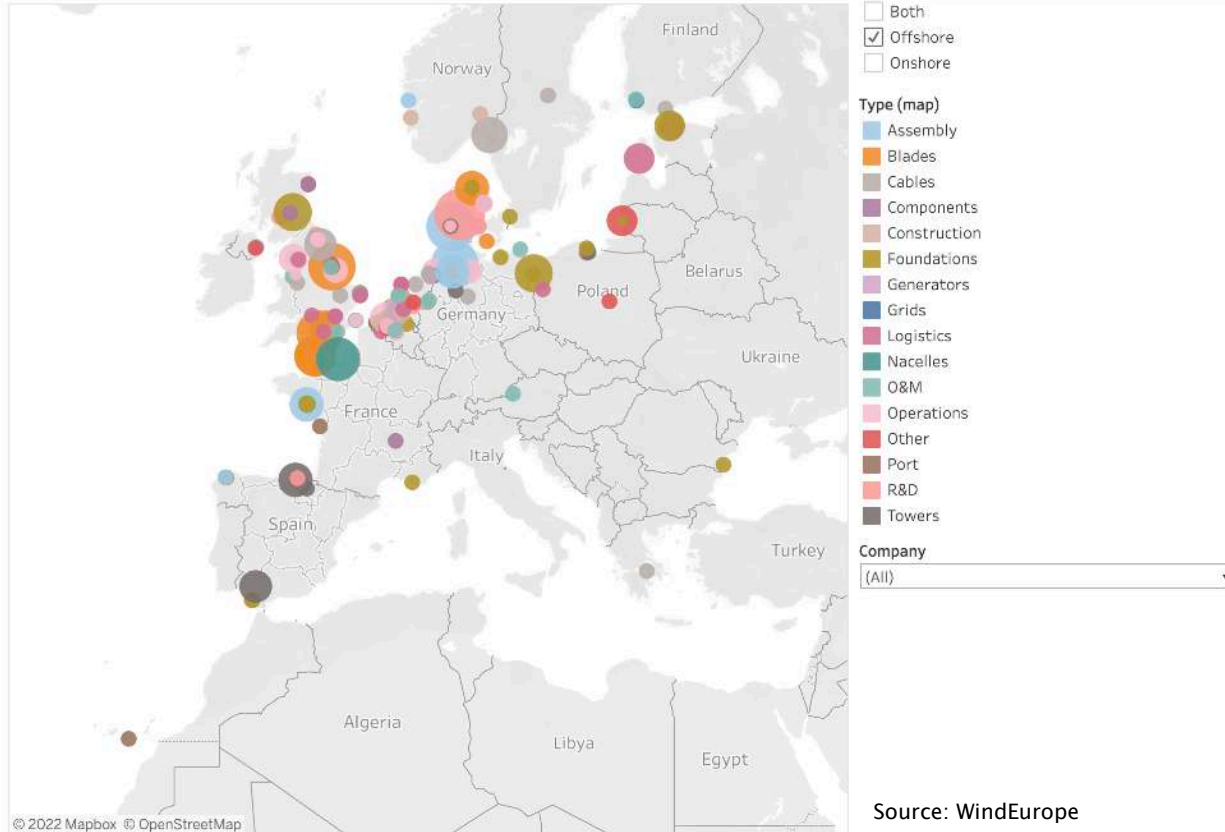


Source: WindEurope



Wind supply chain map

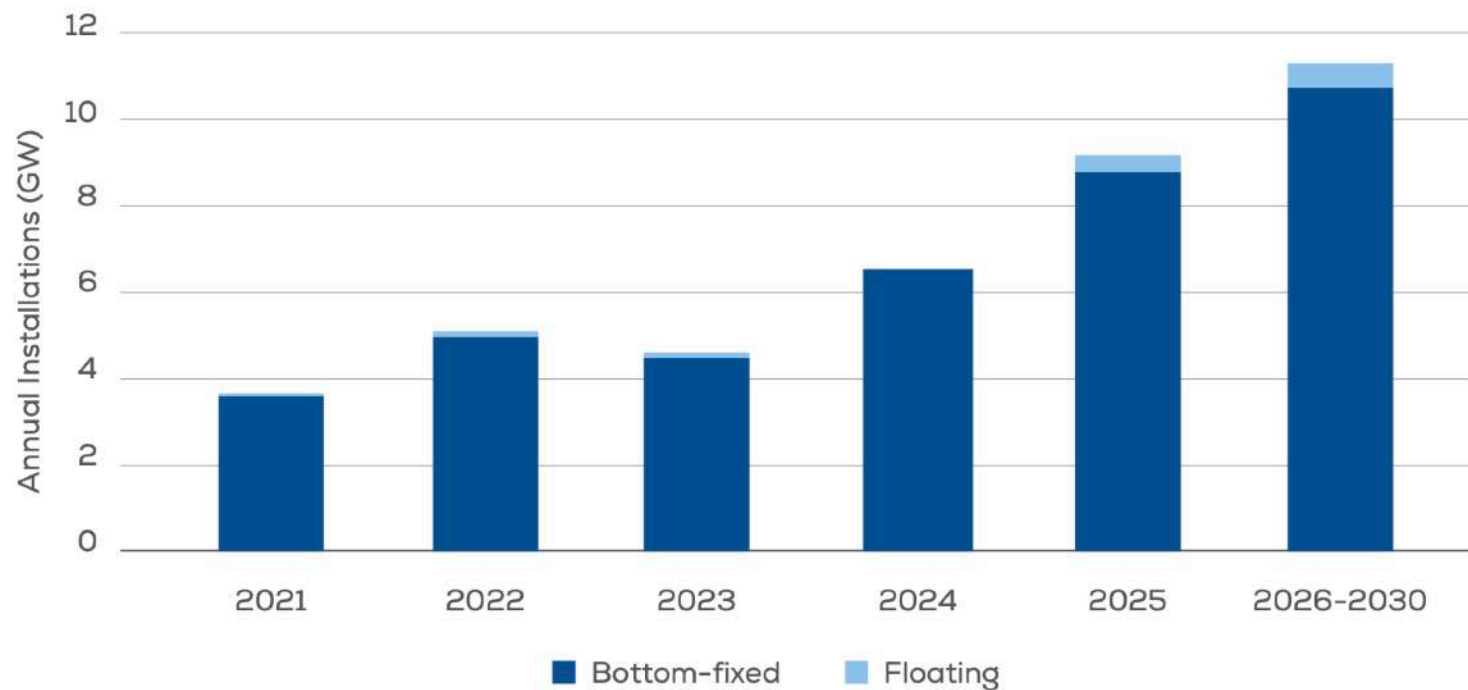
Regional Map



Source: WindEurope



Estimated share of bottom-fixed and floating wind in the next decade



Source: WindEurope



Llewelyn Hughes
Crawford School of Public Policy
College of Asia & the Pacific
Australian National University
T +61 474 828 185
E llewelyn.hughes@anu.edu.au

