THE OFFSHORE WIND PERSPECTIVE

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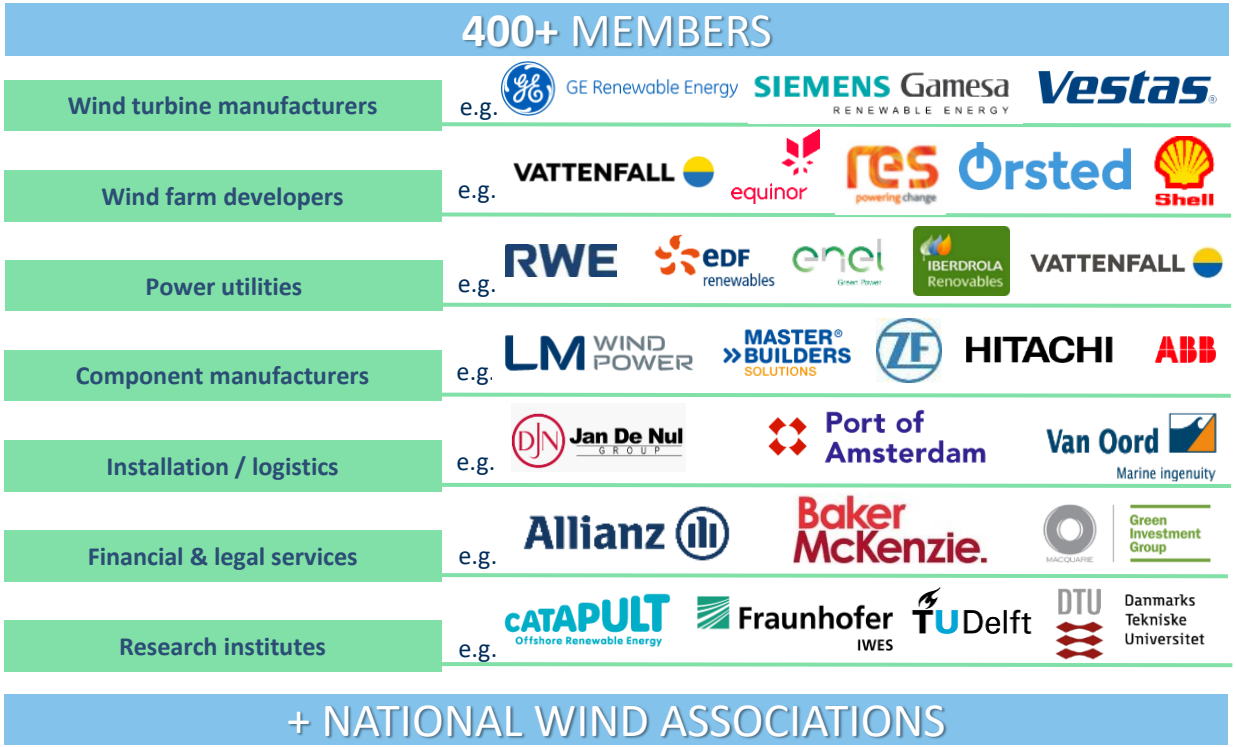
WindEurope is the voice of the European wind industry



