

Oslo, 11. November 2024

# Global Offshore Wind Annual Market Report 2024 - 3Q update



# Purpose & mandate

NORWEP is an independent non-profit foundation established to strengthen the long-term basis for value creation and employment in the Norwegian energy industry through facilitation of the industry's international business activities.

NORWEP's mandate is to simplify the process of internationalisation for Norwegian suppliers of technology, solutions and services within the energy sector.

## Founders

- Norwegian Shipowners' Association
- Federation of Norwegian Industries
- Offshore Norge
- Renewable Norway
- Equinor
- Statkraft
- Ministry of Trade, Industry & Fisheries
- Ministry of Energy
- Ministry of Foreign Affairs

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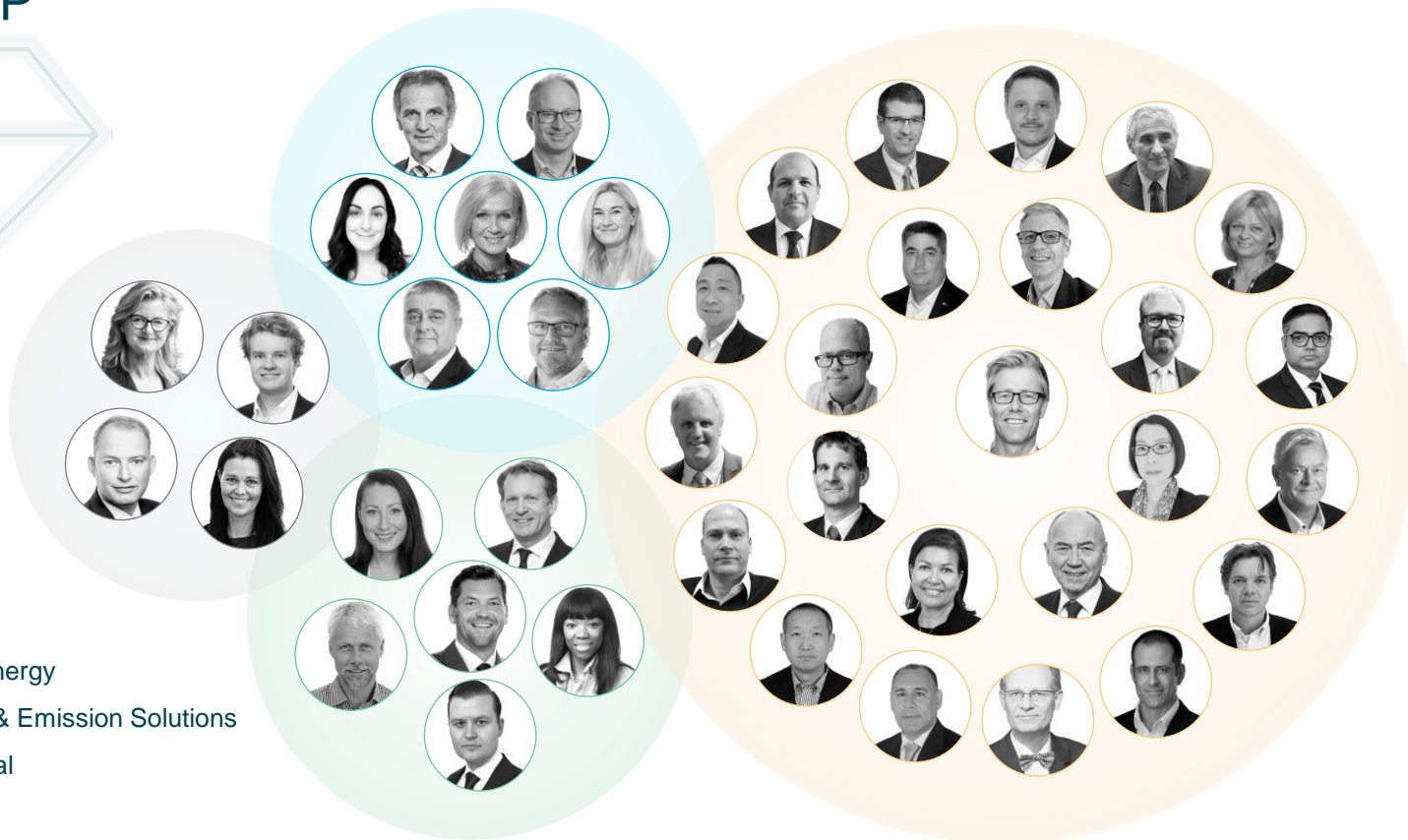
# This is Norwegian Energy Partners

- Public - private cooperation promoting Norwegian technology and solutions to international energy markets
- **Providing** market intelligence
- **Promoting** Norwegian capabilities in international markets
- **Connecting** Norwegian suppliers to international customers
  
- **Speeding up** commercial decisions
- **Reducing risk** of internationalisation





# NORWEP



- Geomarkets
- Renewable Energy
- Hydrocarbon & Emission Solutions
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# 2024 report takeaways - a mixed picture

The Global offshore wind industry is facing harsh headwinds as mature markets are struggling with significant cost increases, supply chain constraints and policy changes, leaving both projects and permitting stranded. Project cancellations together with challenging permitting processes have reduced portfolio growth rates seen earlier.

Markets across all regions are at risk of missing ambitious government targets.

Nevertheless, near 55 GW of capacity has been auctioned in 24 with 26 in Australia and 13 in the UK alone – expectations are towards 75 GW licenced by the end of the year.

12 GW are currently under construction while 5 GW of projects across Germany, Poland, the UK, the US and South Korea reached FID during the period.

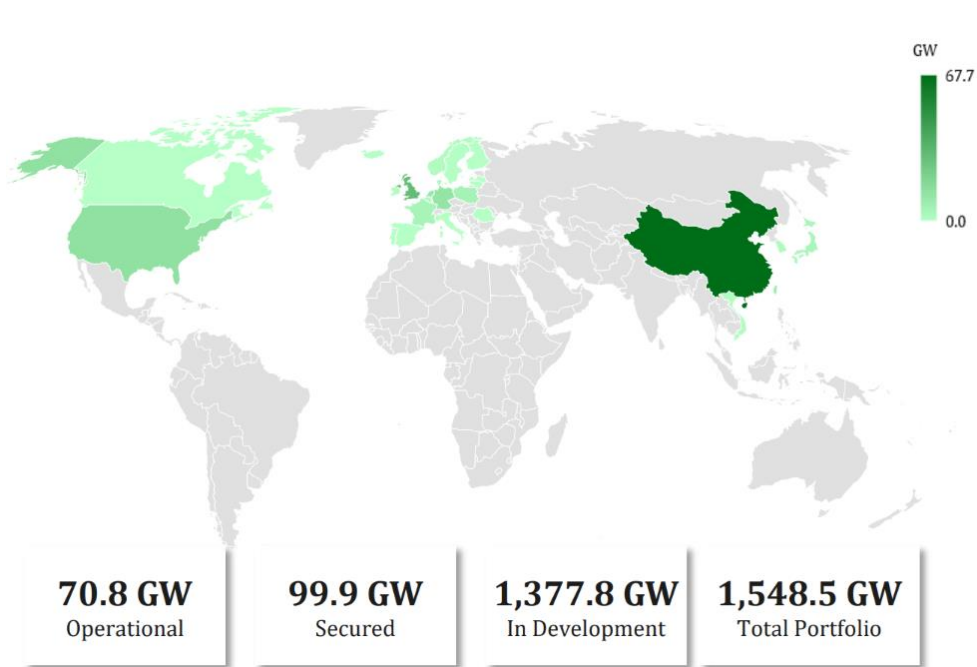
Up to 380 GW of global offshore wind capacity could be operational by 2034, more than 5 times the current capacity installed.

