Technical Webinar Series: Accelerating Offshore Wind Technologies in Small Island Developing States

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About GWEC

- GWEC is the **representative body for the global wind energy industry**
- Its membership is made up of **the leaders in the international wind sector** including manufacturers, utilities, investors, developers, service providers, and more.
- It brings together and supports the **leading wind energy associations** around the world, with a successful track record in capacity-building for new markets in China, Brazil, South Africa, Mexico, Argentina, Colombia and South East Asia.
- It is **the most active thought advocacy body for the sector** and plays a leading role in opening and developing new markets for the wind industry to accelerate the global energy transition.
- It has high level relationships with the **leading global institutions which influence policy for the wind industry such as** IRENA, UNFCCC, World Bank/IFC, and collaborates with adjacent technologies such as solar PV and storage

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GWEC Institutional Relationships

Co-chair of Business and Investor Group; adviser to

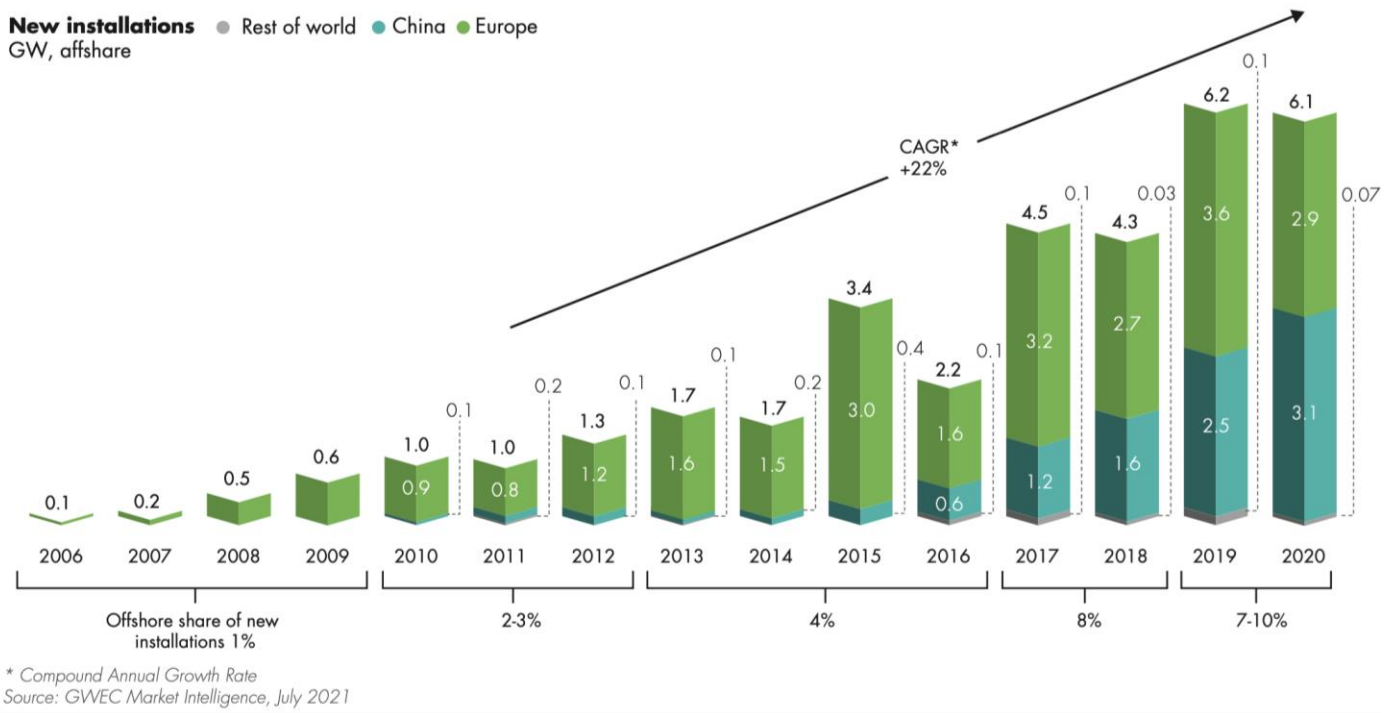
GWEC works closely with the UNFCCC, IPCC and COP

Strategic partnership with RE100-Climate Group to scale up corporate sourcing of

GWEC works with World Bank–IFC and leading development banks.

