

A collage of images related to offshore wind energy. On the left, a large white wind turbine nacelle is being hoisted by a yellow crane structure over the ocean. In the center, a yellow crane structure is positioned over a body of water. On the right, a yellow offshore platform or vessel is visible, with a worker in a high-visibility vest on a deck. The background shows a blue sky and a distant coastline. The text 'GWEC | GLOBAL OFFSHORE WIND REPORT 2026' is overlaid in white on a teal horizontal line.

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Global Wind Energy Council

The Unicorn Factory
Av. Infante D. Henrique 143 S09
Lisbon. Portugal
info@gwec.net
www.gwec.net

Lead Authors

Rebecca Williams, Feng Zhao, Janice Cheong, Nina Melkonyan

Contributors and editing by

Joyce Lee, Emerson Clarke, Roberta Cox, Ramon Fiestas, Heba Rabie, Ann Margret Francisco,

Wanliang Liang, Thang Vinh Bui, Juman Kim, Takeshi Matsuki, Raimond Dasalla, Trang Van Nguyen, Pope John Sotto, Juan Miguel Consolacian, Juan Tomas Sanchez, Marcela Ruas, Gustavo Ferreira, Kshitij Madan, Erick Lu, Nadia Weekes

Additional contributions

WindEurope, DNV, Southerly Ten, Renewable UK, ACEN, Camilla Holbech, Independent Energy Policy Expert

We received valuable review and commentary for this report from:

Pernille Mortensen, Camille Besnard (CIP)

Roger Charles Cordeux Salomone (Vestas)
Jon Lezamiz, Fergus Costello (Siemens Energy)
Simon Benmarraze, Francisco Gafaro, Jaidev Dhavle (IRENA)

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Bryan O'Neil
Director, Global Equipment Strategy,
Lincoln Electric

Accelerating the Next Generation Supply Chain

The global offshore wind industry is entering a decisive phase following several years of intense activity in industrial transformation, where long-term investment in manufacturing capacity and supply chain resilience will determine the pace and scale of the energy transition. There has been great progress since last year, including significant capacity additions, advancements in turbine technology, and expanded geographic participation from emerging markets. This project-driven sector continues to evolve into a capital-intensive, technology-led manufacturing ecosystem—one that must deliver unprecedented volumes of large-scale infrastructure with consistency, speed, and cost efficiency. All of this comes in the face of growing complexity in project procurement, which is reshaping the future energy supply chain—particularly for offshore wind.

Across Europe, Asia, and specific parts of the Americas, the organization of this transformation is

already built with new manufacturing capacity online. Measured by significant investments in steel production, shipyards, offshore fabrication yards, and specialized vessel fleets, each are reshaping the industrial landscape required to support offshore wind growth. These commitments mark one of the fastest periods of industrial expansion in modern energy history, enabling the future fabrication of turbines, towers, and fixed foundations at scales never previously achieved. Since 2025 the fabrication speed continued to accelerate in response to numerous new factories and production lines coming online to deliver large scale projects.

At the same time, the next generation of offshore wind technology—anchored in the ambitions of turbines exceeding 20 MW and future floating wind foundations—continues to redefine and challenge the future manufacturing requirements. Consider future offshore floater fabricated steel weight in the range

of 4000 – 8000 MT (equivalent to three or more monopile foundations produced today), the manufacturing challenge for the future is mastering serial production at scale. Industry manufacturing base is following closely the next generation offshore turbine system which will demand not only larger components, but entirely new approaches to fabrication, logistics, and installation. To achieve the installed capacity growth ahead, industry accelerators are necessary to drive innovation and consistency across the globe.

The future economics of offshore wind in mature and emerging offshore regions depends on the transition to high-volume, serial manufacturing, where repeatability, automation, and digital integration drive productivity and cost reduction across the value chain. The industry should recognise that global leaders are equipped and ready to respond decisively to these emerging challenges. Encouragingly, organisations such as GWEC and its member companies are convening dedicated working groups to tackle these issues, strengthen collaboration, and support the continued growth of the sector.



Workforce readiness as strategic infrastructure for clean energy deployment

The global offshore wind industry is entering a defining phase in which governments around the world are strengthening energy security strategies, accelerating decarbonisation targets and increasing investment into large-scale offshore infrastructure. Project pipelines continue to expand across Europe, APAC and the Americas, while emerging markets move rapidly from ambition to execution. The opportunity ahead is enormous. But so is the challenge of delivering it.

As this report highlights, offshore wind is no longer constrained by ambition alone. Increasingly, it is constrained by execution capacity. Supply chains, vessels, ports and grid infrastructure all remain critical pressure points. Yet one of the most urgent and underestimated challenges sits at the centre of them all: workforce readiness. The speed of global offshore wind expansion is now outpacing the systems designed to prepare, mobilise and support the people needed to build and operate it.

This is not simply a question of technician shortages. It is a global workforce coordination challenge that spans the entire project lifecycle. Developers, OEMs, EPC contractors, vessel operators and service providers are all competing for many of the same specialised skill sets. Experienced offshore personnel are moving between sectors and regions at unprecedented speed. At the same time, new offshore wind markets are attempting to scale without mature talent pipelines or established training ecosystems already in place. The pressures differ by region, but the underlying challenge is remarkably consistent.

In Europe, offshore wind competes heavily with oil and gas, marine and infrastructure sectors for experienced technical personnel. In the United States, labour dynamics, domestic content requirements and the availability of offshore capable crews continue to shape project execution. Across APAC, visa frameworks and mobility restrictions can slow the deployment of specialist expertise between

markets. In emerging regions such as Latin America, Africa and Southeast Asia, the long-term talent potential is significant, but structured entry pathways and scalable workforce development infrastructure are still evolving.

The reality is clear: offshore wind has become a truly global industry but workforce systems are still too fragmented, localised and reactive for the scale of growth ahead. The next phase of offshore wind deployment requires a different level of coordination between industry, governments, training organisations and workforce partners. Workforce planning can no longer sit behind engineering, procurement and supply chain strategy. It must be treated as critical infrastructure for the energy transition itself.

The industry needs scalable workforce ecosystems that can support both established and emerging markets simultaneously. That means accelerating entry pathways for new talent, strengthening international competency alignment,



Matt Riding
Chief Commercial Officer,
Atlas NextWave



improving workforce mobility frameworks and expanding training capacity at pace. It also means creating more predictable and compliant systems that allow experienced personnel to move safely and efficiently between projects and regions as demand shifts globally.

Encouragingly, the sector has already demonstrated what is possible when effective collaboration happens. Over the past decade, offshore wind has made major progress in safety culture, technical training standards and operational professionalism. The challenge now is to scale those foundations globally and fast enough to support the ambitions set for 2030 and beyond.

At Atlas NextWave, we see these workforce dynamics every day

across offshore wind projects around the world. We see how quickly workforce shortages can impact installation schedules, operational readiness and long-term asset performance. But we also see the opportunity for the industry as a whole to take the next step.

When workforce development is approached strategically, projects become more predictable, mobilisation becomes more efficient and operational risk is significantly reduced. Structured entry programmes, internationally aligned competency standards and compliant cross-border workforce deployment are not future concepts. They are already essential components of successful offshore wind delivery.

Initiatives such as Greenhands Offshore – Atlas NextWave’s accelerated workforce entry programme for new offshore talent– demonstrate how quickly new workforce pipelines can be developed when industry, training providers and local stakeholders work together with a shared objective. In rapidly growing markets, programmes like these help create job-ready personnel within weeks, while supporting the development of long-term local capability alongside international expertise.

The offshore wind industry has proven repeatedly that it can innovate technologically. The next challenge is to scale operationally and globally at the same pace.

Achieving global offshore wind targets will require more than turbines, vessels and capital investment. It will require coordinated action to ensure the industry has the skilled, mobile and future-ready workforce needed to deliver projects safely, efficiently and at industrial scale.

Atlas NextWave is proud to support the Global Offshore Wind Report 2026 because we believe workforce readiness will be one of the defining factors shaping the next era of offshore wind growth. The energy transition will ultimately be delivered not only by infrastructure and technology, but by the people behind it. Building the workforce systems that support those people must now become a strategic priority for the entire industry.

Why offshore wind matters for APAC's energy security and economic future

Energy security has become one of the most critical topics this year, especially as the fuel crisis continues to unfold. This has further cemented the need for electrification globally. Over the past five years, the world has experienced two major fuel crises – first in 2022 during Russia's invasion of Ukraine, and more recently with the war in the Middle East. In response, governments worldwide have implemented rapid measures, including fuel rationing, aggressive energy efficiency initiatives, targeted financial support for the most vulnerable sectors, and the release of strategic petroleum reserves to complement depleting fuel supply.

The Philippines went one step further by declaring a state of “national energy emergency,” enabling the government to deploy immediate policy tools. These include intervention in the Wholesale Electricity Spot Market to stabilise electricity prices in the short term, government procurement of fuel and petroleum products to ensure adequate supply, and the bypassing

of usual procedures to ensure a more agile response.

Against this backdrop, discussions around energy security have become more important than ever. In Asia, governments are rethinking their medium- to long-term energy planning. The case for harnessing indigenous sources of energy, including wind, has moved front and centre in both energy and security policymaking circles. As an industry, this is an opportune moment to strengthen the case for offshore wind – a viable contender in long-term energy planning that global markets should seriously consider.

For us at ACEN, we have been at the forefront of the energy transition story, not just in our core market of the Philippines, but across the wider APAC region. We are focused on delivering solutions that accelerate the shift toward a greener, more sustainable future. Backed by Ayala Corporation, one of the oldest conglomerates in the Philippines, our first foray into the energy sector began in 2011 through the

acquisition of a 50% stake in the 52 MW Bangui Onshore Wind Farm – the first onshore wind farm in Southeast Asia.

Since then, through greenfield development and strategic acquisitions across Asia-Pacific, we have built more than 7 GW of attributable renewable capacity globally. Wind accounts for nearly 1.6 GW of this capacity, across both operational and under-construction projects, with more in the pipeline. Our partnership with CIP for the San Miguel Bay Offshore Wind Project further reflects ACEN's belief that offshore wind will play a vital role in diversifying the Philippine energy mix and strengthening regional energy security.

Our offshore wind push stems from a strong view that wind energy can enhance energy security by reducing reliance on imported fossil fuels and providing greater energy independence. It also offers a stable and reliable energy source as economies continue to grow and electrify across the markets we



Eric Francia
ACEN President & CEO





operate in. The Global Offshore Wind Report 2026 by GWEC echoes this perspective – highlighting offshore wind as a strategic pillar in the shift toward a modern, electrified world.

If built at scale, supported by robust market enablers such as well-designed auction frameworks, accessible financing mechanisms, and strong grid and port infrastructure, offshore wind can deliver high and predictable output. With capacity factors comparable to efficient thermal generation, its sustained and consistent production exhibits baseload-like characteristics. When complemented by storage, interconnection, and demand-side measures, offshore wind can help stabilise power systems and support efficient planning. This is particularly critical in the APAC region, where most fuel requirements are imported, and where offshore wind can enable deeper electrification while reducing exposure to external shocks.

At ACEN, we strongly echo the call to act now. This means strengthening partnerships between industry and government, securing social licence, developing deliverable auction frameworks, streamlining permitting

processes, enabling robust financing, and scaling supply chains.

In our core market of the Philippines, we commend the proactive approach of the government in fostering strong collaboration with industry. This ensures that succeeding auctions are grounded in market realities and that developers can deliver on their commitments. Emerging markets such as the Philippines can serve as a model for how governments, investors, and industry players can come together to successfully advance offshore wind development. The country's Department of Energy has engaged stakeholders through public consultations, industry dialogues, and iterative policy design incorporating feedback into key policy decisions, including auction frameworks, permitting processes, and grid planning. This approach has helped ensure that renewable energy policies reflect market realities while balancing investor viability with national energy planning and consumer priorities.

Continued progress will require stronger regional collaboration – from governments, investors, and development partners – to ensure that projects move from pipeline to final investment decision and, ultimately, to construction.

Accelerating offshore wind deployment is an energy security imperative

The sight of stranded tankers in what was once one of the world's busiest shipping lanes has become a defining image of 2026. The closure of the Strait of Hormuz, a critical chokepoint for oil and LNG supplies, has reignited a global debate on energy security and sharpened the focus on where we source power from.

The world's continued dependence on fossil fuels, and under-dependence on renewable energy, has exposed a major faultline in national economies. Yet this difficult moment offers an opportunity to accelerate the transition towards more resilient, secure and domestically sourced energy systems.

Faced by the second major global energy crisis in less than five years, countries are now locked in a race to electrify their economies and deploy as much homegrown renewable energy as possible, to ensure they are better insulated against the next crisis.

As governments look to strengthen energy security and diversify their energy mix, it is no surprise that offshore wind energy features high on

their agendas. A proven, mature and affordable technology offering high, predictable electricity generation, offshore wind is one of the strongest utility-scale options to support reliable, clean power systems.

In this year's Global Offshore Wind Report, we examine the continued momentum behind offshore wind deployment globally. While 2025 was not a record-breaking year, the industry still delivered 9.3 GW of new installations, the third-highest annual total on record and a 16% increase compared with 2024.

The year 2025 saw important first auctions taking place in key emerging markets such as Philippines, and the beginning of 2026 saw the largest ever auction globally for renewables, with 8.4 GW of new offshore wind procured by the UK Government, which will save 1.79bn GBP (2.41bn USD) for UK consumers vs comparative energy technologies. China meanwhile redoubled its offshore wind resolve, announcing a huge new 100 GW target by 2030 for offshore wind. In addition, positive policy developments were taking

place in Vietnam, government and industry were working together to revise the auction framework in Japan, and South Korea is holding its second offshore wind auction since the passage of the OSS Bill in 2025.

At the North Sea Summit in January 2026, nine governments signed the Hamburg Declaration, confirming their joint ambition to deliver 300 GW of offshore wind capacity by 2050, including a shared goal of 100 GW of cross-border offshore wind capacity.

Global offshore wind capacity hit 92.5 GW by the end of 2025, placing the industry on track to surpass the 100 GW installed milestone in 2026. Despite headwinds, we are approaching the 'take-off' point in a steep growth curve. Around 50 GW of offshore wind capacity is currently under construction globally, and annual installations are expected to accelerate significantly over the coming decade. GWEC forecasts that annual additions will double in 2026, triple by 2030, and exceed 50 GW per year by 2035.

Over the next ten years, more than



Rebecca Williams
Deputy CEO,
Global Wind Energy Council

327 GW of new offshore wind capacity could be installed worldwide, increasing total global capacity more than fourfold to 420 GW by the end of 2035.

Support for offshore wind outside of China and Europe has been steadily increasing for several years, and now appears to be deepening as a response to today's fossil fuel crisis, especially in Asian markets. In this report, we highlight several key growth markets to watch – including: Philippines, South Korea, Japan, Vietnam and Türkiye. GWEC, alongside its association partners, has been representing industry and advising governments for many years in these markets to put in place the right regulatory frameworks to get offshore wind right first time. And this work is now bearing fruit, with emerging markets starting to auction and build out their first offshore wind projects. Now supported by two organisations founded by GWEC, the Global Offshore Wind Alliance (GOWA) a diplomatic multistakeholder initiative on offshore wind, established in collaboration with IRENA and the Government of Denmark, as well as Ocean Energy Pathway, an NGO founded by GWEC in order to provide offshore wind technical assistance support, GWEC and its partners are able to

contribute strongly and meaningfully to moving countries down their “offshore wind pathway”.

The central challenge continues to be scaled delivery: translating political ambition into operational projects at scale. Analysis by GWEC shows that more around 25 GW of projects worldwide outside of China are still waiting to be green-lit, despite being classed by GWEC as ‘ready to build’, having received consent and planning permission. These projects may be waiting for grid connections, auction outcomes or subsidy arrangements before reaching their Final Investment Decision (FID).

Long development timelines and their associated risks remain a major barrier to deployment. Securing seabed leases, permits, financing and grid infrastructure can still take close to a decade in some markets. A project team assembled today to develop a new offshore wind farm could experience two or three more global energy crises, at the current rate, before the first kilowatt-hour of electricity is generated.

Offshore wind projects should not take this long to develop, finance and construct. This is why, in the 2026 Global Offshore Wind Report, we set out an ambitious Action Plan for

Offshore Wind for policymakers and decision-makers. Our first recommendation to any government that is serious about electrifying its economy is to fast-track offshore wind as critical energy security infrastructure, requiring urgent investment and development. Special critical national infrastructure status could expedite project development and planning phases, provide protection from legal delays, and reduce project risks and financing costs. In combination with ensuring an effective market design framework, with CfDs that deliver bankable projects, making this change could help significantly improve the industry's investment case and, ultimately, help to lower bills for consumers.

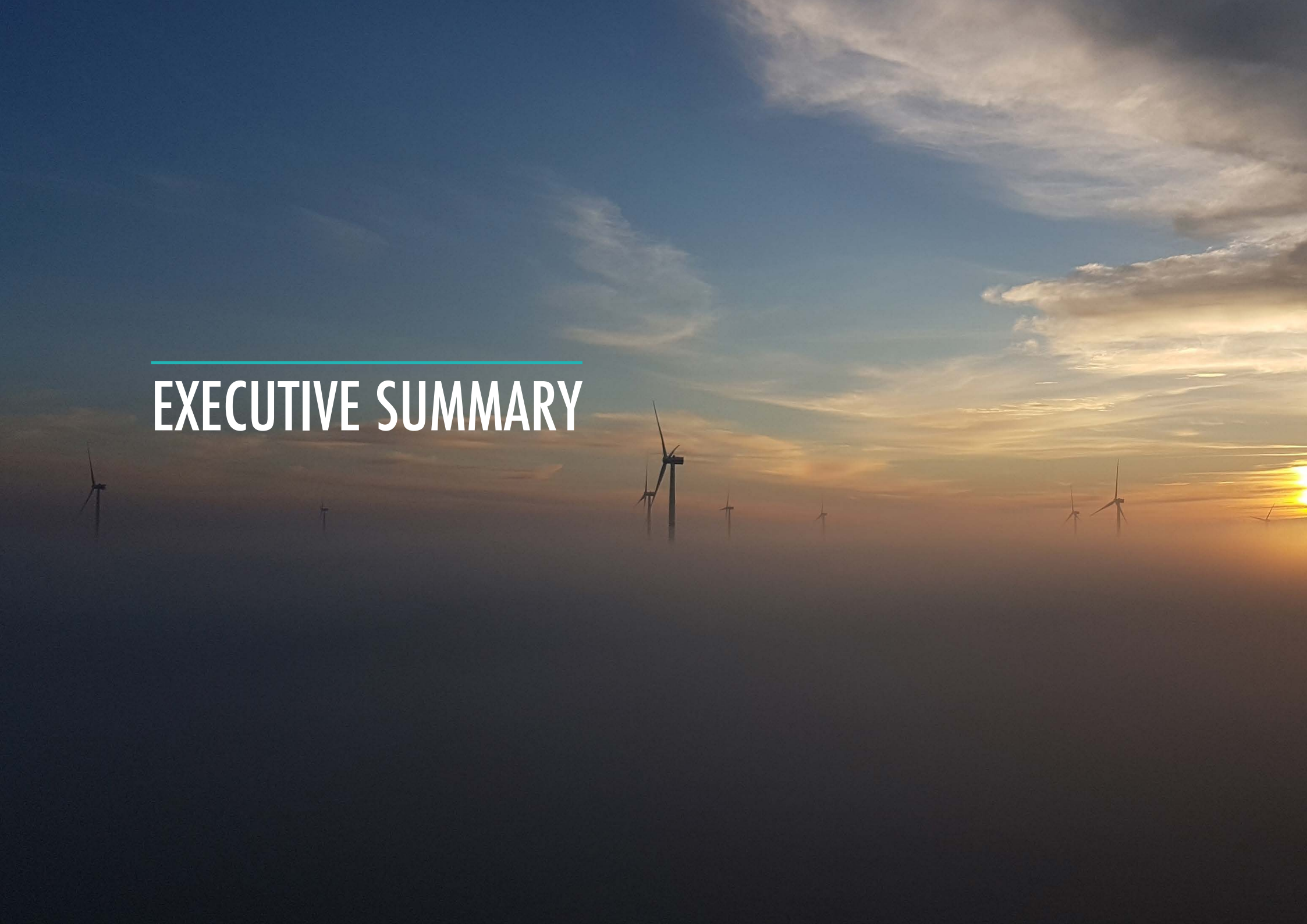
Something that doesn't lower bills for consumers is uncertainty. As such, no analysis of the state of offshore wind would be complete without exploring the situation in the USA. On 20 January 2025, the current federal administration's first day in office, a National Energy Emergency was signed declaring that, “an affordable and reliable domestic supply of energy is a fundamental requirement for the national and economic security of any nation.” The actions that have followed show a critical misunderstanding of this

challenge, with America's nascent offshore wind sector subjected to numerous attacks and stop work orders which have had a chilling effect on the sector and investment community. The industry nevertheless continues to deliver turbines and strives to generate new clean, secure energy for key energy centres on the Eastern seaboard.

As we've learned from the closure of the Strait of Hormuz, and the pictures of all those stranded tankers, no country is immune from a global fossil-fuel crisis. A national economy reliant on fossil fuels is inherently more vulnerable to volatile, internationally traded oil and gas prices. That's why we are calling on governments across the world to get serious about offshore wind and follow GWEC's Action Plan to clear a path for deployment.

Building an arc of offshore wind turbines along a country's coast is a way to guard against future energy supply vulnerability. As the world responds to the second major energy crisis this decade, we must work to ensure that wind turbines spinning in sea winds – rather than stranded tankers bobbing in disputed seas – become the defining image of a new era of secure global energy security.

EXECUTIVE SUMMARY





Feng Zhao
Chief Research Officer,
Global Wind Energy Council

Offshore wind as critical energy infrastructure

In a global power system still dominated by volatile fossil fuels, the next energy crisis is not a question of 'if' but 'when'. History keeps repeating itself: an energy crisis shakes the global economy, governments respond with expensive emergency measures and leave the structural vulnerabilities that caused the crisis intact, ready to trigger the next one. The central question for governments is no longer how to manage and mitigate the next fossil fuel shock, but how fast they can build an offshore-wind anchored electrified system that eliminates the structural conditions that cause such shocks in the first place.

Offshore wind is uniquely suited to underpin the shift to a modern, electrified world. Built at scale it can deliver high, predictable output that – when combined with storage, interconnection and demand-side response – supports both baseload-like and flexible system needs. It reduces exposure to imported fuels while enabling deep electrification. Offshore wind is not just another

renewable energy technology, it is the structural asset that allows an electro-tech economy to exist and thrive.

For many countries, offshore wind is a major part of the answer. It is the only energy technology that combines indigenous resource, scale and reliability to offer reliable

PV,¹ and strong generation during winter and evening peak periods make it uniquely suited to anchor the electrified economy. For land-constrained, high-density coastal nations including South Korea, with growing electricity demand centres, there is simply no equivalent land-based alternative capable of replicating this output at comparable scale and proximity to load.

The reliable, grid-forming characteristics of offshore wind stabilise power systems and ease system planning. When evaluated

Offshore wind is not just another renewable energy technology, it is the structural asset that allows an electro-tech economy to exist and thrive.

energy and genuine independence from fossil fuels. Offshore wind is anchored to the seabed of a country. Once built, it delivers with certainty for up to 30 years through geopolitical tensions, pandemics, and financial crises. Its high-capacity factors, roughly double those of solar

not on the cost of generation alone but on total system cost, offshore wind consistently outperforms the alternatives.² This is partly driven by offshore wind's high-capacity factors and stronger generation profiles. Every gigawatt installed is simultaneously an energy security

1. IEA, Offshore Wind Outlook, 2019, <https://www.iea.org/reports/offshore-wind-outlook-2019>

2. IRENA, "Renewable Power Generation Costs in 2024", 2025, https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2025/Jul/IRENA_TEC_RPGC_in_2024_2025.pdf



asset, an economic development investment and a foundation for long-term industrial competitiveness. It reduces exposure to imported fuels while enabling deep electrification. With a strong offshore wind backbone, countries can electrify industry at scale, keep long-term power prices affordable and build the resilience that breaks the cycle of fossil crises.

In 2025, 9.3 GW of new offshore wind capacity was grid-connected worldwide – the third-highest year for new installations in offshore wind history. China led installations for the eighth consecutive year, commissioning 6.6 GW, while Europe commissioned nearly 2 GW across three markets, demonstrating the efficacy of strong political support. The global offshore market grew on average by 10% each year

over the past decade, bringing total installations to 92.5 GW, which accounted for 7.1% of total global wind capacity as of the end of 2025.

Yet despite this progress, the industry is not breaking records. Macroeconomic headwinds (inflation, rising interest rates, supply chain constraints and policy uncertainty) have slowed deployment at precisely the moment

it needs to accelerate. In 2025, only 11.4 GW of offshore wind capacity was awarded in auctions worldwide, one-fifth of the record set in 2024. Delayed auctions, unfavourable public narrative, grid bottlenecks, permitting backlogs and insufficient long-term pipeline visibility are not abstract industry challenges; these are the friction points that keep countries locked into fossil fuel dependence for longer than



necessary, leaving them more exposed to the next inevitable shock.