We estimate the addressable market size to grow from today's EUR 30 bn towards 300 bn EUR per year in 2030.



# Slower growth..

Total global capacity in operations or with a secured route to market was 171 GW at the end of 1H 2024, up from 156.2 GW at end 1H 2023 – with only 66 GW added to the total pipeline of 1 526 GW.

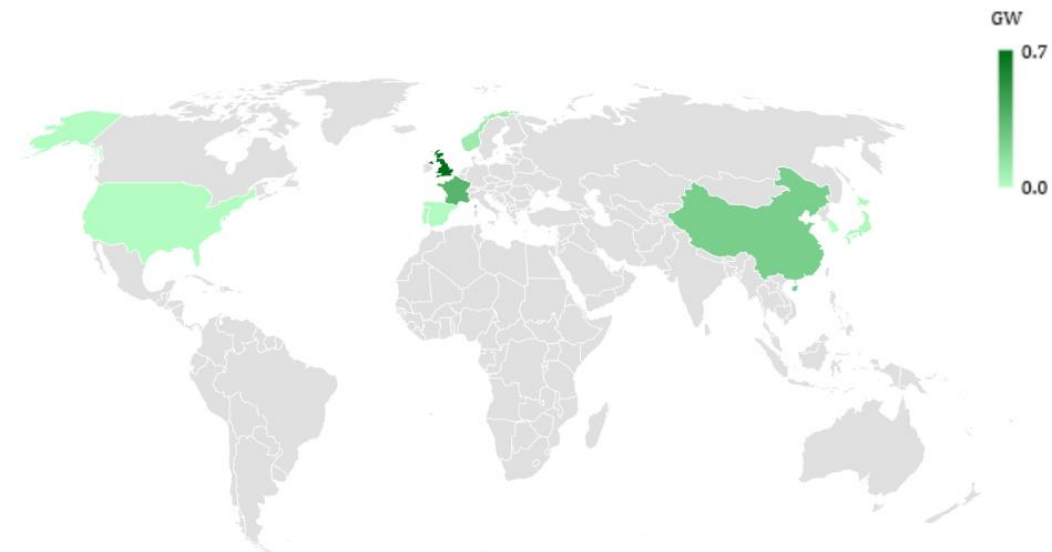


Country	Operational	Secured	Development
<b>China</b>	37,746	30,000	90,521
<b>United Kingdom</b>	14,802	15,919	96,593
<b>USA</b>	174	13,766	128,664
<b>Germany</b>	8,251	4,056	50,825
<b>The Netherlands</b>	4,515	6,422	17,400
<b>Taiwan</b>	1,513	6,382	38,908
<b>Poland</b>	-	5,930	10,871
<b>France</b>	1,475	3,428	5,503
<b>Japan</b>	311.84	4,037	51,714
<b>Denmark</b>	2650	1,000	12,452
<b>Ireland</b>	25	3,300	6,775
<b>Belgium</b>	2,261	-	3,500
<b>South Korea</b>	106	1,630	66,389
<b>Norway</b>	93	1,500	23,126
<b>Vietnam</b>	777	312	65,349





# What about floating?



**0.22 GW**  
Operational

**1.17 GW**  
Secured

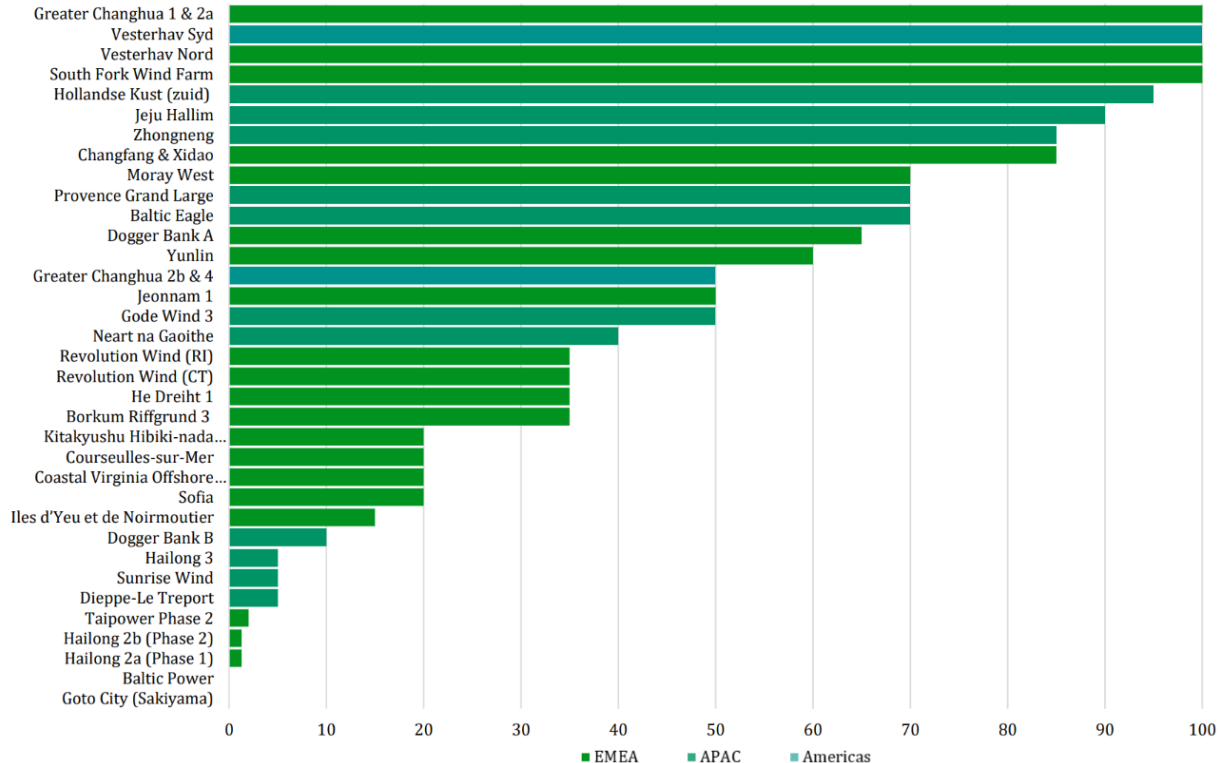
**389.9 GW**  
In Development

**391.3 GW**  
Total Portfolio

Country	Operational	Secured	Development
<b>United Kingdom</b>	78	594	57,962
<b>France</b>	2	341	2,003
<b>China</b>	19	204	13,394
<b>Norway</b>	94	-	15,636
<b>Portugal</b>	25	-	12,907
<b>Japan</b>	5	17	4,354
<b>Spain</b>	2	11	26,899
<b>USA</b>	-	11	62,266
<b>South Korea</b>	1	-	20,132
<b>Italy</b>	-	-	81,828
<b>Sweden</b>	-	-	25,914
<b>Australia</b>	-	-	22,150
<b>Taiwan</b>	-	-	15,587
<b>Philippines</b>	-	-	15,153
<b>Brazil</b>	-	-	4,539