GWEC also has cooperative working relationships with the following institutions and

Fast-paced growth over the last 15 years



- 6.1 GW new capacity added in 2019, a record year for the global offshore wind industry
- Total capacity now **35.4GW**, across advanced economies
- UK was the largest market, until China became largest market in mid-2021

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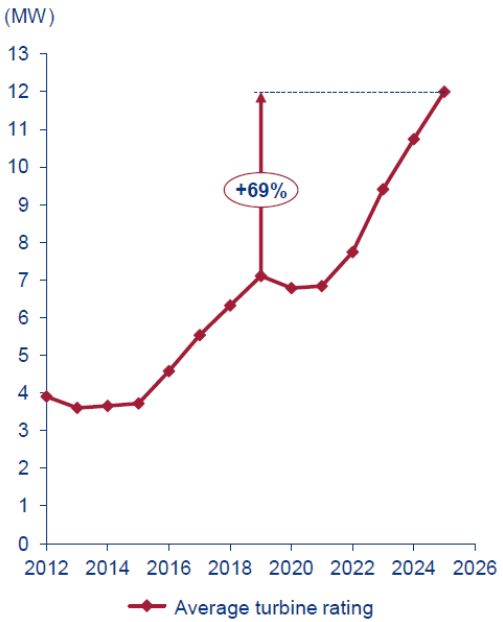
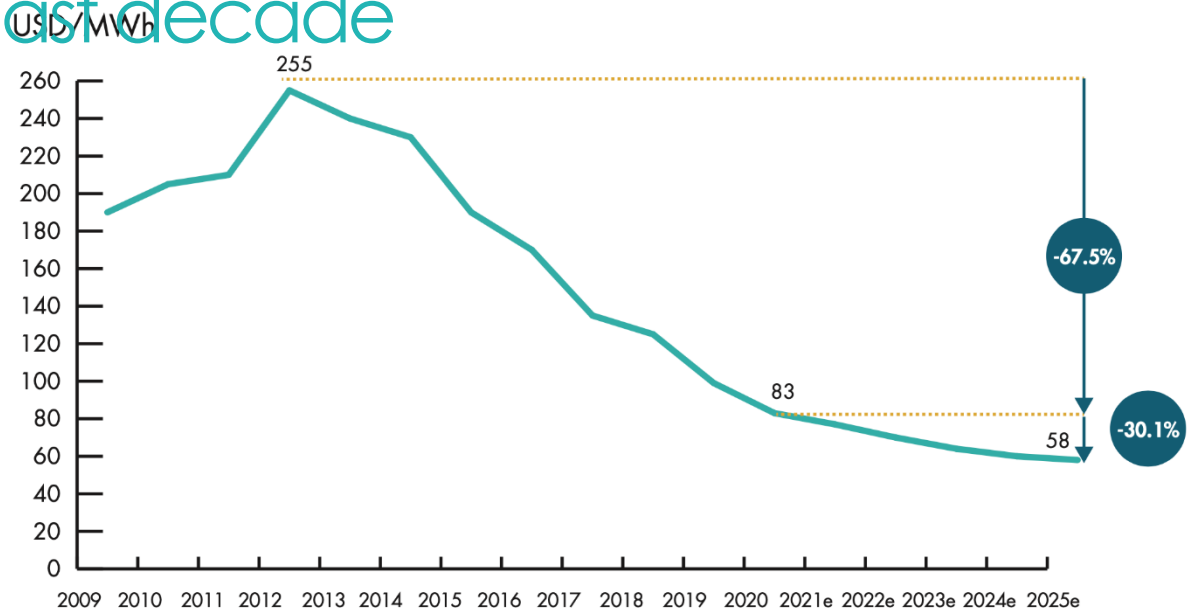
Growth driver: Technology innovation and adaptation

Installed Offshore Wind Turbine Ratings (ex. China)



Growth driver: Dramatic cost reduction over the last decade



The cost of power from offshore wind (in LCOE terms) has fallen dramatically to one-third of the levels seen eight years ago, and will continue declining

Methodology: BNEF LCOE scope for offshore wind farms includes all transmission costs up to the project's onshore substation, which is also included. The outlook from 2020-2025 is a fitted curve best reflecting future levelized auctions bids (it mixes auctions including and excluding the cost of transmission to shore).