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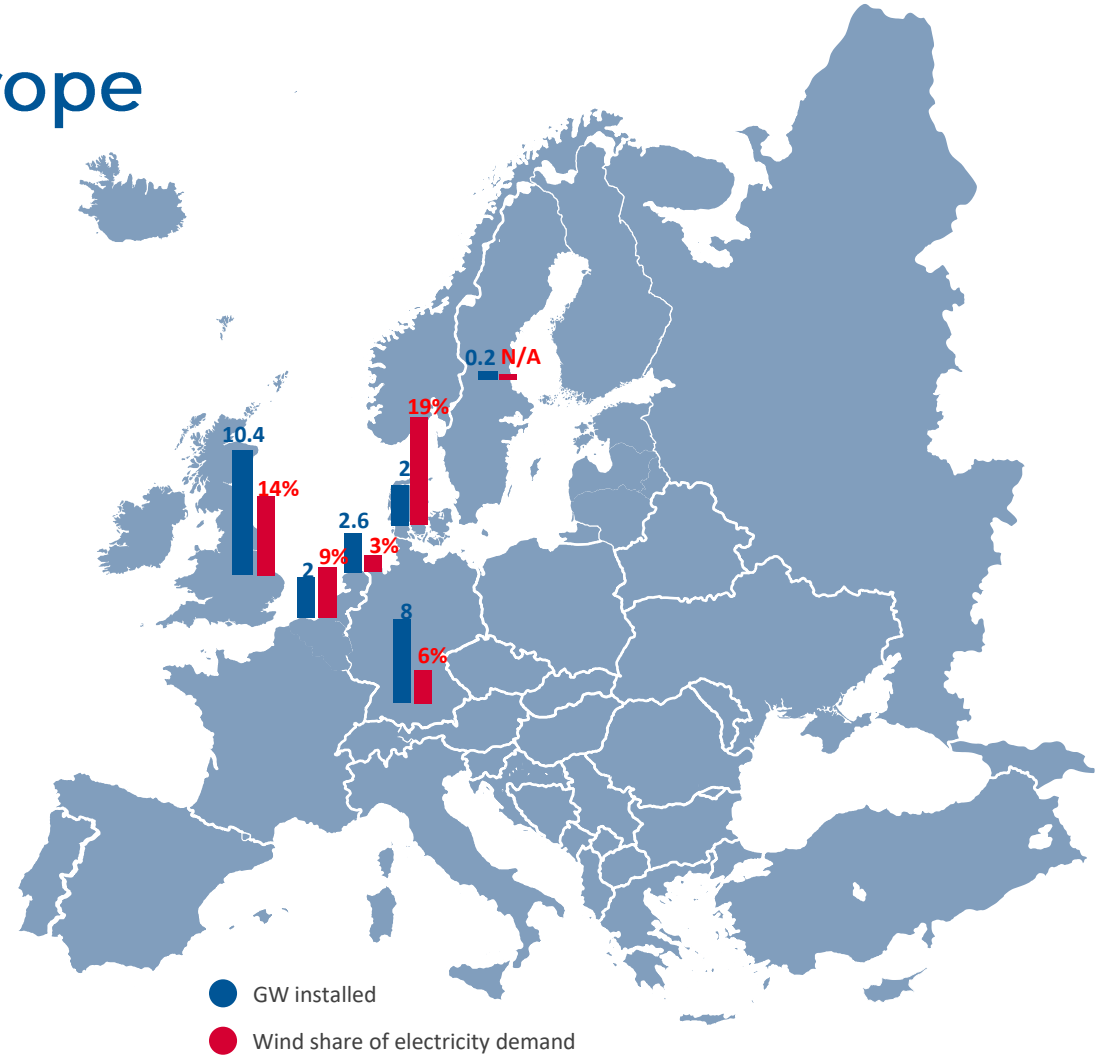
Offshore wind in Europe