To translate ambition into gigawatts and to anchor offshore wind in the electrified economy, GOWR 2026 proposes a forward-looking action plan organised around eight areas that governments must and can act on immediately:

- **Fast-track offshore wind as critical energy infrastructure.** Governments should treat offshore wind along with its support infrastructure - grids, storage and ports - as critical national infrastructure and develop long-term anticipatory grid investment plans coordinated with offshore wind auction pipelines
- **Stronger government-industry partnership.** Governments must engage in transparent and honest dialogue with the industry rooted in realistic country-specific context and deliverables so that public expectations are grounded in evidence.
- **Counter misinformation and build public trust.** Governments, industry and civil society must work together and confront well-funded disinformation campaigns head-on, build cross-party political consensus, and communicate the tangible benefits of offshore wind to

- communities and households.
- **Deliverable auction frameworks.** Governments must shift from short-term procurement focused on lowest nominal price to long-term frameworks designed for deliverability, demand certainty and supply chain confidence.
- **Faster permitting.** Governments must accelerate regulatory approvals by streamlining permitting and consenting procedures for offshore wind and co-located storage projects.
- **More offshore wind financing.** Governments must treat offshore

- workforce investments needed to deliver at pace.
- **Industrial electrification.** Governments must actively invest in decarbonising their industries and economies as that will enable offshore wind to deliver its full potential as the backbone of the electrified economy.

Offshore wind is inherently steady: once built, projects deliver high-capacity, zero-fuel-cost electricity for decades, with no exposure to commodity price swings or shipping disruptions. It is not a

Offshore wind is inherently steady: once built, projects deliver high-capacity, zero-fuel-cost electricity for decades, with no exposure to commodity price swings or shipping disruptions.

- wind as a critical national investment and allocate more financing along with grid, storage and support infrastructure.
- **Scale and diversify supply chains.** Governments must build robust industrial strategies and market arrangements for supply chain development, creating visible long-term pipelines and driving the manufacturing and

temporary patch but a backbone technology that keeps delivering through wars, pandemics and market turmoil. In the electro-tech era, where more of the economy runs on electrons rather than molecules, this constancy is no longer optional – it is the foundation for energy security, industrial competitiveness and economic stability.

PART 1: OFFSHORE WIND AND THE END OF FOSSIL FUEL CRISIS CYCLES





Offshore wind and the end of fossil fuel crisis cycles

Fifty years of recurring energy crises have produced a consistent and largely unheeded lesson. From the 1973 OPEC oil crisis and the Iranian Revolution in 1979 to the impact on European gas imports of the Russian invasion of Ukraine in 2022, each major disruption has exposed the same structural weakness: a deep vulnerability of modern economies that is closely linked to their dependence on internationally traded fossil fuels. In 2026, the closure of the Strait of Hormuz reinforced that same lesson, disrupting close to 20% of global oil supply, around 80% of which was destined for Asia.³ In an increasingly interconnected global

system, the scale and speed of transmission of these shocks has only intensified their economic impacts.

These events are recurring manifestations of a structural vulnerability. The emergency measures that have been introduced in response, such as price controls, strategic reserve releases, short-term fuel substitutions and rapid diversification of fuel suppliers, have helped to cushion immediate impacts but have not addressed the underlying drivers of volatility, and in many cases have placed a significant burden on consumers and public finances. In 2022 alone, governments

across 82 economies spent approximately USD 1.5 trillion⁴ subsidising the fossil fuels that caused the crisis, capital that could've built approximately 500 GW⁵ of new offshore wind capacity in emerging markets and developing economies where financing costs and risk premiums remain comparatively high.

The status quo is no longer a sustainable strategy. The central question for governments is not how

to manage and mitigate the next fossil fuel shock, but how fast they can build a renewables-based, electrified system that makes such shocks less damaging and ultimately less likely. A system that permanently reduces dependence on imported fuels stabilises long-term energy costs and strengthens energy security.

For many countries, offshore wind will provide the key to ending the cycle of energy crises. Offshore wind is

3. Dallas Federal Reserve, "What the closure of the Strait of Hormuz means for the global economy" <https://www.dallasfed.org/research/economics/2026/0320>

4. OECD/IEA, Cost of Support Measures for Fossil Fuels Almost Doubled in 2022 in Response to Soaring Energy Prices, December 2023 — <https://www.oecd.org/en/about/news/press-releases/2023/12/cost-of-support-measures-for-fossil-fuels-almost-doubled-in-2022-in-response-to-soaring-energy-prices.html>

5. GWEC, Financing Offshore Wind in Vietnam, 2024, calculations approximately 3 billion USD per 1 GW

scalable and reliable, delivering baseload-like power at an efficiency comparable with the most efficient Combined Cycle Gas Turbine (CCGT). Offshore wind is an energy technology that combines indigenous resource, scale and reliability to offer independence from fossil fuels. Once built, offshore wind farms deliver with certainty for up to 30 years, through political cycles, geopolitical tensions, pandemics and financial crises.⁶ The corollary is equally true: every year of delayed deployment is a year of continued exposure. A study conducted by Baringa in 2025 shows that delaying just 3 GW of offshore wind in the UK would increase total energy costs to consumers by over GBP 350 million (USD 470 million) per year under normal market conditions – rising to GBP 2 billion (USD 2.7 billion) per year in the event of a price shock equivalent to the 2022 gas crisis.⁷ Governments that understand this have already been harnessing offshore wind for energy security through deliberate national energy strategy.

6. UCL Open Environment / UNU-INWEH, Wind Energy Delivered £104 Billion Net Benefit in UK, October 2025 — <https://unu.edu/inweh/news/wind-energy-delivered-ps104-billion-net-benefit-uk-demonstrating-renewables-pay>
 7. Baringa Partners, Securing the Benefits of Offshore Wind for the UK, December 2025, <https://www.baringa.com/globalassets/insights/low-carbon-futures/securing-the-benefits-of-offshore-wind.pdf>



The Strait of Hormuz

The Strait of Hormuz carries ~25% of seaborne oil and ~20% of LNG shipments. Each 1% drop in oil supply increases oil prices by about 4%, which may in turn impact costs across energy price-linked sectors like transportation, utilities, industrial production and more.

Economists estimate a 10% increase in energy prices lasting 1 year would raise global inflation by 0.40 pp (40 basis points) and reduce global GDP growth by 0.1–0.2 pp.

The Strait handles roughly 20% of global jet fuel flows, nearly 50% for European markets, and even higher figures in countries such as Japan and South Korea.

It also stands as a critical chokepoint for helium and fertilizer supply chains, with roughly one-third of global helium supply and a similar share of globally traded fertilizer and fertilizer inputs transiting through the Gulf. Fertiliser shortages linked to the Iran war have increased costs for UK farmers by up to 70%. The impact is expected to be especially

severe in Africa, where ammonia prices have already risen over 75% and urea prices about 60% year-on-year.

In response to the crisis countries across continents have drawn on strategic petroleum reserves to smooth shortfalls and moderate price spikes. Energy importers have accelerated procurement from alternative suppliers while others temporary measures such as adjusting fuel procurement rules, prioritizing critical aviation and transport demand, and increasing coordination with refiners.



Case Study: Danish offshore wind for regional energy security and global demand for green hydrogen and e-fuels

*Provided by Camilla Holbech,
Independent Energy Policy Expert,
Denmark*

In the face of geopolitical tensions and ensuing shocks to the energy markets, Denmark introduced policy reforms for offshore wind in 2025 that resulted in two state tenders that reintroduced a revenue-sharing mechanism, promised more flexibility to market actors, and initiated post-2030 models for deployment that are more market-driven and have a regional approach.

Following the failed tender for 6 GW,⁸ the government reintroduced a revenue-sharing mechanism in the

form of a double-sided Contracts for Difference (CfD)⁹ to accommodate the more volatile global market situation. This was a necessary revision that enabled this mature market to move forward and launch tenders for 2.8 GW of radially connected offshore wind.

Meaningful progress was made to advance the hybrid Energy Island Bornholm project, comprising 3 GW of offshore wind reaching both Denmark and Germany through an interconnector. This innovative project drives technological and regulatory developments and will serve as a blueprint for how offshore wind can underpin regional

integration and crossborder collaboration to promote energy independence and lower power prices on a regional scale. Energy Island Bornholm rests on bilateral agreements between the states on cost-sharing for the revenue stabilisation scheme covering offshore wind generation and grid infrastructure. In doing so, it is advancing regulatory innovation as Europe is yet to develop a standardised framework for hybrid offshore wind projects that span

multiple national jurisdictions. Post-2030 models for offshore wind are being developed with a view to realising as much of the 40-80 GW estimated technical potential as possible in the lead up to 2050. Offshore wind is cementing Denmark's quest for energy independence and projecting it on a wider European level, as well as scaling up production of green hydrogen, e-fuels and other PtX commodities for the global market.

8. Denmark was not alone in this. 2025 saw a wave of failed offshore wind auctions across Europe, with 6.1 GW of capacity going unawarded in Germany, France, the Netherlands and Belgium (GWEC Market Intelligence).

9. A traditional (one-sided) Contract for Difference guarantees a minimum strike price to developers when market prices fall below it, protecting project revenues. A double-sided CfD works in both directions: developers receive top-up payments when market prices fall below the strike price, but must pay back the difference when market prices exceed it. This revenue-sharing mechanism reduces ensures the burden is shared evenly.

Case study: Energy security as a major strategic driver for China's offshore wind development

In China, the world's largest renewable energy market, wind power supplied 10.7% of the country's electricity demand last year. China has made huge progress in increasing domestic renewables in order to enhance its own energy security. By the end of 2025, the total installed wind and solar capacity reached 1.84 TW, accounting for 47% of all power installations, surpassing thermal power and becoming the largest power source in the system. However, according to China National Petroleum Corporation's (CNPC) Economics and Technology Research Institute (ETRI), China's crude oil import dependency is expected to remain at around 70% throughout the 2026–2030 period, leaving the country exposed to external supply disruptions.¹⁰ This is particularly significant given crude oil's critical role domestically, not only for transport and power generation, but also as a key feedstock for petrochemicals, plastics, synthetic fibres, fertilisers and broader chemical production. Asia has been hit first and hardest by the impact of the war in Iran on oil supplies. Although China has been curbing the growth of fossil fuel use for several years, it remains highly exposed to maritime energy supply

risks, with an estimated 52% of its crude oil imports and around 30% of its LNG imports linked to flows transiting the Strait of Hormuz.¹¹

Against this backdrop, offshore wind is viewed not only as a decarbonization pathway, but also as a strategic domestic energy source that can strengthen China's energy sovereignty.¹² Compared with inland renewables, offshore wind benefits from higher capacity factors and longer annual full-load hours, while being located close to major coastal load centers. This helps strengthen regional electricity supply security and reduce dependence on long-distance power transmission, especially for China's eastern coastal provinces. These areas account for more than 60% of national economic output and electricity demand but possess limited large-scale onshore renewable resources.

A step-change in offshore wind deployment: the 15th Five-Year Plan

The 15th Five-Year Plan, released just after the start of the US-Israel-Iran conflict, further elevates the strategic importance of offshore wind and strengthens China's ambition on

China's offshore wind development road map, 2009-2030



Source: GWEC Market Intelligence, NEA, April 2026

offshore wind development. The plan targets at least 100 GW of cumulative offshore wind capacity by 2030, implying more than 50 GW of new additions within five years. This would require offshore wind deployment to accelerate significantly beyond the historical build rate (around three to four times the historical average).¹³ It formally incorporates large-scale offshore wind bases across the Bohai Sea, Yellow Sea, East China Sea and South China Sea into national-level energy planning for the first time, signaling stronger long-term policy certainty for the sector.

China is currently transitioning from nearshore to deep-water offshore wind development. Over the next five years, the policy focus is expected to expand towards deep-water and far-sea development, alongside

technologies such as floating offshore wind and flexible HVDC transmission. At the same time, offshore wind is increasingly being integrated into China's broader marine economic and industrial strategy.

President Xi has explicitly highlighted offshore wind within the framework of high-quality marine economic development, with a growing emphasis on offshore hydrogen production, integrated energy islands and offshore industrial clusters. Within the context of China's vision for renewables as the backbone of the 'new energy system', offshore wind is increasingly viewed as a strategic pillar to enhance grid stability, strengthen energy security and achieve the country's '30-60' goals of carbon peaking by 2030 and carbon neutrality by 2060.

10. China remains structurally exposed to oil market disruptions, because oil in China is not primarily used for power generation, but also for many other critical sectors such as petrochemical feedstock, plastics, synthetic fibres, fertilizers and broader chemical production.

11. Vusal Guliyev, "Hormuz Blockade Pushes China Toward Continental Energy Suppliers and Overland Routes," The Saratoga Foundation (May 13, 2026), <https://www.saratoga-foundation.org/p/hormuz-blockade-pushes-china-toward>

12, 13. GWEC Market Intelligence



Why offshore wind, now?

Offshore wind is uniquely suited to act as the engine of an electrified economy in the 21st century.

Offshore wind is indigenous. For many of the world's largest economies and fastest growing energy markets, population, industrial capacity and energy demand are heavily concentrated in coastal zone. In these markets, offshore wind sits precisely where the power is needed, minimising the space constraints and land-use conflicts that constrain onshore generation alternatives. Built at the scale that modern turbines now make possible, offshore wind

delivers electricity at volumes capable of powering entire industrial regions from a single development zone. For example, the largest offshore wind project, Dogger Bank, built off the Northeast Coast of England, can power up to six million homes annually.¹⁴

Offshore wind delivers at scale. It is designed to be the workhorse and carry the load of the modern economy. Its high capacity factors match those of efficient gas-fired power plants and are roughly double those of solar PV.¹⁵ Its 'variable baseload'¹⁶ characteristics increase predictability, stabilise power

systems and ease system planning. Ørsted's South Fork Wind Farm off New York achieved a 46.4% net capacity factor in its first full year of operation, climbing to 53% in the first half of 2025 – comparable to New York's most efficient natural gas plant at 53.7%.¹⁷ Offshore wind's energy output supports both baseload-like and flexible system needs when combined with storage, interconnection and demand-side response.

Offshore wind is long-term power. Where fossil fuels are traded globally, with prices based on market supply and costs for production, conversion and transport, offshore wind is anchored to the seabed of a country. Once

built, it delivers. There is no fuel to buy, no logistics chain to disrupt, and no commodity markets that transmit geopolitical shocks to consumers' energy bills. Analysis consistently shows that reducing dependence on fossil fuel imports through domestic renewable generation stabilises long-term energy prices and insulates

14. Dogger Bank Offshore Wind Farm, 'Eastgate Engineering, <https://eastgateengineering.com/projects/dogger-bank-offshore-wind-farm/>

15. - IEA, Offshore Wind Outlook 2019 (World Energy Outlook Special Report), 2019, <https://www.iea.org/reports/offshore-wind-outlook-2019>

16. Offshore wind produces power at consistently high rates compared to other variable renewable sources, with predictable seasonal output patterns. This means it can anchor the grid in a way that intermittent sources cannot, earning it the designation of 'variable baseload'.

17. Ørsted, South Fork Wind: One Year of Reliable, Cost-Effective Power, 2025 — <https://us.ored.com/renewable-energy-solutions/offshore-wind/south-fork-wind-report>

economies from the volatility that defines the fossil fuel era.¹⁸ In an era of strategic competition, this provides a form of national resilience that fossil fuel investment cannot replicate.

Offshore wind lowers system costs and consumer bills

A common assumption is that offshore wind's higher cost of capital must make it a more expensive system choice. Traditionally, energy costs are measured and compared through the levelised cost of energy (LCOE). This captures the cost of producing a unit of electricity at the point of generation. However, it does not capture the cost of integrating that electricity into a system that must be reliable, dispatchable and affordable at all hours of the day, across different seasons and different weather conditions. As IRENA's 2026 analysis confirms, LCOE captures only plant-level costs.¹⁹ It does not account for the wider costs of integrating generation into the power system, including balancing supply and demand in real time, providing grid flexibility and reinforcing transmission networks to connect new capacity. When storage is included and total system costs properly accounted for, offshore

wind consistently outperforms the alternatives.

The reasons are structural and compounding. Offshore wind (excluding floating) connects directly to coastal load centers, where 40% of global population resides,²¹ reducing the need for the long-distance onshore transmission infrastructure that inland generation typically requires. Its high capacity factors and seasonal output profile reduce the hours at which expensive gas peaking capacity must run. In comparison, onshore wind, even when paired with battery storage, requires significantly more turbines and substantially larger land footprints to deliver equivalent output. Its location at sea eliminates certain planning conflicts and compensation costs that can burden onshore generation development. Lower system costs likely mean lower wholesale prices, which then translates into lower household, industrial and consumer bills.²² For example, a study published in UCL Open Environment found that, from 2010 to 2023, wind power delivered a net benefit of GBP 104.3 billion (USD 140 billion) to UK consumers – GBP 14.2 billion (USD 19 billion) from lower electricity prices and GBP 133.3 billion (USD 179 billion) from reduced natural gas costs.²³



18. Ørsted, Offshore Wind at a Crossroads, 2025 — <https://cdn.orsted.com/-/media/www/docs/corp/com/about-us/whitepaper/offshore-wind-at-a-crossroads.pdf>

19. IRENA, 24/7 Renewables: The Economics of Firm Solar and Wind, International Renewable Energy Agency, Abu Dhabi, 2026 — <https://www.irena.org/Publications/2026/May/24-7-renewables-The-economics-of-firm-solar-and-wind>

20. IRENA, Renewable Power Generation Costs in 2024, International Renewable Energy Agency, Abu Dhabi, 2025, https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2025/Jul/IRENA_TEC_RPGC_in_2024_2025.pdf

21. UNEP Ocean, Seas and Coasts, United Nations Environment Programme — coastal regions are home to 40% of the global population and 12 of the world's 15 largest cities — <https://www.unep.org/topics/ocean-seas-and-coasts>

22. Southerly Ten / Jacobs, NEM Offshore Wind Benefits Study, March 2026 — <https://southerlyten.com.au/gippsland-offshore-wind-less-transmission-lower-electricity-prices/>

23. UCL Open Environment / UNU-INWEH, Wind Energy Delivered £104 Billion Net Benefit in UK, October 2025 — <https://unu.edu/inweh/news/wind-energy-delivered-ps104-billion-net-benefit-uk-demonstrating-renewables-pay>



Case Study: How 7 GW of offshore wind saves Australian consumers nearly AUD 3 billion (USD 2.2 billion)

Provided by Southerly Ten

According to a recent National Electricity Market (NEM) study,²⁴ 7 GW of Gippsland offshore wind would reduce wholesale electricity prices by AUD 5/MWh (USD 3.6/MWh) on average across Australia's east coast between 2033–2040, rising to AUD 15/MWh (USD 11/MWh) by 2040. This translates into bill savings of AUD 151 (USD 108) per year for a typical Victorian household.

The study by Star of the South and global consultancy Jacobs shows that offshore wind **lowers total system**

costs because it reduces the need for new transmission lines and rising fuel costs. The benefits of offshore wind are felt across the east coast, predominately in the states of Victoria, New South Wales and Queensland, demonstrating the importance of offshore wind in the energy mix as Australia's remaining coal plants reach their retirement dates.

The study found that 7 GW of Gippsland offshore wind by 2040 will:

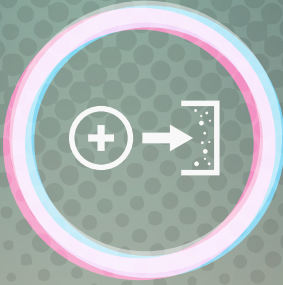
24. Jacobs Group (Australia) Pty Ltd, "NEM Offshore Wind Benefits Study" (March 16, 2026), <https://southerlyten.com.au/wp-content/uploads/2026/03/jacobs-Energy-Market-Study-Summary-Findings-2026.pdf>

- Save AUD 2.9 billion (USD 2.1 billion) in total system costs
- Reduce transmission capital costs by AUD 4.9 billion (USD 3.55 billion)
- Decrease the amount of additional new transmission needed by between 500 and 2000 kilometres (likely 930 kilometres)
- Save at least AUD 2.5 billion (USD 1.8 billion) in fuel operating costs
- Result in an AUD 5.2 (USD 3.8 billion) billion annual wholesale price reduction in the NEM by 2040
- Improve energy security during the daily dinnertime peak and fill

gaps during the winter and summer peaks to meet seasonal electricity demand.

Like many offshore wind development zones around the world, Gippsland's characteristics are unique, but the underlying logic is universal. Offshore wind consistently delivers whole-system savings that standalone LCOE comparisons obscure. The question for governments is not how much offshore wind costs to build – it is how much more its absence will cost consumers, the grid and energy security.

TWO SYSTEMS, TWO FUTURES



Import Dependency



Geopolitical Exposure Index
(Black Rock)



Rising System Costs



Price Volatility



Reduced Fuel Costs



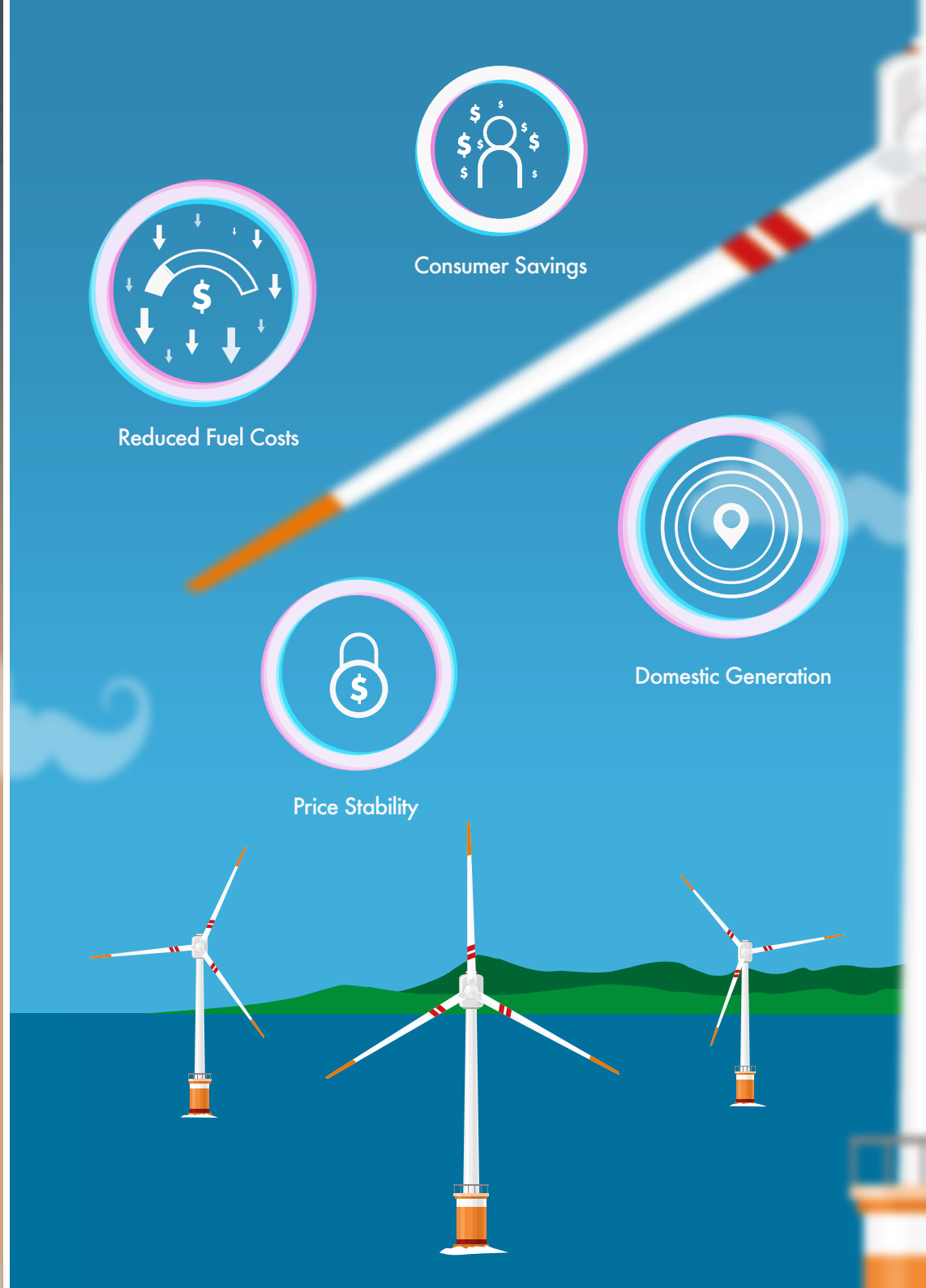
Consumer Savings



Domestic Generation



Price Stability



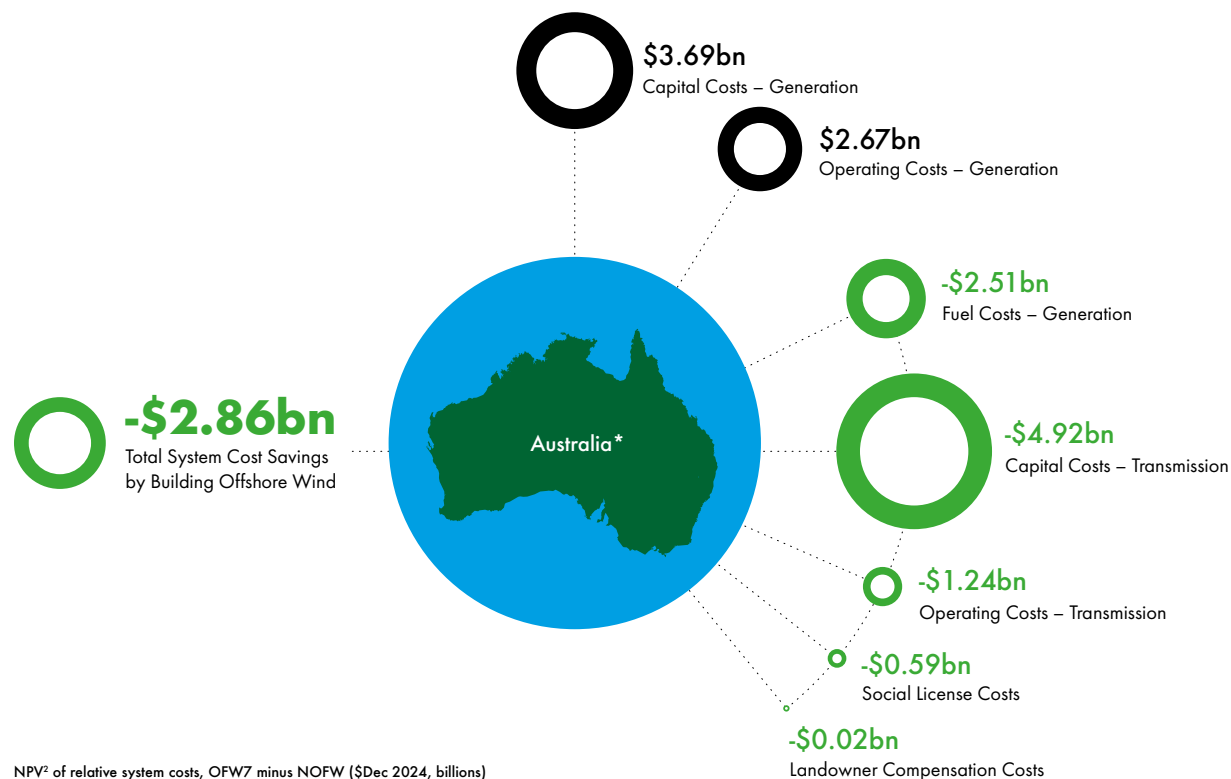
The multiplier effect of offshore wind

The economic case for offshore wind is not only confined to the electricity it generates. Every gigawatt installed is simultaneously an energy security asset, an economic development investment and a foundation for long-term industrial competitiveness.