# Construction activity on three continents

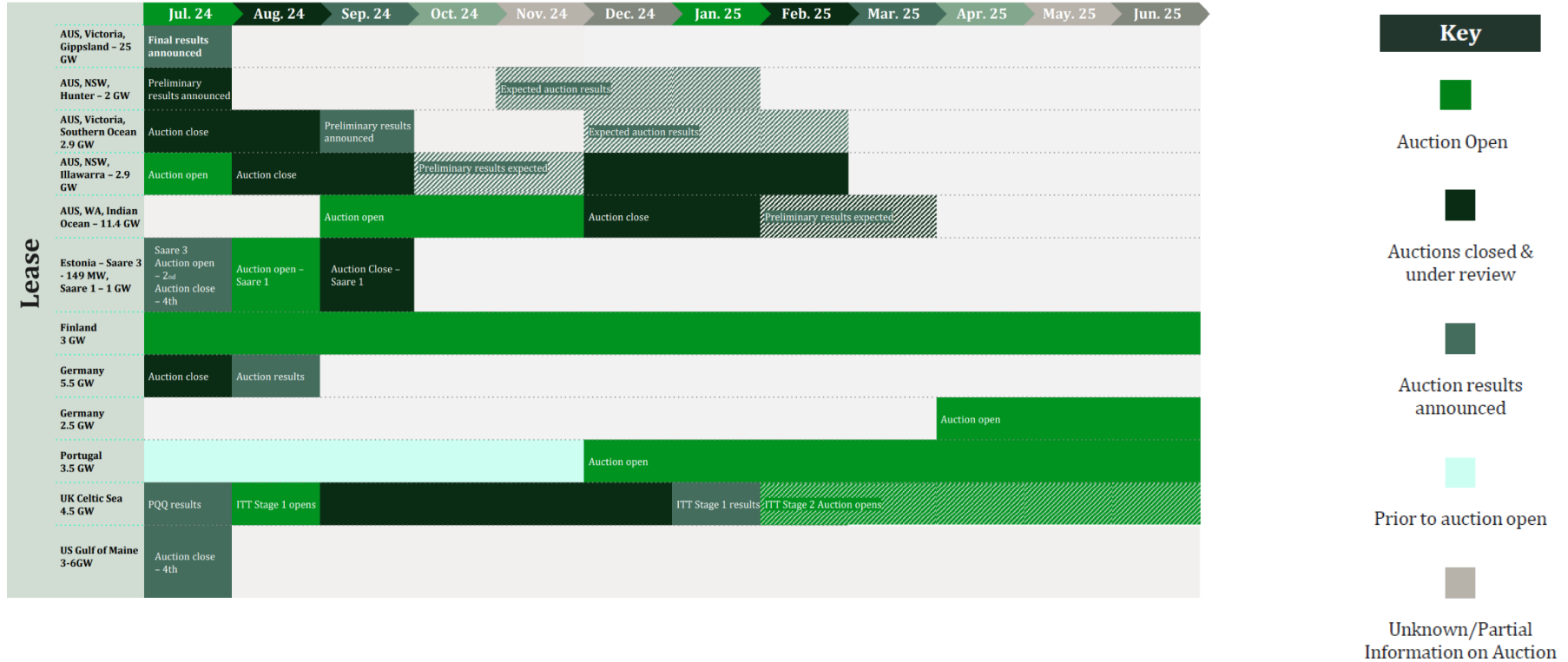


- Vesterhav Syd & Nord, DK, recent COD.
- Saint Brieuc and Fécamp, France, reached operations during the H1 2024
- Vineyard Wind produced first power in January 2024, while South Fork Wind Farm was completed in February 2024.
- Coastal Virginia Offshore Wind farm is progressing, with almost half of monopiles installed at the end of Q3, the completion of the project is not expected until late 2026.
- The last turbines of the Greater Changhua 1 and 2a, Taiwan, were completed in April 2024.
- Changfang & Xidao and Zhongneng offshore wind farm in Taiwan were completed with all 31 turbines installed.
- Moray West delivered first power to the UK grid and is on track to become operational in 2025.
- Provence Grand Large floating offshore wind farm has completed the installation of all 3 turbines, the project is still awaiting commissioning.