Source: BNEF LCOE Database Jan 2020, GWEC Market Intelligence

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Growth driver: Transition to sustainable economy

1. **Delivers affordable electricity prices:** Enormous cost reduction over the last decade has seen offshore wind delivered at below wholesale-market prices in many European markets. New offshore wind capacity will become cheaper than new fossil fuel capacity early this decade (BNEF).

2. **Delivers clean power to millions of homes**: Offshore wind farms offer incredible scale. The 1,200 MW Hornsea Project One in the North Sea powers more than 1 million households.

3. **Reduces carbon emissions:** 1,400 GW offshore wind by 2050 could save more than 2.5 billion tons of CO2 emissions per year, equivalent to taking more than half (800 million) of the world's cars off the road. An offshore wind farm pays back the carbon produced during construction within 8 months of operation (SGRE).

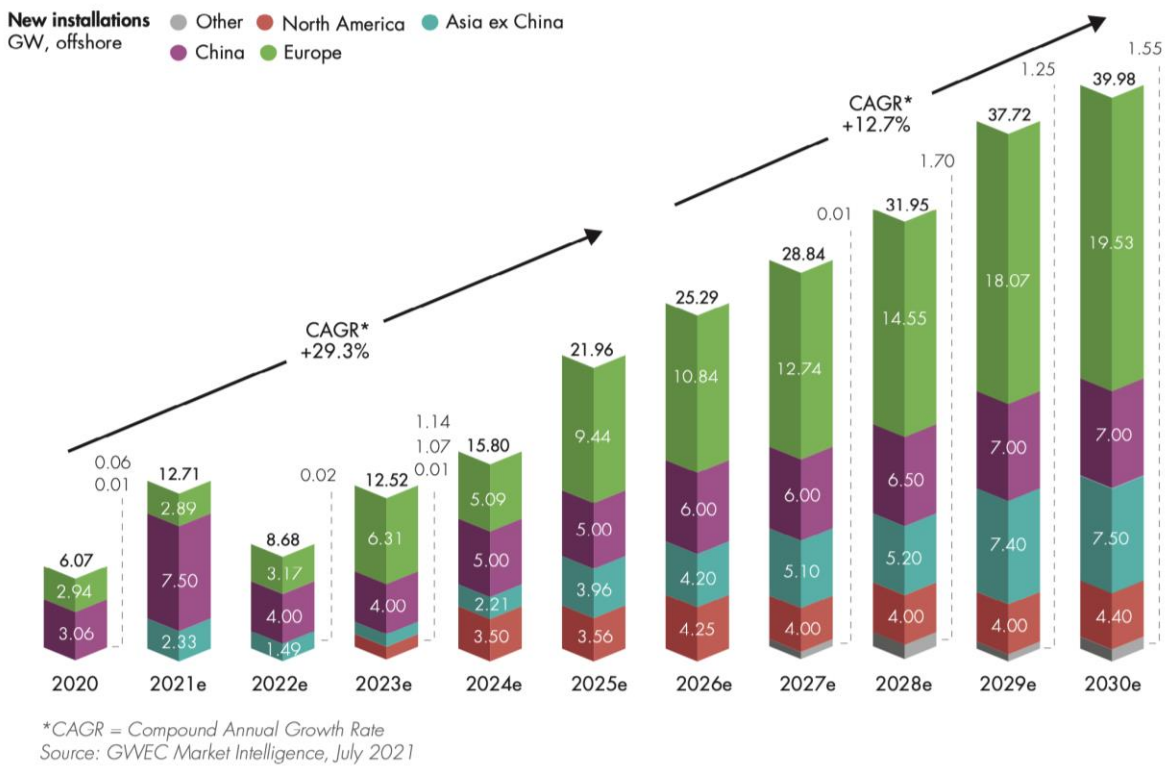
4. **Boosts economic growth:** Offshore wind generates a diverse value chain of jobs and revitalizes coastal communities. A 500 MW project creates 2.1 million person-days of work, or about 10,000 jobs over its 25-year lifetime (IRENA).

5. **Delivers energy security:** Reduces reliance on imported energy and fossil fuels, with high capacity factors and lower variability compared to other renewable sources. "Power to X" offers a path to carbon-neutrality.