When fuel is imported, the economic value of that transaction largely flows outwards. The domestic economy bears the cost and does not retain the long-term value after electricity is consumed. When a country invests in offshore wind, the economic value circulates domestically, through manufacturing, port and grid infrastructure, and skilled workforce development. Initial investment builds capacity that compounds over time – supply chains deepen, skills accumulate, and export competitiveness can grow.

Many countries have recognised this logic for onshore wind: this now needs to be expanded to offshore wind, where the scale of industrial and economic value captured can multiply significantly. Countries such as Türkiye, India and Brazil have already developed substantial onshore wind manufacturing

Where the savings come from*



Source: Jacobs Group (Australia) Pty Ltd, "NEM Offshore Wind Benefits Study" (March 16, 2026)

ecosystems spanning blades, towers, nacelles and supporting equipment for both domestic deployment and export markets. For example, Türkiye today exports

approximately 50-70% of component production to around 45 countries, while India has built one of the world's largest integrated wind manufacturing bases. These

countries now have a major opportunity to leverage existing industrial capacity, skilled workforces, and supply chains into offshore wind.

* Jacobs Group (Australia) Pty Ltd, "NEM Offshore Wind Benefits Study" (March 16, 2026), <https://southerlyten.com.au/wp-content/uploads/2026/03/Jacobs-Energy-Market-Study-Summary-Findings-2026.pdf>

The next wave: floating wind

For many countries, deep waters near to shore or other seabed conditions will necessitate the development of commercial scale floating wind. Fixed installations are constrained to continental shelf regions with suitable seabed conditions, whereas floating systems can be deployed farther offshore, unlocking stronger and more consistent wind resource. Floating technologies will allow the industry to tap into over 80% of offshore wind resources in deeper waters and achieve higher,²⁵ more stable capacity factors often in excess of 60%.²⁶

Floating offshore wind represents one of the most sophisticated emerging energy technologies, combining advanced floating platforms, dynamic mooring and cabling systems, hydrodynamic engineering, and next-generation offshore grid infrastructure.²⁷ Between 2002 and 2022, floating wind technologies accounted for half of the 17,000

patent families related to offshore wind energy that were published, reflecting an average annual growth rate of 18%.²⁸ In recent years though, several macroeconomic and policy challenges have hit the floating sector, resulting in a significant downgrading of GWEC's floating wind growth forecast. Despite government ambitions of around 90 GW of floating wind capacity worldwide, progress remains limited, with only 1.5 GW having secured active offtake contracts and a further 5.9 GW committed through auction processes. As a result, near-term visibility remains limited, with only 0.4 GW of floating wind auctions firmly scheduled in South Korea and 5.5 GW committed but without confirmed timelines in France and Norway, while the UK has yet to specify targeted volumes for floating wind in upcoming auction rounds.

Despite these challenges, the strategic imperative of floating wind

25. GWEC, "Floating Offshore Wind – a Global Opportunity" (2021) <https://www.gwec.net/news/report-outlines-enormous-potential-for-floating-offshore-wind-in-energy-transition>

26. Equinor, "World Class Performance by World's First Floating Wind Farm," 15 February 2018, <https://www.equinor.com/news/archive/15feb2018-world-class-performance>

27. International Renewable Energy Agency (IRENA). 2024. Floating Offshore Wind Outlook. Abu Dhabi: IRENA. https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2024/Jul/IRENA_GT_Floating_offshore_wind_outlook_2024.pdf

28. Boedt, Geert, Johannes Schaaf, Francisco Boshell, Jyoti Dhavle, Gauri Prakash, José Pablo Jiménez Navarro, and Francesco Pasimeni. 2023. Offshore Wind Energy: Patent Insight Report. Vienna: European Patent Office and International Renewable Energy Agency. IRENA report



Part 1: Offshore wind and the end of fossil fuel crisis cycles

has not changed, and the industrial opportunity is enormous. Floating wind requires ports that can handle assembly of large semi-submersible structures, specialised fabrication facilities, different wind turbine installation vessels (WTIV), and deep technical engineering expertise across the value chain.

Emerging hybrid deepwater technologies could offer a pathway to ease some of the key bottlenecks constraining the scale-up of floating wind. These solutions can support fixed-bottom installations while extending deployment in deeper waters at lower cost. They also provide an important platform for testing critical floating wind components, including specialised cables and mooring systems. Reflecting this potential, the UK Government has introduced a new “other deepwater offshore wind” category for AR8, alongside rather than instead of floating.²⁹ Besides, there has been significant policy and market progress, including demonstration project initiation in markets like the UK, Japan and South Korea. The sector is now reaching a critical stage where stronger alignment across industry, supply chains and governments will be essential to move from pilot projects to commercial-scale deployment.

For new markets in particular, floating wind presents an opportunity to close the gap with established offshore wind markets in terms of offshore wind energy production capacity. With the right policy frameworks, infrastructure planning and early investment signals, newer entrants have the potential to position themselves as first movers in a rapidly expanding global industry.

GWEC’s Floating Wind Industry Accelerator

Key to achieving this transition is coordinated action between governments and industry to establish bankable contracting and procurement structures that reduce risk and create a credible pathway to scale. GWEC established the Floating Wind Industry Accelerator in 2025 to coordinate industry advocacy, technical assistance and stakeholder engagement.

The mission of the Floating Wind Industry Accelerator is to lead industry efforts to accelerate the commercial development of floating wind. Leveraging its strong relationships across emerging markets, GWEC is convening stakeholders across the global floating wind value chain to drive coordinated action towards

commercial-scale deployment and address existing and anticipated bottlenecks limiting sector growth.

While governments in multiple regions are increasingly recognising the strategic value of floating wind, translating ambition into investable and scalable deployment pathways remains a challenge. In this respect, the Accelerator focuses on reinforcing the sector’s growth trajectory by addressing the following three core priorities:

- **Improving financial conditions for competitive projects.** Efforts to strengthen bankability and risk allocation frameworks to reduce investor uncertainty. The initiative will work to improve contracting and procurement structures that align incentives across public and private stakeholders, lower the cost of capital, and create the insurance and financing conditions that the first commercial projects require, building on the last 20 years of small project deployment experience. Global alignment on floating wind value proposition and cost-reduction trajectories
- **Coordination of industry efforts to establish clear, credible roadmaps that link cost reduction to deployment scale, pipeline stability, and market conditions.** These roadmaps will

cover the innovation, industrialisation, and learning that larger project sizes unlock to strengthen policy alignment across markets and elevate best practices for market design that can deliver best value for society.

● **Pathways for global supply chain development, standardisation, and infrastructure readiness**

Efforts to supporting the development and scaling of resilient supply chains where clear, stable, long-term pipelines can unlock the sector investment required to deliver large-scale projects competitively, reliably, and safely. The initiative will promote cross-border cooperation to maximise learnings from initial commercial scale projects across sea basins, advance technical and commercial standardisation, and facilitate trade and manufacturing alignment across key deployment regions

Apart from these, the Accelerator is already working to enhancing coordination between governments, industry, and strategic institutions to ensure alignment on shared priorities, including collaboration with key stakeholders such as GOWA, the governments of the UK, Japan, and South Korea, the Carbon Trust, ORE Catapult and the Crown Estate, among others.

29. UK Department for Energy Security and Net Zero, “Proposed Refinements for Allocation Round 8 and Future Rounds,” GOV.UK, accessed May 27, 2026, <https://www.gov.uk/government/consultations/proposed-refinements-for-allocation-round-8-and-future-rounds>



Case Study - Into deeper waters: Goldwind's floating breakthrough

Provided by Goldwind

On 2 May 2026, the Three Gorges Navigator floating offshore wind platform was fully installed offshore Yangjiang, Guangdong Province. Equipped with Goldwind's GWH252-16-F floating wind turbine, it set two world records: the largest single-unit capacity (16 MW) and the largest rotor diameter (252 metres), with an estimated annual output of 44.65 GWh.

Core technology: a systemic leap

The GWH252-16-F is an upgrade of Goldwind's commercially proven GWH252-16MW platform, reusing core components to reduce lifecycle costs. Over 10,000 load cases were simulated to achieve "genetic optimisation" of the product.

In collaboration with China Three Gorges Corporation and other partners, Goldwind developed an integrated turbine-floater-mooring simulation and coordinated control, significantly reducing design redundancy and overcoming load control challenges.

The turbine features RTK high-

precision attitude monitoring for proactive maintenance, black-start capability, and stable operation under extreme conditions ranging from -20°C to a Super Typhoon Level 17.

Industrial support: deep-sea zero-carbon base

Goldwind has established a deep-sea offshore wind zero-carbon base in Wenzhou, Zhejiang Province, integrating turbine final assembly, a digital operation and maintenance (O&M) centre, and zero-carbon industry demonstration, forming a closed-loop capability from R&D to delivery.

The GWH252-16-F was produced, tested, and successfully shipped from Wenzhou base to Yangjiang for installation. With the base now fully operational, Goldwind has built end-to-end industrial chain capacity covering floating turbine R&D, production and delivery – laying a solid foundation for mass production.

Advancing towards larger capacity and deeper waters

The Three Gorges Navigator marks the beginning of Goldwind's deployment in floating offshore wind. The company is accelerating the



iterative upgrade of its next-generation floating technology and has already secured an order for 20 MW floating wind turbines.

Spanning from 16 MW to 20 MW in power rating, from nearshore waters to deep-sea areas, and from domestic to global markets, Goldwind is leveraging sustained technological iteration and a well-defined industrial layout to drive the development of floating offshore wind power from demonstration trials towards large-scale commercial operation.





PART 2: OFFSHORE WIND ACTION PLAN

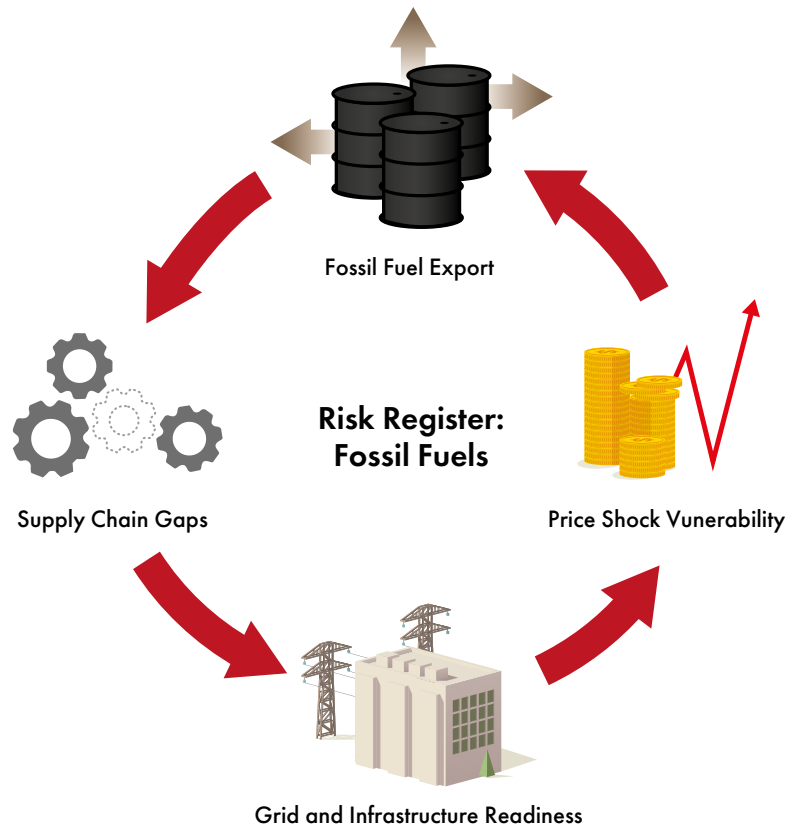
Offshore wind action plan

Delayed auctions, unfavourable public narrative, grid bottlenecks, permitting backlogs and constrained supply chains are not abstract industry challenges; these are the friction points that keep

countries locked into fossil fuel dependence.

The case for offshore wind is no longer contested; it has the economic fundamentals, it is

Risk Register of fossil fuel dependency



strategically essential and technically proven. What has changed is the cost of delay.

GOWR 2026 proposes a forward-looking action plan organised around eight areas, each containing the urgent actions and decisions policymakers should seriously consider now to avoid locking in another decade of fossil fuel exposure. The action plan is primarily geared towards countries that have already identified offshore wind as a strategic national opportunity and established a clear understanding of their development potential, with the focus now shifting from assessment to accelerated deployment and delivery at scale.

1) Fast-track offshore wind as critical energy infrastructure

In today's uncertain geopolitical environment, securing access to the homegrown, reliable and limitless renewable energy that offshore wind provides should be seen as a national security imperative. Fast-tracking offshore wind projects as critical energy security infrastructure requiring urgent investment and development is essential to prevent, avoid and mitigate future energy crises. In practice, this prioritisation could unlock concrete policy and

regulatory benefits: expedited planning and permitting procedures, dedicated inter-agency coordination, priority dispatch to grid connection, and eligibility for policy-backed infrastructure financing. This prioritisation should be extended to include vital support infrastructure such as grids, storage and ports, without which offshore wind projects cannot be delivered on time.

Priority actions

- Governments with significant offshore wind resources should classify offshore wind, along with its support infrastructure – grids, storage and ports – as critical energy security infrastructure.
- Develop long-term anticipatory grid investment plans coordinated with offshore wind auction pipelines, recognising the structural timeline mismatch that can emerge between transmission planning and offshore wind development cycles. In newer markets, where existing onshore transmission networks may be insufficient to deliver electricity from coastal generation zones to inland demand centres, associated grid infrastructure must be treated as an integral part of offshore wind planning from the outset, rather than a downstream consideration.



- Invest in co-located battery storage and hybrid offshore wind-plus-storage projects to demonstrate whole-system value and develop the regulatory frameworks needed to scale co-location.
- Invest in cross-border interconnectors, energy islands and regional grid infrastructure establishing transparent cost-sharing arrangements across jurisdictions and harmonised market frameworks as the prerequisite for making

interconnection investment bankable and operationally effective.

Case Study: Denmark and China: what is possible when offshore wind is treated as a national energy security priority. See “Offshore Wind and the End of Crisis Cycles”, pages 16-17

2) Create a stronger, collaborative partnership with industry

Nurturing, establishing and growing a

domestic offshore wind industry depends upon the strength and depth of the relationship between government and industry. Establishing a strong partnership demands open and transparent dialogue and a commitment to deliver a regulatory framework and roadmap that is both ambitious and achievable.

Across different markets, this collaboration is already taking shape through joint-industry partnerships, technical working groups (TWGs),

offering a model for markets in the earlier stages of their offshore wind journey.

Priority actions

- Governments should engage in transparent and honest dialogue with industry rooted in realistic country-specific contexts and deliverables, so that public debates on offshore wind are grounded in evidence.
- Governments should develop and implement national offshore wind growth plans and roadmaps in

close partnership with industry and trade associations.

- Representatives of industry should sit alongside government in national planning and delivery bodies that are mandated to address obstacles to offshore wind.

Case study: In Australia, VicGrid, a Victorian Government body, is developing a shared 2 GW transmission line to connect offshore wind energy off the Gippsland coast to the grid. Rather than leaving individual developers to build separate connections, VicGrid is coordinating shared infrastructure and has shortlisted three industry consortia to partner on delivery. In parallel, they are also conducting structured consultation with local communities, landholders and Traditional Owners. The project demonstrates how government can take an active co-delivery role alongside the industry.²⁹

3) Counter misinformation and build public trust.

Offshore wind cannot be built without public confidence and political will. While there exists widespread support for offshore wind and renewable energy, growing misinformation and disinformation has contributed to a fraying of the political consensus in a growing

number of countries. Coordinated disinformation campaigns, often funded by fossil fuel incumbents, are directly threatening offshore wind projects and costing government clean energy capacity.

Priority actions

- Governments, industry and civil society must work together to forge strong, consensus among a cross-section of political parties while also seeking to build the public's trust and understanding of the benefits of offshore wind power.
- Governments need to actively engage in countering anti-wind disinformation campaigns, orchestrated by well-funded opponents and vested interests, that seek to undermine confidence in renewable energy and solutions to climate change.
- Credibility and trust are earned when government and industry proponents are honest about the tradeoffs of the energy transition: achieving long-term energy security may involve short-term disruptions and localised impacts that not everyone will support.

4) Design deliverable auction frameworks

Stop-start auctions, poorly indexed contracts and one-off tenders create

boom-and-bust cycles that deter the long-term investment offshore wind requires. Governments must shift from short-term procurement focused on lowest nominal price to long-term frameworks designed for deliverability, demand certainty and supply chain confidence.

Priority actions

- Publish multi-year auction schedules with pre-announced volumes and timelines.
- Adopt Contracts for Difference (CfD) mechanisms to balance risk between developers and governments appropriate to local market conditions. CfD terms must reflect real-world commercial risks including cost indexation, currency exposure, negative pricing provisions and opt-out clauses, as a poorly designed CfD will increase the cost of capital and undermine bankability. In light of the above, co-create auction frameworks with industry stakeholders, and embed structured, recurring government-industry dialogue into policy design to ensure frameworks are calibrated to market realities before they are locked in.

²⁹ VicGrid, "Gippsland Offshore Wind Transmission," <https://www.vicgrid.com.au/transmission-projects/gippsland-offshore-wind-transmission>.





Case study: The UK successfully held its seventh CfD allocation round (AR7), securing 8.4 GW of new offshore wind capacity – enough to power 10 million UK homes annually. The auction marked an important recovery following the difficulties experienced in previous years. The competitive framework resulted in average prices of BBP 91.20/MWh in England and Wales and GBP 89.49/MWh in Scotland. The estimated savings to UK consumers as a result of this auction were £1.7 billion a year compared to the alternative – power from gas.

Case Study: In January 2026, nine North Sea countries signed the Hamburg Declaration, committing to a collectively managed build-out of 15 GW of offshore wind annually from 2031 to 2040, with at least 10 GW backed by two-sided CfD.³⁰ This sends a strong political signal and provides the investment certainty needed to de-risk projects.

5) Fast-track permitting

Permitting backlogs are a major barrier to offshore wind deployment but also one of the easiest to overcome. Offshore wind projects typically require approvals across multiple government agencies, including maritime authorities, defence and national security

bodies, fisheries and environmental regulators, and port and aviation authorities, which often operate with limited coordination, adding complexity and delay to the process. Without digitalisation, reform and streamlining, permitting timelines risk becoming one of the primary constraints on offshore wind scale-up. Governments must accelerate regulatory approvals by streamlining permitting and consenting procedures for offshore wind and co-located storage projects.

Priority actions

- Fast-track offshore wind as critical energy security infrastructure, elevating it to the status of other nationally significant infrastructure.
- Establish centralised permitting authorities or one-stop-shop approval processes to eliminate inter-agency delays and conflicting requirements.
- Set and enforce maximum lead times for permitting decisions
- Streamline coordination on permitting and consenting across agencies.
- Deploy digital permitting platforms and transparent approval timelines and guidelines.

Case Study: In 2025, South Korea passed the so-called the One-Stop Shop (OSS) Bill introducing a

permitting model that simplified site selection, permitting and licensing procedures housed under a government agency. Germany took a complementary approach. Its 2022 Renewable Energy Act legally defined renewable energy utilisation as a matter of overriding public interest and national security, giving wind and solar projects priority in permitting procedures while balancing ecological sensitivities and competing land and sea use. This has allowed Germany to reduce its permitting backlog from 11 GW in 2019 to 3 GW in 2023.³² Recently, the UK also passed new legislation which accelerates offshore wind development. It broadens the range of the compensatory measures (including protection of seabird nesting sites, predator control near protected colonies and restoration of native oyster populations) which developers can use to offset unavoidable impacts on protected marine sites.³³

6) Mobilise financing

Offshore wind built at scale, with the grid, storage and infrastructure to support it, becomes a strategic

30. Wind Europe, 2026 <https://windeurope.org/news/europe-needs-homegrown-power-at-scale-offshore-wind-is-gearing-up-to-deliver/>

national asset that reduces system costs, lowers consumer bills and anchors energy security for decades. Yet current financing flows remain far short of what is needed. Closing that gap requires governments to treat offshore wind as a critical national investment to be prioritised and scaled.

Priority actions

- Formally classify offshore wind as a Tier 1 infrastructure asset in national investment frameworks and policy signals. This is what shifts the perception of sovereign wealth funds, institutional investors and private capital providers from energy bet to long-duration, inflation-linked and low-risk infrastructure.
- Establish structured, recurring industry-government-financier dialogue on project bankability
- Tailor financing frameworks and remuneration mechanisms to specific and changing market conditions. In some markets governments should consider long-term PPAs or hybrid mechanisms that combine price support with volume guarantees to ensure bankability.
- Scale up and coordinate MDB support through preferential interest rates and dedicated renewable energy lending windows.

- Engage sovereign wealth funds and long-term institutional investors with evidence that offshore wind provides the inflation-linked, long-duration returns that match their liability profiles.

7) Scale and diversify supply chains

Offshore wind targets means little without a bankable pipeline of projects and a supply chain to deliver them. Governments need to develop robust industrial strategies and market arrangements for supply chain development that create clear pipeline visibility and promote the necessary investments in manufacturing and labour force capacity.

Priority actions

- Governments must align domestic energy and industrial policies so that auction pipelines, demand signals and supply chain investment strategies are developed in parallel
- Policymakers should treat offshore wind supply chain development, such as ports, vessels, manufacturing and services, as an industrial security strategy.
- Maintain long-term supply chain investment commitments even as near-term logistics costs rise.

Current disruptions are temporary but the structural vulnerability of fossil fuel import dependency is not.

- To address the supply chain concentration risk, governments should pursue supply chain diversification policies but without resorting to measures that block existing trade flows or delay deployment.

8) Move towards electrification

To remain on a 1.5°C-compatible pathway, electrification must account for 35% of global total final energy consumption by 2035.³⁴ Despite rapid growth in renewable energy, large parts of the global economy remain dependent on fossil fuels. If governments actively invest in decarbonising their industries and economies, offshore wind will deliver its full potential as the backbone of the electrified economy.

Priority actions

- Develop national electrification strategies that extend beyond the

power sector to transport, heating and industry, with binding targets and policy frameworks.

- Invest in the electrification of offshore wind's own supply chain – electric and hydrogen-powered service vessels, shore power at ports, and procurement incentives that make zero-emission operations the default. The industry that builds the clean energy backbone should not run on the fuels it is replacing.
- Align offshore wind industrial policy with broader national electrification strategy. When planning ports, logistics networks and manufacturing facilities for offshore wind, governments should anticipate and build for electrified operations from the outset rather than locking in fossil-fuel dependent assets that will require costly retrofitting later.
- Recognise industrial demand response and flexible loads as critical system-enabling resources for large-scale offshore wind integration.