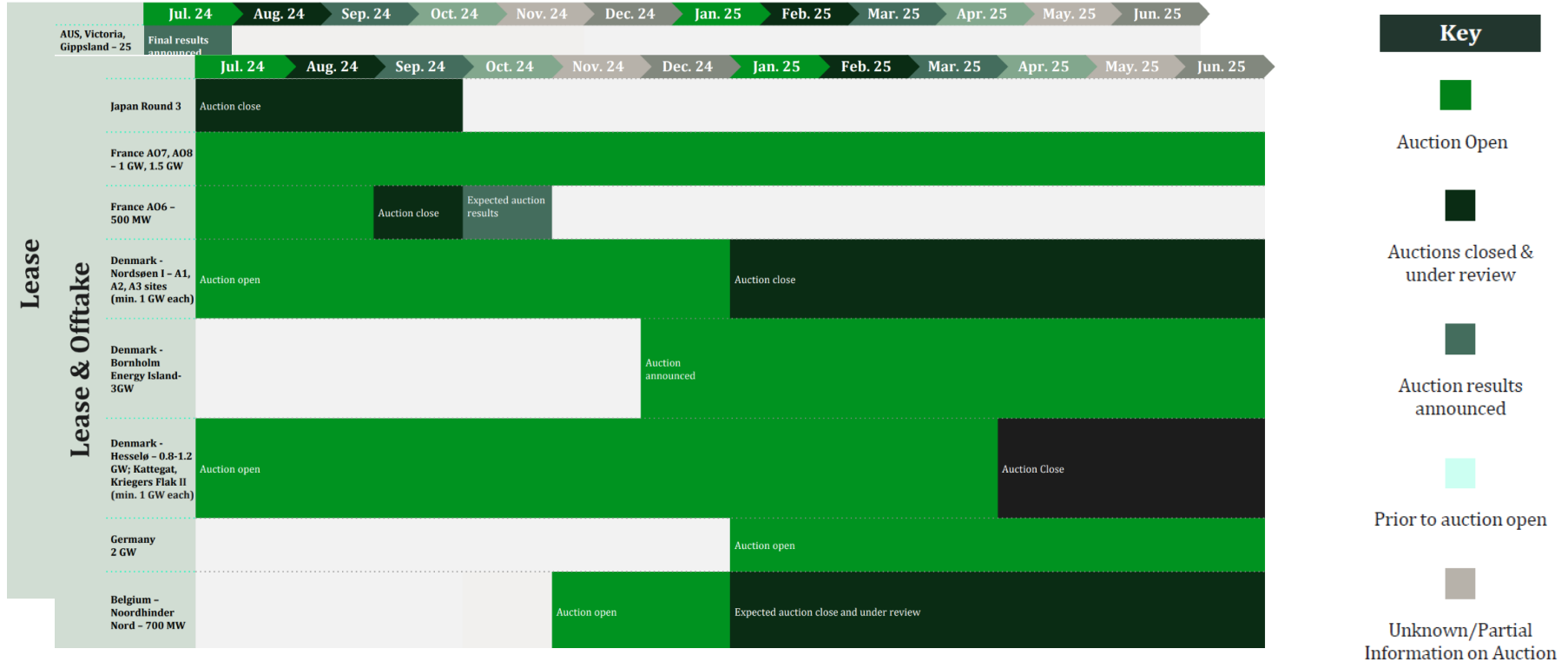


# High auction activity in the last year – some successful



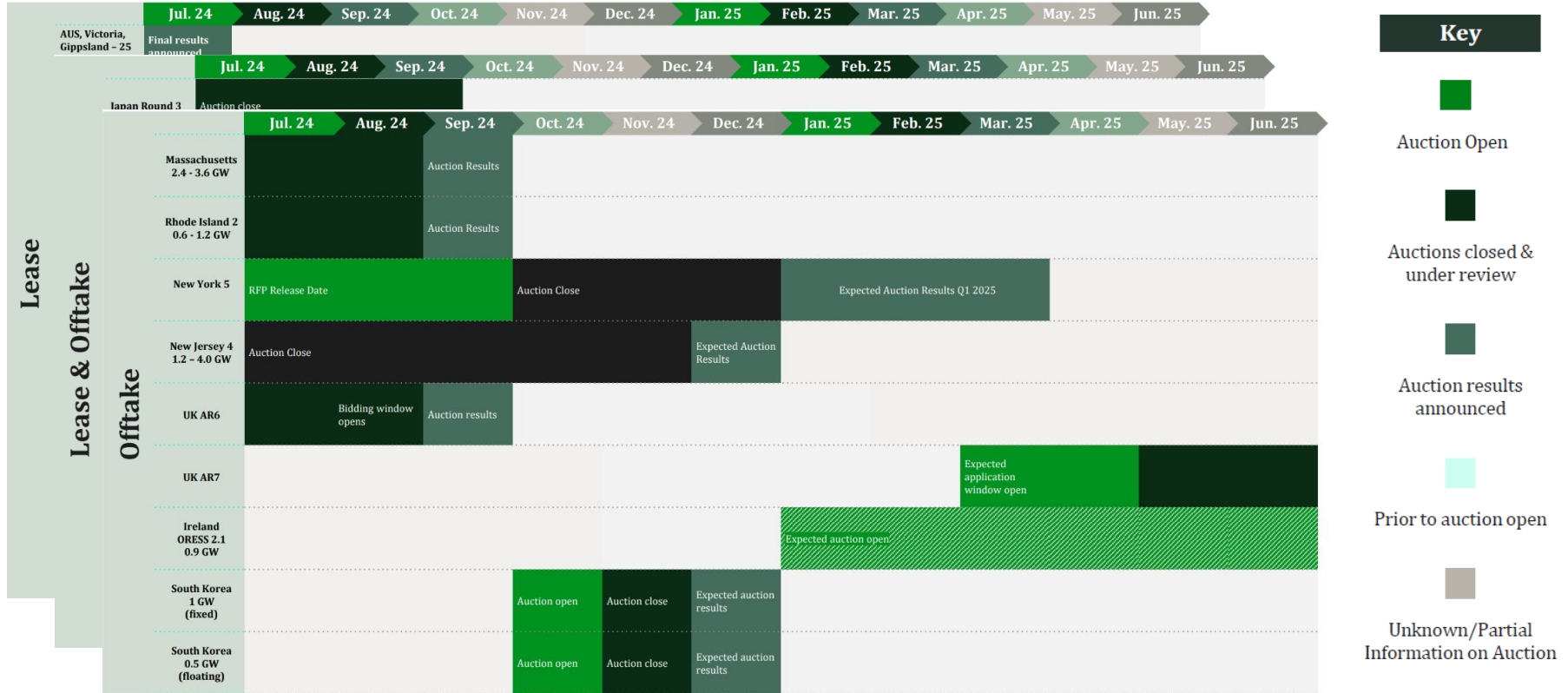


# High auction activity in the last year – some successful





# High auction activity in the last year – some successful





# Upcoming auctions





# Upcoming auctions

Lease Auctions	2024 H1		2024 H2		2025 H1		2025 H2		2026				
	2024 H1		2024 H2		2025 H1		2025 H2		2026				
	Region	Country	Country	Country	Country	Country	Country	Country	Country	Country			
Lease & Offtake	EMEA	Germany 2.5 GW	Germany	France A06 0.5 GW	France	Germany 2 GW	Germany	Noordhinder Nord 0.7 GW	Belgium	Germany 2 GW	Germany		
		APAC	Japan Round 3 1.1 GW	Denmark 6.5 GW	Denmark	India Gujarat 0.5 GW	India	Utsira Nord 500 MW	Norway	Noordhinder Sud 1.4 GW	Belgium		
				Lithuania 0.7 GW	Lithuania	Taiwan Round 3-2 3 GW	Taiwan	France A07 & A08 2.5 GW	France	Fairy Bank 1.4 GW	Belgium		
	AMER	Offtake Only	New York 4 (NY4) 1.7 GW	AR6 TBA	United Kingdom	ORESS 2.1* 0.9 GW	Ireland	AR7 TBA	United Kingdom	AR8 TBA	United Kingdom		
				Poland 4 GW	Poland	New Jersey 4 4 GW	United States	New Jersey Round 5 ~2.6 GW	United States	South Korea* 2-2.5GW (fixed); 0.5-1GW (floating)	South Korea	South Korea 1-1.5GW (fixed); 1-1.5GW (floating)	South Korea
				Massachusetts, Connecticut, Rhode Island 3.6 GW, 2 GW, 1.2 GW	United States		South Korea 1 GW (fixed); 0.5 GW (floating)		South Korea		Philippines* TBA	Philippines	Australia - Victoria* TBA

\*Expected. Date to be confirmed. Timelines and capacities are based on current expectations and are subject to change. The timeline reflects the auction submission deadline, not the time of the award.

