SG 14-222 DD – A Milestone in the Development of Offshore Wind Power & Green Deal

September 3rd, 2020 | Martin Gerhardt, Head of Platform and Portfolio Management Offshore

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Today's global energy system is largely based on fossil fuels

Fossil fuels still account for up to 2/3 of the global electricity generation.

Offshore wind account for 0.3 % of the global electricity generation.

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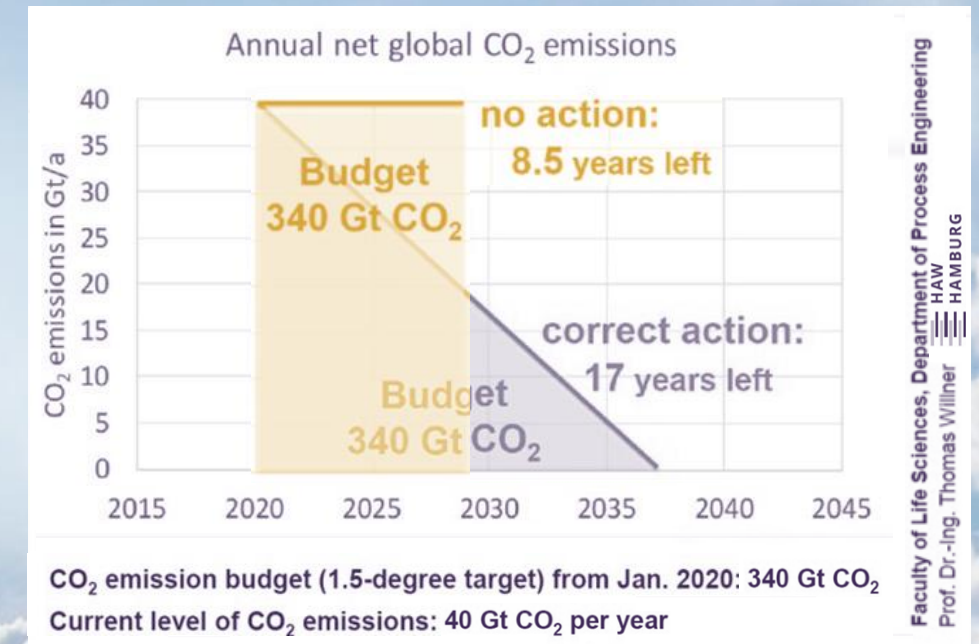
Only 8-17 years left and 340 Gt CO_2 – before the 1.5 degree target has inevitably failed



Mathematics of climate protection

World warming stripes 1850-2018 by Professor Ed Hawkins (University of Reading)

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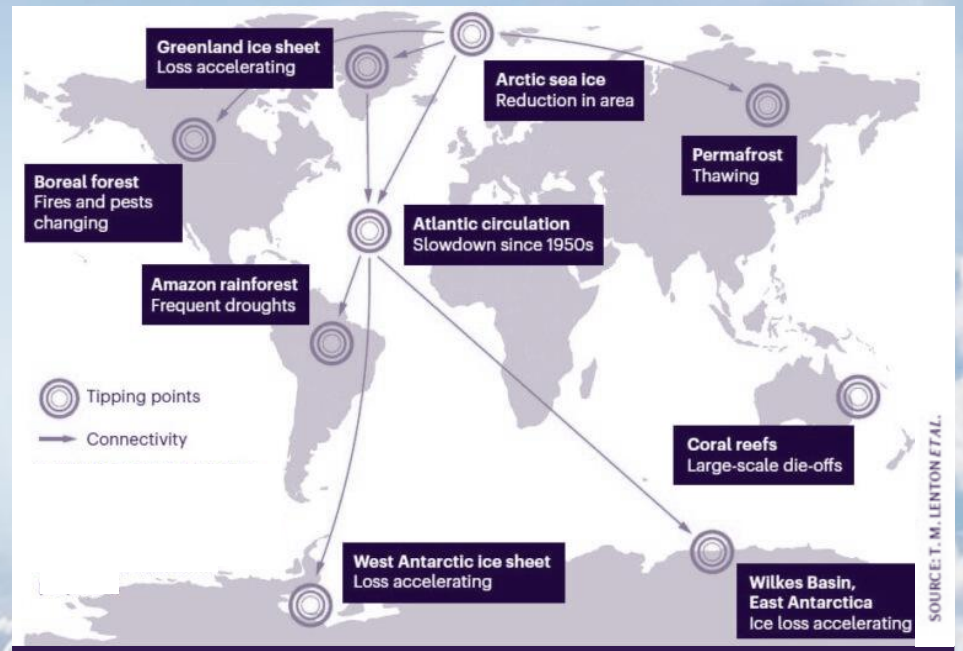
Crossing several tipping points might irreversibly accelerate the climate change



Tipping points and domino effects

World warming stripes 1850-2018 by Professor Ed Hawkins (University of Reading)