31. GWEC, Global Offshore Wind Report 2025, <https://www.gwec.net/reports/globaloffshorewindreport>

32. GWEC, Global Offshore Wind Report 2025, <https://www.gwec.net/reports/globaloffshorewindreport>

33. Buljan, A. (21 May 2026). New Offshore Wind Environmental Compensation Rules Go Into Force in UK. *offshoreWIND.biz*. <https://www.offshorewind.biz/2026/05/21/new-offshore-wind-environmental-compensation-rules-go-into-force-in-uk/>

34. IRENA (2026), Transitioning away from fossil fuels: A roadmap powered by renewables, electrification and grid enhancement, <https://www.irena.org/Publications/2026/May/Transitioning-away-from-fossil-fuels>

Case Study: The indirect effect: How Quality, AI and digitalisation are changing Offshore Wind LCOE

Provided by Bureau Veritas

Offshore wind is scaling fast – but so is the pressure on costs. While the industry rightly focuses on inflation, supply chains and financing, there is a more fundamental lever quietly shaping project economics: quality. It does not appear as a line item in LCOE calculations, yet hidden quality-related costs drive a significant share of delays, rework and lost production.

As projects grow in scale and complexity, risk is also shifting. Projects are larger, often located in regions with less mature infrastructure and logistics. Supply chains are more complex and globally distributed, and assets are being deployed in increasingly demanding offshore environments. In this context, small quality deviations can escalate rapidly into major downstream issues. What were once manageable challenges are now system-level risks.

Quality cuts across the entire project lifecycle. Design assumptions influence constructability and performance. Manufacturing defects lead to rework and warranty claims. Installation tolerances translate into operational issues. Ultimately, asset performance suffers. Put simply, quality impacts both

sides of LCOE: the cost you incur and the energy you produce.

At Bureau Veritas, we consistently observe that many of the most costly issues do not originate offshore, they originate early in the lifecycle. Design gaps, under-prepared logistics, manufacturing variability and insufficient verification can remain hidden for years, only to emerge during operations when intervention is most complex and most expensive.

Subsea cable performance

Across wind farms operating offshore, cable failure remains a highly disruptive and costly risk. When cables fail, the consequences are immediate and significant: specialist vessels, long repair campaigns, and significant production losses.

From an insurance perspective, cable failures are among the largest and most frequent high-value claims across offshore wind portfolios. The impact extends well beyond repair costs. Lost generation, reputational pressure and rising premiums all feed directly into higher LCOE. In the vast majority of cases, these failures trace back to quality – whether in manufacturing, installation practices, or system integration.

Flight to digital

The industry is moving away from reactive quality management towards proactive, data-led assurance. Developers are increasingly focused on preventing defects rather than correcting them. That shift is being enabled by digitalisation and artificial intelligence, supported by stronger cyber security frameworks.

At Bureau Veritas, we are implementing AI-driven approaches that improve visibility and control across the entire project lifecycle. In design, advanced modelling and data analytics reduce uncertainty and strengthen engineering decisions before they are locked in. During manufacturing, AI-powered inspection technologies, particularly computer vision, enable earlier, faster and more consistent detection of defects, improving traceability and reducing the risk of downstream issues.

During construction, digital inspection tools, including drone-based monitoring, provide real-time visibility to installation quality enabling immediate correction of deviations rather than costly remediation in operations.

In operations, the most significant shift is toward predictive maintenance. By

analysing real-time data from turbines and electrical systems, with integrated cybersecurity controls, it is possible to detect abnormal behaviour before it leads to failure. This enables earlier intervention, reduces unplanned downtime, and extends asset life.

Overall, proactive quality management delivers measurable improvements: fewer failures, higher availability, reduced maintenance intensity and ultimately lower realised LCOE. This represents not just a technology shift, but a fundamental change in mindset. Quality is no longer only about compliance or inspection. It is about actively managing risk across the full lifecycle.

As offshore wind continues to scale in size and complexity, cost reduction will not be driven by scale alone, but by execution. Getting quality right from the outset is no longer optional, it will be a defining factor in the next phase of offshore wind cost reduction.



Case Study: Industry Innovation Update: Road to Additive Manufactured Components Continues

Provided by Lincoln Electric

As the offshore wind industry scales globally, manufacturers are increasingly exploring innovative production methods that can improve manufacturing flexibility and supply chain resilience. One technology attracting growing interest is wire arc additive manufacturing (WAAM), a form of large-scale metal 3D printing that has the potential to transform the fabrication of complex offshore wind components.

Recognising this opportunity, Germany's Federal Ministry for Economic Affairs and Energy (BMWE), through its 8th Energy Research Programme, has supported a new industry driven research project to assess the viability of wire arc additive manufacturing for fixed foundations. This three-year JAM (jacket additive manufacturing) Project¹ recently kicked off and assembled a project consortium and associated partners in Hannover, Germany. The project consortium brings together leading industrial partners, research institutions, and universities to investigate the pathways required for wider adoption of the technology.



Photo: WAAM printed "K" node made by Lincoln Electric, All Rights Reserved

Project consortium:

Institute for Steel Construction, Leibniz University of Hanover, Hanover, Germany

Test Center Support Structures Hanover (TTH), Leibniz University of Hanover, Hanover

JBO Engineering Group GmbH, Hamburg, Germany

Institute for Metal and Composite Construction, University of Technology, Hamburg, Germany

Lincoln Electric Deutschland GmbH, Eisenberg, Germany

Associated Partners

EnBW Energie Baden-Württemberg AG, Hamburg, Germany

Smulders Group NV, Arendonk, Belgium

LROA Deutschland GmbH, Rostock, Germany

The JAM project aims to develop a detailed scientific and manufacturing led investigation towards acceptance and use of wire arc additive manufacturing (WAAM) as a viable solution for future production of offshore wind components. The project

represents an example of how collaboration between industry, academia and public funding programmes can help accelerate innovation in offshore wind manufacturing.

1. For more information on this technology please contact industry partners below or bryan_oneil@lincolnelectric.com for more information.



MARKET STATUS 2025



Annual Installations

In 2025, 9.3 GW of new offshore wind capacity was grid-connected worldwide, bringing the total to 92.5 GW by the end of last year. New additions were 16% higher than the previous year, making 2025 the third-highest year for new installations in offshore wind history.

- **China's** new offshore wind

installations were the highest globally for the eighth year in a row. With 6.6 GW of new capacity commissioned, the country's total offshore wind capacity stood at 48.4 GW by the end of 2025. Since the end of feed-in tariffs at the end of 2021, China's offshore wind market development has been supported by the 'grid parity' market mechanism. As with

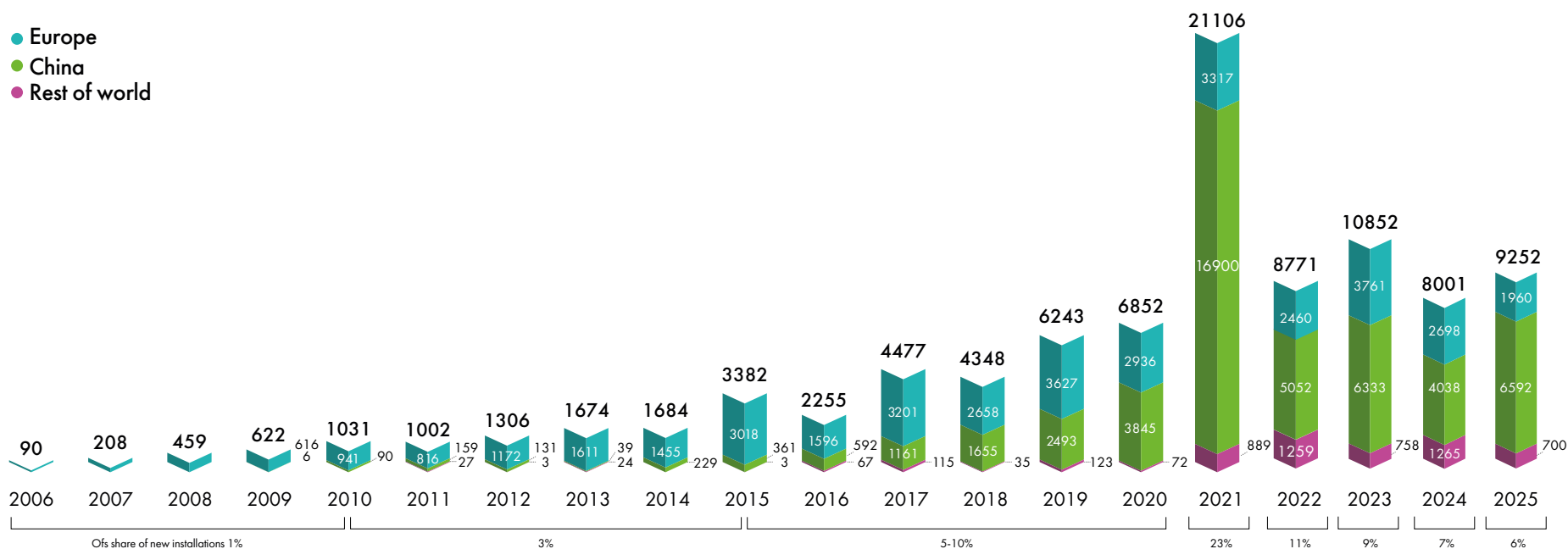
onshore wind, grid parity was replaced last year by the market-oriented renewable energy pricing scheme. With 6.6 GW of new offshore wind grid-connected, 2025 was the second-highest year for Chinese installations, although new additions were lower than our projection. To bring annual offshore wind growth in China to

the next level, greater than 10 GW per year, policies are being drafted to accelerate complex maritime approvals and to support the transition from nearshore to deep-water offshore wind development.

- **Europe** commissioned nearly 2 GW of new offshore wind from five wind farms across three markets

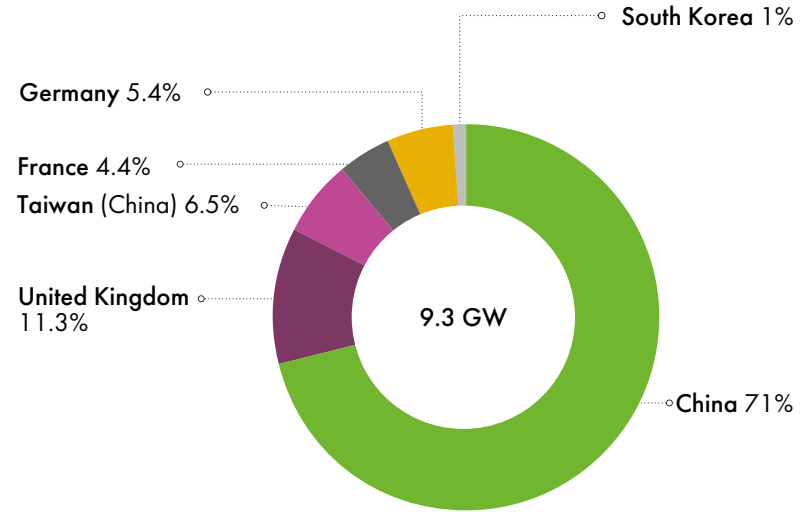
New offshore wind installations (MW)

- Europe
- China
- Rest of world

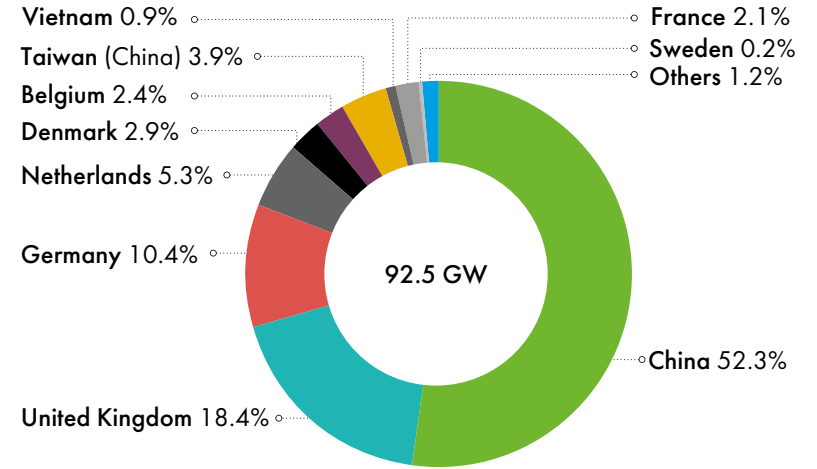


Source: GWEC Market Intelligence

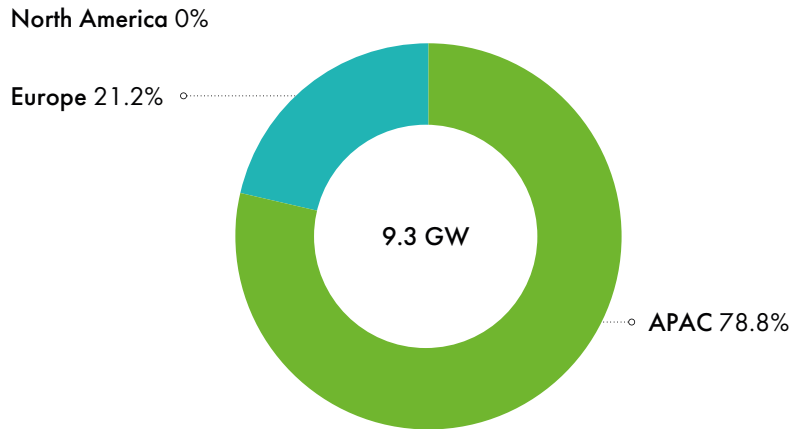
New offshore wind installations by country in 2025



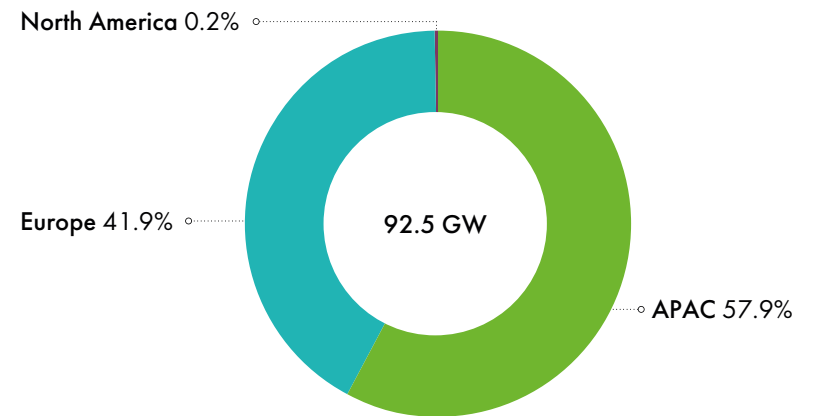
Total offshore wind installations by country by end of 2025



New offshore wind installations by region in 2025



Total offshore wind installations by region by end of 2025



Source: GWEC Market Intelligence



last year, accounting for one-fifth of the offshore wind capacity connected worldwide.

- **The UK** connected 1,049 MW of offshore wind capacity in 2025, making it Europe's largest market in new additions. The remaining 26 SG8.0-167 turbines at the Neart na Gaoithe wind farm were connected in 2025, bringing this 448 MW project into full operation, while 66 GE Vernova Haliade-X turbines were connected at the 1.2 GW Dogger Bank Phase A, a project that has been further delayed.

- **Germany** connected 41 wind turbines, totalling 503 MW, in the North Sea last year, including 28 Siemens Gamesa SG11.0-200 wind turbines at the 913 MW Borkum Riffgrund 3 and 13 Vestas V236-15.0 MW wind turbines at the 960 MW He Dreiht.

- **France** commissioned 408 MW of offshore wind at the Îles d'Yeu and Noirmoutier wind farm in 2025. This project, consisting of 61 SG 8.0-167 turbines, is projected to reach full COD in 2026.

- Outside of China, only two other

markets commissioned new offshore wind capacity in the Asia Pacific region. **Taiwan** (China) commissioned 600 MW of offshore wind turbines across the Hailong 2 & 3 and Greater Changhua 2b & 4 offshore wind farms in 2025. Both projects used SG 14.0 wind turbines, but with different rotor diameters.

- **In South Korea**, the 96 MW Jeonnam 1 offshore wind project comprising 10 SG SG10.0-193 DD turbines, and one 4.3 MW Unison U151-4.3 MW turbine at the Yeonggwang Yaksu offshore wind

project were commissioned last year.

- The **United States** remains the only country in the Americas with offshore wind turbines in operation. The 806 MW Vineyard Wind 1 offshore wind project, comprising 62 GE Haliade-X 13 MW turbines, saw its commissioning pushed back to Q1 2026 due to the stop-work order issued by the DOI's Bureau of Ocean Energy Management (BOEM) last December, citing national security concerns. The project is now operational.



Cumulative installations

The global offshore wind market grew on average by 10% each year in the past decade, bringing total installations to 92.5 GW, which accounted for 7.1% of total global wind capacity as of the end of 2025.

- China further consolidated its market leadership for cumulative

offshore wind installations last year, accounting for 52% of the global market. The country took over the crown from the UK in 2021. Germany, the Netherlands and Taiwan (China) complete the top five, as last year.

- Asia overtook Europe as the world's largest regional offshore wind market in 2022. By the end of

2025, 58% of the world's total offshore wind capacity (or 53.5 GW) was in this region, of which 48.4 GW in China, 3.6 GW in Taiwan (China), 0.9 GW in Vietnam (intertidal), 0.3 GW in Japan and 0.3 GW in South Korea.

- Total offshore wind installations in Europe surpassed 38 GW by the

end of 2025, making up 42% of global offshore wind capacity.

- Outside Europe and Asia, North America commissioned 174 MW of offshore wind by the end of 2025, with all installations located in the US.

Floating wind

- No floating wind capacity was commissioned in 2025, the first time since 2015.
- Although all the turbines at the 16.8 MW Goto offshore wind project that won Japan's first floating offshore wind auction in 2021 were installed before the end of last year, commissioning was not achieved until early 2026.
- Elsewhere, France had a total of 65 MW of floating wind capacity across three projects under construction last year, while one 16 MW floating prototype in China was ready for commissioning. The four projects are set to come online in 2026.
- At the end of 2025, a total of 278 MW net floating wind was installed globally, including 101 MW in Norway, 78 MW in the UK, 40MW in China, 27MW in France, 25 MW in Portugal, 5 MW in Japan and 2 MW in Spain.





2025: A challenging year in offshore wind auctions

- 11.4 GW of offshore wind capacity was awarded worldwide last year, only one-fifth of the capacity awarded in 2024, which was a record year for offshore wind auctions. The lower auction awards in 2025 are the result of failed auction rounds in Europe, cancellations in the US and the changed market support mechanism in China.

- Excluding China, where 3.9 GW of offshore wind projects were allocated under the market-oriented pricing mechanism, the remaining 7.5 GW was awarded through auctioning, with 6.8 GW in Europe and 0.7 GW in South Korea.

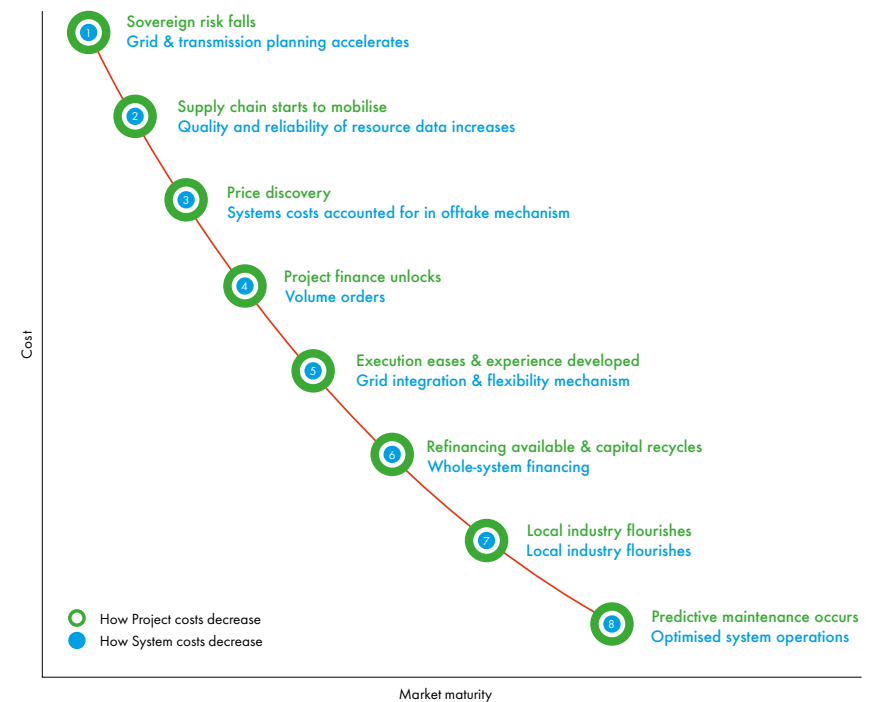
- In Europe, Poland, France and Ireland awarded 3.4GW, 1.5 GW and 0.9 GW of offshore wind capacity respectively last year via two-sided CfDs, while Germany awarded 1 GW via a negative bidding model. Failed auction rounds totalling 6.1 GW took place in Germany, France, the Netherlands and Belgium in 2025.

- In the US, no offshore wind capacity was awarded last year. New Jersey's fourth round and New York's fifth round of offshore wind solicitations, both launched in 2024,

were cancelled, mainly due to the uncertainty caused by the federal government's opposition to offshore wind. For the same reason, Massachusetts delayed its next offshore wind auction until at least 2026.

- While 1.9 GW of floating wind capacity won auctions worldwide in 2024, nothing was awarded last year.

Cost vs market maturity





From cost to catalyst: the role of geo-data in the energy transition

Provided by Fugro

As the world approaches 100GW of installed offshore wind capacity, more countries are embracing wind as a core element of their energy mix. Since the mid-1990s, Fugro has supported almost half the world's offshore wind farms with geo-data – insights and expertise concerning the composition of sites and how conditions change over time.

Amid concerns around energy security, geopolitics and financial resilience, geo-data has evolved from a traditional engineering input into a broader enabler of optimisation, risk reduction and value creation,

informing decisions across the entire lifecycle from planning to decommissioning.

Historically, geo-data focused on early-stage development: metocean studies to assess generating potential; geotechnical and geophysical investigations for foundation and cable design; biodiversity surveys to understand environmental impact; and reconnaissance for hazards such as boulders or unexploded ordnance. Today, its value extends further: supporting installation monitoring, asset integrity inspections and site surveillance, as well as enabling infrastructure such as ports and grid systems.

A typical 1 GW offshore wind farm costs USD 3.5–5 billion to develop, install and operate, with geo-data accounting for approximately 2% in development and another 2% across construction and operations. While this is a significant investment, its real value lies in ensuring successful delivery and long-term performance.

Attempts to reduce or substitute site-specific geo-data – through assumptions or unproven methods – can be costly. Industry experience suggests that remediation costs escalate dramatically: a dollar spent resolving an error in design can become ten in fabrication, and one hundred offshore.

As the energy transition evolves, early engagement, curiosity and proactive collaboration are key to maximising geo-data's impact, shifting its perception from cost burden to strategic asset. And trusted global players like Fugro are central to this shift, combining local expertise, integrated capabilities and an innovative culture to help ensure offshore wind's role in creating a safe and liveable world.

Market Journey

Market	Political ambition and long term commitment	Permitting	Offtake options	Offtake Contract Award (govt or corporate)	Financial Investment Decision	Construction	Operations	Decommissioning
 UK	● Strong offshore wind targets, long-term policy visibility, Net Zero 2050 commitment.	● Complex multistage permitting and environmental assessments	● Mature offtake structure including CfDs and corporate PPAs	● Well established government-backed CfD mechanism	● Investments from private, public and government backed financial institution	● 10.5 GW of offshore wind under construction	● Almost 17 GW in operation	● Policies and structure exist with multiple offshore projects already entering or completing decommissioning phases
 China	● Strong short-term and some long-term installation targets	● Strong permitting regulations, but lengthy approval timelines	● Offtake options exist but challenges persist in deep sea projects	● Transition towards a market based PPA has begun, but still at an early stage	●	●	●	● A small number of turbines decommissioned, but no major farms
 Philippines	● Auction capacity until 2035 confirmed. Long-term target until 2050 announced	● Guidelines for development published. Some further clarifications required	● Offtake options exist. Financial institutions have specific requirements for power projects	● Only pre-bid activities ongoing	○	○	○	○
 Vietnam	● Short and long-term installation targets exist	● Framework under development phase, final implementation rules to be announced	● Offtake Framework under planning phase. Implementation guidance to be announced	○ No project has reached contract award.	○	○	○	○
 Japan	● Short and long-term installation targets exist	● Permitting process is shifting from developer-led to a centralised model	● Offtake options exist but require further recalibration	● Contracts have been awarded but requires further recalibration with external market conditions	● Only port projects and 16.8 MW floating project achieved FID. No auction projects reached FID	● Only the port projects and 16.8 MW floating project	● Only the port projects and 16.8 MW floating project	○
 South Korea	● Short and long-term installation targets exist but have been reduced	● Permitting process is shifting from developer-led to a centralised model	● Offtake options exist but are subject to changes	● Contracts through government-led auctions have been awarded	● Limited number of projects have reached FID	● Limited projects are under construction	● Only 17 projects operational	○
 India	● Installation capacity targets exist	● Planning frameworks underway at federal level	○ Delayed tender announcements	○ No project has reached contract award	○	○	○	○
 Australia	● Only state-led installation capacity targets exist	● Planning frameworks have been implemented only in 2 states	○ Delayed tender announcements	○ No project has reached contract award	○	○	○	○
 Brazil	● Short and long-term installation targets exist. Need to strengthen political interest	● Planning frameworks need further development. Only one license issued	○ Offtake options need to be developed	○ No project has reached contract award	○	○	○	○
 Colombia	● Targets exist but lack clear implementation strategies and timelines.	● ToR issued, licensing phase underway	● CfD framework approved but first calls expected in 2030	○ No project has reached contract award	○	○	○	○
 Turkey	● Short and long-term installation targets exist. Need to strengthen political interest	● Framework under development phase, 4 seabed lease areas identified	○ Awaiting first tender announcement	○ No project has reached contract award	○	○	○	○

The above matrix illustrates key markets at varying stages of offshore wind development. Progress is tracked across eight stages. Circle symbols along with a short explanation indicate maturity within each stage.