26 GW

3%
of Europe's
electricity demand



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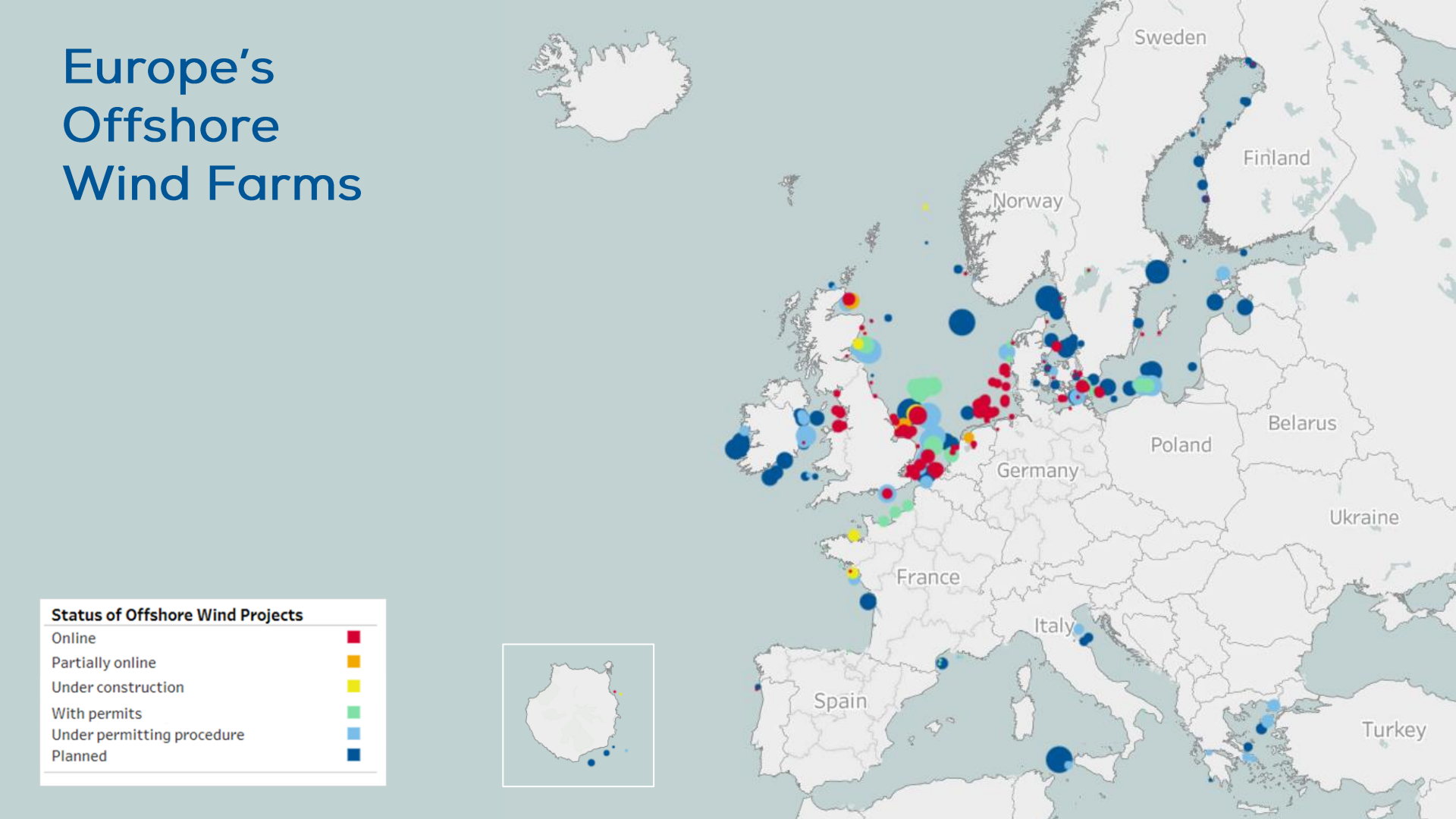
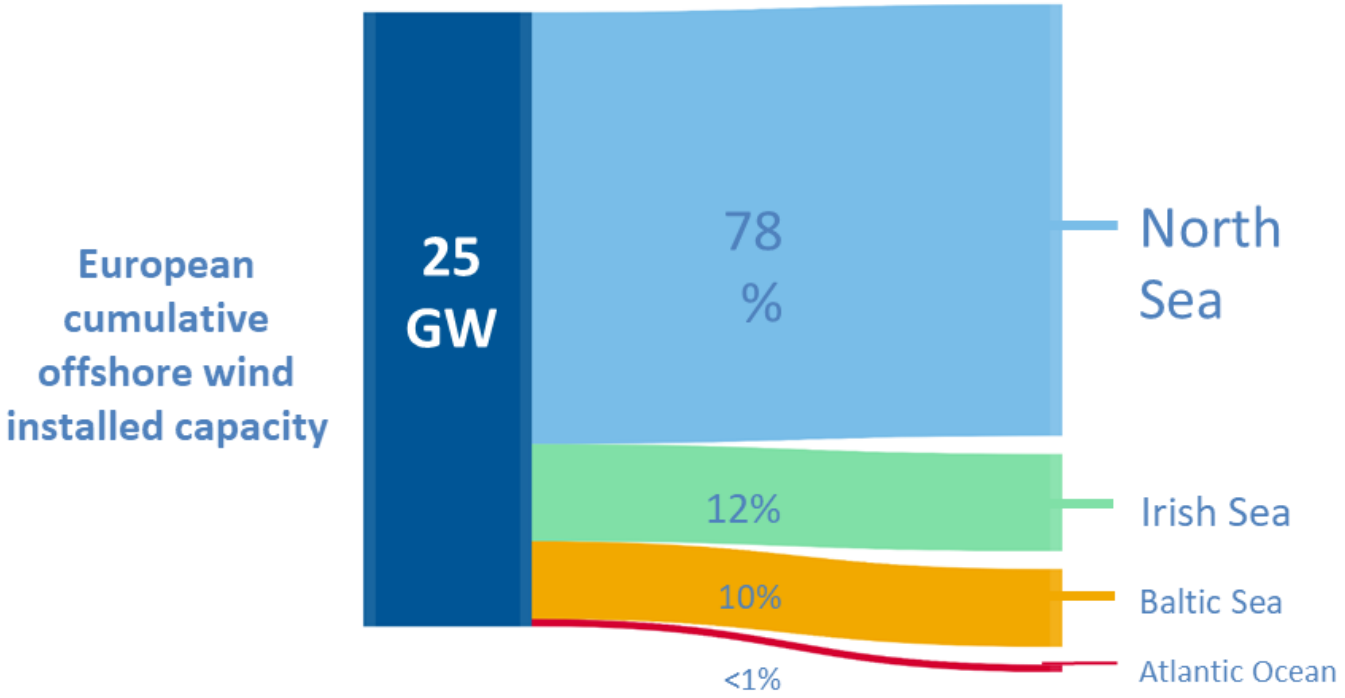
Europe's Offshore Wind Farms