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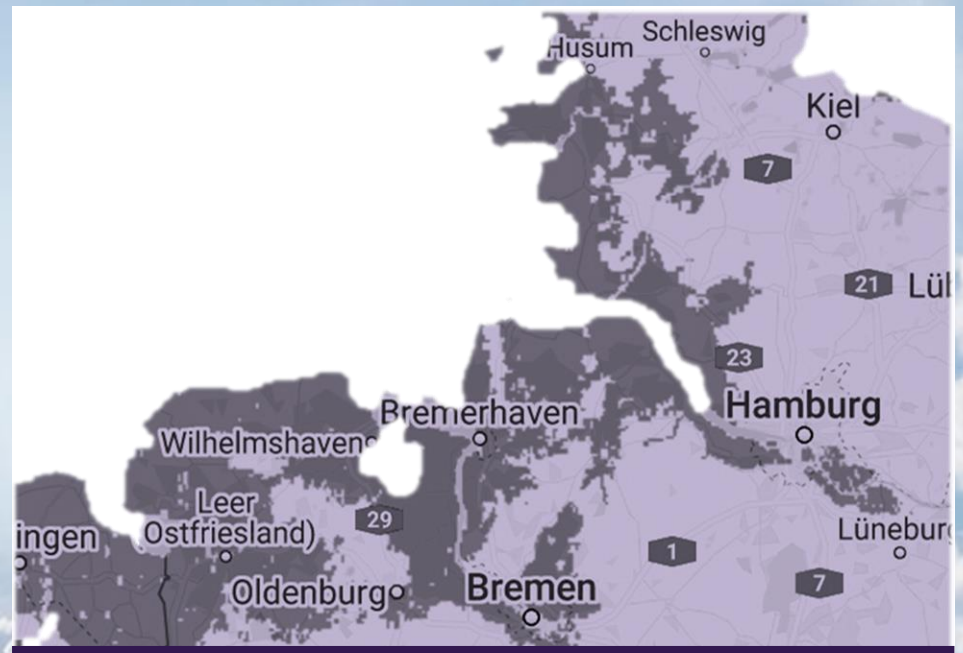
The results of climate change will be felt as far as Bremen



Land areas projected to be below annual flood level in 2050

World warming stripes 1850-2018 by Professor Ed Hawkins (University of Reading)

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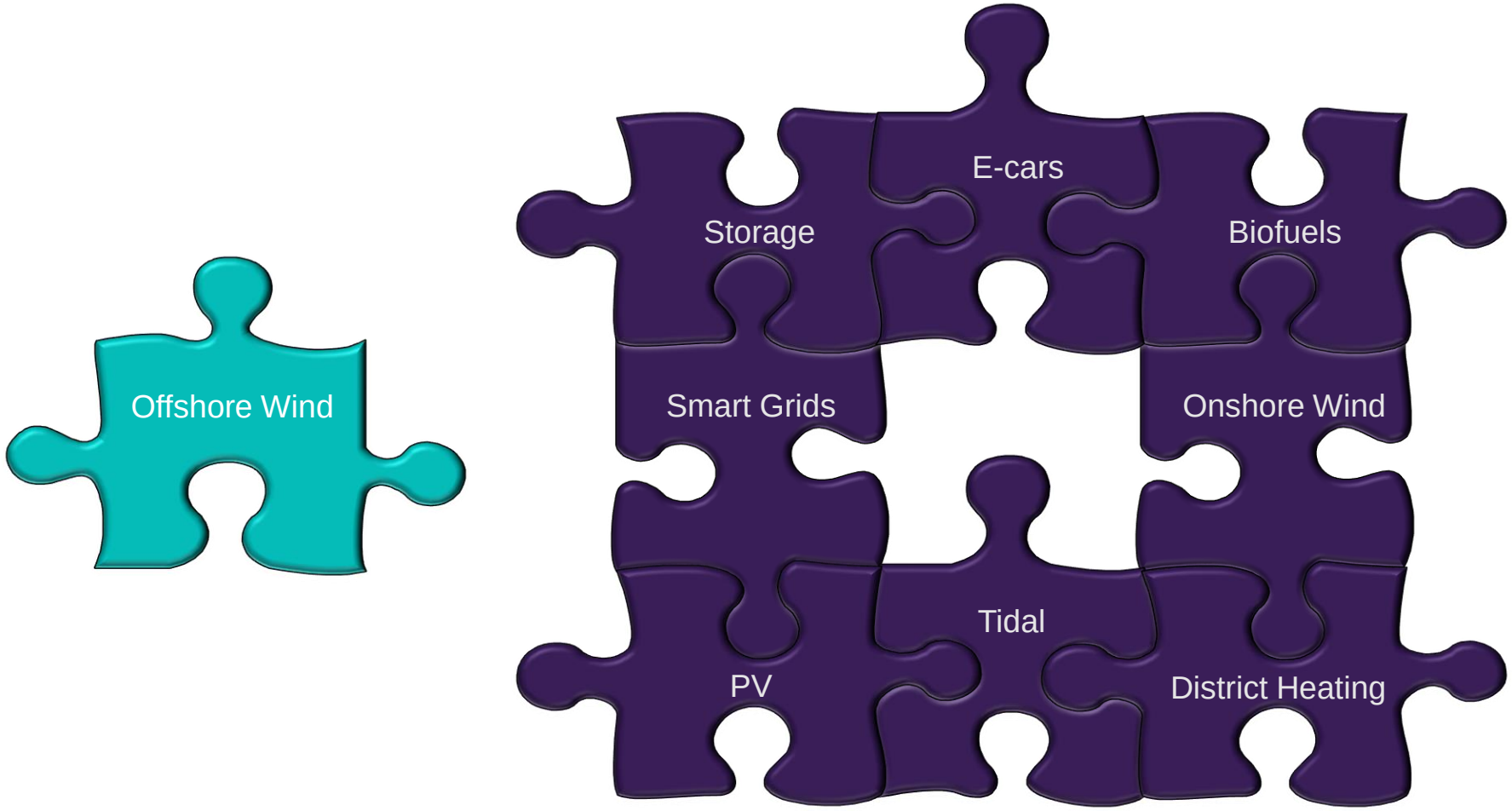
An ecosystem of renewables and storage technologies will be needed for 100% decarbonization