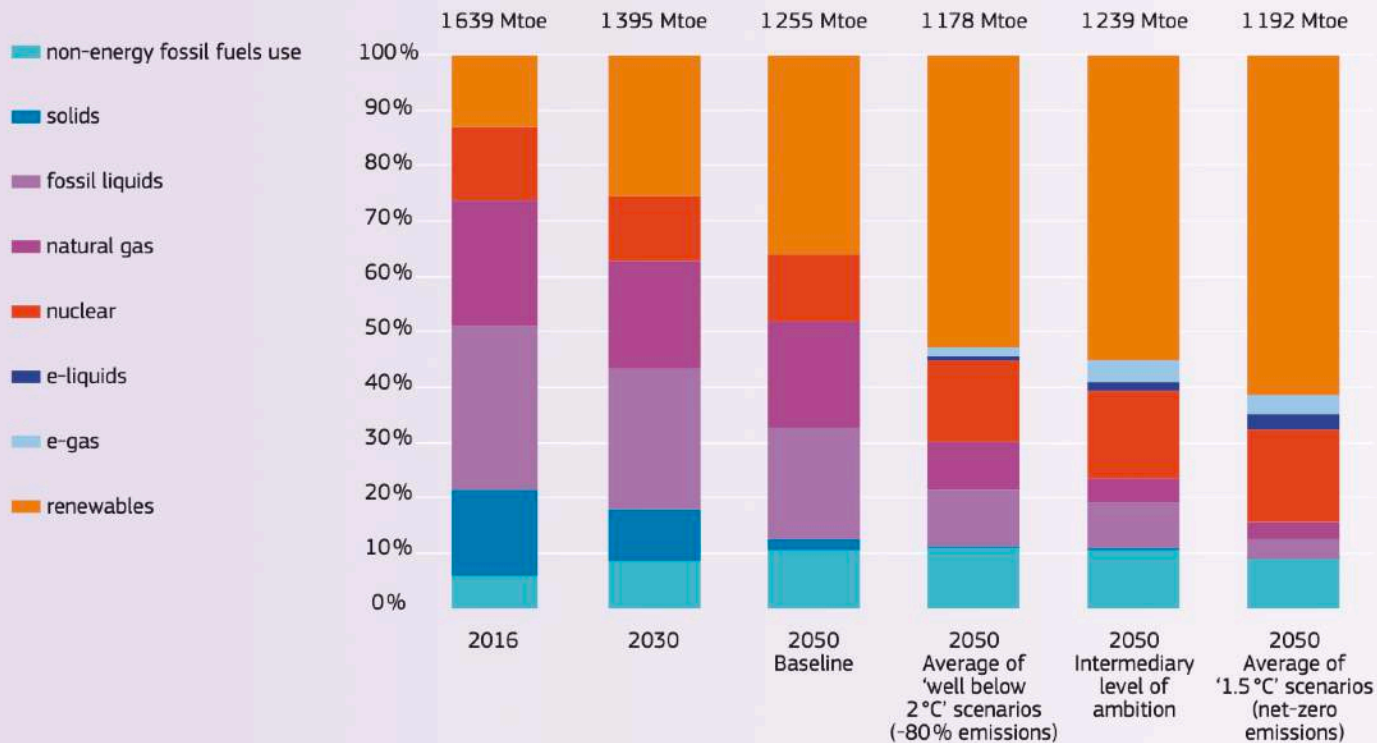


Australian
National
University

EXTRAS



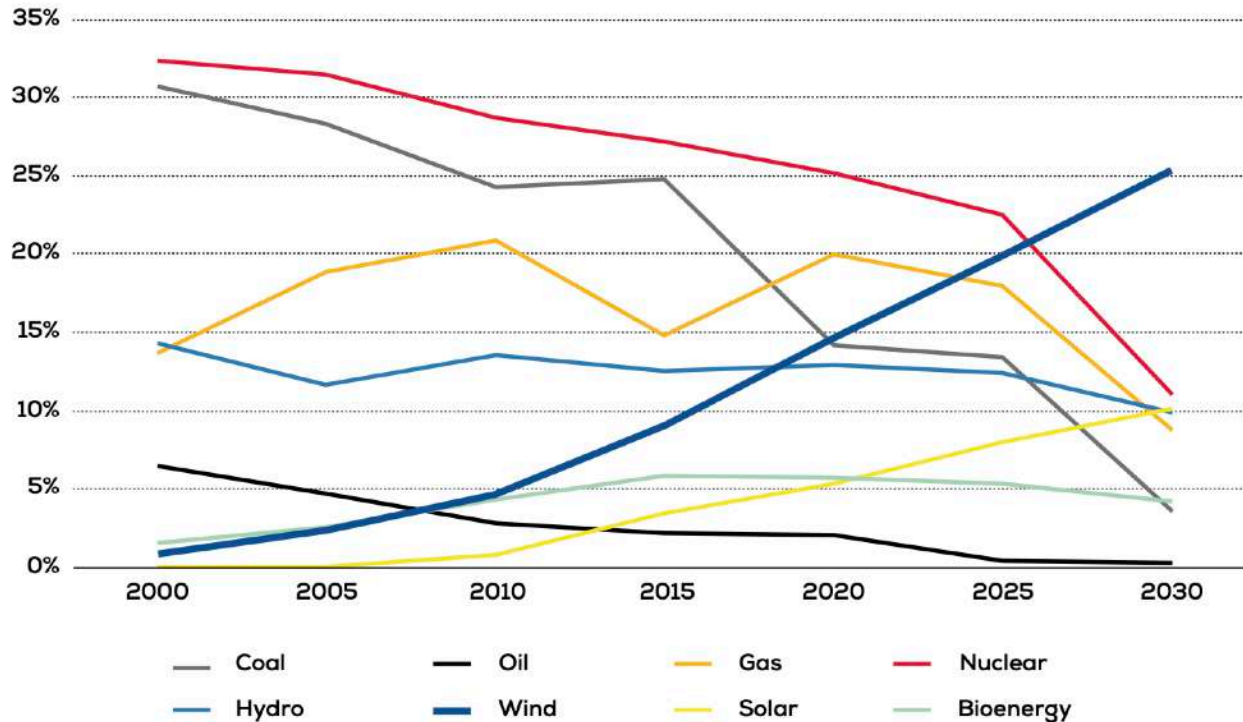
Figure 1. Gross inland consumption of energy