Share by Sea Basin



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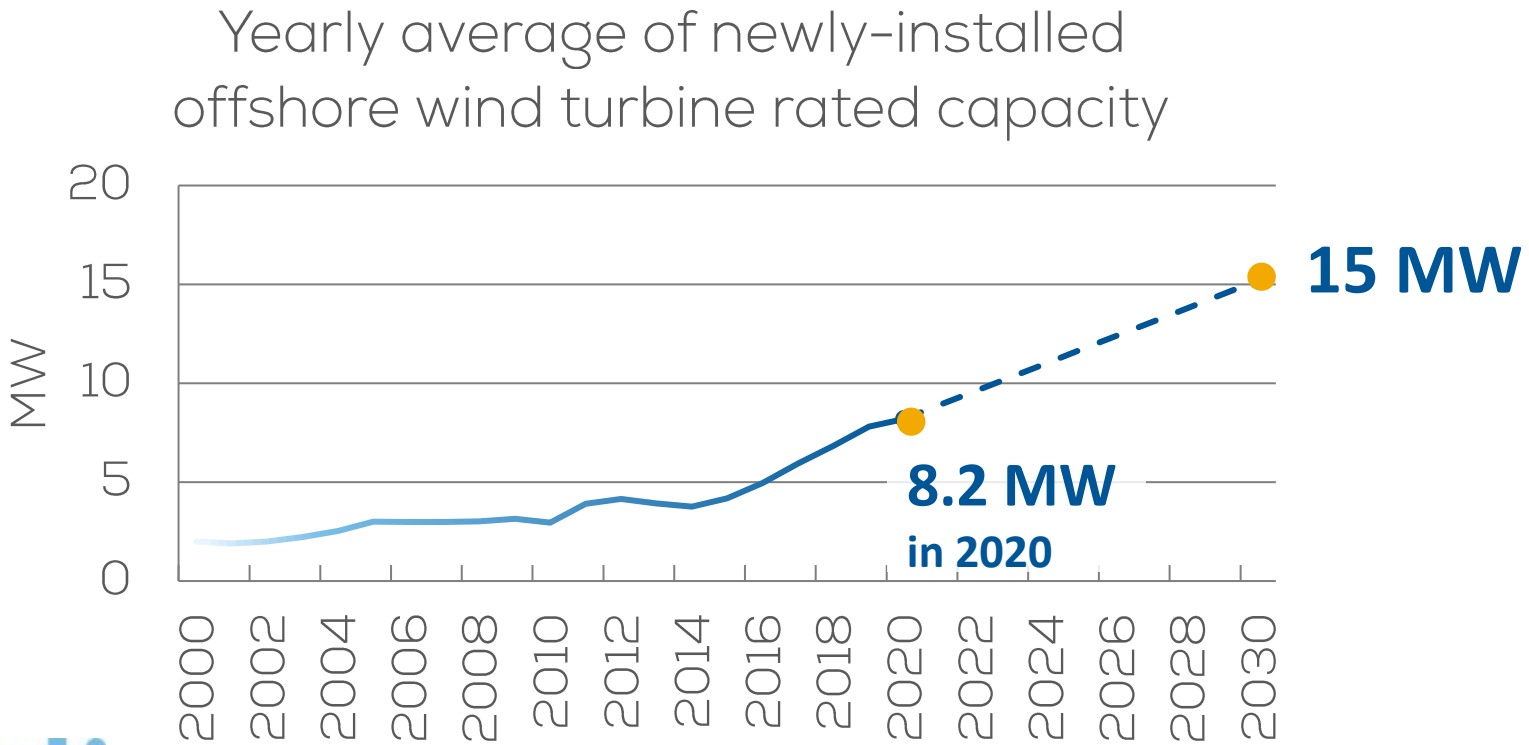
Offshore turbines are getting larger