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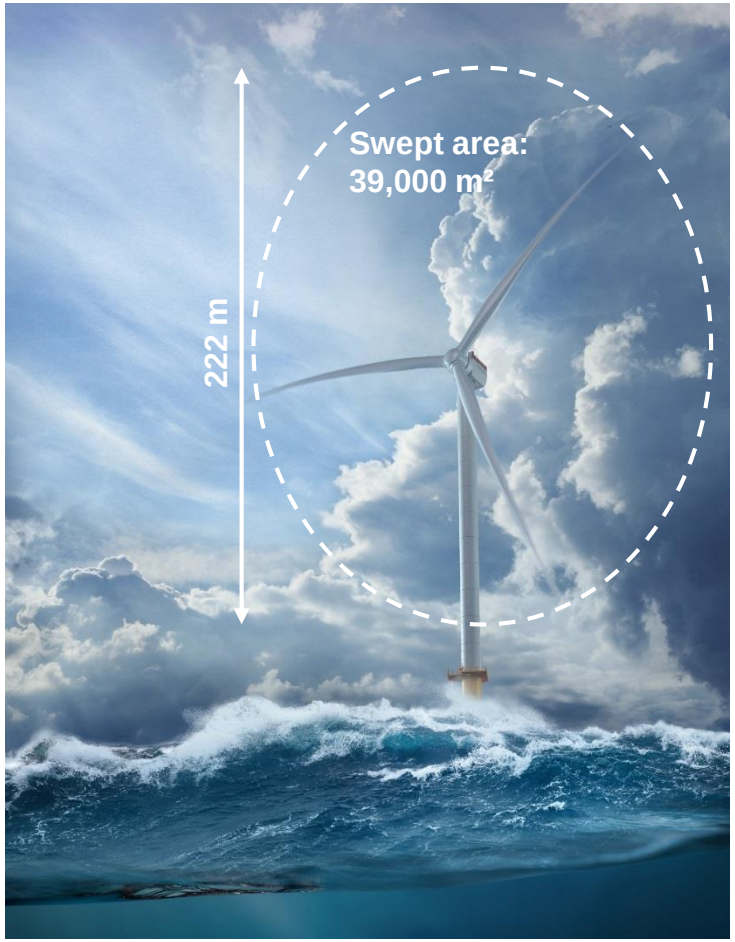
Our new turbine reaches new heights



SG 14-222 DD	
IEC class	I, S
Nominal power	14 MW
Rotor diameter	222 m
Blade length	108 m
Swept area	39,000 m^2
Hub height	Site-specific
Power regulation	Pitch-regulated, variable speed