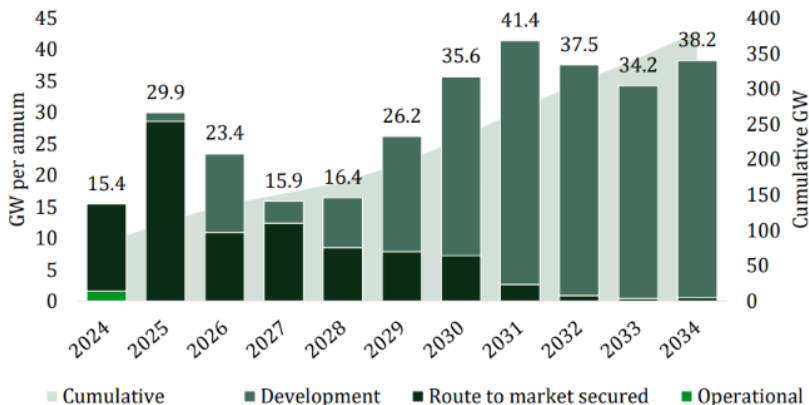
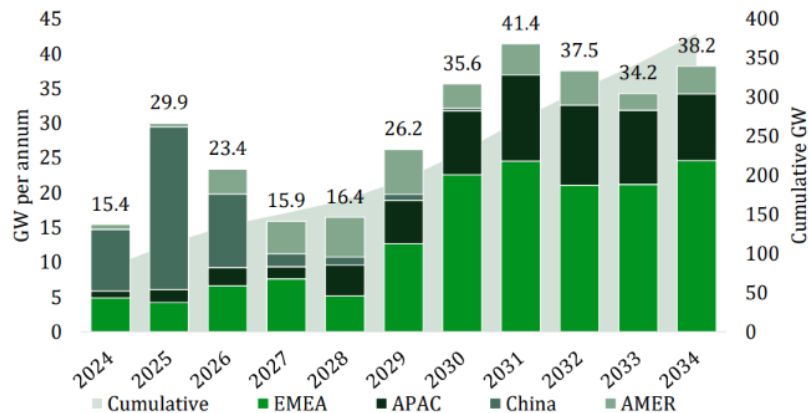


# Several emerging markets are considering offshore wind

Emerging market	Activity in 2023
Azerbaijan	<ul style="list-style-type: none"> <li>In Q1 2023, the State Oil Company of the Republic of Azerbaijan (SOCAR) and the United Arab Emirates' Masdar entered into a partnership to develop offshore wind and hydrogen production projects totalling 2 GW of capacity.</li> <li>In Q2 2023, Azerbaijan, Georgia, Hungary and Romania signed an MoU to develop the Caspian Sea-European Union Green Energy Corridor. The project consists of the generation of green energy in Azerbaijan, potentially from onshore and offshore wind, and export to Europe via a subsea cable under the Black Sea.</li> </ul>
Bulgaria	<ul style="list-style-type: none"> <li>In Q1 2023, the Centre for European Policy Studies announced the launch of BLOW (Black sea fLloating Offshore Wind), a 5 MW demonstrator located off the Bulgarian coast. The project will use French engineering firm Eolink's floating offshore wind turbine design and is supported by 16 European partners. The unit will operate for five years, connected to an existing gas platform operated by Petroceltic, a Bulgarian oil and gas company.</li> </ul>
Chile	<ul style="list-style-type: none"> <li>In collaboration with the World Bank, experts from the Ministry of Energy of Chile together with experts from the United States laboratory network will prepare a Roadmap for the Development of Offshore Wind Energy that allows Chile to achieve its decarbonization and fair energy transition objectives. The Roadmap will provide the Government of Chile with key information to create the enabling conditions for investment and deployment of offshore wind generation in complementarity with other clean technologies that are currently being implemented in the country.</li> </ul>
Costa Rica	<ul style="list-style-type: none"> <li>In Q1 2023, the Costa Rican Electricity Institute (ICE) kicked off a research stage of study and investigation of conditions for the future use of offshore wind in the country. According to the data collected, Costa Rica has an offshore wind energy potential of 14.4 GW, which includes both fixed and floating.</li> </ul>
Cyprus	<ul style="list-style-type: none"> <li>On 20 December 2023, the Council of Ministers approved the Maritime Spatial Plan (MSP) of Cyprus, which was published on the official gazette of the republic nine day later.</li> </ul>
Egypt	<ul style="list-style-type: none"> <li>Two offshore wind projects in Egypt were proposed in Q4 2022, and if developed would be the first projects in the country. In 2023, no activity was recorded. According to the World Bank, Egypt has an offshore wind potential of 27 GW for fixed, and 139 GW for floating.</li> </ul>
Greenland	<ul style="list-style-type: none"> <li>In Q1 2023, H2Carrier and Anori signed a Letter of Intent targeting the development of the first commercial offshore wind farm in Greenland. The proposed 1.5 GW project would supply power to H2Carrier's P2XFloater, a vessel on which green hydrogen and ammonia would be produced.</li> </ul>
South Africa	<ul style="list-style-type: none"> <li>In Q4 2023, the International Finance Corporation announced that it would develop an offshore wind roadmap for South Africa. The project will be led by the Carbon Trust and the Council for Scientific and Industrial Research (CSIR) and it is set to have a special focus on geospatial mapping, the Just Energy Transition, and power-to-X opportunities.</li> </ul>
Turkey	<ul style="list-style-type: none"> <li>In Q1 2023, an industry consultation webinar, organised by the World Bank Group (WBG), presented preliminary findings of Turkey's "Offshore Wind Roadmap".</li> <li>The "Roadmap" suggests that there are limited areas suitable for fixed-bottom offshore wind, with 85% of total area suitable for floating. The high growth scenario envisages 2 GW in place by 2030.</li> <li>Furthermore, the EU is funding a technical assessment for offshore wind potential in Turkey. The study will consider metocean and seabed conditions of 3 potential areas with the aim of determining eligible sites to be tendered in the future, and de-risking and increasing transparency for potential investors, as well as developing institutional capacity in the Turkish Ministry of Energy for conducting/managing preparatory technical studies.</li> </ul>