Source: Directorate-General for Climate Action (European Commission)



Electricity mix

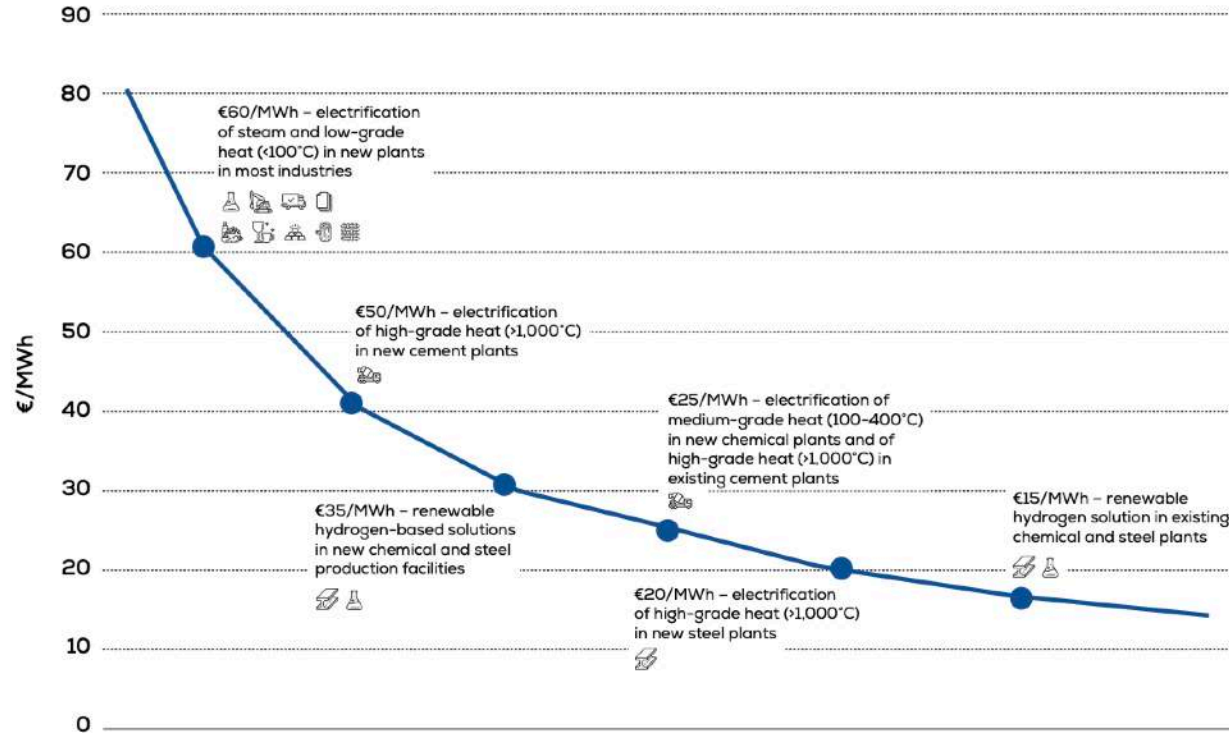


- This will require wind to be 50% of the EU's electricity mix with renewables representing 81%:
- Onshore wind expected to generate about 2,300 TWh per year by 2050.
- Offshore would grow to 1,200 TWh.
- Together this represents more electricity than that produced for Europe today.
- Also, note offshore technical potential is 25,000TWh

Figure 4. Electricity mix EU27. Source: Eurostat, Ember and WindEurope for historical data. Projections: European Commission Impact Assessment, COVID MIX scenario, 2020.