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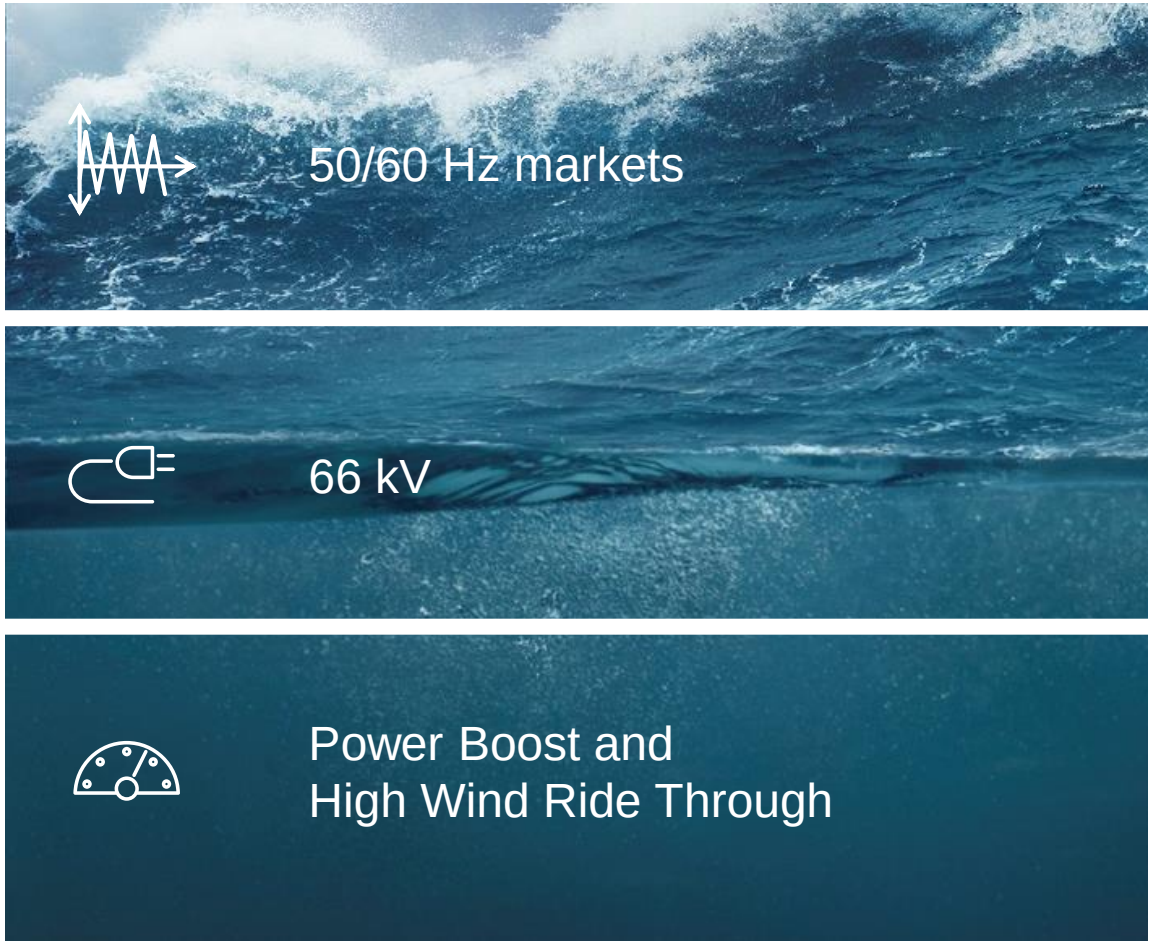
SG 14-222 DD – Prototype in 2021 and commercial market deployment in 2024



Upgrades:

Blade, hub, generator, nacelle, converter and transformer

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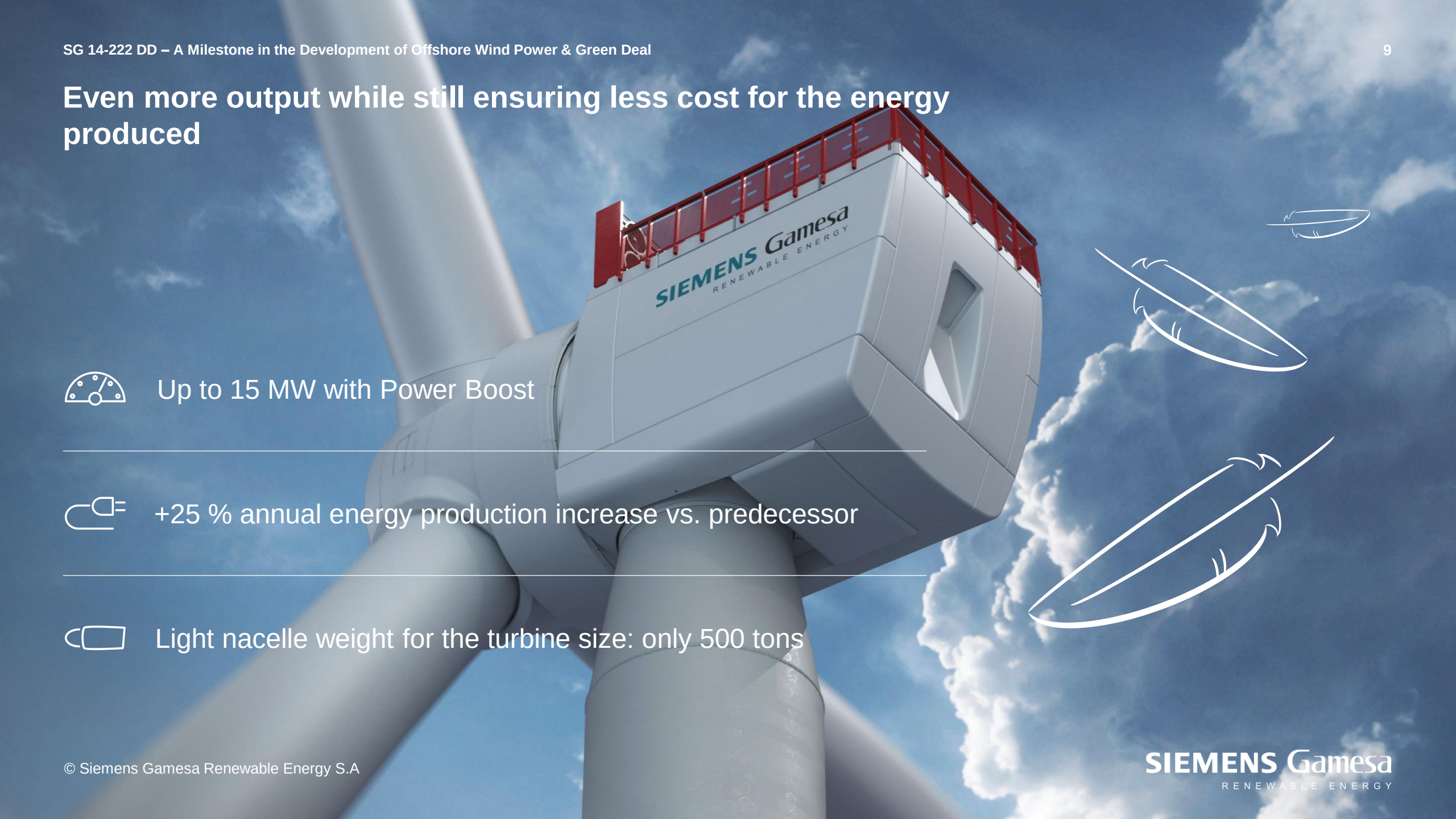
Even more output while still ensuring less cost for the energy produced