# Continued growth..

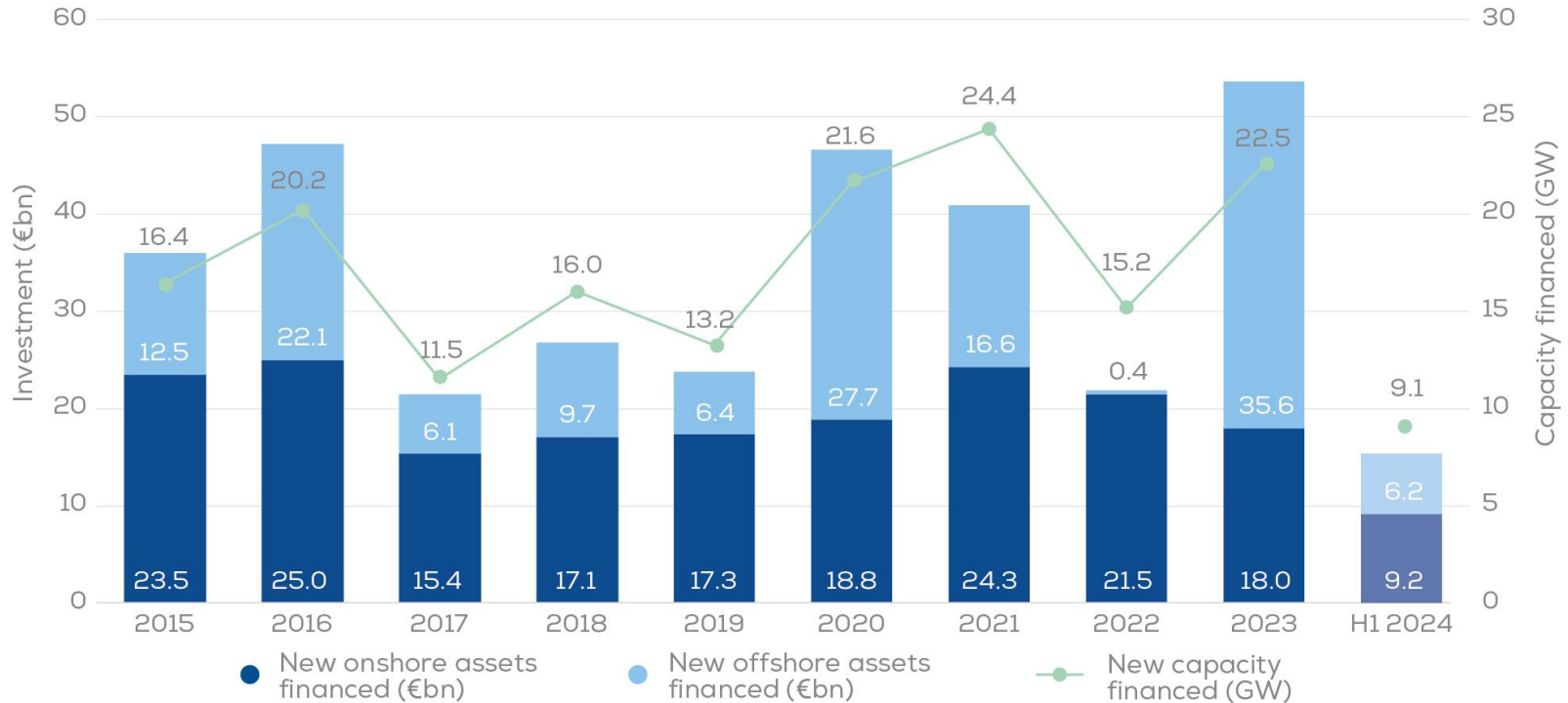


- Capacity commissioned to approach 380 GW i 2034 (excl. China), doubling yearly capacity installations.
- Increases in annual commissioning activity from 2028 onwards as commercial-scale projects allocated from after 2020 begin to enter construction in EMEA. Further leasing rounds and tenders support a further build-out in the region throughout the forecast period.
- In APAC (excl. China), early commissioning in Taiwan until 2027 will be complemented by projects across the region as large-scale projects in South Korea, Japan and Vietnam from 2028.
- In the Americas, the US is replacing lost projects with new, holding up the pipeline, while Canada and the LATAM countries are developing regulation and testing the market with first auctions.
- Several emerging countries are considering offshore wind, developing regulations and processes.
- Ambitious government targets nevertheless might be missed due to challenging cost levels and administrative delays.





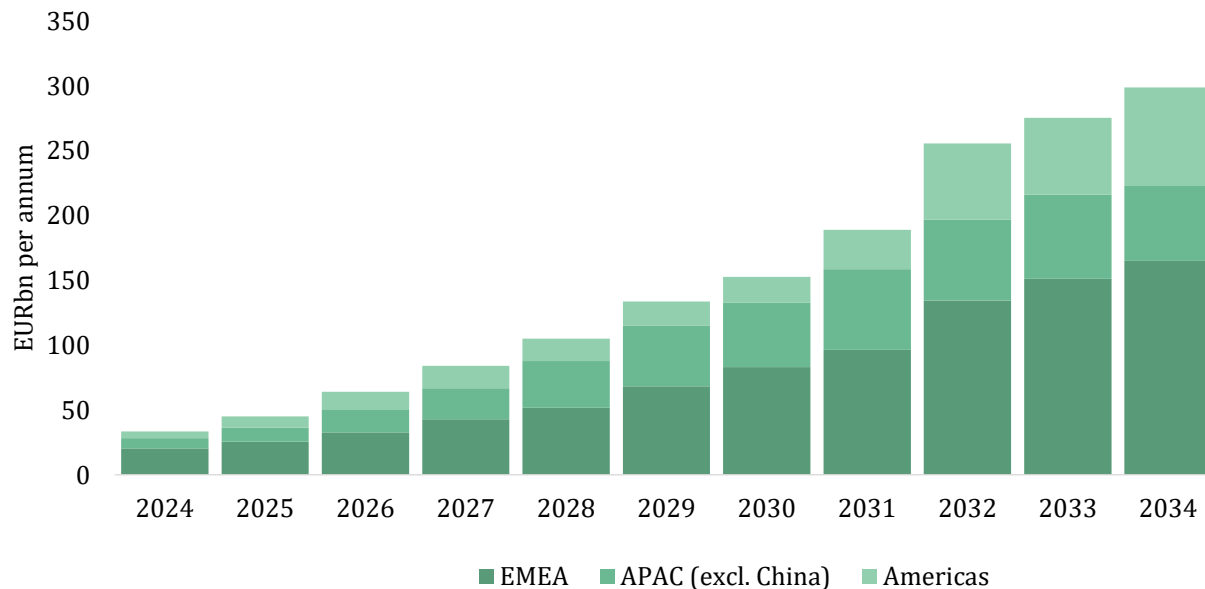
# European investments in wind 2015 – 1H 24