Break even electricity prices for switching into electrical heating and feedstock production

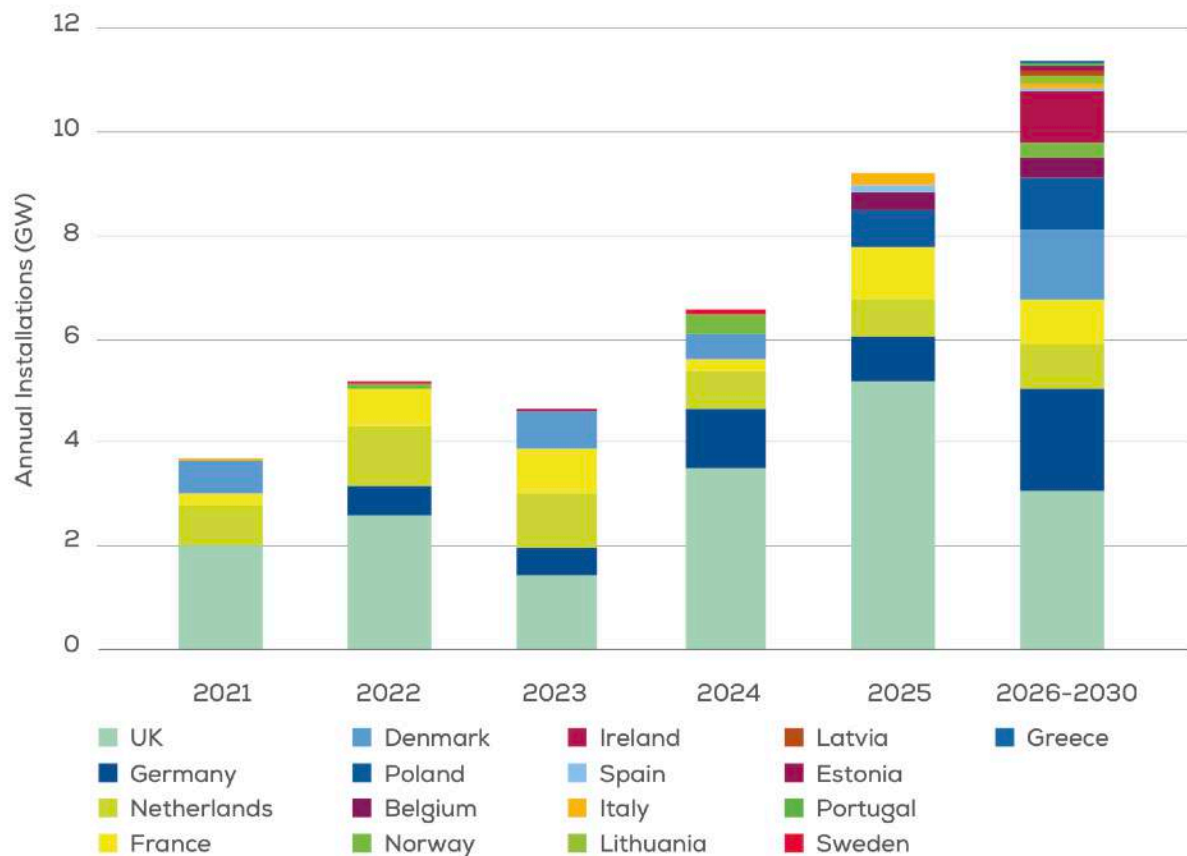


- More than three quarters of final energy demand will be electrified.
- This will require the electricity system to grow to 6,800 TWh from less than 3,000 TWh today.

Figure 16. Electricity prices for electrification switch. Source: WindEurope based on McKinsey, Material Economics^{29 30 31}.