- Up to 15 MW with Power Boost
- +25 % annual energy production increase vs. predecessor
- Light nacelle weight for the turbine size: only 500 tons

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OF DD platform evolution since 2011 enables low-risk and high-performance


Cuxhaven – production facility

Re-use:

Hub and tower concepts, maintenance and safety systems.

Transport, installation and foundation supply chains.

Qualified supplier base.

SGRE production facilities with minimal changes.

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More than 4 GW sold – The SG 14-222 DD brings us an important step towards a world powered by green energy

Sofia Offshore Wind Project, UK

1,400 MW

Hai Long 2 Offshore Wind Project, Taiwan

300 MW

Dominion Energy Coastal Virginia Offshore Wind Project, U.S.

2,640 MW

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During a 25-year lifespan, one single SG 14-222 DD will ensure…

… close to 1.4 million tons of CO_2 avoidance compared to coal

… equaling the CO_2 absorption of 4.5 million beech trees in the same period

Powering Sustainability

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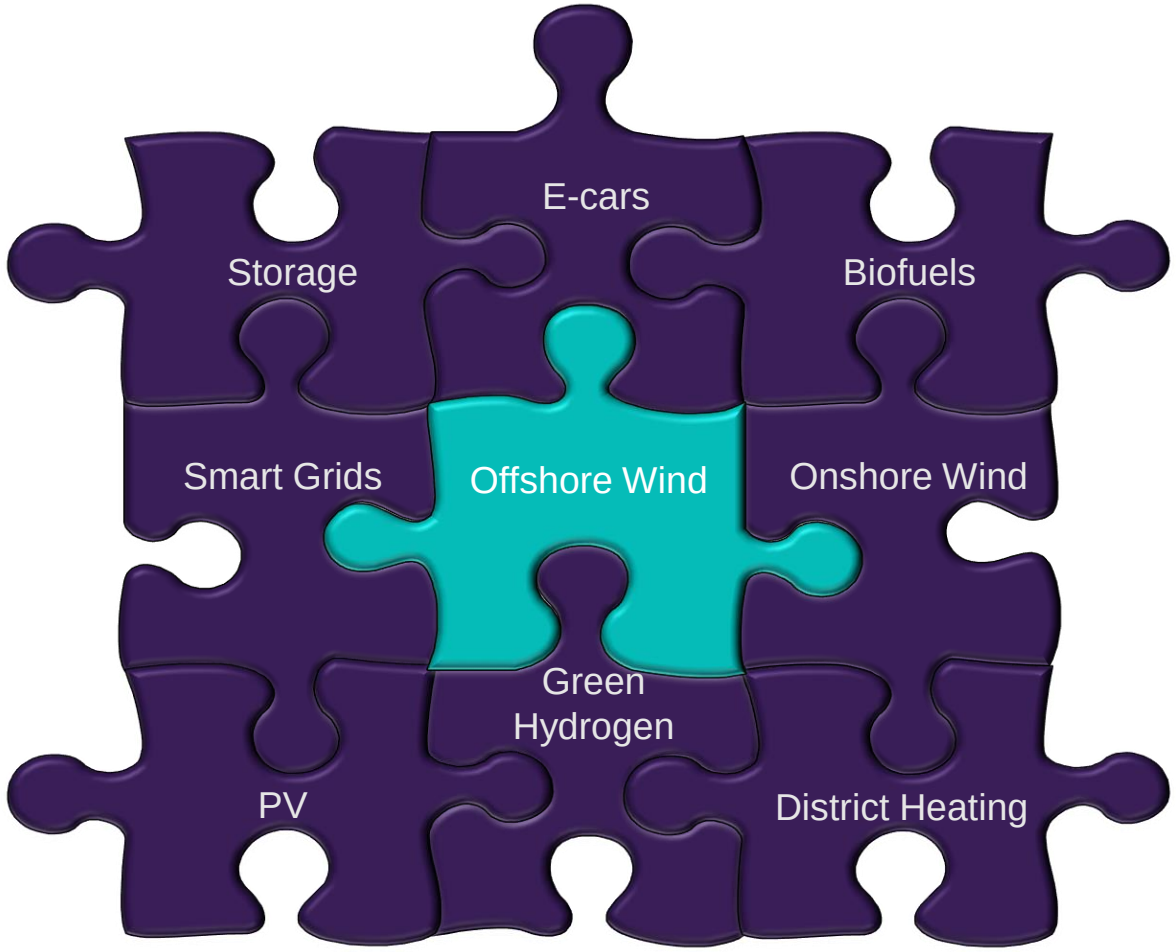
Offshore wind will be an important part of the decarbonized economy