Source: WindEurope

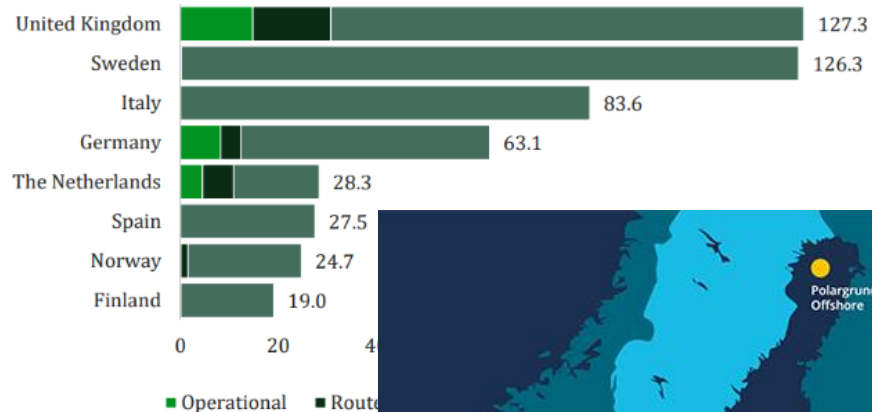
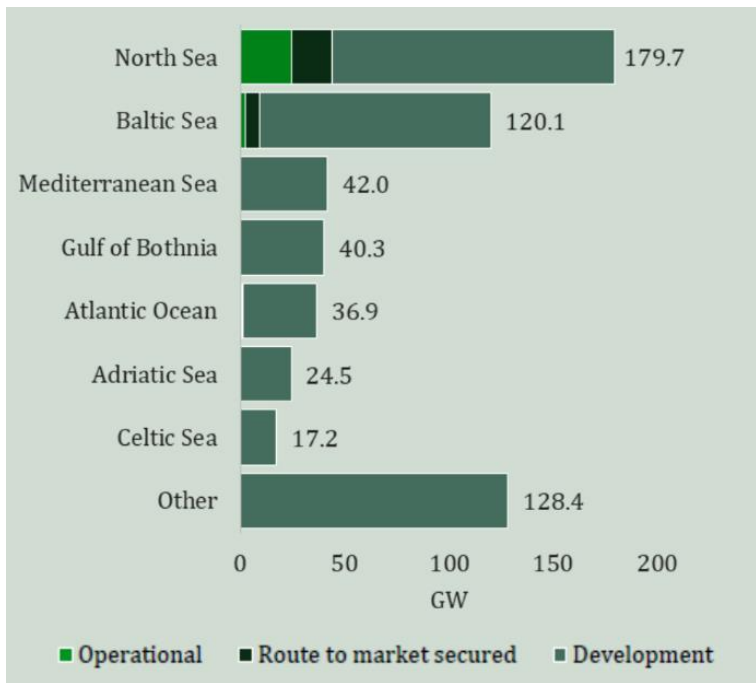


# Current addressable market x10 - approaching 300 bn





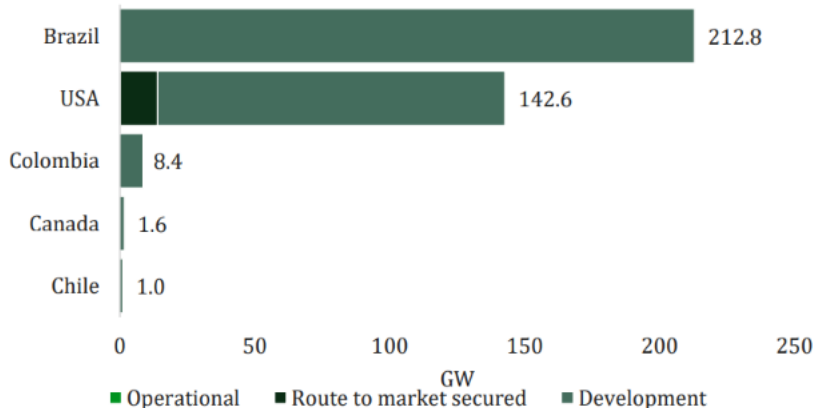
# At our doorstep..



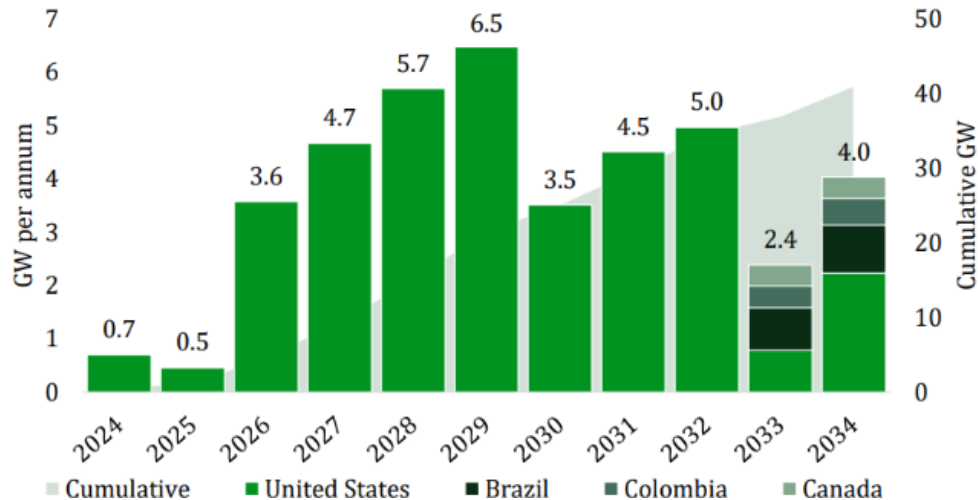


# Americas by country

## Project capacity



## Commissioning forecast



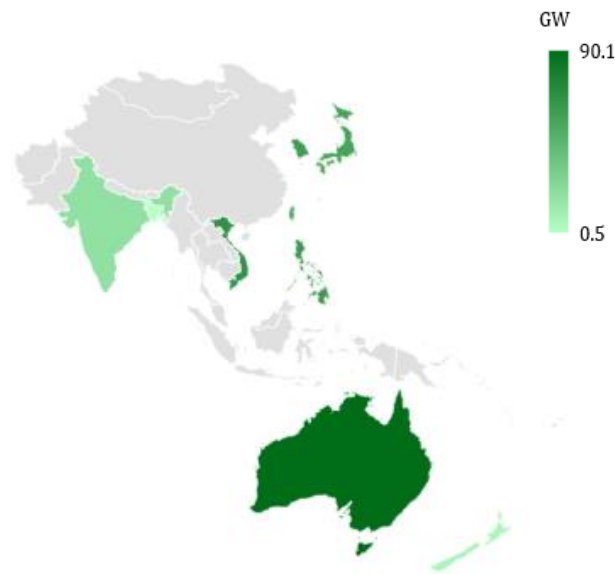
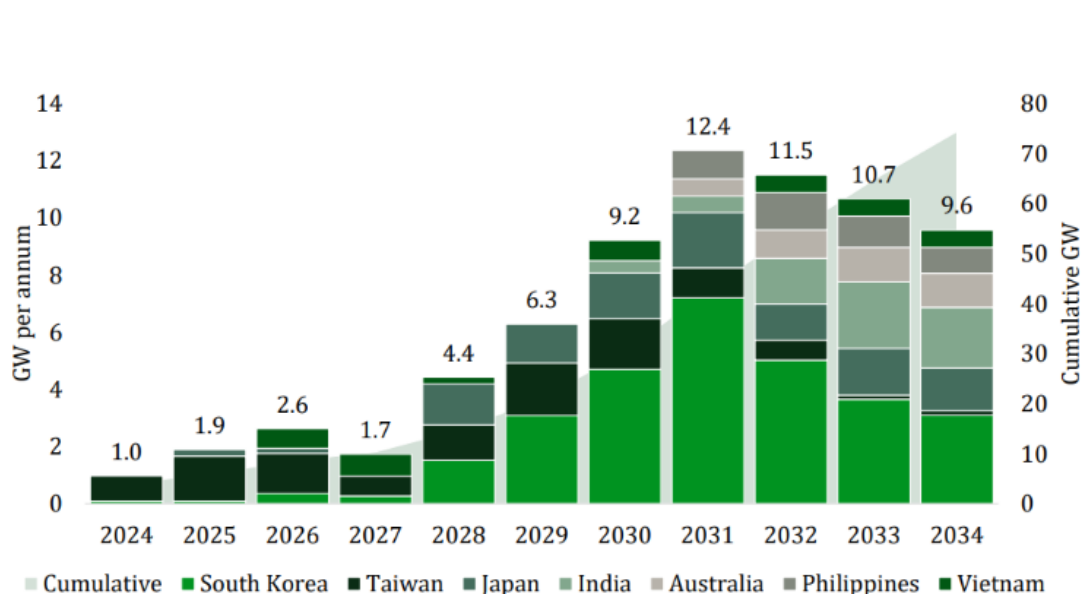
**0.17 GW**  
Operational