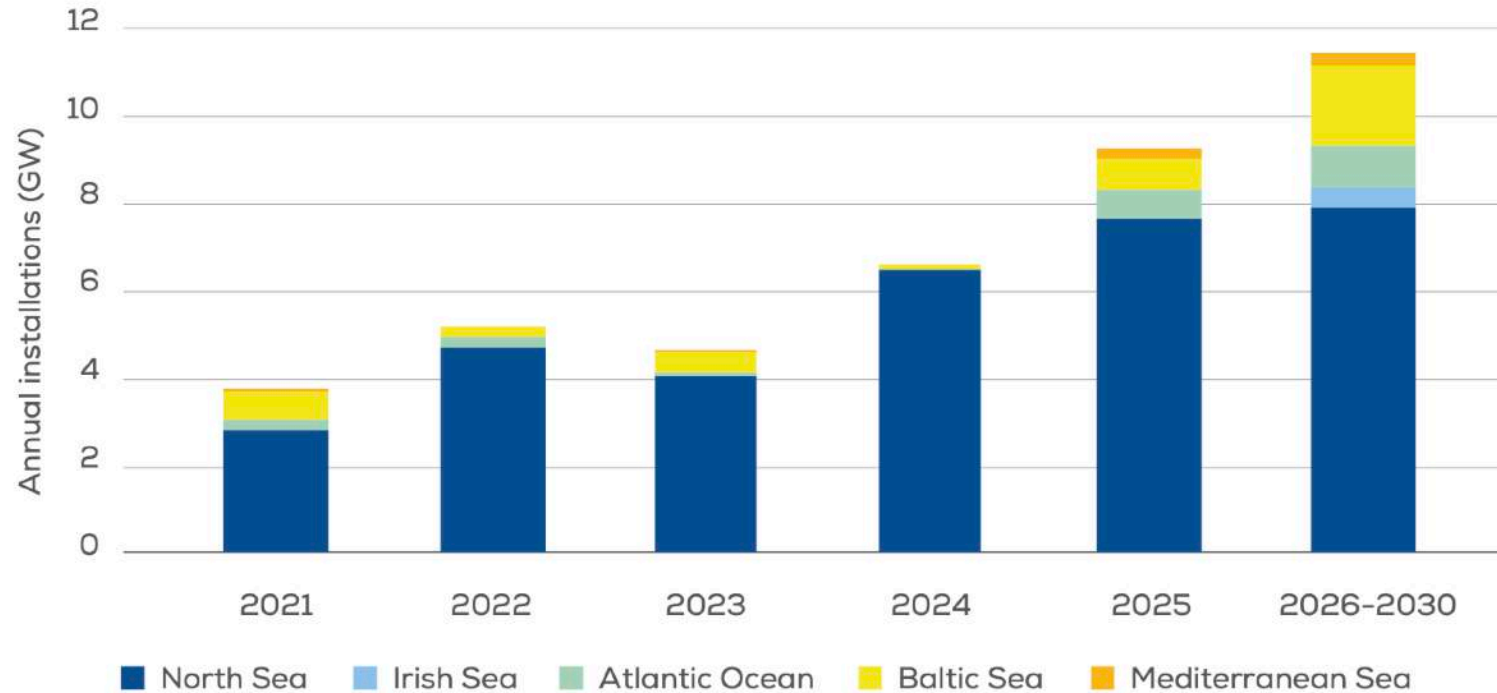
European Offshore Wind Outlook to 2030: Annual installations (GW)



Source: WindEurope



Estimated offshore wind installations over the next decade (GW)