● Fully mature/complete progress ● Advanced stage ● Mid-stage development ● Early stage/limited progress ○ Not yet initiated/no progress

MARKETS TO WATCH





Asia-Pacific

Philippines: Southeast Asia's emerging offshore wind frontier

Long characterised by high electricity costs and a reliance on imported fossil fuels, the archipelago of the Philippines is repositioning itself as one of the premier destinations for offshore wind investment in Asia, driven by driven by mounting energy security pressures and the recognition that offshore wind offers the lowest long-term cost path to energy independence. Market liberalisation has opened the doors to more investment and created policy pathways to make OFW projects bankable. As of 2024, the Board of Investments outlined total investment in OFW of PHP 1.16 trillion (USD 18.9 billion), confirming interest in this technology. Offshore wind is not only the primary pillar of the energy transition but a key infrastructure and economic backbone for the country.

35. (2026, February 25). DOE empowers TransCo to fast-track priority transmission projects to strengthen power reliability and support the energy transition. Department of Energy. <https://doe.gov.ph/articles/3337037--doe-empowers-transco-to-fast-track-priority-transmission-projects-to-strengthen-power-reliability-and-support-the-energy-transition?title=DOE%20empowers%20TransCo%20to%20fast-track%20priority%20transmission%20projects%20%20to%20strengthen%20power%20reliability%20and%20support%20the%20energy%20transition>

The Department of Energy's (DOE) aggressive targets act as strong catalysts, specifically the 3.3 GW Green Energy Auction 5 (GEA-5) programme and the additional 4.2 GW in OFW capacity. While current wind generation accounts for only about 1% of national gross generation, the government is laying the groundwork for a massive scale-up. Under the Certificate of Authority (COA) introduced by the 2024 Revised Omnibus Guidelines, developers can conduct three years of pre-feasibility studies without depleting their 25-year contract term. The DOE has also allowed developers to build and finance transmission projects to alleviate grid congestion, and empowered the National Transmission Corporation (TransCo) to partner with qualified private sectors to fast-track priority projects.³⁵

A digitalised permitting platform, EVOSS, has evolved and integrated key agencies to ensure that comprehensive permitting guidelines, internal workflows and digital signatures are embedded. By mandating concurrent processing and 'deemed approved' timelines, the government has accelerated development schedules by up to 40%.

Navigating the first wave of auctions

In the short term, the industry's focus is on the GEA-5 auction for projects utilising fixed-bottom technology – a critical litmus test for investor confidence and the technical readiness of the market. The primary challenge remains the synchronisation of various national and local agencies with the EVOSS timelines to prevent permitting bottlenecks from stalling early-stage momentum. In addition, the integration of energy storage systems will be mandatory to maintain grid frequency.

The next 12 months require a transition from speculative interest to definitive site finalisation and technical de-risking. This period will see OFW frontrunners race to complete critical path requirements, focusing on unlocking the 3.3 GW of fixed-bottom offshore wind capacity. The first year will determine the success of the auction, where clear winners emerge and commitments for OFW capacity build-out are evident.

Making progress on infrastructure and integration

Moving into the medium term, the narrative is shifting toward the physical backbone of the industry:

ports and grids. The availability of specialised staging ports, heavy-lift terminals and O&M bases currently does not exist at the required scale; investing in these strategic maritime hubs is no longer optional. GWEC led a study on the viability of OFW ports in the country and provided clear signals on how to move forward on OFW port utilisation pathways. The DOE has identified port infrastructure development as a core strategic priority for the next two-to-three years.³⁶

The Smart and Green Grid Plan aims to modernise the national transmission backbone to handle the variable nature of massive wind loads. To bypass potential delays in national utility projects, policy levers allow generation companies to construct their own dedicated transmission lines. Projects must prove their technical and financial viability before they reach the critical 'gate' of the Declaration of Commerciality – or else face immediate termination. This is to ensure that only the most capable projects proceed to the commercial stage.

Scaling to the 50 GW Ambition

The Philippines aims to have moved beyond pilot projects into a phase of massive scaling and realisation of the PEP clean energy scenarios by 2030.

The long-term outlook leads down two paths: the Clean Energy Scenario 1, and the more aggressive Scenario 2, which targets 50 GW of OFW capacity by 2050. Achieving these milestones requires the maturity of the country's financial ecosystem.

The 'BIGSHOW' strategy

The Philippines represents a test case for how an archipelagic nation can leverage its natural geography to achieve total energy independence and lead the regional clean energy transition. Under the 'BIGSHOW' initiative representing Biomass, Geothermal, Solar, Hydro and Wind, offshore wind is the vanguard of national energy self-reliance. The country is prioritising a framework built on partnerships and trust. The overarching signal to the global community is: "We are making the investment scenario ready for the proper utilisation of the country's vast resource. We stand ready to collaborate!³⁷"

Vietnam: from policy momentum to first-project delivery

Vietnam remains one of Asia-Pacific's most important offshore wind markets to watch. The country has strong fundamentals: high-quality wind resources, a long coastline, growing electricity

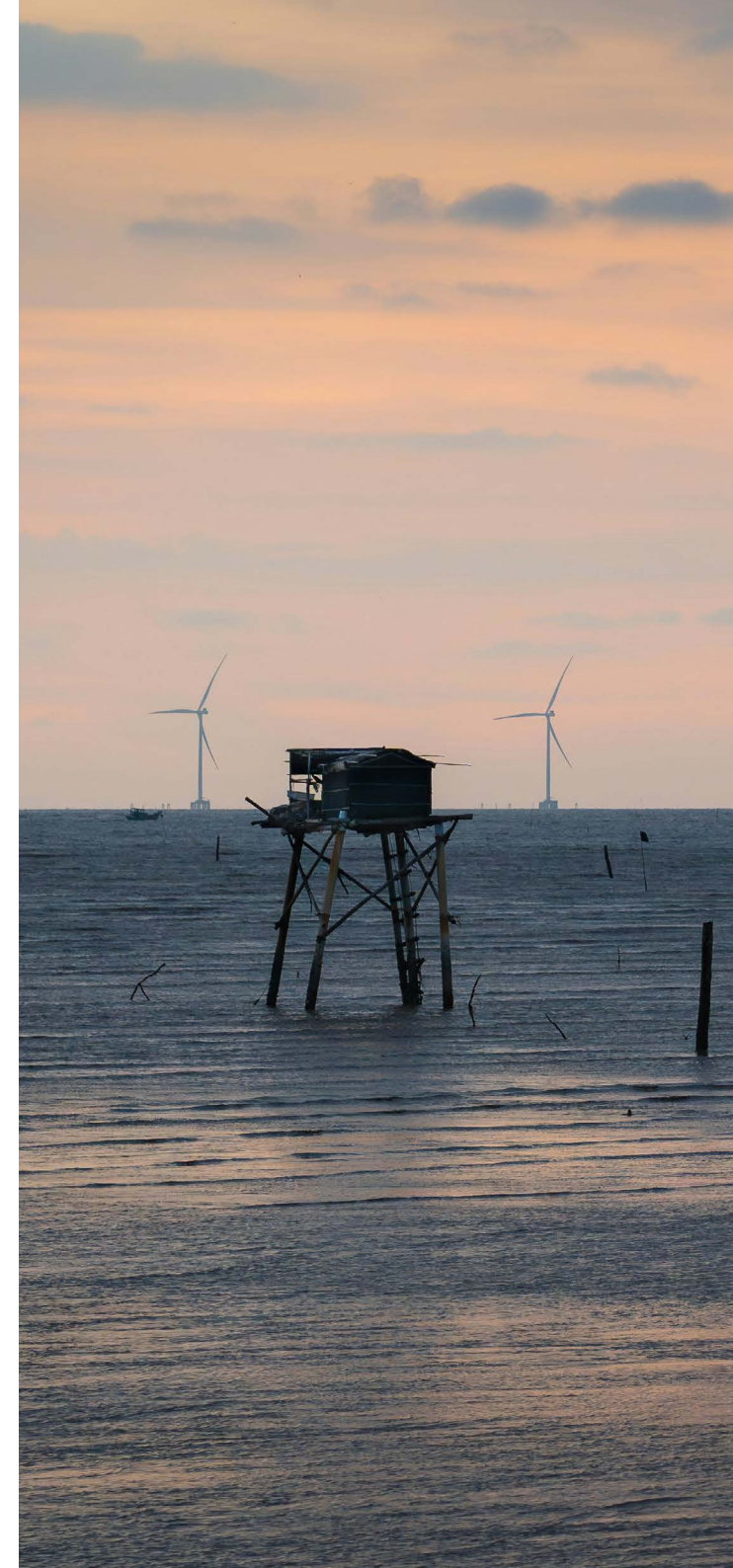
demand, an emerging offshore energy supply chain and a strong political commitment to expand clean energy. The revised Power Development Plan VIII (PDP8 Revised) places energy security and the energy transition at the centre of Vietnam's power system development, with renewable energy excluding hydropower targeted to account for 28-36% of generation capacity by 2030 and 74-75% by 2050.

Offshore wind is expected to play a major role in this transition. Under PDP8 Revised, Vietnam plans to develop 6-17 GW of offshore wind between 2030 and 2035, rising to 113.5-139 GW by 2050. The Implementation Plan for PDP8 Revised, approved by the Ministry of Industry and Trade under Decision 1509/QD-BCT dated 30 May 2025, provides a regional and project-based allocation of offshore wind capacity.

This means Vietnam is no longer at the stage of debating whether offshore wind should be part of the

36. Abris, A. J. (2025, December 09). Two offshore wind ports seen ready by Q1 2027. Philippine Daily Inquirer. <https://business.inquirer.net/563200/two-offshore-wind-ports-seen-ready-by-q1-2027>

37. (2026, February 21). Your next big RE investment? It's here in the Philippines!. Department of Energy Philippines. <https://www.facebook.com/share/r/1CuQj6b3bK/>





power mix. The market has moved to the phase of turning planning targets into investable, bankable and deliverable projects.

Vietnam's legal and regulatory framework for offshore wind has also advanced significantly. The Electricity Law provides the core legal basis, supported by key decrees issued in March 2025, including Decree 58/2025/ND-CP (Decree 58) on renewable and new

energy development, Decree 56/2025/ND-CP on electricity planning (Decree 56), and Decree 57/2025/ND-CP (Decree 57) on the direct power purchase agreement mechanism. In December 2025, the National Assembly adopted Resolution 253/2025/QH15, introducing specific mechanisms for offshore wind project implementation during 2026-2030, including direct approval by the Prime Minister of both investment policy and investor

for projects in the first development period.

This represents an important step forward. For the initial offshore wind pipeline, Resolution 253 creates a pathway to move faster than a full competitive auction process, which may be more appropriate once the market has matured. For the 2031–2035 period, approval authority is expected to be decentralised to provincial-level authorities based on

the project's grid-connection point, with investor selection to follow the applicable legal framework.

Identifying a bankable route to market

However, Vietnam's offshore wind market is still working through the conditions needed to deliver its first projects. The country has targets, planning direction and emerging legal instruments but still needs a fully bankable route to market. Key

issues remain around investor selection, survey rights, sea area allocation, tariff-setting, PPA bankability, minimum contracted output, grid connection, and permitting coordination .

Several ongoing legal reforms could help close these gaps. Draft revisions to the Electricity Law seek to strengthen revenue visibility for offshore wind through long-term minimum contracted output mechanisms, clarify that site surveys may be conducted before investment policy approval and by entities other than the final project investor, and confirm the decentralisation of approval authority. Proposed amendments to Decree 57 and Decree 58 also aim to provide further detail, including a potential increase of the minimum contracted output for offshore wind projects to 90% for up to 20 years, refinements to the DPPA framework, and clearer investor eligibility requirements.

The National Marine Spatial Plan is another key enabler. It identifies the Northern, South Central and Southern sea regions as potential areas for offshore wind development. However, priority areas still need to be surveyed, confirmed and coordinated with other marine users.

Clarifying sea use rights will be critical. The ongoing review of the Law on Marine and Island Natural Resources and Environment is therefore highly relevant, particularly for issues such as sea area allocation, transferability, mortgageability, sea-attached assets, compensation and the legal treatment of offshore infrastructure.

Adopting a step-by-step approach

Over the next 12 months, Vietnam should finalise the implementing framework for Resolution 253 and provide clear guidance on the first 6 GW pipeline. Priority actions include confirming the investor selection process, clarifying survey and sea area procedures, setting out a bankable PPA framework, and ensuring that tariff negotiation allows sufficient risk allocation for early offshore wind projects.

In the next two-to-three years, Vietnam should move from regulatory design to project execution. This means completing site identification and surveys, progressing investment policy approvals, securing grid-connection arrangements, preparing ports and supply chain infrastructure, and establishing a transparent pathway for the 2031–2035 pipeline.

By 2030, Vietnam should aim to have its first offshore wind projects under construction or in operation, supported by a bankable commercial framework and a credible long-term pipeline. The objective is not only to deliver the first 6 GW, but to build confidence that Vietnam can scale offshore wind beyond 2030.

Japan: market recalibration underway to strengthen commercial viability

The enactment of the Renewable Energy Sea Area Utilization Act in 2018 and the launch of the first general sea area auction (Round 1) in 2020 raised expectations that Japan would rapidly scale offshore wind deployment and emerge as a leading market in Asia. Japan's offshore wind market has the institutional foundations in place but is constrained by a single correctable problem: the gap between auction price assumptions and market realities. This is a policy design issue with a known solution, not a fundamental market failure.

The root cause of this stagnation does not lie in a lack of permitting processes or institutional structures. In Japan, projects that can reach Final Investment Decision (FID) are generally able to move forward into





the next phase of development. The core challenge is that, under the current policy and market conditions, only a very limited number of projects are able to reach FID. This lack of commercially viable conditions has become the central structural constraint facing the market.

As a result, there is a shortage of projects with sufficient commercial certainty to justify irreversible investment decisions. Without FID, developers are unable to commit to binding agreements with turbine

OEMs and key suppliers, invest in onshore transmission line construction, secure port upgrades, or mobilise large-scale offshore construction works. These capital-intensive and long-term commitments cannot be made incrementally, and their absence has become the primary reason why projects are unable to progress at scale.

This challenge has been exacerbated by the widening gap between the cost assumptions underpinning early auction rounds

and current market realities, driven by global inflation, rising construction costs, and higher financing costs. As a result, some international offshore wind developers have scaled back investment or exited the Japanese market entirely. Compared with other emerging offshore wind markets in the Asia-Pacific region, Japan is increasingly perceived as carrying elevated commercial risk and uncertainty.

Breaking through this structural barrier requires more than new

procedures or accelerated administrative processes. What is fundamentally needed is a recalibration of policy design and market conditions to restore commercial viability and enable developers to reach FID with confidence.

First step: restoring market visibility

In the short term, restoring market visibility and stabilising expectations among stakeholders is critical. The government needs to present a clear and coherent roadmap for upcoming

auction rounds and designated areas, including delayed general sea area tenders. Greater predictability will allow developers and investors to align assumptions and prepare accordingly.

At the same time, urgent adjustments to auction design are required. Price caps, evaluation criteria and risk-sharing mechanisms should be recalibrated based on lessons learned from the past three rounds and aligned with today's cost environment. Without such adjustments, future auctions risk limited participation or post-award project failure.

To minimise gaps in market activity, it is important to implement a sequenced approach combining a re-tendering of Round 1 and the timely launch of Round 4. Ensuring the successful delivery of already awarded Round 2 and Round 3 projects, including through the effective use of the long-term decarbonised power source auction, will be essential to restoring market confidence.

Appropriate structural reforms

Over the medium term, policy responses must build on measures that have already been introduced while recognising that partial

interventions have not restored commercial viability at scale. The focus should shift from incremental adjustments to a clearer differentiation between: (i) elements that can be further improved through continued policy and market design tuning, and (ii) more complex reforms – potentially including legal or institutional changes – that can deliver a more material impact on project bankability.

As the market matures, Japan may also need to consider further structural reforms to the auction and offtake framework, including phased auction approaches and alternative revenue stabilisation mechanisms. While inflation indexation mechanisms have already been introduced, further refinement of the current auction framework may still be necessary, including consideration of long-term cost variations such as OPEX escalation and more flexible auction implementation reflecting supply chain constraints.

Balancing consumer cost considerations with the creation of a sustainable market remains a central challenge not only for offshore wind, but for Japan's broader energy transition. Establishing a commercially sustainable multi-GW

market during the early development phase will be critical to enabling supply chain investment, industrial maturation and long-term cost reduction.

The government has committed to forming commercial floating offshore wind projects in fiscal year 2029.³⁸ To deliver on this commitment, it must urgently develop dedicated policy and regulatory frameworks tailored to floating offshore wind, including promotion area designation, auction design, transmission planning and related institutional arrangements. In parallel, as Japan moves towards potential EEZ development, the government should strengthen foundational marine data development and clarify phased risk allocation approaches appropriate for multi-stage floating offshore wind development.

Scaling up and building competitiveness

Japan targets 10 GW of offshore wind capacity by 2030. As long as this target remains in place, maximising

the remaining time through coordinated policy, institutional alignment and market operation will be essential.

The formation of floating offshore wind projects in FY2029 should serve as a catalyst for establishing floating offshore wind as a domestic industry throughout the 2030s. Achieving this will require a clear long-term strategy integrating ports, shipbuilding, floating structures, installation and O&M, while building an internationally competitive industrial ecosystem. This industrialisation pathway will be central to both long-term economic growth and Japan's energy security.

Pushing past the barrier

Japan's offshore wind market already benefits from important foundations: clear decarbonisation goals, political recognition of offshore wind as a strategic industry, and strong latent demand for domestically generated clean energy. What requires continued development is a consistent, commercially grounded

38. Unlike deployment targets, Japan's offshore wind targets remain project formation targets, meaning the government's objective is to bring projects to a stage where they can be tendered rather than to guarantee installed capacity. This approach is reflected in the Seventh Strategic Energy Plan and related government materials. Japan targets 10 GW of project formation by 2030 and 30–45 GW by 2040, with offshore wind positioned as a key pillar of the energy transition. The growing importance of floating offshore wind is also emphasized, with at least 15 GW expected from floating projects by 2040. As of 2025, the project pipeline has been further structured under the Renewable Energy Sea Area Utilization Act, with 12 promotion zones, 9 promising zones, and 17 preparation zones identified, indicating a progressively systematised approach to project development. 001969092.pdf



approach that links policy design, market implementation and investment decisions around a shared understanding of commercial viability.

The market's position at present sees strong institutions, but few projects that are able to reach FID. The goal is a bankable and internationally competitive offshore wind market by 2030. Short-term policy recalibration to restore commercial conditions, medium-term structural reform and long-term commitment to industrialisation are the tools to achieve this target.

Decisions taken over the next two-to-three years will determine whether Japan can break through this structural barrier or remain constrained by it.

South Korea: preparing the market for the delivery pathway

South Korea's offshore wind market entered in 2025 a transition phase from policy ambition to more structured and realistic execution, positioning it as a key 'market to watch' globally. Compared with other offshore wind markets, South Korea can be categorised as nearly ready but execution-constrained. It is a market with strong political backing, deep industrial capabilities

and significant scale potential. However, delivery depends on resolving persistent grid, permitting and market-design challenges. As such, Korea provides a compelling example of how early-stage policy corrections, if implemented decisively, can lock in long-term options for secure, domestic and crisis-resilient clean power while underpinning green industrialisation.

A major inflection point came in mid-2025 with a broad policy reset. Earlier offshore wind strategies had targeted 14.3 GW by 2030³⁹. But this level of ambition increasingly diverged from infrastructure readiness, grid capacity, vessel availability and permitting realities. In December 2025, the government formally revised the target to a binding 10.5 GW of offshore wind by 2030, defined as combined deployment and under-construction capacity. Within this framework, South Korea aims to develop critical infrastructure, including ports and installation vessels, to support the annual deployment of up to 4 GW of offshore wind capacity by 2030⁴⁰, subject to evolving market conditions.

The adjustments significantly improve policy credibility while maintaining offshore wind as a core pillar of Korea's decarbonisation, energy security and industrial agendas. Crucially, the focus shifted away from headline capacity announcements towards delivery readiness, recognising that credibility in execution is a prerequisite for sustained investment.

Locking in the market foundations

Over the next 12 months, South Korea's priority is to consolidate the institutional, spatial and system foundations required for offshore wind delivery. The center piece of this effort is the Special Act on the Promotion of Offshore Wind Power Deployment and the Development of Related Industries, whose enforcement decree entered into full legal force on 26 March 2026. From this point onward, offshore wind development in Korea formally transitions from a fragmented, developer-led open-door model to a government-led planned site system with integrated and coordinated permitting, overseen by the Ministry of Climate, Energy and Environment (MCEE).

39. Jung Min-hee, 'Gov't Unveils 100 Trillion Won Plan to Promote Offshore Wind Power Generation', BusinessKorea, 1 April 2024, <https://www.businesskorea.co.kr/news/articleView.html?idxno=214153>

40. [MCEE Press Release] South Korea aims to build a foundation to deploy 4 GW of offshore wind annually by 2030... Announces 'Infrastructure Expansion and Deployment Plan' <https://www.mcee.go.kr/m/mob/board/read.do?menuId=156&boardMasterId=939&boardId=1826910>

Under this framework, the government has begun designating seven offshore wind development zones, selected through inter-ministerial coordination and early consultation with environmental, maritime, military and fisheries stakeholders. The government now assumes responsibility for site screening, spatial compatibility and key environmental and military clearances before projects are offered to developers via competitive bidding. This represents a fundamental shift in risk allocation, reducing late-stage permitting uncertainty and materially improving bankability in a market previously characterised by protracted development timelines and high regulatory risk.

During this period, offshore wind activity remains focused on auction readiness and pipeline quality rather than construction volumes. This approach builds directly on the outcomes of the 2025 offshore wind auctions, in which South Korea awarded 689 MW of capacity across four fixed-bottom projects, all of them public-led or state-affiliated. The awarded projects, Southwest Pilot Project (400 MW), Handong-Pyeongdae (100 MW), Dadaepo (99 MW), and Aphae (80 MW),⁴¹ reflected tightened evaluation

criteria around energy security, domestic supply-chain participation and industrial contribution. Notably, privately led projects were unsuccessful, signaling a deliberate policy preference for public-sector anchoring during the market-stabilisation phase.

This direction was reinforced in the H1 2026 offshore wind auction, which offers approximately 1.8 GW of capacity across fixed-bottom and floating offshore wind projects. The auction maintains a two-stage evaluation system with equal weighting between price and non-price criteria, elevating considerations such as port utilisation plans, grid readiness, project maturity, local manufacturing and community acceptance. Intense competition among eligible projects, amounting to several gigawatts of qualified capacity, highlights the growing importance of disciplined bid strategies, realistic cost assumptions, and demonstrable execution capability in an increasingly selective procurement environment.

At the same time, grid constraints remain the most material near-term system gap. In particular, the transmission of offshore wind power from the south-west coast to Korea's

main industrial and demand centres continues to pose a structural challenge. While the planned-site system allows grid considerations to be addressed earlier in the development process, grid reinforcement and onshore connection investment must proceed in parallel to avoid projects stalling after auction award. The coming year is therefore less about rapid capacity build-out and more about aligning spatial planning, grid expansion, auction design and industrial deployment into a coherent delivery system.

Moving from readiness to delivery

The period between 2027 and 2029 represents the critical bridge from readiness to sustained delivery. During this phase, Korea is expected to refine and publish a new offshore wind auction roadmap, aligning future auction volumes more clearly with the 10.5 GW deployment pathway towards 2030. This period will also see the gradual sunset of the Renewable Portfolio Standard (RPS), reducing reliance on Renewable Energy Certificates and requiring the full implementation of an auction-based support framework. While this transition is intended to enhance market transparency and long-term bankability, it must be carefully

designed to avoid near-term revenue uncertainty.

In this context, GWEC is actively supporting the Korean government, working closely with relevant ministries on a post-RPS offshore wind auction design study. This effort aims to help establish a robust, bankable and internationally competitive auction framework that reflects Korea's industrial priorities while ensuring cost discipline and delivery certainty.

As zoned areas advance through permitting and financing, project pipelines are expected to narrow, shifting the focus from speculative development to execution-ready projects. Domestic supply chains, particularly ports, installation vessels, foundations and offshore substations, will become increasingly decisive in determining delivery pace. Korea's strengths in shipbuilding, steel, offshore engineering and digital services position offshore wind not as a standalone power technology, but as a cornerstone of an integrated industrial strategy.