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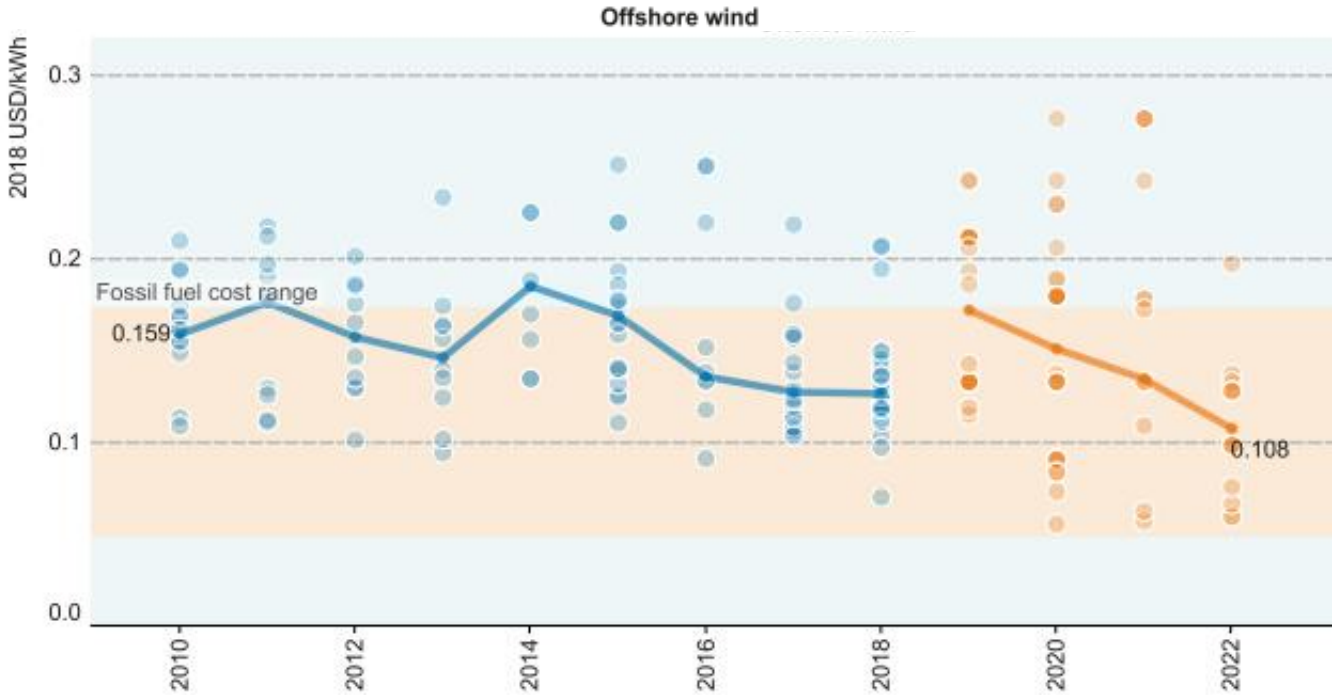
Offshore wind has arrived at industrial scale and cost-competitive level

Offshore wind today

Capacity factor	Typical North Sea Project >50 %
Project size	>1.2 - 3.6 GW e.g. UK CfD 3
Turbine size	1 GW = ~70#
Cost	Increasing competitiveness