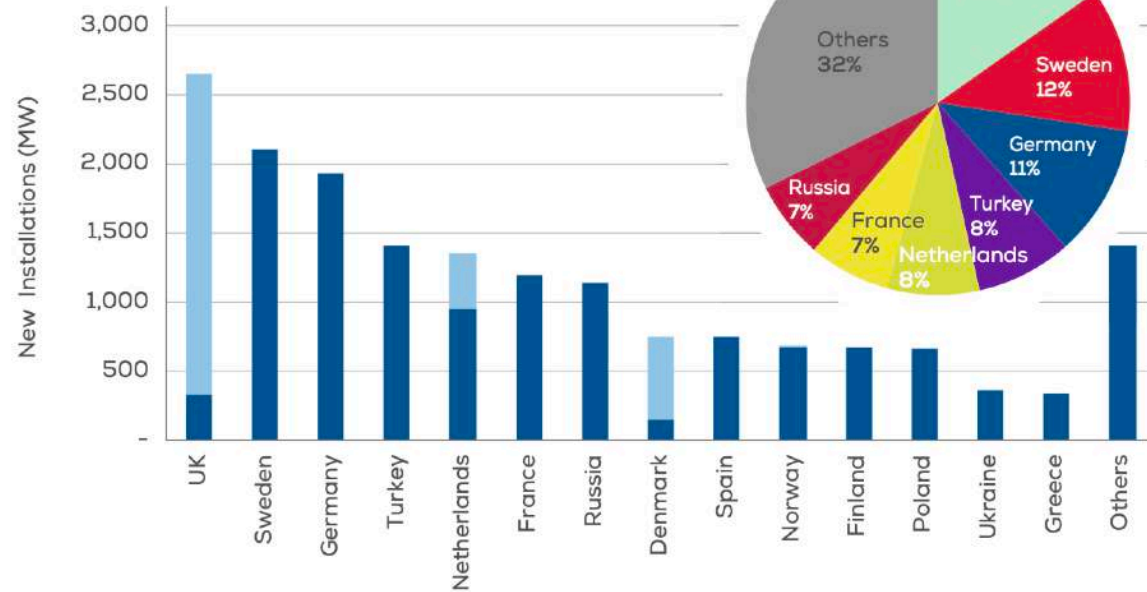


Source: WindEurope



FIGURE A

New onshore and offshore wind installations in Europe in 2021

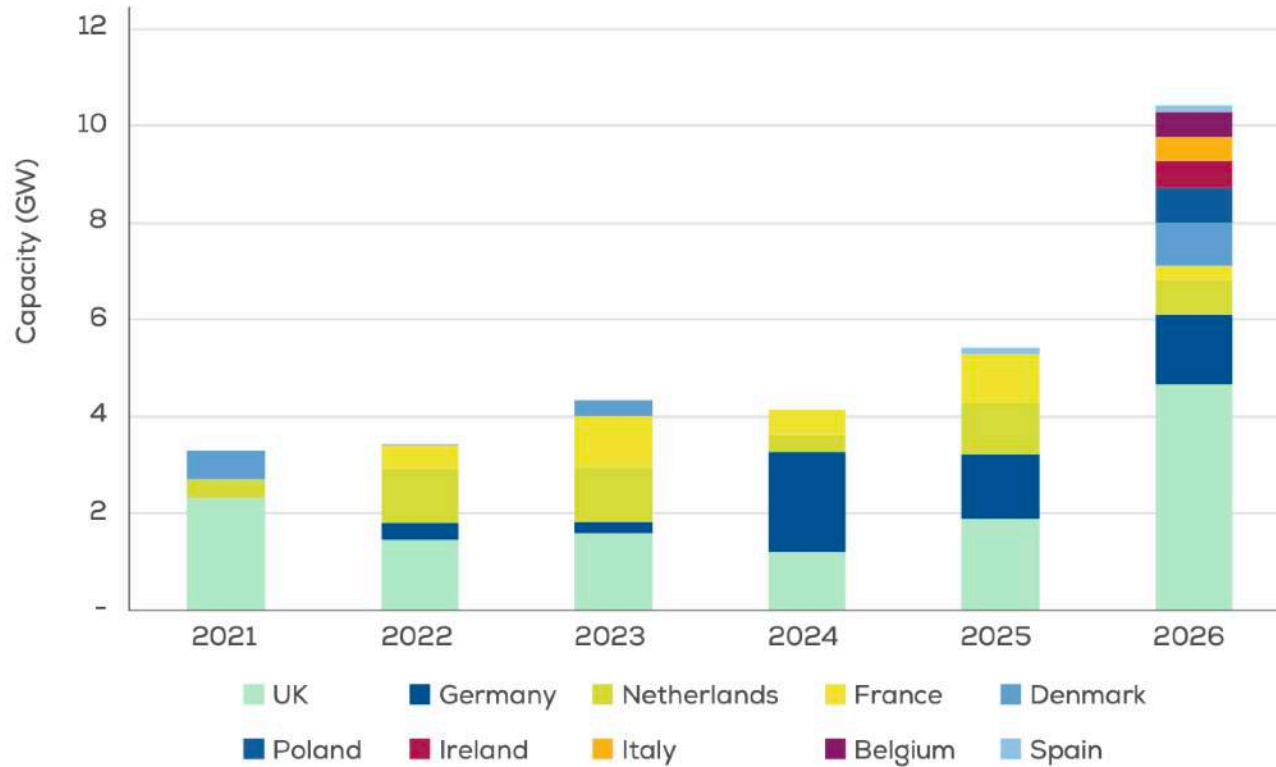


Offshore	2,317	-	-	-	392	-	-	605	-	4	-	-	-	-	-
Onshore	328	2,104	1,925	1,400	952	1,192	1,139	149	750	672	671	660	359	338	1,402
Total	2,645	2,104	1,925	1,400	1,344	1,192	1,139	754	750	676	671	660	359	338	1,402

