



EUROPEAN TECHNOLOGY & INNOVATION
PLATFORM ON WIND ENERGY

The future of Europe will be heavily influenced by our grasp of offshore technologies.

Agenda

ETIPWind
1,2,3

Offshore
status

The challenge

The key

Turbine Manufacturers



Utilities and developers



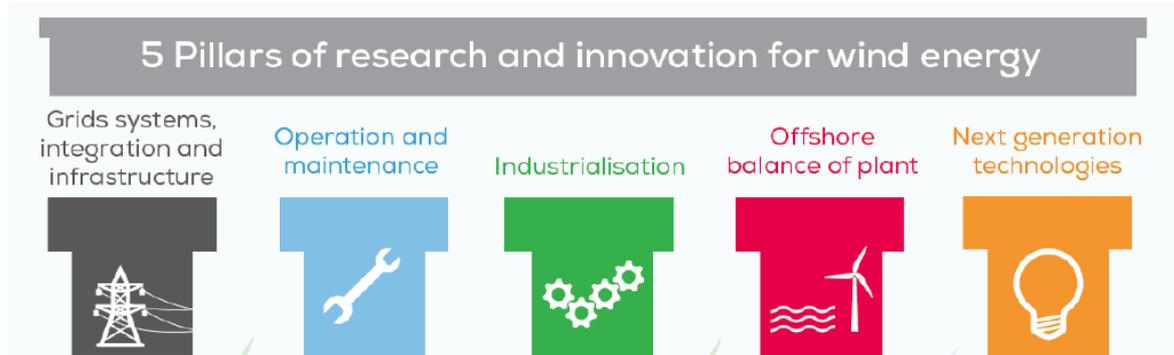
Universities, research institutes and consultants



Others



Which are the best topics for ETIPWind?



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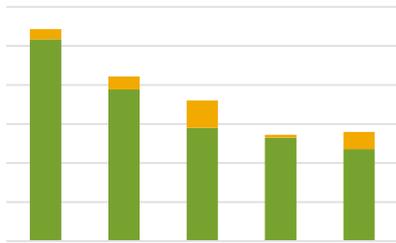
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What has offshore achieved



tenders (€/MWh)



- Ensuring the transition for offshore oil & gas jobs
- Employing all over Europe from Polish shipyard to Czech foundries

- From **0 MW** to **12.6 GW** are now installed
- Now attracting Oil & Gas companies (Shell, Statoil)