- OF wind is on a fast track of industrialization – scale and cost wise

LCOE and global weighted average values



Source: IRENA, 2019c

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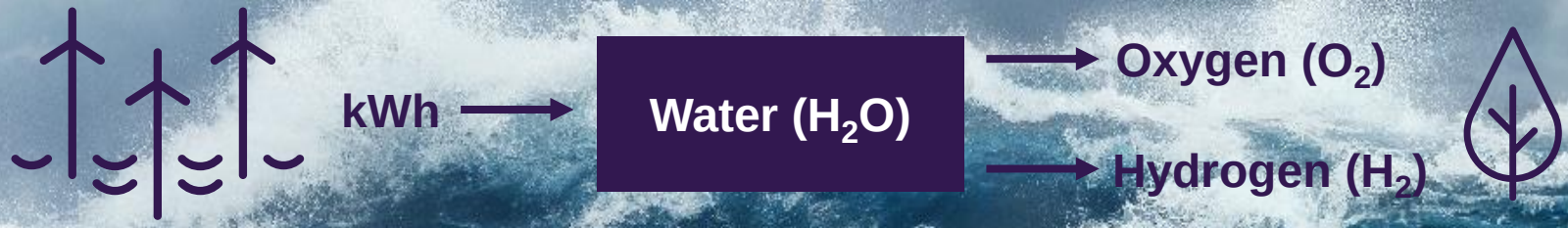
Offshore wind will be essential for green hydrogen and decarbonization beyond electricity



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The Danish island of Bornholm in the Baltic Sea would be one of the 'energy islands'. Photo: JONATHAN NACKSTRAND/AFP via Getty Images/NTB scanpix

Denmark confirms massive wind plans for 'world's first energy islands' in North Sea and Baltic

Nation says islands to host 4GW of wind power by 2030 with North Sea site potential to grow to 10GW

20 May 2020 15:44 GMT *UPDATED 20 May 2020 15:47 GMT*
By **Andrew Lee**

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Heligoland Island in the German part of the North Sea Photo: TOBIAS SCHWARZ/AFP via Getty Images/NTB scanpix

Little German island goes big with plans for 10GW offshore wind to hydrogen hub

The AquaVentus initiative centred around Heligoland plans to produce green hydrogen at sea from offshore wind and transport it to land via dedicated pipelines

7 August 2020 15:33 GMT *UPDATED 10 August 2020 15:00 GMT*
By **Bernd Radowitz**

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Green hydrogen is set to become a playing field for oil companies in transition

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ENERGY

BP Aims to Build 50GW of Renewables by 2030, Cut Fossil Fuel Output by 40%

The oil supermajor lays out further details on its path toward net-zero, keeping ahead of its fossil fuel rivals in its energy transition ambitions.

JOHN PARNELL | AUGUST 04, 2020

BP wants to increase its low-carbon investments tenfold by 2030, to $5 billion a year.

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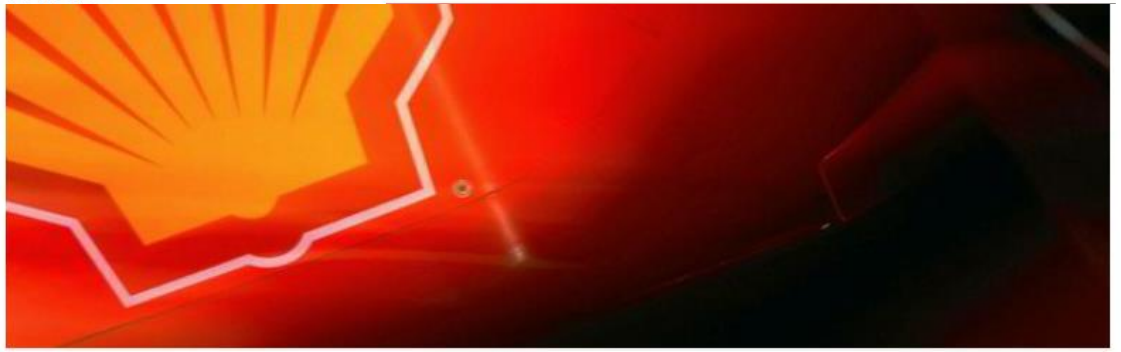

Shell unveils world's largest offshore wind plan to power green hydrogen

Oil giant links with Gasunie for NortH2 initiative off Netherlands that aims to have 10GW of turbines in place by 2040