Source: WindEurope



New offshore installations per country, 2022-26 - Realistic Expectations Scenario



Source: WindEurope





DAILY WIND ENERGY



YESTERDAY'S TOP 20 COUNTRIES



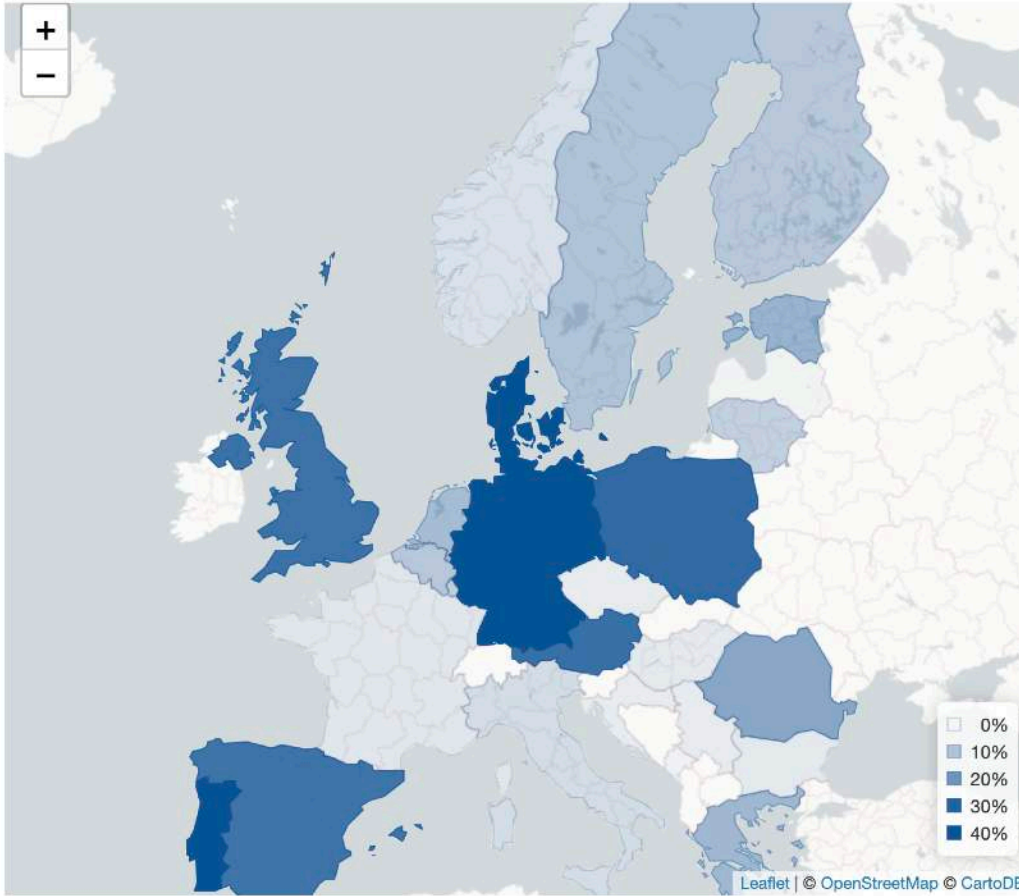
HOURLY ELECTRICITY MIX



HOURLY WIND ENERGY GENERATION



CAPACITY FACTORS



Share of wind energy in electricity demand

19.2%



16.6%
1,150 GWh
onshore wind



2.7%
185 GWh
offshore wind

Would you like to receive
Daily Wind Power Numbers every morning in
your inbox?

[Subscribe here](#)

New to wind power
numbers?
[See the explanation](#)

Source: WindEurope