Not only North Sea suppliers

Hungary



Czech Republic



Romania

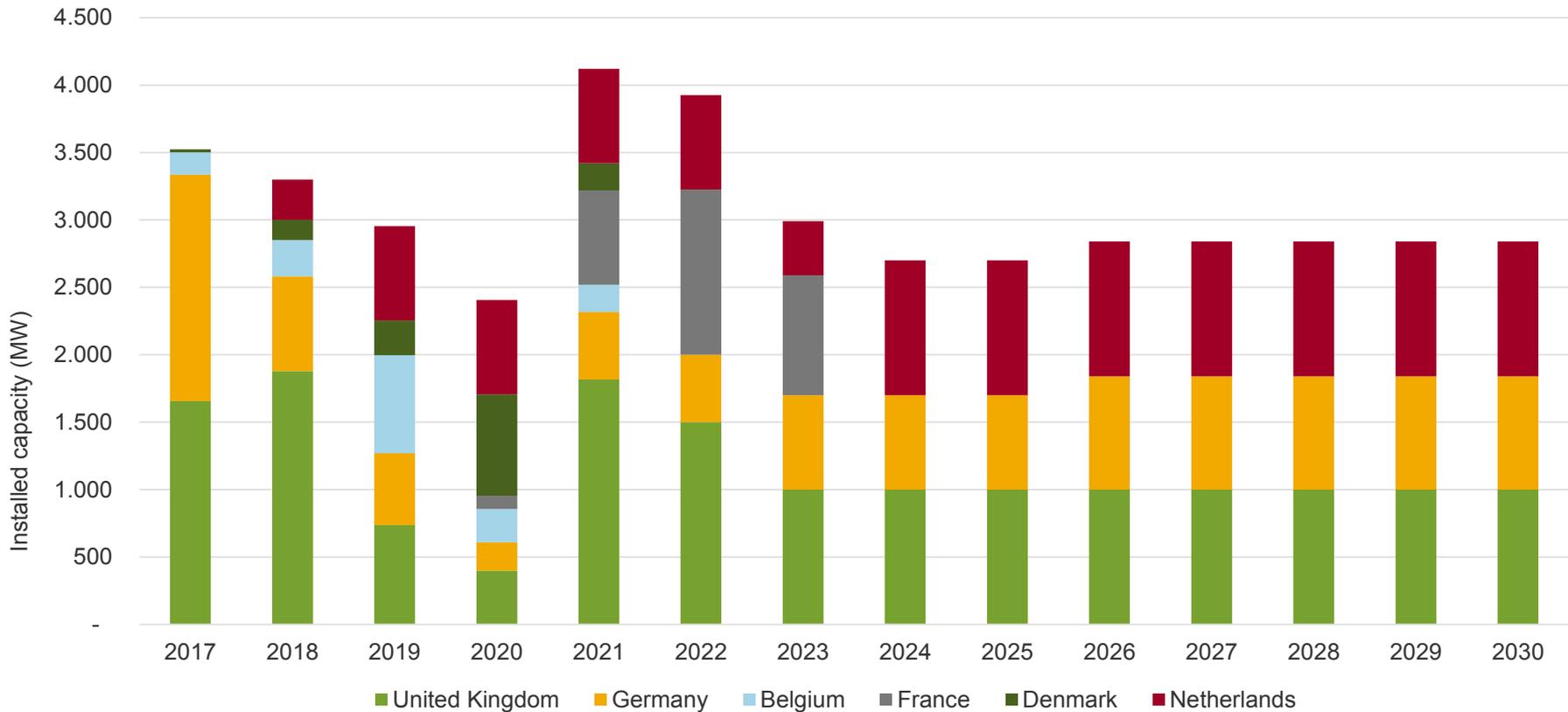


Poland



4 GW/year are needed to secure the 80 €/MWh target by 2030 – Best case scenario after 2024 !

Outlook for new capacity until 2030



Today's European offshore wind sector

12.6 GW

3,589 turbines

81 sites

96,000 jobs

European offshore wind outlook 2030

23,5 GW

5,000+ turbines

120+ sites

144,000 jobs

The challenges we now face in R&I



Floating technology needs to catch up



Industry **standardisation** is a must to reduce the balance of plant costs.

- New cable concepts
- Standardised kit assembly foundations



Adaptation and verification of very large components and large structures in **real scale offshore environment test benches**

- Sliding bearings; Large gear units
- New cable and foundation concepts

A new generation of scientists and engineers needed to drive the next generation of development.

Climate change will drive an unprecedented demand for energy

- More extreme higher and lower temperatures
 - Higher energy load
- The increase in megacities
 - Often easier to expand into the sea
 - Offshore Multi purpose platforms may be the norm
- Flooding will necessitate the creation of cheaper high stress floating structures to protect vital power, energy , water infrastructure
- Managing a more chaotic world will drive even more data connectivity and demand even more energy.

Demand offshore energy will increase

New buildings will need foundations that can float when flooded

- Purification and treatment
- Aquaculture
- Desalination
- Vertical Farming

Water

Increasing electricity demand

- Heat pumps
- Thermal storage

Heating and cooling

Transport

- Electric vehicles
- Electrical port propulsion

- High capacity storage is coming

Offshore hubs – interesting ! but well designed multi purpose approach vital – no quick fixes - a supplement to current plans and targets to help increase volume and decrease cost - not a slow down excuse



Chris Westra

Tennet



Needs

- Increase visibility and need to cement and improve short medium and long term offshore binding targets
- Align funding with active government and corporate initiatives
- Europe is connected to a greater degree each day the energy business will regionalize
- The weather is going from predictable to unpredictable – Mitigating this will need a lot of energy we need a European Master Plan this forum can be a first step
 - What we need to do? Why? and how fast?

The vision

- Offshore can deliver, particle free, CO2 free electricity to the modern coastal cities of the future.
- High cycle long term storage will start coming onstream within 10 years
- Wind / PV onshore and offshore will be among the most benign forms of power generation and too obvious to ignore.
- The sea is rising, and the climate is changing as we speak
- Now we look at structures with 25 year lifetimes we may need to look at structures with double that life time.

Core reasoning

- Energy demand will rise dramatically as we have to adapt to climate change
- Increased energy demand will have to be met from CO2 free resources or climate extremes will increase further
- Offshore wind can deliver huge amounts of clean low risk electricity.
- Offshore R&I is developing the technologies to deliver ever cheaper, clean power while training the next generation of scientists and engineers to create solutions to enable a future Europe to thrive and survive.

**Delivery is incumbent on united goals and efforts from
all involved**

Thank you
#ETIPWind

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