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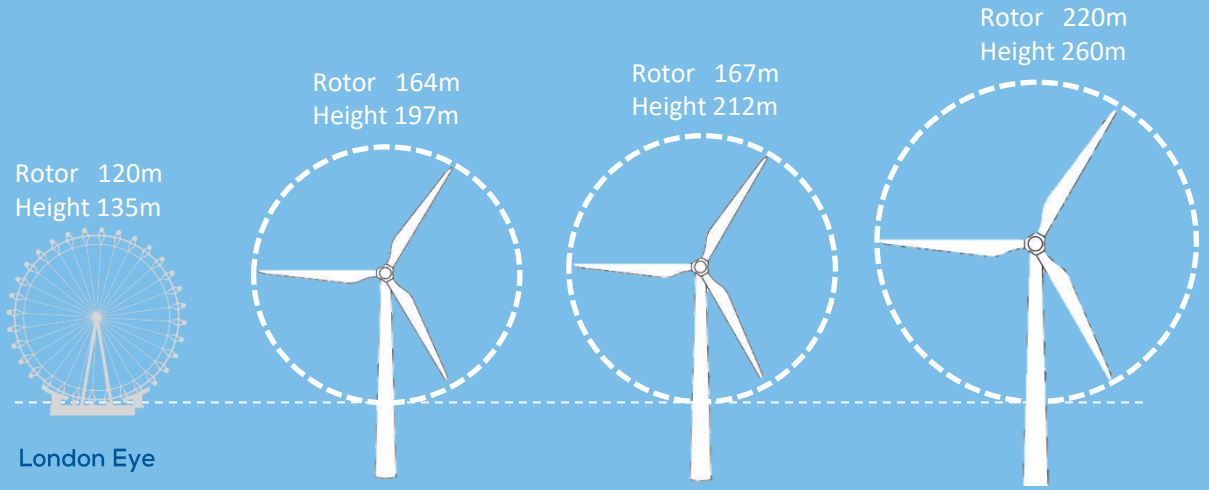
Turbine model highlights
2020



*Heights are indicative only

Source: WindEurope

Offshore Wind jobs and economic contribution

77,000
jobs in Europe today

200,000
jobs in Europe in 2030

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

€7.5bn
EU GDP contribution

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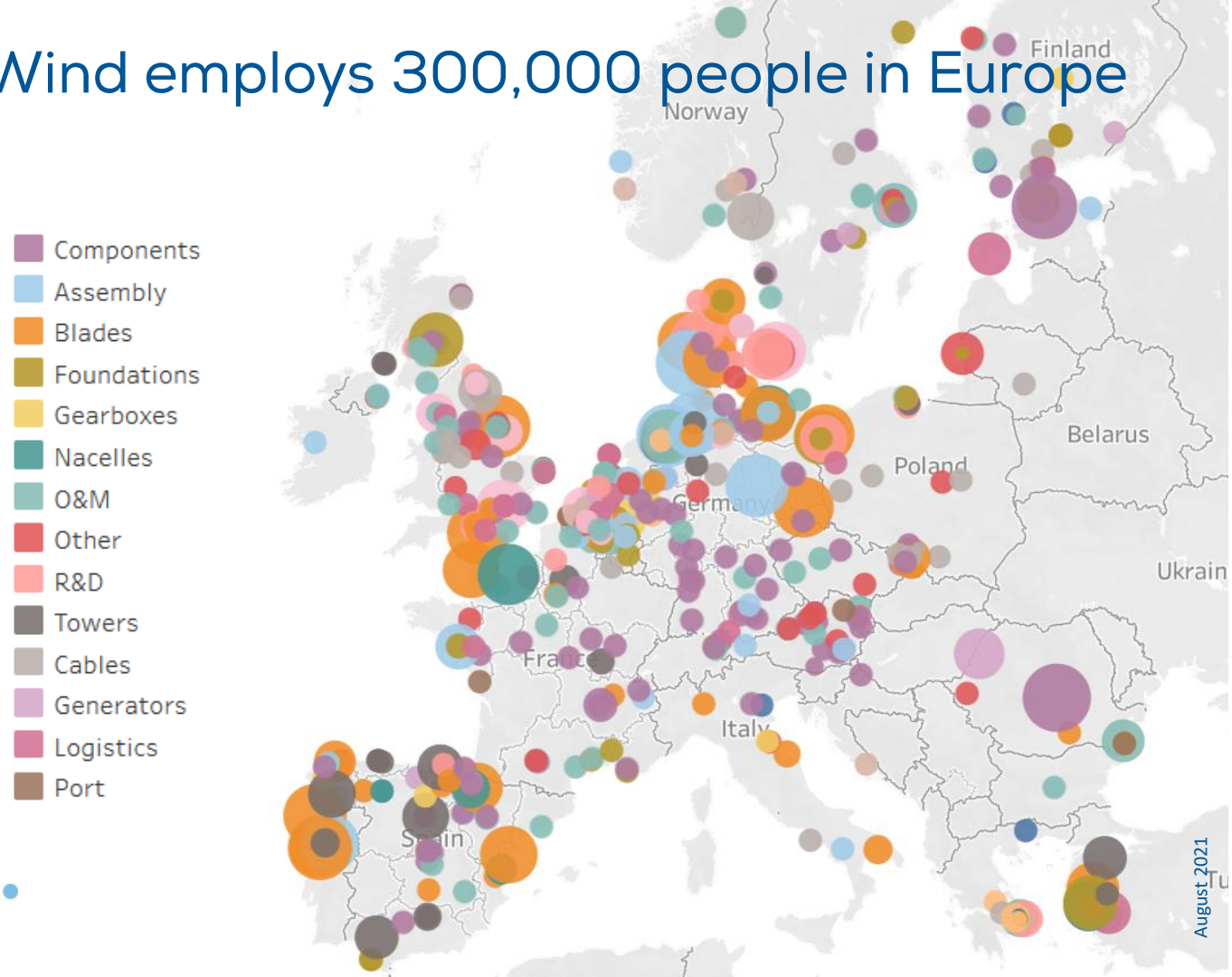
Wind employs 300,000 people in Europe