6. **Reduces pollution:** As a replacement to fossil fuel, reduces air pollutants that create smog, asthma and health issues. The 96 GW onshore wind in the US generated $9.4 billion in public health savings in 2018 (AWEA).

7. **Saves water:** Fossil fuels consume an average of 15 million liters of water per GWh 1,400 GW of

The next 10 years of offshore wind



*CAGR = Compound Annual Growth Rate
Source: GWEC Market Intelligence, July 2021

- **China** largest installer this decade
- Existing countries are raising their targets e.g. **UK** 40GW by 2030, **Germany** 20GW by 2030
- Other countries will establish themselves e.g. expanding **Europe**, Atlantic Coast **US**, **APAC** region (Japan 10GW by 2030, Korea 12GW by 2030)
- Deployment will begin in **low-middle income countries** e.g., Vietnam and India, but still large economies
- Over **$500bn capital expenditure** this decade → over $3tn by 2050

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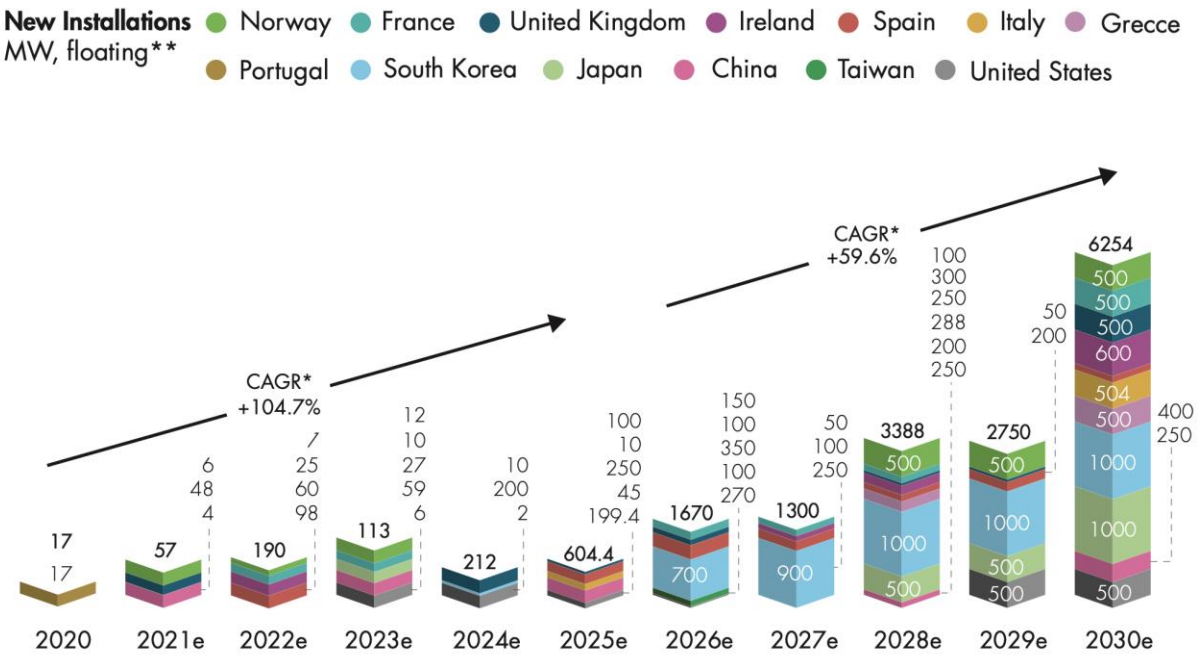
The next 10 years of floating offshore wind



* CAGR = Compound Annual Growth Rate

** Note: this floating wind outlook is already included in GWEC's global offshore wind forecast

Source: GWEC Market Intelligence, July 2021

- Floating wind opens the door for SIDS in the 2030s but needs consideration and planning now
- Feasible concept for floating wind turbines to be towed from a manufacturing port outside SIDS

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Energy characteristics of SIDS