41. [Press Release] 2026 H1 Wind Power Auction Results <https://www.epj.co.kr/news/articleView.html?dxno=36902>, <https://lautec.com/2025/09/05/south-korea-offshore-wind-auction-2025/>

Markets to watch

Floating offshore wind becomes especially relevant in this timeframe. With deep-water conditions along the east coast near Ulsan and Busan, Korea has the opportunity to position itself as a global floating wind hub, linking domestic energy deployment with export-oriented industrial growth and technology leadership.

A credible offshore-wind-anchored system

By 2030, South Korea aims to have 10.5 GW of offshore wind capacity awarded, under development, or entering construction, supported by a coherent regulatory framework, a mature auction-based market design and an increasingly localised supply chain. Fixed-bottom projects in the south-west, particularly Jeonnam, Shinan, and Incheon, form the backbone of near-term capacity, while floating offshore wind establishes the foundation for expansion beyond 2030.

Crucially, offshore wind by this point is expected to function as more than a decarbonisation instrument. It enhances domestic energy security, reduces exposure to volatile fossil fuel imports, and anchors regional industrial development linked to ports, manufacturing and offshore services. Markets such as South Korea demonstrate how starting now allows

countries to leapfrog directly to an electrified, offshore-wind-anchored energy system, rather than replicating fossil-based vulnerabilities.

While challenges remain – particularly grid expansion, stakeholder acceptance and financial pressure under competitive auctions – the recalibration towards a realistic target has materially improved delivery credibility. South Korea now stands as a market that, by correcting course early, has preserved long-term optionality and positioned offshore wind as a defining pillar of its low-carbon industrial future.

Australia: enabling a high-potential market to thrive

Provided by Southerly Ten

Australia is emerging as a high-potential, mid-readiness offshore wind market: policy frameworks are in place, and projects are moving through feasibility and permitting activities. Australia is at a critical investment juncture for offshore wind. After its first auction was delayed in 2025, government decisions in 2026 will determine the level and pace of progress in the near term.

Australia has extensive untapped

offshore wind resources, with coastal waters offering strong and consistent wind speeds that are high by international standards. The potential energy output from these winds, combined with relatively shallow waters, positions offshore wind as a huge asset for the nation's renewable energy future.

Bass Strait, off the Gippsland coast in the State of Victoria, is the nation's first and most progressed offshore wind zone, with nine awarded licences and site studies progressing. The government has issued one feasibility licence in the Southern Ocean, off Victoria, and three licences in the Indian Ocean, off the Bunbury region in Western Australia.

Australia's regulatory framework establishes a strong regime for offshore wind exploration and generation that is based on coexistence. As a later entrant, Australia can avoid legacy design constraints and move directly towards establishing a successful industry to complement other technologies such as storage and onshore renewables, which are being increasingly constrained by conflicting land pressures.

Early government actions including

zone declarations, policy frameworks and transmission planning have begun to lock in long-term optionality. If followed through with investment and regulatory clarity, these steps could enable Australia not only to decarbonise its power sector but also build a globally competitive clean industrial base powered by homegrown energy, boosting its energy sovereignty and resilience as global supply concerns intensify.

Mind the gaps: what is needed for offshore wind to take off

Despite strong foundations, Australia remains a pre-commercial offshore wind market, with several critical gaps preventing large-scale deployment.

1. Revenue certainty and market design

Australia's offshore wind sector stalled in 2025 when the Victorian State Government delayed its first auction. A new auction should commence in August 2026, with contracts to be transitioned into the national Electricity Services Entry Mechanism (ESEM), currently under design. The ESEM introduces a central buyer to run competitive auctions for new generation into Australia's National Electricity Market (NEM) to ensure ongoing investment and secure enough

low-emissions capacity to meet national policy objectives. The ESEM is designed to support state energy technology targets, such as Victoria's legislated offshore wind capacity targets of 2 GW by 2032, 4 GW by 2035 and 9 GW by 2040.

2. Grid and transmission readiness

Transmission infrastructure remains a priority. The most progressed zone is Gippsland where the state government-backed VicGrid is progressing permitting and procurement for the Gippsland Offshore Wind Transmission 2 GW project. A designated Gippsland Shoreline Renewable Energy Zone directs where offshore cables can land to shore, providing certainty to developers and local communities.

3. Supply chain and infrastructure gaps

Australia's domestic supply chain for offshore wind – ports, vessels, fabrication yards and a specialised workforce – is largely undeveloped. Upfront investment is required to localise value creation and avoid reliance on constrained global supply chains. In its May 2026 budget, the Victorian Government allocated AUD 124.5 million (USD 88.7 million) to progress development work for the Victorian Renewable Energy Terminal at the

Port of Hastings – a promising signal to industry.

4. Regulatory fragmentation

Australia's split federal-state governance model introduces complexity across licensing and environmental approvals. This creates uncertainty around timelines and risk allocation, particularly for first-of-a-kind projects. Australia's most advanced project, the Copenhagen Infrastructure Partners-backed Star of the South, has submitted its Environmental Impact Assessment. As a first for the market, the timelines and outcomes of this process will provide a signal to the market and set expectations for subsequent projects in the pipeline.

Tackling uncertainty could unlock a forward leap

Australia in 2026 sits at a critical inflection point: the market fundamentals are strong, and the first commercial signals are emerging. Delivery depends on addressing revenue certainty, grid readiness and regulatory alignment.

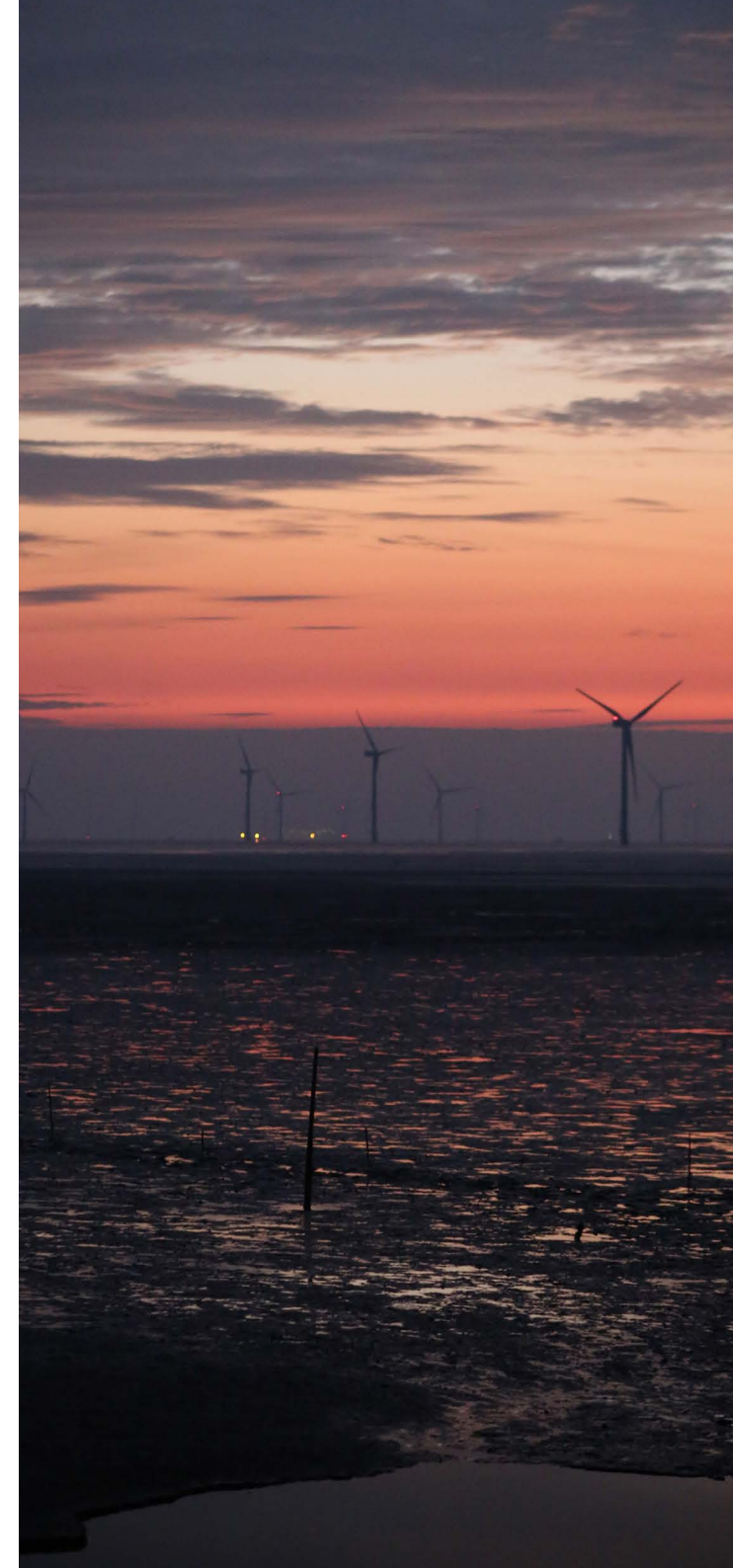
If these issues are resolved, Australia could rapidly shift from a 'market to watch' to a core offshore wind market in Asia Pacific, with global significance.

China: heading for farther and deeper waters

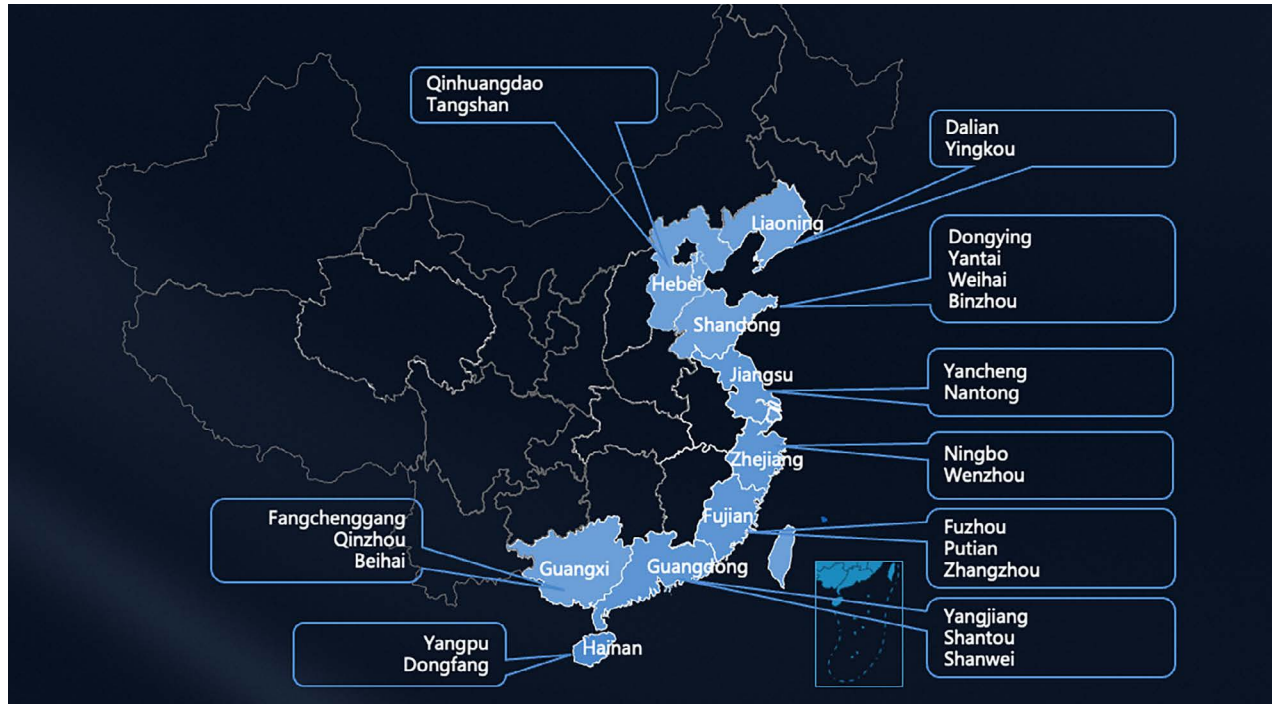
China remains the world's largest offshore wind market, but its growth dynamics are shifting. As feed-in tariffs were phased out, the sector has started transitioning to a market-based renewable pricing mechanism in 2025. The dwindling of nearshore resources, increased constraints on marine use and mounting pressure on project returns are leading to a move away from nearshore, scale-driven expansion towards deeper waters and more distant offshore development. This transition is not purely policy led but reflects the combined impact of resource limitations and evolving market conditions.

Market dynamics and policy transition

China maintained its position as the world's largest offshore wind market in 2025, adding 6.6 GW of new capacity, which represented approximately 71% of global additions. On the policy front, the regulatory focus is shifting towards enabling large-scale and deep-sea deployment. In October 2025, the NEA signaled the need to improve top-level design and accelerate the formulation of planning frameworks and management rules for



China's offshore wind power industrial bases map and list (key provinces and cities)



Source: CWEA (Chinese Wind Energy Association), 2025

deepwater projects.

While China as a whole has transitioned towards a market-based renewable electricity pricing mechanism, some provincial policies suggest that a degree of revenue stabilisation is still being actively maintained for offshore wind. Several coastal provinces, including Shandong, Jiangsu, Zhejiang,

Guangdong and Liaoning, have introduced differentiated pricing and competitive allocation frameworks specifically tailored to offshore wind projects. These mechanisms typically combine market-based bidding with reference pricing linked to coal benchmarks, alongside additional premiums or grid-connection adjustments for deep-sea projects.

Supply chain scale and technology advancement

China's offshore wind ecosystem continues to expand in both scale and geographic concentration. Coastal regions are accelerating the development of integrated industrial clusters that cover the full value chain, including turbine manufacturing, key components,

installation, and operations and maintenance services. Around 30 offshore wind industrial parks have been established along the coast, spanning both operational and under-construction projects, and forming increasingly coordinated manufacturing and logistics networks.

Regional hubs are becoming more specialised. In Jiangsu, Yancheng has developed multiple industrial parks and accounts for around 40% of China's offshore wind turbine manufacturing capacity and about 20% of blade production. In Guangdong, Yangjiang and Shantou have developed 'four-in-one' industrial parks that integrate R&D, process engineering, manufacturing, and testing and certification. This brings together OEMs, component suppliers and testing processes into a single ecosystem covering technology development, production, validation and export. As a result of this industrial build-out, China's annual offshore wind turbine manufacturing capacity exceeds an estimated 20 GW, a level broadly sufficient to meet domestic demand over the next five-to-ten years.

Technological and project milestones continue to demonstrate



the sector's high level of development. In October 2025, a 26 MW offshore wind turbine developed by Dongfang Electric Corporation was successfully grid-connected in Shandong, setting a new global benchmark for single-unit capacity.

In December, the CTG Jiangsu Dafeng 800 MW offshore wind project was fully commissioned, with an offshore distance exceeding 80 km, marking a notable step forward in long-distance transmission and deepwater project execution. As well as the projects currently under construction, the Huadian Yangjiang Sanshan Island Phase VI offshore

wind project is among the first in China to deploy 16 MW-class turbines at scale and incorporates AI-driven control systems to optimise performance and improve overall project returns.

Deepwater expansion and integrated development

According to the CWEA, China's technically developable offshore wind potential reaches around 2.1 TW at a hub height of 150 meters, much of which is located in deeper waters beyond nearshore zones. However, translating this resource potential into economically viable projects remains uncertain.

Beyond its role in energy supply,

deepwater offshore wind is also seen as strategically important, with its potential to support industrial upgrading and broader marine resource use.

The first commercial floating wind farm, Phase I (100 MW) of the 1 GW Wanning project, is in progress, with delivery targeted in 2027. However, despite notable cost reductions compared to early demonstration projects, floating wind has higher capital expenditure than fixed-bottom offshore wind. As a result, large-scale commercial deployment is contingent on further cost declines, policy support and validation of long-term project economics.

As offshore wind development moves into farther and deeper waters, the complexity also increases, making it more important to improve the overall economic value of marine space. In this context, integrated development models are emerging as a complementary pathway to enhance project viability.

Wind power-plus-marine ranching is a representative example, enabling multi-layer use of sea space by combining power generation, aquaculture and ecological restoration. Shared infrastructure such as offshore platforms can reduce development costs and improve resource efficiency, while

Markets to watch

turbine foundations can function as artificial reefs, supporting marine ecosystems and enhancing aquaculture productivity.

In parallel, offshore wind-to-hydrogen has been increasingly incorporated into development, particularly in coastal regions where demand for green hydrogen is expected to be concentrated. Integrating offshore wind with hydrogen production near ports or offshore hubs could help address power transmission constraints while supplying low-carbon fuels for shipping and industry. However, despite growing policy interest and ongoing project planning, both of these hybrid models remain at an early stage. High costs, technical complexity and an evolving regulatory framework mean that large-scale commercial viability requires further development.

As development in China moves into market-driven and deeper-water environments, China is expected to remain the global leader in offshore wind but to start looking beyond scale alone. National planning targets, including those set out in China's 15th Five-Year Plan, target around 100 GW of cumulative offshore wind capacity by 2030,

which implies annual additions of over 10 GW in the coming years.

Delivering at this level will require further policy support, as well as stronger backing for the transition from nearshore to deepwater development. While technological progress and integrated models may support this shift, long-term growth will ultimately depend on improving project economics and making project delivery even more efficient.

India: forging a pathway for a critical energy source

India ranks third globally in total energy consumption and fourth in wind and renewable energy installed capacity.⁴⁵ As of April 2026, the country had installed 56 GW of onshore wind capacity. However, offshore wind still remains at a nascent stage, with no commissioned capacity and limited project development activities to date.

Despite this, offshore wind is increasingly being recognised as a critical component of India's long-term decarbonisation and energy security strategy. With a coastline exceeding 7,600 km and favourable wind speeds, the Ministry of New and Renewable Energy (MNRE) aims to tap an estimated 70 GW of offshore wind energy capacity off the

coasts of Gujarat and Tamil Nadu.⁴⁶ Offshore wind is of strategic importance in supporting India's target of achieving 500 GW of non-fossil fuel capacity by 2030 and in shaping the country's energy landscape.

The National Offshore Wind Energy Policy, notified in 2015, lays the groundwork for the strategic and comprehensive development of offshore wind projects up to the country's Exclusive Economic Zone, which extends 200 nautical miles from the coastline. In early February 2024, the Solar Energy Corporation of India (SECI) announced a solicitation for 4 GW of seabed lease capacity off the coast of Tamil Nadu and a 500 MW offshore wind project off Gujarat's coast, marking a strategic push toward clean energy diversification.

To ensure financial viability and attract private investment, the government approved a INR 74.53 billion (USD 893 million) Viability Gap Funding (VGF) scheme,

supporting 1 GW of offshore projects and port upgrades, along with additional support including an ISTS waiver until 2032,⁴⁷ which exempts these projects from certain grid usage charges.

Under a broader strategic initiative detailed in the Strategy Paper for Establishment of Offshore Wind Energy Projects, a tentative tender trajectory foresees the award of 37 GW of seabed lease capacity by 2030. The Offshore Wind Energy Lease Rules, 2023 further support this initiative by regulating the allocation of sea blocks to developers, thereby ensuring a structured development pathway.

Steps taken to overcome key challenges

Despite strong potential and policy intent, several challenges continue to slow the pace of offshore wind development in India. In August 2025, the Solar Energy Corporation of India (SECI) cancelled offshore wind tenders totalling 4.5 GW due to limited developer participation.⁴⁸

45. Energy Watch, "India adds record 6.05 GW wind capacity in FY26; total installed base crosses 56 GW" (April 6, 2026), <https://www.energywatch.in/renewable-energy/wind/india-adds-record-605-gw-wind-capacity-in-fy26-total-installed-base-crosses-56-gw>

46. Adnan Memija, "India Cancels Two Offshore Wind Tenders," Offshore Wind (August 13, 2025), <https://www.offshorewind.biz/2025/08/13/india-cancels-two-offshore-wind-tenders/>

47. The Hindu Business Line, "Govt Approves Viability Gap Funding for Offshore Wind Energy Projects," <https://www.thehindubusinessline.com/economy/govt-approves-viability-gap-funding-for-offshore-wind-energy-projects/article68308589.ece>

The supply chain for offshore wind components is underdeveloped in the Indian market, leading to increased costs and a high dependence on imports. There is also a shortage of specialised vessels for offshore wind component transport.

Offshore wind projects are capital-intensive, and with government support limited to the first 1 GW, developers face significant financing challenges. Estimated tariffs of INR10.5/kWh (USD 0.11/kWh) in Gujarat and INR 9.6/kWh (USD 0.11/kWh) in Tamil Nadu are significantly higher than the current grid tariff of INR 7/kWh (USD 0.08/kWh).

However, recent policy signals suggest that efforts are being made to rebuild developer and investor confidence in the sector. India and the United Kingdom jointly launched an offshore wind task force in February 2026 under the Vision 2035 partnership, with the primary goal of accelerating the development of India's offshore wind sector. In addition, the Ministry of New and Renewable Energy is expected to announce offshore wind tenders in the second half of 2026 for two projects of 500 MW each, or a single 1,000 MW tender.

The Bureau of Indian Standards (BIS) has introduced new design standards for offshore wind turbines, including blades and towers, aligned with global International Electrotechnical Commission (IEC) norms. This step aims to ensure quality, safety and consistency in India's emerging offshore wind sector.⁵⁰

Central and state government agencies have partnered with a range of multilateral and bilateral organisations, think tanks and expert groups to help establish a robust enabling environment for the offshore wind industry in the country, including maritime spatial planning (MSP) and skills development initiatives.

Unlocking skilled jobs and economic growth

Several challenges remain, including port upgrades to support the offshore wind supply chain, ground-level market barriers, permitting and clearance processes, and high costs. Nonetheless, the successful allocation of offshore wind tenders

by the government in the coming years will unlock a new offshore wind market in India.

With an estimated offshore wind potential of 70 GW, the sector will create demand for higher-value technical skills across marine operations, port logistics, offshore safety, heavy engineering equipment, subsea cable installation and specialised maintenance services. Offshore wind can also stimulate local economic growth.

In the coming years, government-to-government (G2G) and business-to-business (B2B) partnerships, along with customised financial packages, will play a pivotal role in unlocking these opportunities. Both central and state governments should leverage impactful platforms to showcase the country's offshore wind energy potential and facilitate cross-country partnerships with the private sector to help strengthen India's role in shaping global and regional priorities in the offshore wind energy sector.

48. Adnan Memija, "India Cancels Two Offshore Wind Tenders," *Offshore Wind* (August 13, 2025), <https://www.offshorewind.biz/2025/08/13/india-cancels-two-offshore-wind-tenders/>

49. Economic Times, "Indo-UK Offshore Wind Task Force Launched; India Crosses 27.2 GW Non-Fossil Fuel Power Capacity," <https://economictimes.indiatimes.com/industry/renewables/indo-uk-offshore-wind-task-force-launched-india-crosses-272-gw-non-fossil-fuel-power-capacity/articleshow/128497809.cms>

50. Livemint, "India Offshore Wind Standards Design Turbines Blades Foundations Global," <https://www.livemint.com/industry/energy/india-offshore-wind-standards-design-turbines-blades-foundations-global/amp-11777264178872.html>





Latin America

Brazil: capturing the economic benefits of a new industrial chapter

Brazil enters 2026 with the legal framework for its offshore wind sector in place. The country's fundamentals remain strong: a technical potential exceeding 1,200 GW along approximately 8,000 kilometres of coastline, capacity

factors that are estimated to reach 60%, calm sea conditions, and a proven offshore engineering base inherited from the oil and gas sector. The main question is whether Brazil will move fast enough to capture the full economic benefits of this new industry, opening up a new industrial chapter that involves domestic manufacturing capability, green hydrogen, port modernisation, and hundreds of thousands of skilled jobs.

Adjusting the regulatory framework

Approved in January 2025, Law 15,097/2025 established the legal framework for maritime use. In October 2025, the National Energy Policy Council (CNPE) formally instituted the Offshore Wind Energy Working Group, bringing together more than 20 federal bodies – including the Ministry of Mines and Energy (MME), the regulatory agency (ANEEL), the energy

planning agency (EPE), the Navy, the environmental agency (Ibama), the Ministry of Ports and Airports, and the ministry of industry (MDIC). Its deliverables include next steps for the implementation of Law 15,097/2025 and the approval flow for the interference declaration process (DIP) – both expected in 2026.

On 1 April 2026, the CNPE approved Resolution 1/2026, establishing

strategic guidelines for implementing the offshore wind law. The resolution requires that project area definitions follow EPE's Area Selection Methodology, integrating geospatial data from participating institutions, Marine Spatial Planning (PEM) guidelines, environmental factors such as coral reefs and migratory routes, and coastal distance criteria. It sets an initial reference distance of 12 nautical miles from the coastline for projects, subject to revision through technical studies. It also mandates creation of a single-window portal (PUG) to streamline the DIP process, establishes applicable deadlines and fees, and sets parameters for promoting the domestic industry.

A multi-sectoral approach to offshore wind

In April 2026, GWEC formally launched the Brazilian Offshore Wind Coalition, *Coalizão Eólica Marinha* (CEM). The multi-sectoral platform brings together developers, manufacturers, port operators, research institutions and coastal communities, with the goal of accelerating Brazil's offshore wind agenda through coordinated advocacy, knowledge sharing and primary data generation.