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Regenerating communities

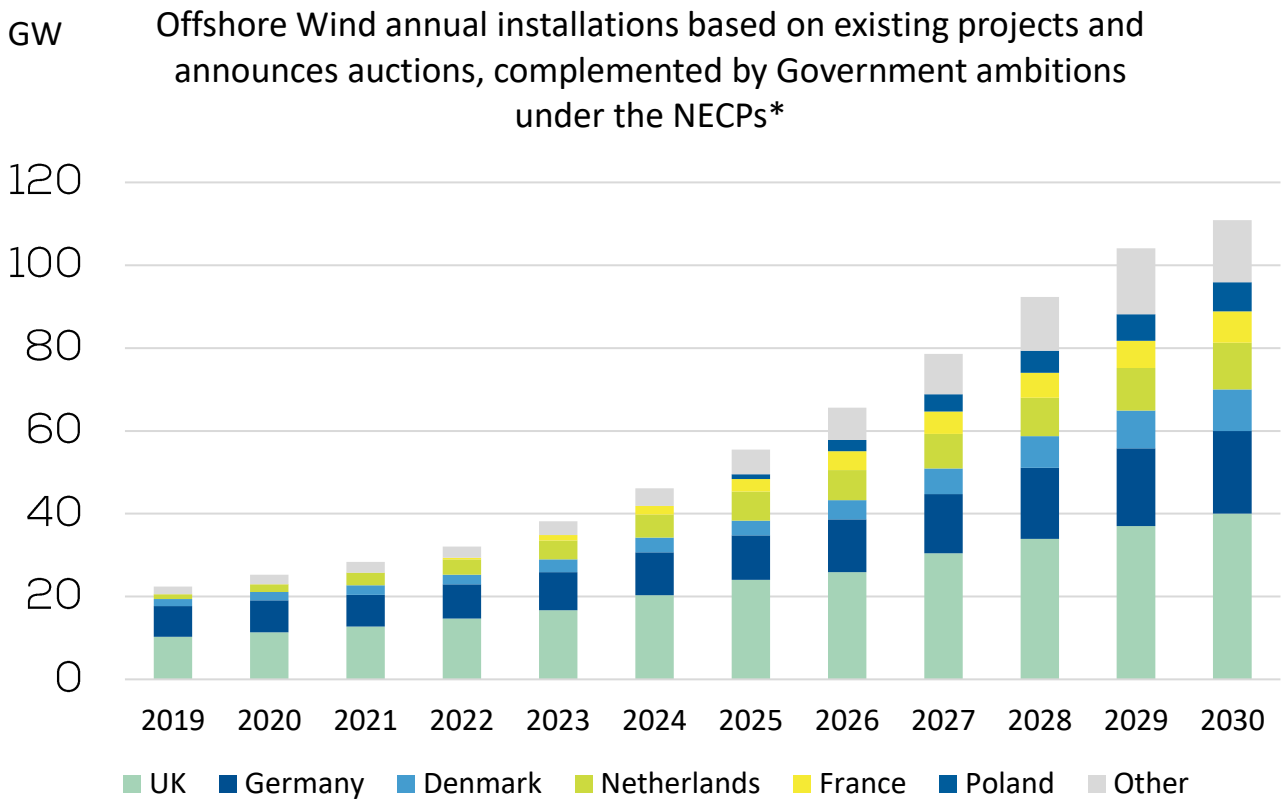
Green Port Hull, UK
£310m invested
1,000 jobs