27 February 2020 11:18 GMT *UPDATED 28 February 2020 12:47 GMT*

By **Andrew Lee**

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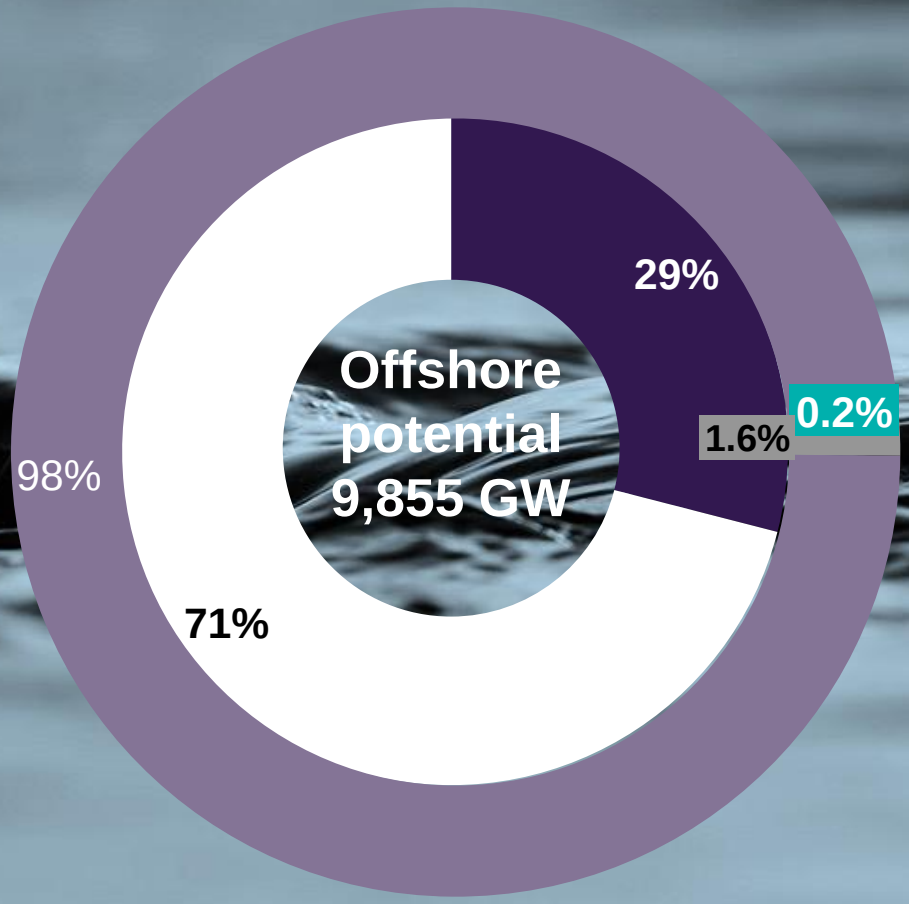
Floating wind will open up new markets



Cumulative 2018 offshore forecast
Cumulative 2028 offshore forecast
Unutilized capacity

Offshore wind resources <60m water depth
Offshore wind resources >60m water depth

Source: Wood Makenzie. Technical potential of offshore wind. ”Europe, US, Japan and Taiwan incl. based on Carbon Trust and Industrial Technology Research Institute

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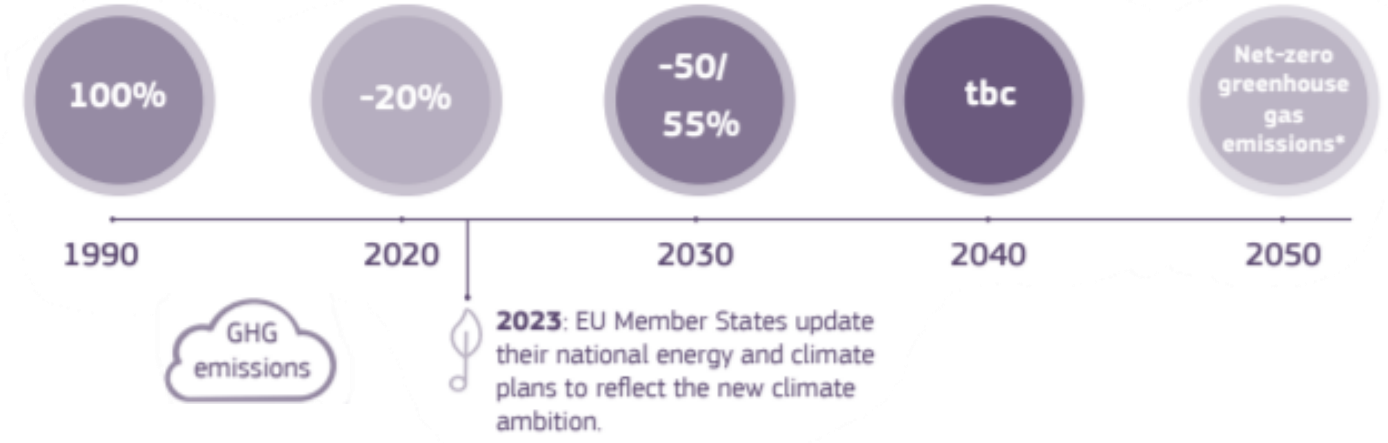
A Green Deal for reliable, focused and accelerated investment in offshore wind is needed – further building on the steps already taken

Source: European Commission - Clean Energy, Green Deal



- Better integrate renewable energy sources to the grid.
- Promote innovative technologies and modern infrastructure.
- Boost energy efficiency and eco-design of products.
- Decarbonize the gas sector.
- Empower consumers and help member states tackle energy poverty.
- Increase cross-border cooperation to better share clean energy sources.
- Promote EU energy standards and technologies at global level.
- Develop the full potential of Europe's **OFFSHORE WIND** energy.

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Thank you!

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