51. GWEC Latin America Market Intelligence

Brazil has calm seas, consistent winds with capacity factors that can reach 60%, and consolidated offshore engineering expertise already built through the oil and gas sector.⁵¹ No subsidies are foreseen for this first stage, and the 8–10 year development timeline provides adequate space to build the necessary infrastructure. What the sector is asking for now is access to seabed areas for feasibility studies, which will be funded entirely by investors.

CEM's immediate priority is to unlock seabed access for feasibility studies, the essential first step toward building the evidence base needed for environmental licensing and community engagement. Each study area represents an investor-funded commitment of approximately USD 60 million for the development phase, requiring no government subsidy and generating the primary data necessary for regulatory compliance and social license to operate.

Offshore wind as a national opportunity

Brazil's offshore wind potential, in addition to generating renewable energy, can represent an industrial and economic development opportunity. According to a World

Bank study, offshore wind could create over 516,000 jobs by 2050 and add at least BRL 900 billion (USD 178.5 billion) to the Brazilian economy. Brazil's heavy industry requires competitive, reliable and clean power at scale to remain competitive. Offshore wind, with its high capacity factors and complementarity to the existing hydropower system, is uniquely positioned to meet this need.

The country has done this before: the onshore wind sector, built with initial policy support in the early 2000s, is today one of the most competitive in the world. Offshore wind can repeat that nation-building exercise on an even greater scale. The publication of the implementing decree will unlock the DIP process and allow investors to formally initiate area studies. After convening a public hearing on 7 April 2026 to debate implementation, the Senate's Infrastructure Committee has announced a follow-up hearing focused on transmission, consumer costs and industrial development – signalling sustained legislative engagement.

How offshore wind can support grid integration

Thanks to a consistent generation profile, high capacity factors and

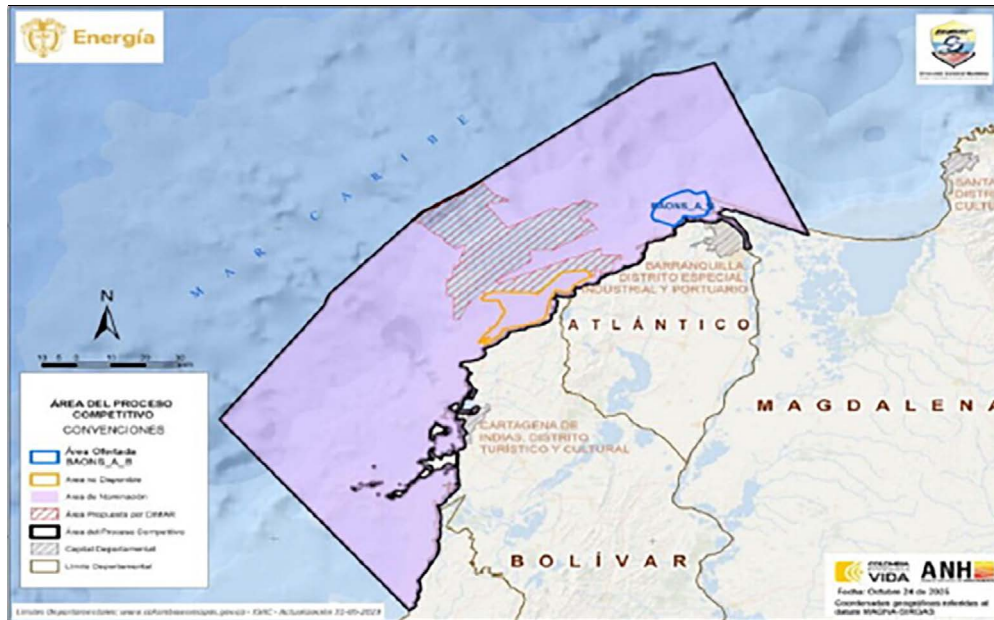
complementarity to Brazil's hydropower base, offshore wind is a natural fit for the national electricity system. Its predictable output can reduce the need for thermal backup dispatch, lower system costs and strengthen energy security.

Over the next decade, there is enough time to coordinate, plan and build the necessary transmission infrastructure, provided that investment decisions are made now. Beyond the grid itself, offshore wind's consistent output supports industrial electrification and green hydrogen production.

The industry's recommendations are simple: in the short term, timely publication of the implementing decree and the operationalisation of the DIP process will enable investors to promptly launch funded area studies. A functioning PUG portal will facilitate alignment among participating institutions on timelines and responsibilities; however, even in its absence, the process is expected to continue, with coordination proceeding through existing institutional channels.

Initial area allocations can be structured under the existing law, with investors willing to undertake site-specific studies and data

Markets to watch



collection at their own cost and risk. This mechanism provides a technically sound and strategically viable pathway to initiate offshore wind development in Brazil, enabling early investor engagement while risk sharing with the government.

Identifying priority areas and planning transmission

Over the next few years, the focus should shift to identifying and publishing priority areas for planned auctions, while work should continue on the Marine Spatial Planning process in coordination with the

Navy, and on establishing a clear auction schedule with pre-announced volumes. Transmission planning is also a must, with grid investment decisions being treated as strategic national infrastructure. Local content frameworks should be finalised to give the supply chain the certainty it needs to invest in port upgrades and specialist vessel capacity.

By 2030, Brazil should have its first area concessions awarded and feasibility studies well underway. With a realistic timeline of projects in

operation in the early 2030s, the decisions taken in the next two years will determine how quickly Brazil delivers on its potential. Offshore wind can become Brazil's next industrial frontier: today's policy choices will determine whether the country can take full advantage of this opportunity.

Colombia: government action lays the ground for future development

The launch of Colombia's first seabed area allocation process positions the country as a regional first mover in offshore wind. The current administration has built on the country offshore wind roadmap released in 2022 outlining the potential to install nearly 50 GW of capacity (over 27 GW bottom-fixed, 21 GW floating) primarily in the Caribbean region, by targeting 1–3 GW of potential installed capacity, mapping and prioritising shallow and deep-water zones in Atlántico, Bolívar, southern Magdalena and northern Sucre. The government has already drafted, enacted and started implementing a streamlined policy framework to allocate seabed areas and enable project developments by qualified candidates.

In the first stage of Colombia's

inaugural offshore wind auction, in a process led by the National Hydrocarbons Agency (ANH), nine companies – seven international and two Colombian – participated in the qualifying phase: BlueFloat Energy (Spain), Copenhagen Infrastructure Partners (Denmark), Jan de Nul and DEME (Belgium), Powerchina and China Three Gorges Corporation (China), Ecopetrol and Celsia (Colombia), and Dyna Energy (United Kingdom).

Having met the technical and financial requirements necessary for the development of large-scale offshore wind projects, all the companies were qualified to proceed to the next phase and became eligible to submit bids.

In the final eligibility list, released by the National Hydrocarbons Agency Copenhagen Infrastructure Partners' subsidiary, CI GMF Coöperatief UA, was awarded an offshore wind site permit off the coast of Barranquilla.

This process – the first in Latin America for the generation of wind energy in maritime areas – has demonstrated the government's capacity to coordinate across key institutions, including the Ministry of Mines and Energy, the General



Maritime Directorate and the ANH. It has also provided valuable experience in shaping an investment environment capable of attracting major players for future auction rounds.

Addressing priority issues ahead of the next rounds

The government is actively addressing issues identified in the initial process, with the aim of accelerating future rounds. This includes legacy issues related to permitting, community engagement and electricity market regulation experienced by onshore developers. Therefore, developing offshore wind represents an opportunity for the public and private sectors to restore investor confidence by resolving these challenges so Colombia's offshore wind sector can grow on a solid

foundation. Beyond these legacy issues, the government remains focused on the following key enablers as critical for the success of future rounds:

- Clear long-term policy signals within national energy planning
- Integration of offshore wind into energy transition scenarios
- Expansion planning of the transmission grid to accommodate future capacity
- Frameworks to enable grid connection for offshore projects

Following stakeholders' recommendations, the government is introducing an energy price securitisation mechanism through the regulation of a Contract for Difference (CfD) scheme, which is expected to increase certainty and provide long-term price stability for offshore wind projects. The first

allocation round under this mechanism is envisaged before 2028 and is expected to use the Levelised Cost of Energy (LCoE) as the primary reference for setting strike prices.

Licensing, permitting and maritime spatial planning

Environmental Impact Assessment (EIA) terms of reference for offshore wind are expected shortly. A Maritime Spatial Planning pilot is under way to reduce developer risk in site identification and project development.

Community engagement and capacity building

Collaboration with the government is also progressing in community engagement. Efforts are focused on understanding the socioeconomic dynamics of fishing and coastal

communities, conducting early-stage workshops to improve public perception of renewable energy, and designing strategies to strengthen local industry participation and workforce capabilities.

Bringing offshore wind to Colombia involves aligning port and infrastructure planning, and restructuring port and coastal infrastructure, with a focus on the Caribbean coast. Quays must be upgraded to allow access for heavy cargo, to provide extensive laydown areas for assembly, and to ensure deep-water access for specialised installation vessels, particularly for fixed-bottom foundations. Barranquilla has been designated as the primary offshore wind service hub in preparation for development of the first project.



Europe

Provided by WindEurope

Europe: turning political intent into delivery

Europe's offshore wind market remains strategically important, but recent delivery has fallen well below what is needed. Europe installed 2.6 GW in 2024 and only 2 GW in 2025, the lowest annual addition since 2016.

At the same time, the medium-term pipeline remains solid: more than 15 GW is under construction, around 10 GW has been financed and should start construction soon, and Europe is still expected to reach roughly 73 GW by 2030, against original policy ambitions of around 140 GW. The core issue is no longer ambition alone, but the gap between targets and timely delivery.

Auction activity reflects this mixed picture. In 2024, Europe awarded more than 19 GW – a record year – led by Germany, the Netherlands, Norway, France and the UK. But 2025 exposed a tougher reality: more than 17 GW was offered, yet only 39% was awarded, with several tenders delayed or unsuccessful.

The market is moving away from

zero-subsidy and negative bidding models towards revenue-stabilising support such as two-sided Contracts for Difference (CfD). The Wind Power Package, Net-Zero Industry Act (NZIA), EU Ports Strategy, and renewed regional cooperation in the North Sea and Baltic are all policies pointing in the right direction. But these policy signals still need to translate into more regular successful auctions, faster permitting and grid deployment, and overall into a more predictable and investable environment for the supply chain to scale up.

Key markets to watch

The key markets to watch are those combining scale with credible execution, with clear routes from targets to timelines, clear rules and responsibilities, and a supportive investment environment for the sector.

Germany matters due to its scale and because of its shift away from negative bidding toward CfD, restoring investor certainty.

France is central for both fixed-bottom and floating, supported by major tenders and a revised and more structured planning framework.

The Netherlands remains important as it adapts its market design towards temporary support, and over time, a CfD-based model.

Poland is one of Europe's clearest success stories. Starting from no offshore wind and high fossil dependence, the government acted decisively on its target, resulting in major projects financed and under construction, with Poland set to become Europe's third-largest market by the end of the decade.

The UK, while outside the EU, is and will remain Europe's largest offshore wind market. It will continue to shape the wider sector through its development volumes and growing floating wind execution.

Market positioning

Europe remains one of the world's most important offshore wind markets, with a strong industrial and technological base and a deep project pipeline. Offshore wind also plays a strategic role in Europe's energy security and independence. But ambition alone is no longer enough. Europe now needs to treat homegrown electricity as a strategic priority and turn political intent into delivery. For offshore wind, that means putting in place

the framework needed to deliver projects at the scale and speed required.

Europe still faces slow permitting, constrained grid build-out, uneven auction outcomes and supply chain bottlenecks in enabling infrastructure, such as ports, vessels and substations. A credible delivery framework means faster and simpler permitting, auction design that secures volumes rather than creating artificial scarcity, stronger investment signals for manufacturing and infrastructure, and coordinated action to connect new supply with demand.

What governments should do in the short and medium term

In the short term, governments should prioritise bankable auction design. The industry needs recurrent auction schedules, indexed and investable contracts, and a broader shift toward two-sided CfDs or equivalent revenue stabilisation tools. This is especially important after failed tenders and weak participation in 2025.

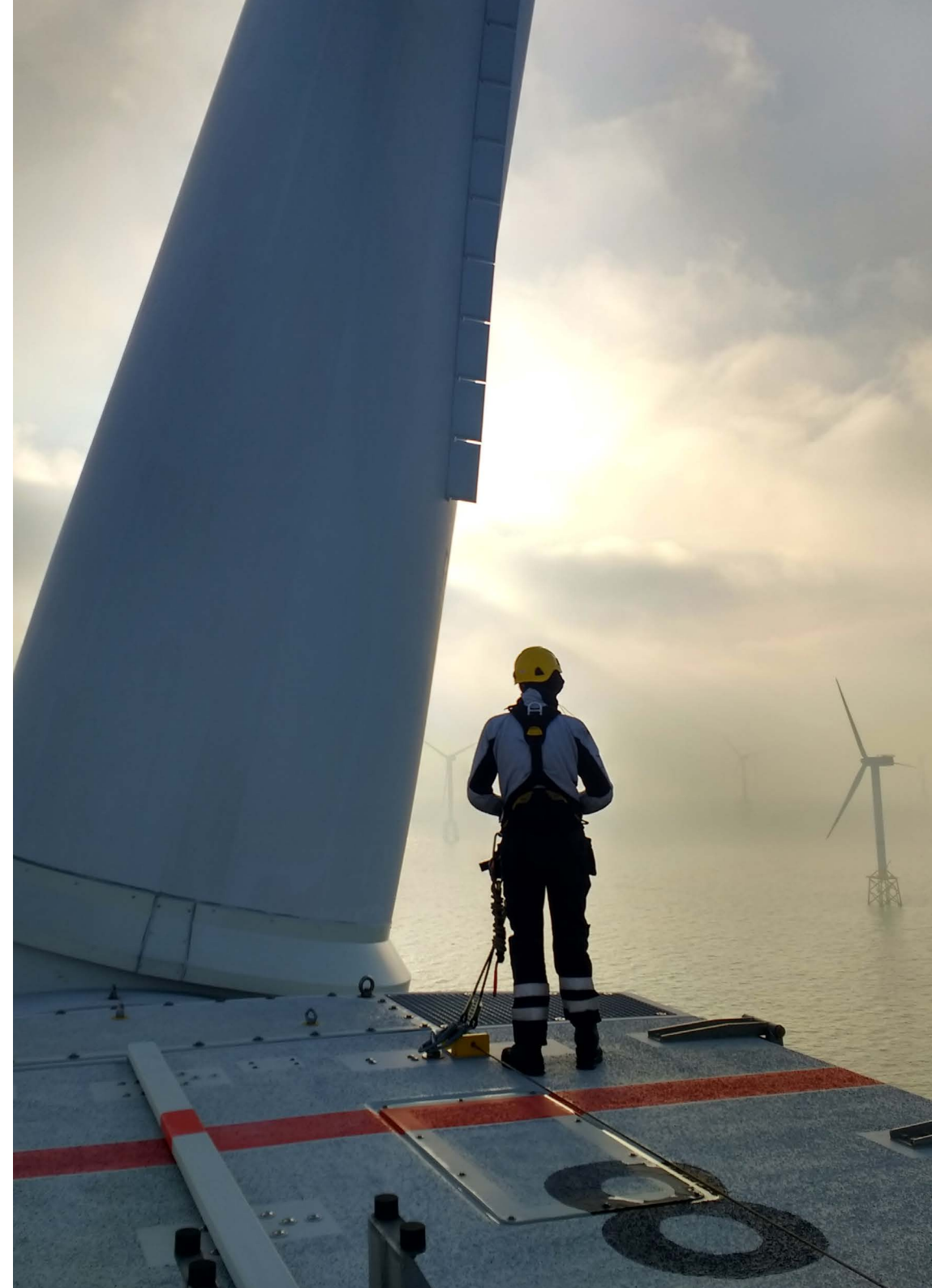
Governments should also accelerate permitting implementation, particularly offshore-specific timelines, and provide greater clarity on project

sequencing, grid access and connection responsibilities.

A second short-term priority is targeted public support for the supply chain. There is a growing need for EIB counter-guarantees, Innovation Fund support, regulatory certainty and public co-funding for ports, foundations, cables, substations and vessels. Offshore wind manufacturing investment cycles are long, and without visible demand and coordinated support, Europe risks underinvestment in critical infrastructure.

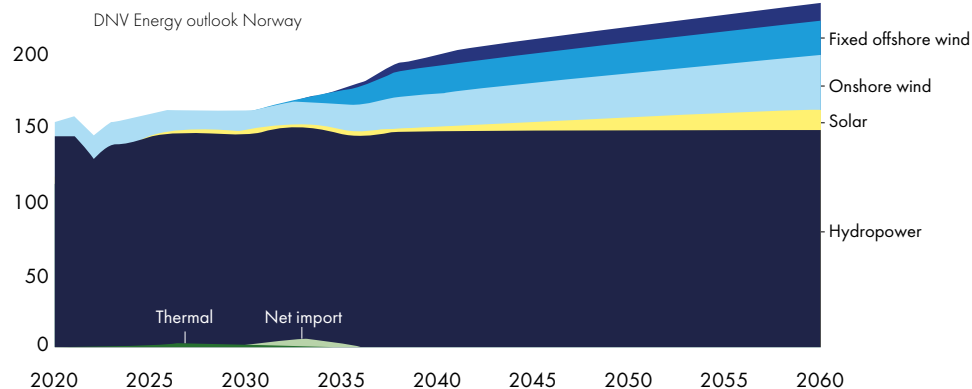
In the medium term, governments need stronger cross-border planning. Offshore wind growth increasingly depends on coordinated grids, hybrid projects, maritime spatial planning and regional infrastructure strategies, especially in the North Sea and Baltic. And that's what the North Sea Summit in January 2026 was about: greater collaboration on a sea basin level.

If Europe can align policy, infrastructure and investment around delivery, offshore wind can remain one of its strongest industrial and energy advantages.



Markets to watch

Electricity supply by technology (TWh/yr)



Source: SSB & IEA WEB (2025)

Norway: the challenge of moving from pilot projects to industrial scale

Provided by DNV



Norway entered 2026 with political ambition for offshore wind but limited deployment beyond early projects. The government's target to allocate 30 GW of offshore wind areas by 2040 signals long-term commitment. Yet the past year, including recent national political debate, has reinforced a key message from DNV's Energy Transition Outlook (ETO) Norway 2025: the reality is that timing and execution – not ambition – will determine success.

Strong foundations, limited scale

Norway's offshore wind sector remains in a pre-commercial scaling phase. Its flagship floating wind project Hywind Tampen is fully operational and demonstrates the viability of floating wind in harsh North Sea conditions.

Development continues in the two awarded areas:

- Sørlige Nordsjø II – Norway's first large-scale bottom-fixed project, now progressing after the initial award in March 2024
- Utsira Nord – intended as a launchpad for floating offshore wind, with two project areas awarded and a state-aid competition planned for 2028.

Norway has a strong ecosystem of demonstrators and test infrastructure – and the Enova instrument for early-phase technology development support. Still, compared with European peers, capacity additions remain limited because of unresolved questions around strategy, cost competitiveness, support mechanisms and grid integration.

Structural drivers: a tightening power balance

The fundamental drivers for offshore wind in Norway have strengthened and are clearly reflected in ETO Norway 2025. They are:

- The need for more renewable energy

Electrification of transport and industry is increasing power demand. DNV projects Norwegian electricity demand to rise by 30–50% by 2040, driven by electrification and new industries. Without major new generation, a structural power deficit could emerge in the early 2030s. With hydropower expansion limited and onshore wind facing public resistance, offshore wind is viewed as the main scalable option.

- **Green industrial development**
Renewable and reliable electricity

has long been a competitive advantage for Norwegian industry, but rising demand is putting it under pressure. Offshore wind can support growth in key sectors, and power availability is now a binding constraint for industrial expansion in parts of Norway.

• New export opportunities

Offshore wind offers major export potential for Norway, but domestic deployment is needed to drive innovation, reduce costs and strengthen supply chains.

Areas identified and environmental considerations

Norwegian authorities have identified multiple suitable offshore wind areas, balancing wind quality with environmental and coexistence considerations.

Impact assessments covering fisheries, biodiversity, maritime traffic and other ocean activities provide a strong basis for responsible development and future licensing rounds. At the same time, they show that environmental constraints and multi-use conflicts will affect timelines and available capacity.

Policy direction: bridging ambition and delivery

The government has committed to

presenting during 2026 a roadmap to the 30 GW ambition. From a DNV perspective, predictability and pace are now the key policy gaps. To enable scale-up, four actions are required:

- **Establish a firm auction schedule**

A predictable pipeline of leasing rounds is needed to sustain developer interest and supply-chain investment.

- Implement effective support mechanisms

This is especially important for floating wind at Utsira Nord, where costs remain above market levels. Early support is needed to unlock later cost reductions.

- **Accelerate grid and system planning**

Offshore wind must be integrated into the wider power system through onshore reinforcements, offshore grid solutions and possible hybrid interconnectors.

- Reduce permitting timelines while maintaining robustness

Norway's environmental processes are a strength, but efficiency gains are needed to align with industrial timelines.

Jobs, supply chain, and export potential

Norway's offshore wind sector is

already creating jobs in engineering, fabrication and maritime services, building on decades of offshore oil and gas experience. The supply chain is especially strong in floating structures, mooring systems, subsea technologies and marine services.

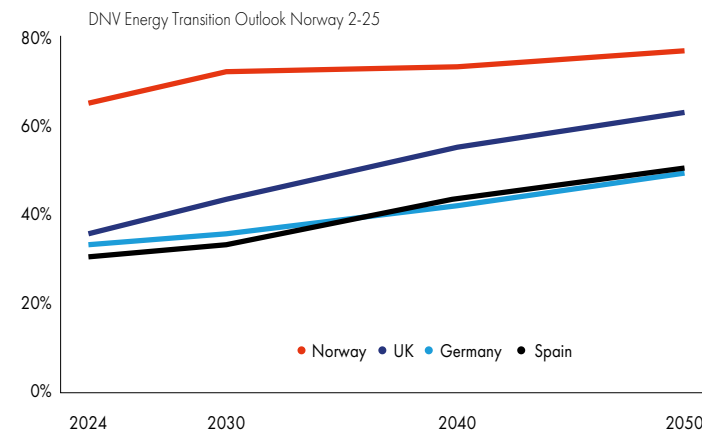
Norwegian companies are increasingly active in offshore wind projects across Europe, Asia and North America, producing significant export revenues. This is a major opportunity, but a strong domestic market is essential to maintain global competitiveness. Without projects at home, industrial capabilities may erode or move abroad.

Offshore wind as a system-critical solution

DNV's ETO Norway 2025 concludes that offshore wind is system-critical. Rising energy demand, limited onshore wind development and finite hydropower expansion make offshore wind instrumental to future capacity additions.

Offshore wind alone will not solve the challenge, but it is an important part of the solution for producing more renewable energy. It must be supported by integrated energy-system planning, including grid expansion, digitalisation and flexibility solutions.

Share of electricity in manufacturing



Delays in offshore wind deployment will have system-wide consequences, including higher power prices, constrained industrial growth, and greater reliance on energy imports.

Combining world-class offshore capabilities with strong wind resources – and a 30 GW target by 2040 – Norway is a potential leader, especially in floating offshore wind. The key question is whether it is capable of moving from pilot projects to industrial scale within this decade.

The next two-to-three years will be critical. A credible project pipeline, timely policy clarity, predictable

financial frameworks and grid solutions will determine whether offshore wind can become a backbone of a modern, electrified Norwegian energy system.

United Kingdom: short-term progress but long-term uncertainty

Provided by Renewable UK

The offshore wind sector in the UK has experienced a year of significant progress, policy innovation and industrial expansion, reinforcing the country's position as a leading market. Against a backdrop of heightened geopolitical uncertainty and renewed focus on energy security,



the government has accelerated efforts to expand offshore wind deployment, strengthen domestic supply chains and reform the electricity system to integrate much larger volumes of renewable generation.

Turning auctions into a success story

A major milestone over the past year was the successful outcome of the UK's seventh Contracts for Difference (CfD) allocation round (AR7), which secured investment in six fixed-

bottom offshore wind farms and two floating offshore wind projects. Together, these projects represent 8.4 GW of new offshore wind capacity – enough to power almost 10 million UK homes annually – and are expected to unlock around GBP22 billion (USD 29.6 billion) of private investment. The auction marked an important recovery following the difficulties experienced in AR5 in 2023, when no offshore wind projects bid due to inflationary pressures and supply chain cost increases. The government

responded by substantially increasing auction budgets, reforming auction parameters and taking steps to provide greater investor confidence.

AR7 was also notable for the introduction of the Clean Industry Bonus (CIB), a new supply chain incentive designed to strengthen domestic industrial participation in offshore wind projects. The scheme rewards developers that commit to investing in UK manufacturing facilities, ports, skills and supply

chain capacity, reflecting a growing belief within government that offshore wind deployment must be accompanied by broader industrial development and economic value creation if the sector is to maintain strong political and public support over the long term.