Source: Siemens Gamesa

Port of Esbjerg, Denmark

Source: Port of Esbjerg

Europe's offshore wind capacity to grow 5x by 2030



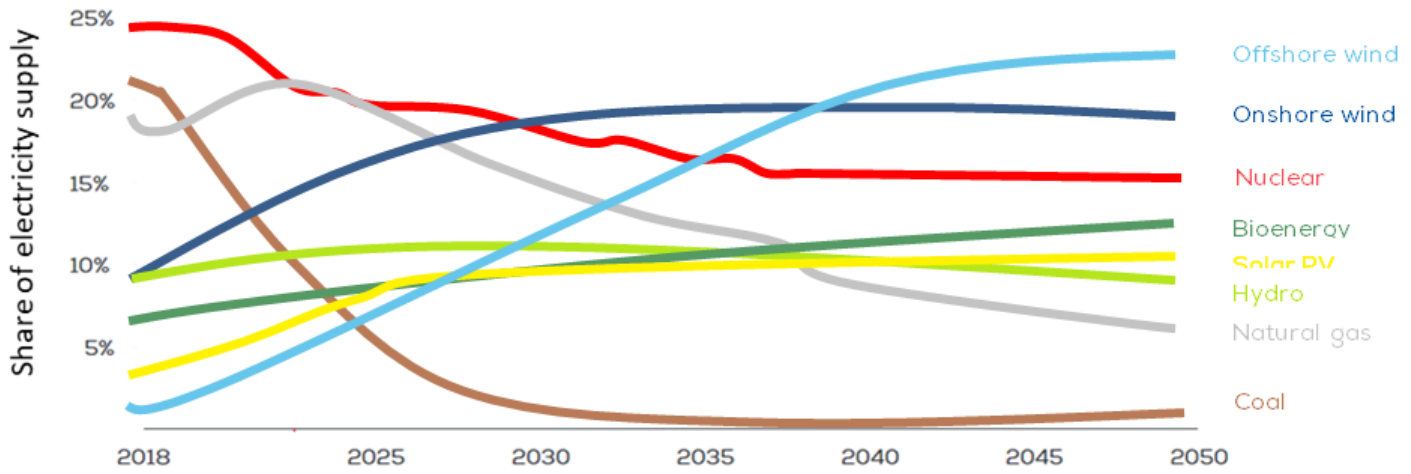
*Only displays countries with more than 5% share by 2030

Source: WindEurope

October 2020

Offshore wind will be the main sources of electricity generation by 2040

Shares of electricity generation by technology in the European Union, Sustainable Development Scenario



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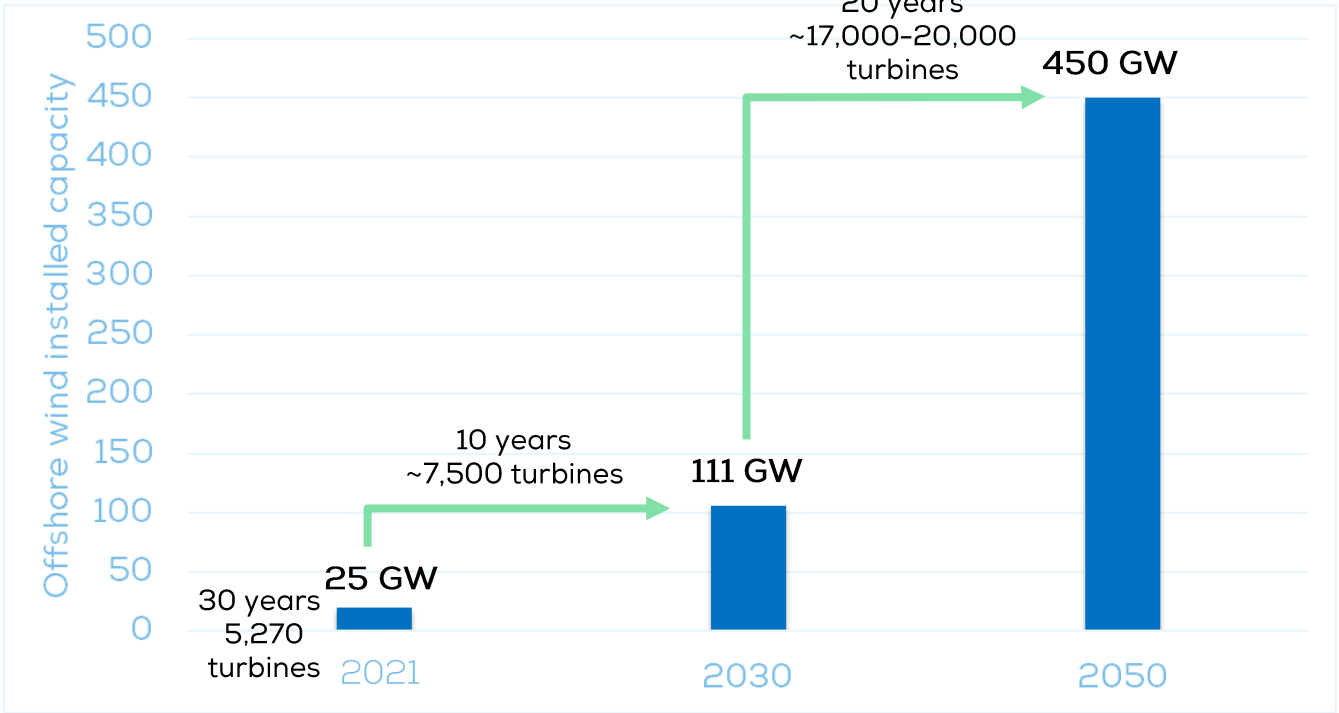
The number of turbines installed every year needs to double from 2025