**17 GW**  
Secured

**345.4 GW**  
In Development

**361.0 GW**  
Total Portfolio

# APAC ex. China



**1.7 GW**  
Operational

**12.3 GW**  
Secured

**392.1 GW**  
In Development

**407.2 GW**  
Total Portfolio





Market	Technology	Event title	Date	Location	Event type	Format
Denmark	Wind	Market update Denmark OW	07 Jan		Webinar	Webinar
UK - Scotland	Wind	Offshore Wind Conference	22 - 23 Jan	Glasgow	Exhibition, Conference & B2B	Physical
Denmark	Wind	Workshop	TBC	Copenhagen	Workshop & client meetings	Physical
Singapore	Wind	Delegation and Workshop Seatrium (HVDC, Maritime and Floating)	11 - 13 Feb	Singapore	Workshop & client meetings	Physical
Japan	Wind	WindExpo Japan	19 - 22 Feb	Tokyo	B2B	Physical
Taiwan	Wind	Wind Energy Asia	25 - 27 Feb	Kaohsiung	Exhibition, Conference & B2B	Physical
USA	Wind	Market update USA OW	11 Mar		Webinar	Webinar
Belgium	Wind	NORWEP @ Belgium Offshore Days	12 - 13 Mar	Oostende	B2B, partner support	Physical
Germany	Wind	Workshop with TSOs or similar	TBC	Germany	Workshop & client meetings	Physical
Denmark	Wind	WindEurope Copenhagen	8 -10 Apr	Copenhagen	Exhibition, Conference & B2B	Physical
Singapore	Wind	Offshore Wind IQPC	22 - 25 Apr	Singapore	Exhibition, Conference & B2B	Physical
France	Wind	FOWT	23 - 26 Apr	Brest	Exhibition, Conference & B2B	Physical
Baltics	Wind	WindWorks	25 Apr	Riga	Exhibition, Conference & B2B	Physical
USA	Wind	IPF	28 Apr-1 May	Virginia Beach	Exhibition, Conference & B2B	Physical
UAE	Wind	Delegation and Workshop Substations (HVDC)	TBC	Dubai	Workshop & client meetings	Physical
Denmark	Wind	Workshop	TBC	Copenhagen	Workshop & client meetings	Physical
Europe	Wind	Market update Germany, Poland and Baltics	14 May		Webinar	Webinar
Netherlands	Wind	Workshop	TBC	Rotterdam	Workshop & client meetings	Physical
Norway	Wind/Maritime	Nor-Shipping	2 - 5 Jun	Oslo	Exhibition, Conference & B2B	Physical
France	Wind	NORWEP @ Seanergy	17 - 18 Jun	Paris	B2B, partner support	Physical
UK - England	Wind	Global Offshore Wind	17 - 18 Jun	London	Exhibition, Conference & B2B	Physical
Poland	Wind	PWEA Annual Conference	10 - 12 Jun	Swinoujscie	Exhibition, Conference & B2B	Physical
Taiwan	Wind	Market webinar with project developer	TBC		Webinar	Webinar



Norway	Wind/Maritime	Nor-Shipping	2 - 5 Jun	Oslo	Exhibition, Conference & B2B	Physical
France	Wind	NORWEP @ Seanergy	17 - 18 Jun	Paris	B2B, partner support	Physical
UK - England	Wind	Global Offshore Wind	17 - 18 Jun	London	Exhibition, Conference & B2B	Physical
Poland	Wind	PWEA Annual Conference	10 - 12 Jun	Swinoujscie	Exhibition, Conference & B2B	Physical
Taiwan	Wind	Market webinar with project developer	TBC		Webinar	Webinar
Australia	Wind	Australia Wind Energy 2025	17 - 18 Jul	Melbourne	B2B, partner support	Physical
Germany	Wind	NORWEP @ Husum Wind 2025	16 - 19 Sep	Hamburg	B2B, partner support	Physical
APAC	Wind	Market update Australia, Taiwan, Korea??	Late Sep / early Oct		Webinar	Webinar
Australia	Wind	Gippsland New Energy Conference 2025	TBC	Melbourne	B2B, C2C	Physical
Denmark	Wind	Workshop	TBC	Copenhagen	Workshop & client meetings	Physical
UK - England	Wind	Workshop	TBC	London	Workshop & client meetings	Physical
USA	Wind	NORWEP @ ACP	6 - 8 Oct	Boston/NYC	Exhibition, Conference & B2B	Physical
Korea	Wind/Maritime	Kormarine	21 - 25 Oct	Busan	Exhibition, Conference & B2B	Physical
Brazil	Wind	NORWEP @ Brazil Wind Power	28 - 30 Oct	Sao Paulo	B2B, partner support	Physical
Taiwan	Wind	Energy Taiwan	29 - 31 Oct	Taipei	Exhibition, Conference & B2B	Physical
Poland	Wind	PIMEW	TBC	Gydnia	Exhibition, Conference & B2B	Physical
UK - Scotland	Wind	Floating Offshore Wind 2025	12 - 13 Nov	Aberdeen	Exhibition, Conference & B2B	Physical
Netherlands	Wind	OEEC	25 - 26 Nov	Amsterdam	Exhibition, Conference & B2B	Physical
Spain	Wind	NORWEP @ 4th Congreso Eólico Marino	Early Nov	Cadiz or Gran Canary	B2B, partner support	Physical
Denmark	Wind	Workshop	TBC	Copenhagen	Workshop & client meetings	Physical
Europe	Wind	Market update Netherlands, France, Spain, Portugal	TBC		Webinar	Webinar
France	Wind	NORWEP @ Energia	TBC	Montpellier	B2B, partner support	Physical



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