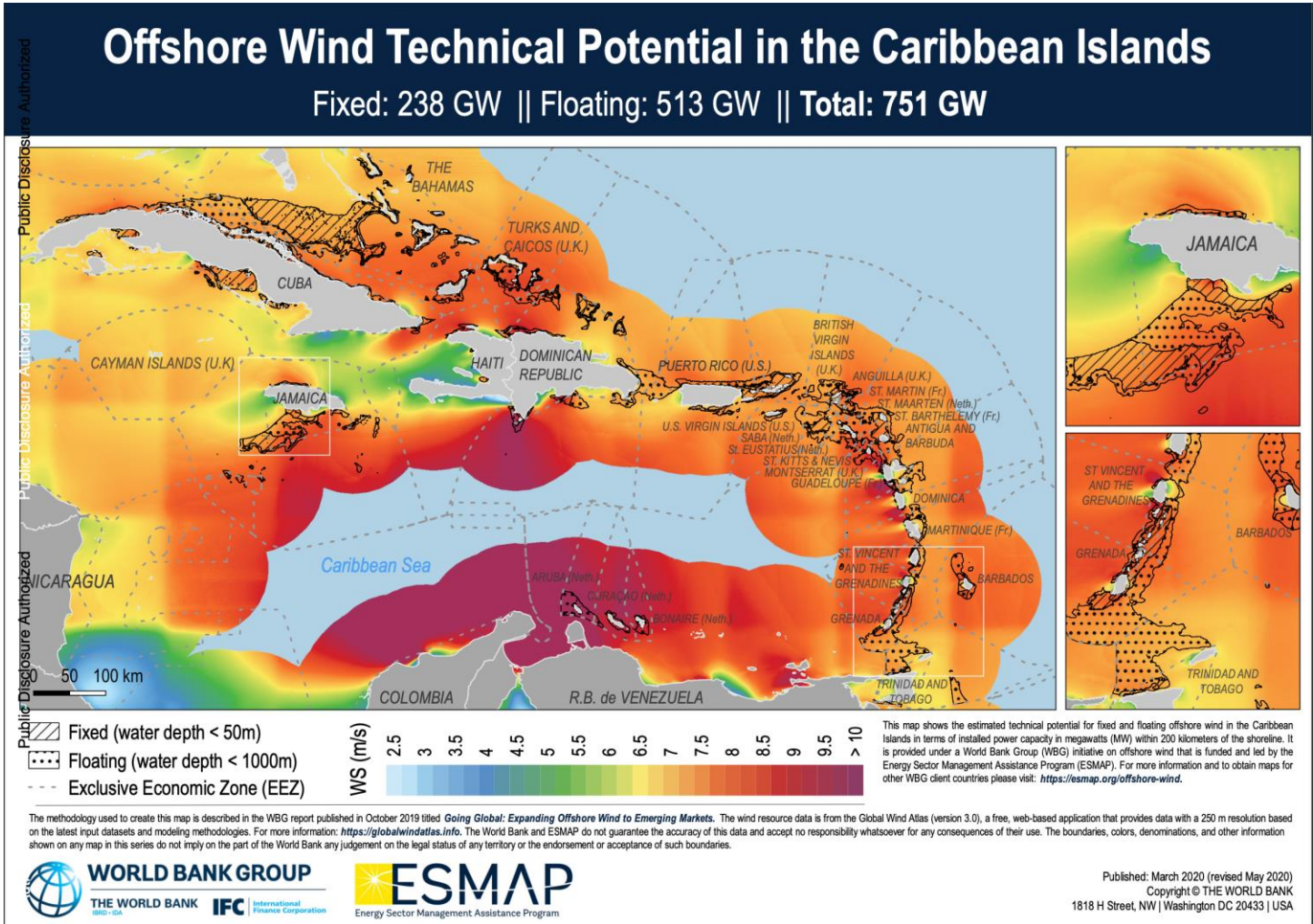
"The SIDS are a heterogeneous group of countries, spread across the world, with very distinct, and context specific, needs, opportunities and challenges"[1]

However there are some common characteristics:

- Lower power demand than advanced economies
- Growing power demand, through economic growth and electrification of transport and industry
- Numerous diesel generators (high unit cost, approx $180/MWh)
- Lack of large industrial scale manufacturing
- Deep waters and tropical storms
- Exposure to climate change, environmental leadership

[1]Development characteristics of Small Island Developing States, Siân Herbert, University of Birmingham, 25 June 2019

- The main SIDS opportunity for offshore wind is in the Caribbean
- Opportunity also exists in Fiji, PNG, Vanuatu & Mauritius
- In other SIDS, the wind speed may currently be considered too low to be economic, but requires scoping work



Thank you

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