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More details: Our Energy, Our Future
www.windeurope.org/450GW

OFFSHORE WIND ENERGY AND DEFENCE

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WHEN WIND ENERGY MEETS DEFENCE

OVERCOMING THE CHALLENGES TO BENEFIT FROM THE OPPORTUNITIES

Direct:

1. **Wind energy supporting the need for energy of the defence sector** – e.g., providing renewable electricity and renewable hydrogen, managing and future-proofing defence's electricity networks;
2. **Defence supporting need for space of the wind energy sector** – e.g., coexistence with radars and military areas such as low-flight and training zones;
3. **Sharing infrastructure and operations –** such as for air/maritime surveillance, wider Communications, Navigation & Surveillance (CNS) infrastructure; training and SAR operations.

Indirect

- **Civil Aviation** – Air Traffic Control Surveillance, airspace and traffic management;
- **Lighting Requirements** – Civil, Military, and industry standards for lighting wind turbines (including IR);
- **Offshore aviation operations** - Own and neighbours' requirements for helicopter and aerial drones.

Aviation
Task Force

Wind energy and defence – coexistence and permitting, Engagement with defence and Civil Aviation Authorities

Mapping of defence and aviation-related obstacles in key countries

Lighting and marking – rules and new technologies

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THALES

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Senior Strategy Advisor – Aviation
VATTENFALL

TF Aviation members

BWE Bundesverband WindEnergie
DTU
orga
EDF renewables
ENGIE
BO Enterprises
ENERCON ENERGY FOR THE WORLD
France Energie Eolienne
GE Renewable Energy
NORDEX
Ørsted
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res power for good
TERMA
SCOTTISHPOWER RENEWABLES
TRELLEBORG
SIEMENS Gamesa RENEWABLE ENERGY

Areas of cooperation in offshore wind

- Coastguard/Navy as partner for SAR exercises
- UXO management, cable trajectories etc.
- Security patrols and reactions
- Environmental research platforms
- Security at sea, sharing of monitoring and surveillance data
- Using mobile or fixed assets in partnership

Military Naval Vessel

Military fighter aircraft

Radar system on transition piece

UAS drone supporting offshore wind

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How to exploit synergies

- **Forster collaboration through joint stakeholder engagement** – e.g., governmental Working Groups between different ministries and industry;
- **Develop a common research plan and design technical solutions** for mitigating and solving radar interference – e.g. BEIS's Innovation Challenge in the UK (£2 million);
- **Establish national rules that are simple to understand and implement**, with a single government entity taking responsibility for overseeing the process;

The BEIS / DASA £2 Million Innovation Challenge (UK)

Soluton Provider	Abstract
Thales with University of Birmingham	Multi-static Radar and cognitive processing techniques
SAAB	AI/ML and doppler filtering
QinetiQ	Radar absorbing materials
	Coded metamaterials
TWI with University of Exeter	Conductive coating
Plextek DTS	Deep learning

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WindEurope's events: a chance to meet policymakers

Content stream	General conference	Technical & scientific programme	Expo feature areas
Audience			
Space			