Initially launched with an indicative budget of around GBP 200 million (USD 268.8 million), the funding available subsequently increased to over GBP 544 million (USD 731.2 million), following strong industry

demand. Government ambitions are for the scheme to unlock up to GBP 9 billion (USD 12.1 billion) of private investment into UK manufacturing facilities, cleaner supply chains and port infrastructure.

The UK has also continued to make progress in floating offshore wind, with the AR7 auction securing two commercial-scale floating projects. Alongside the leasing developments in the Celtic Sea, this has reinforced the UK's position as one of the leading global markets for floating wind deployment and innovation. Floating wind is increasingly viewed by the government as both an energy security necessity and an industrial strategy opportunity, particularly for coastal regions with existing offshore engineering and oil and gas capabilities, such as Aberdeenshire in Scotland.

How the Crown Estate's role aligns with government ambitions

The Crown Estate has played a central role in advancing the UK offshore wind pipeline over the past year. Most significantly, it continued progress toward the first commercial-scale floating wind leasing round in the Celtic Sea, which is expected to unlock several gigawatts of new capacity and support the emergence of a new

industrial cluster in South Wales and southwest England.

The Crown Estate has also progressed its Capacity Increase Programme, enabling existing offshore wind sites to increase generation capacity using more powerful turbines and improved project designs without requiring entirely new leasing processes. More broadly, leasing reforms and seabed management initiatives are increasingly being aligned with the government's Clean Power 2030 ambitions.

Supply chain growth and industrial investment have accelerated considerably over the past year, supported by stronger co-ordination between government, industry and public investment institutions. These build on the funding pots and supportive policy frameworks outlined in the government's Industrial Strategy and Clean Energy Industries Sector Plan, which both marked a significant shift towards a more interventionist industrial policy approach, with offshore wind positioned at the centre of efforts to expand domestic manufacturing capability and attract international investment. Vestas' publicly stated intention to build a new nacelle facility in Scotland, valued at more

than EUR 250 million (USD 290.5 million) and expected to create up to 500 direct skilled jobs, is considered the most significant development of the year, though it formed part of a broader wave of investment across UK ports, turbine servicing facilities, cables, fabrication and component manufacturing.

Great British Energy, the new state-owned clean energy investment body, has begun working alongside the Crown Estate, the National Wealth Fund and industry as part of a more co-ordinated industrial strategy to strengthen the UK offshore wind supply chain and manufacturing base. It has announced an initial GBP 300 million (USD 403.1 million) Offshore Wind and Networks Supply Chain Fund to support UK manufacturing facilities producing strategically important components such as blades, towers, monopiles, cables, substations and floating wind systems, as part of a wider GBP 1 billion (USD 1.3 billion) commitment to clean energy supply chains during this parliamentary term.

In parallel, the Crown Estate announced plans to invest up to GBP 400 million (USD 537.5 million) into offshore wind supply chain



infrastructure, including ports, manufacturing facilities and enabling infrastructure, reflecting its increasingly active role in industrial development alongside seabed leasing. The National Wealth Fund has continued to support offshore wind-related infrastructure and port investment, helping to crowd in private capital into strategically important industrial projects.

Together, these interventions are supporting upgrades to ports, manufacturing facilities and supply chain capability intended to enable significantly larger volumes of offshore wind deployment over the coming decade, while increasing the proportion of economic value captured domestically within the UK.

Focus on integration, market reform and system flexibility

The government has increasingly recognised that offshore wind is no longer a marginal technology, but a central pillar of the national electricity system. Offshore wind now regularly provides around 20-30% of UK electricity generation. As a result, policymakers are focused on how to integrate very large volumes of offshore wind more efficiently into the electricity system.

Electricity market reform, network

planning and system flexibility are in the spotlight. The government and National Energy System Operator (NESO) are developing proposals around market reform to improve locational signals, reduce constraint costs and ensure the system is better optimised for high-renewables operation. There has also been growing momentum behind the development of multi-purpose interconnectors (MPIs), which combine offshore wind connections and international electricity interconnection infrastructure, improving network efficiency and reducing seabed disruption.

Several important measures have been introduced to accelerate offshore wind deployment. In planning and consenting, reforms have focused on reducing delays while maintaining environmental protections. The establishment of the Marine Recovery Fund is intended to streamline compensation processes for environmental impacts and reduce consenting uncertainty for developers. In parallel, reforms to judicial review processes have sought to limit the ability for repeated legal challenges to delay nationally significant infrastructure projects. These changes reflect increasing political recognition that

consenting timelines have become a major constraint on deployment.

Overcoming the barriers to growth

Despite this progress, significant barriers to growth remain. Skills shortages continue to affect the sector across engineering, construction, marine operations and grid infrastructure. Supply chain constraints – a challenge globally – are particularly significant for vessels, cables, substations and certain turbine components. Delays in permitting continue to affect deployment, often driven by chronic understaffing, inconsistent decision-making and increasingly risk-averse institutional cultures within statutory bodies and regulators.

Grid infrastructure and delayed connection timelines are among the most significant challenges, with many projects facing connection dates extending well into the 2030s, threatening deployment schedules and investor confidence. While reforms to the connections process are underway, substantial transmission investment and regulatory reform will be required to align network delivery with offshore wind ambitions.

Finally, while the UK has established ambitious targets for offshore wind deployment to 2030, there remains less clarity around the post-2030 pathway. Political fragmentation, uncertainty around future market arrangements and widely differing projections for electricity demand growth – particularly linked to hydrogen, electrification and data centre expansion – are creating uncertainty about the scale and pace of offshore wind deployment required beyond the current decade. Maintaining investor confidence will require greater long-term policy clarity, stable market frameworks and continued strategic co-ordination between government and industry.

Türkiye: turning natural, industrial and political assets into opportunities

Türkiye has built a strong foundation in onshore wind and renewable manufacturing over the past two decades, but has no installed offshore wind capacity. It aims to reach 5 GW of offshore wind capacity by 2035 as part of a USD 80 billion renewable energy investment programme.^{52, 53}

This ambition is driven by several factors:



- Potential offshore wind sites are located near high-demand centers along the country's west coast, which will provide large-scale domestic sources of renewable energy.
- Electricity demand is growing fast, potentially by more than 50% by 2030,⁵⁴ and the country already imports around 70% of its energy.⁵⁵
- Türkiye aims to strengthen domestic manufacturing and position itself as a regional clean energy supply chain hub.

In this context, offshore wind represents an industrial and economic opportunity, as well as an energy necessity.

Offshore wind roadmap

In November 2024, the World Bank,

in collaboration with the Ministry of Energy and Natural Resources, launched Türkiye's Offshore Wind Roadmap, which sets out a pathway for the country to establish a domestic offshore wind industry with up to 7GW⁵⁶ of offshore wind by 2040. The roadmap identifies an estimated technical offshore wind potential of approximately 75 GW, including 12 GW of fixed-bottom offshore wind potential and 63 GW of floating offshore wind.

The report highlights the country's strategic position as a potential regional clean energy and manufacturing hub. It also provides a set of policy, financing and supply chain recommendations aimed at de-risking projects and attracting investment in offshore wind.⁵⁷

In line with the recommendations set by the offshore roadmap, the government is laying the groundwork for market creation through the Renewable Energy Resource Area (YEKA) model. Türkiye plans to launch its first offshore wind YEKA tender in 2026, with four sites identified for potential development: Saros Bay, Gokceada, Bozcaada and Edremit, with plans to tender approximately 1.5 GW of wind projects annually.⁵⁸

This approach is essential for

investor confidence. Offshore wind requires large upfront investments in project development, grid infrastructure, ports and supply chains. Developers and manufacturers therefore need long-term visibility regarding future project opportunities, which will be available through the YEKA model.⁵⁹

Manufacturing industry as an economic advantage

Türkiye enters the offshore wind sector with the important advantage of an already established wind

52. <https://renewablesnow.com/news/turkey-plans-first-offshore-wind-tender-targets-5-gw-by-2035-1294699/>

53. <https://www.agbi.com/analysis/renewable-energy/2025/08/turkey-focuses-on-offshore-for-wind-energy-evolution/>

54. Turkey outlines renewable power plans to 2035 | S&P Global

55. <https://www.sciencedirect.com/science/article/pii/S0973082625000948>

56. The roadmap sets out a low-growth scenario with 3.5GW of installed offshore wind capacity and a high-growth scenario with an installed capacity of 7GW of installed offshore wind capacity by 2040

57. The full list of 21 recommendations can be found in the full report <https://documents1.worldbank.org/curated/en/099110624015521050/pdf/P173157076eef0da088c406c666981195b.pdf>

58. <https://globalenergynetwork.net/news-item/turkiye-targets-first-offshore-wind-tender-as-2026-set-to-be-year-of-wind/>

manufacturing base. The country has developed substantial industrial capabilities through years of onshore wind deployment and localisation policies, supported by local content bonuses on feed-in tariff rates capable of increasing wind tariffs by up to 50% if locally manufactured components are used.⁶⁰ Localisation rates currently exceed 60% for wind turbine components.

beyond electricity generation itself. Offshore wind can stimulate investment across manufacturing, logistics, engineering, port infrastructure, maritime services and workforce development. According to Türkiye's Offshore Wind Roadmap, the sector could create between 32,000 and 110,000 full-time equivalent jobs under low-growth (3.5 GW) and high-growth (7 GW) scenarios,

onshore wind farms, and require coordinated planning across multiple sectors and government institutions. In addition, permitting, marine spatial planning, environmental approvals and grid connection processes all require more coordination.

with USD 45–50/MWh for onshore wind.⁶⁵ Transparent auction mechanisms, predictable procurement schedules and stable regulatory frameworks will therefore be essential to ensure the clarity and certainty required to attract international developers and financiers. Given the scale of investment required, Türkiye will also likely depend heavily on international financing capital, making investor confidence particularly important.

Transparent auction mechanisms, predictable procurement schedules and stable regulatory frameworks will be essential to ensure the clarity and certainty required to attract international developers and financiers.

In addition, the country's strong steel, heavy manufacturing, ports and maritime industries can support the development of the offshore wind sector, specifically for offshore foundations, towers and floating wind structures. These capabilities could help Türkiye develop a competitive domestic offshore wind supply chain, and position the country as a regional manufacturing hub serving European and Asian markets.

These benefits would extend

respectively. Economic contributions could range between USD 4 billion and USD 16 billion depending on deployment levels.⁶¹

Challenges and recommendations

Technical: The majority of Türkiye's offshore wind potential lies in deep water (>50 meters),⁶² which would require floating offshore turbines that are more costly and technically challenging. Offshore wind projects are considerably more complex than

Interconnection: Large-scale offshore wind deployment will require significant investment in transmission systems, substations and grid modernisation. Planning these investments must begin early to avoid future bottlenecks. Identifying this as a key challenge, the Turkish government is now considering a USD 30 billion investment in national electricity transmission infrastructure through 2035.^{63, 64}

Finance: Offshore wind projects are capital-intensive and depend heavily on long-term policy stability and investor confidence. It is expected that the LCOE for the first offshore wind farms in Türkiye will be USD 94–117/MWh, compared

Recipe for long-term success

Türkiye's offshore wind market remains in its early stages but the country has many of the ingredients necessary for long-term success: strong natural resources, industrial capabilities, strategic geography and political commitment. The next few years will be decisive in determining whether the country can successfully transition to a competitive offshore wind industry capable of supporting energy security, economic growth and regional clean energy leadership.

59. <https://www.plusglobal.com.tr/en/yeka-renewable-energy-incentives-turkey>

60. Renewables Now, Turkey Plans First Offshore Wind Tender, Targets 5 GW by 2035, May 2026 — <https://renewablesnow.com/news/turkey-plans-first-offshore-wind-tender-targets-5-gw-by-2035-1294699/>

61. World Bank / ESMAP / IFC, Offshore Wind Roadmap for Türkiye, February 2025 — <https://documents1.worldbank.org/curated/en/099110624015521050/pdf/P173157076eeaf0da088c406c666981195b.pdf>

62. World Bank / ESMAP / IFC, Offshore Wind Roadmap for Türkiye, February 2025

63, 64. Türkiye Today, Türkiye Plans \$30B Energy Infrastructure Investment by 2035, July 2025 — <https://www.turkiyetoday.com/business/turkiye-plans-30b-energy-infrastructure-investment-by-2035-3204084>

65. World Bank / ESMAP / IFC, Offshore Wind Roadmap for Türkiye, February 2025

A wide-angle photograph of an offshore wind farm at sunset. The sky is a mix of deep blue and bright orange, with scattered white and grey clouds. The sun is low on the horizon, creating a strong glow and long shadows. Numerous wind turbines are visible, stretching across the horizon. The water in the foreground is dark blue with small waves.

MARKET OUTLOOK 2026-2035

Offshore strength despite recalibration

As with other infrastructure sectors and energy sources, offshore wind has been dealing with the long tail of the war in Ukraine – and associated macroeconomic factors – raising

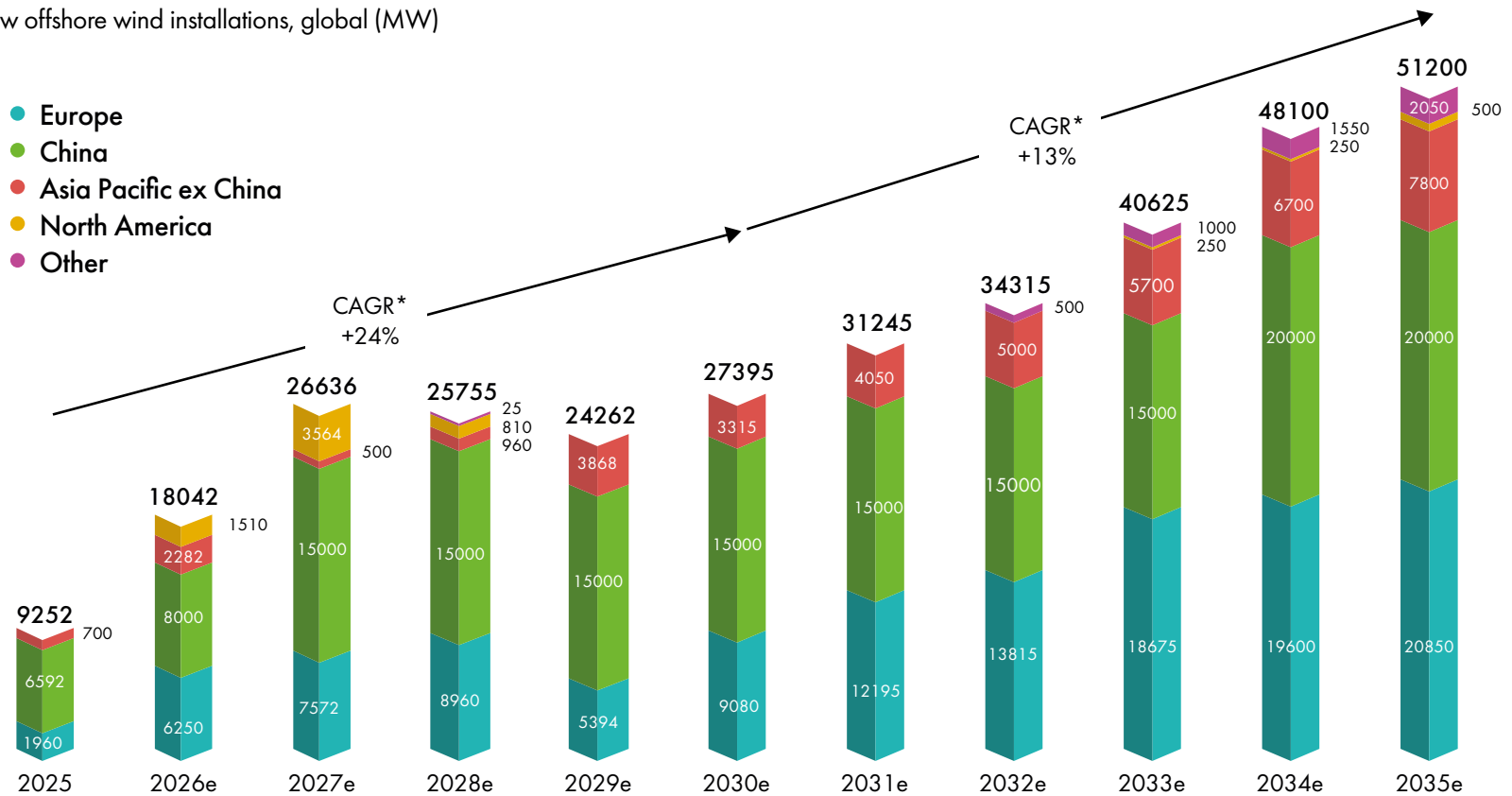
interest rates and the cost of capital. Despite governments setting strong targets, the credible pipeline of development has been inconsistent and uncertain, resulting in a lack of

effective investment signals. Longstanding issues such as slow permitting, poor auction design in mature markets, alongside increasing policy instability and

radical offshore wind policies in markets like the US, have compounded this effect and led the industry to an inflection point.

The offshore wind sector is still recalibrating due to those headwinds. However, this is an

New offshore wind installations, global (MW)



* Compound Annual Growth Rate.
Source: GWEC Market Intelligence, June 2025

adjustment rather than a retreat, as market fundamentals remain strong. Facing failed tenders and project cancellations, last year policymakers started responding to market conditions by implementing targeted solutions to support the sector.

In the light of the ongoing energy crisis, the case for offshore wind has never been stronger. Diversifying energy systems is no longer just a climate objective; it is a fundamental pillar of national energy security. Recent acceleration plans announced by the EU, the UK, Türkiye, China, the Philippines, South Korea and Japan demonstrate that there is no time to waste in the pursuit of energy resilience and to strengthen energy sovereignty.

Confronting the obstacles to success requires supportive intervention to revive the industry. Governments and industry must work together to recalibrate and urgently evolve policy that supports growth. As the sector goes through a period of recalibration, global offshore wind capacity is expected to grow, especially from the second half of the forecast period. With a compound average annual growth rate of 24% until 2030 and 13% up to 2035, global offshore wind annual capacity additions are expected to

sail past the milestones of 30 GW in the early 2030s and 50 GW by 2035.

GWEC Market Intelligence expects more than 328 GW of new offshore wind capacity to be added over the next decade (2026–2035), bringing total offshore wind capacity to 420 GW by the end of 2035. However, only 37% of this projected new volume will be added in 2026–2030, the first half of the forecast period.

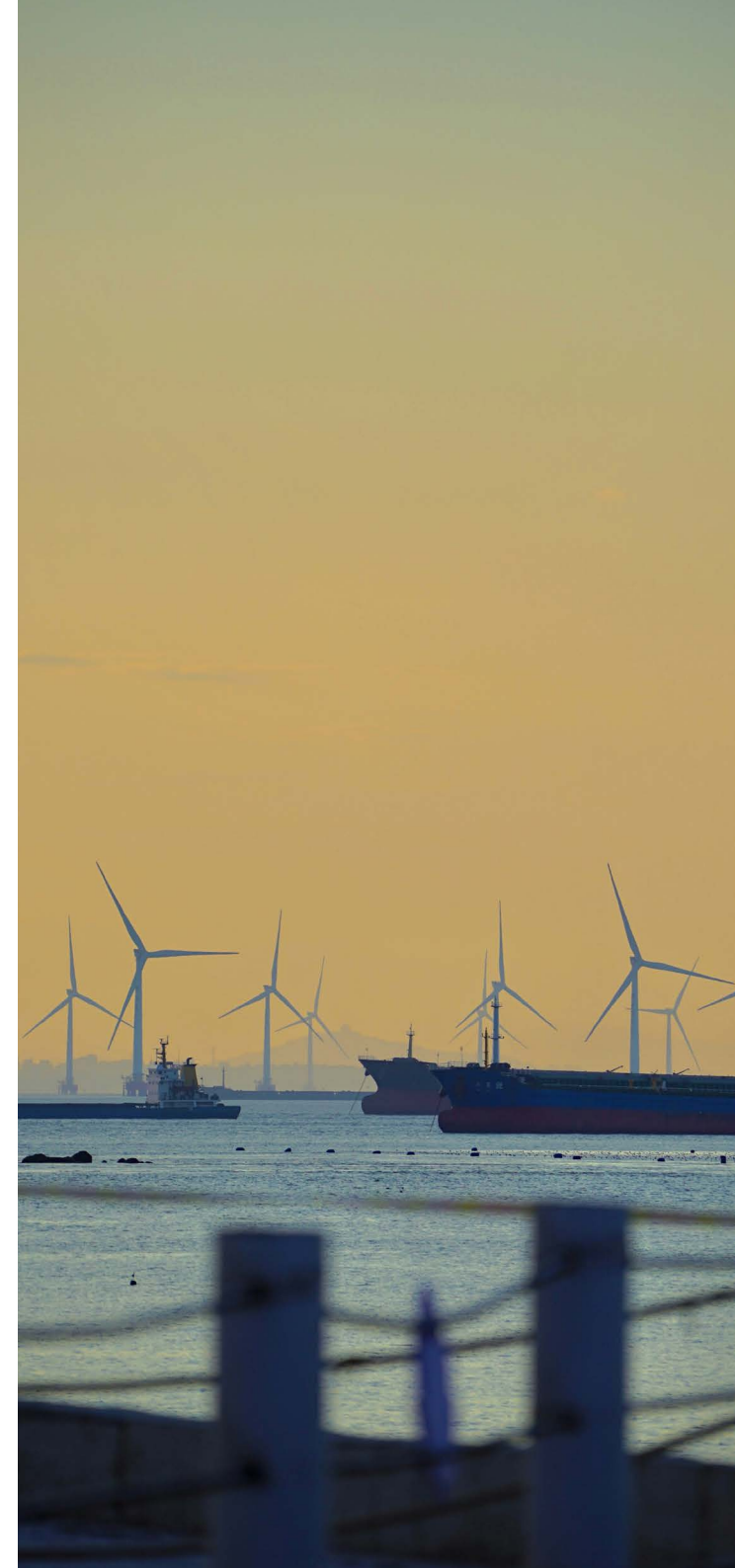
Annual offshore wind installations are expected to double in 2026 and then triple in 2030 from 9 GW in 2025. By 2035, they are expected to reach 50 GW, bringing the offshore share of new wind power installations from today's 6% to about 20%.

Driven by strong growth in China, the APAC region overtook Europe as the world's largest regional offshore wind market in 2020 for new installations, and in 2022 for cumulative capacity. With Chinese offshore wind deployment bouncing back in 2025 as part of Beijing's high-quality marine economy development plan, alongside burgeoning markets in Vietnam, the Philippines and Australia, APAC is expected to retain its leading position over the next decade. The region is projected to account for 59% of global offshore wind

additions between 2026 and 2035.

Meanwhile, since Russia's invasion of Ukraine, the EU's energy policy has been driven by the dual objectives of achieving energy security and meeting climate targets. Recent tensions in the Middle East involving Iran, the US, and Israel, and the subsequent disruptions in the Strait of Hormuz, have made homegrown electricity even more critical. As a result, offshore wind has become one of the cornerstones of Europe's strategy to strengthen energy sovereignty and competitiveness. While we have slightly downgraded Europe's near-term outlook (2026–2030) compared with last year's forecast, and no longer expect annual installations to surpass the 10 GW milestone before 2030, robust growth is anticipated for 2031–2035, with annual additions projected to average 17 GW.

In the US, offshore wind has no future under the current administration. Following the Presidential Executive Order to temporarily withdraw all offshore wind energy leasing within the Offshore Continental Shelf (OCS), the Bureau of Ocean Energy Management (BOEM) cancelled all the wind energy areas that it had designated on the Outer Continental Shelf since 2014. In 2025, the US





federal government halted construction activities at five projects over security concerns. Assuming all the five offshore wind projects that were under construction by the end of 2025 are commissioned, 5.9 GW of offshore wind capacity will be added in 2026–2028. Considering the long lead time for offshore wind projects and the shattered investment confidence in the US offshore wind sector, it is hard to believe that new utility-scale offshore wind capacity will be added shortly after 2028 – even if the Democrats win the next election. Nevertheless, North America will remain the third-largest offshore wind market by 2035,

followed by Latin America.

China and Europe made up 94% of the world's total offshore wind installations by the end of 2025. Although it is very likely that the two markets will continue to dominate offshore wind growth going forward, their global market share in cumulative installations is expected to drop to 90% in 2030 and 86% in 2035, primarily because of growth in markets in other APAC countries and North America.

Thanks to Brazil enacting an offshore wind law and setting guidelines for the regulation of offshore wind development, and Colombia awarding

the first offshore wind site through a seabed area tender last December, Latin America is likely to see its first utility scale offshore wind project come online in the early 2030s.

No offshore wind installations are expected in Africa or the Middle East during the forecast period, as in our previous forecast.

Our near-term offshore wind market outlook (2026–2030), built using a bottom-up approach, is based on GWEC Market Intelligence's global offshore wind project database, which covers projects currently under construction, global auction results

and announced offshore wind tenders worldwide. For the medium-term market outlook (2031–2035), a top-down approach was used alongside existing project pipelines. This takes into account existing policies and medium/long-term national and regional offshore wind targets. There is currently an implementation gap between declared targets and the rate of annual installations. The areas of permitting, finance, supply chains, grids and electrification will be crucial for forecast growth to materialise, to propel offshore wind power development into a new phase of even faster growth, and to make it a pillar of energy security.

Europe

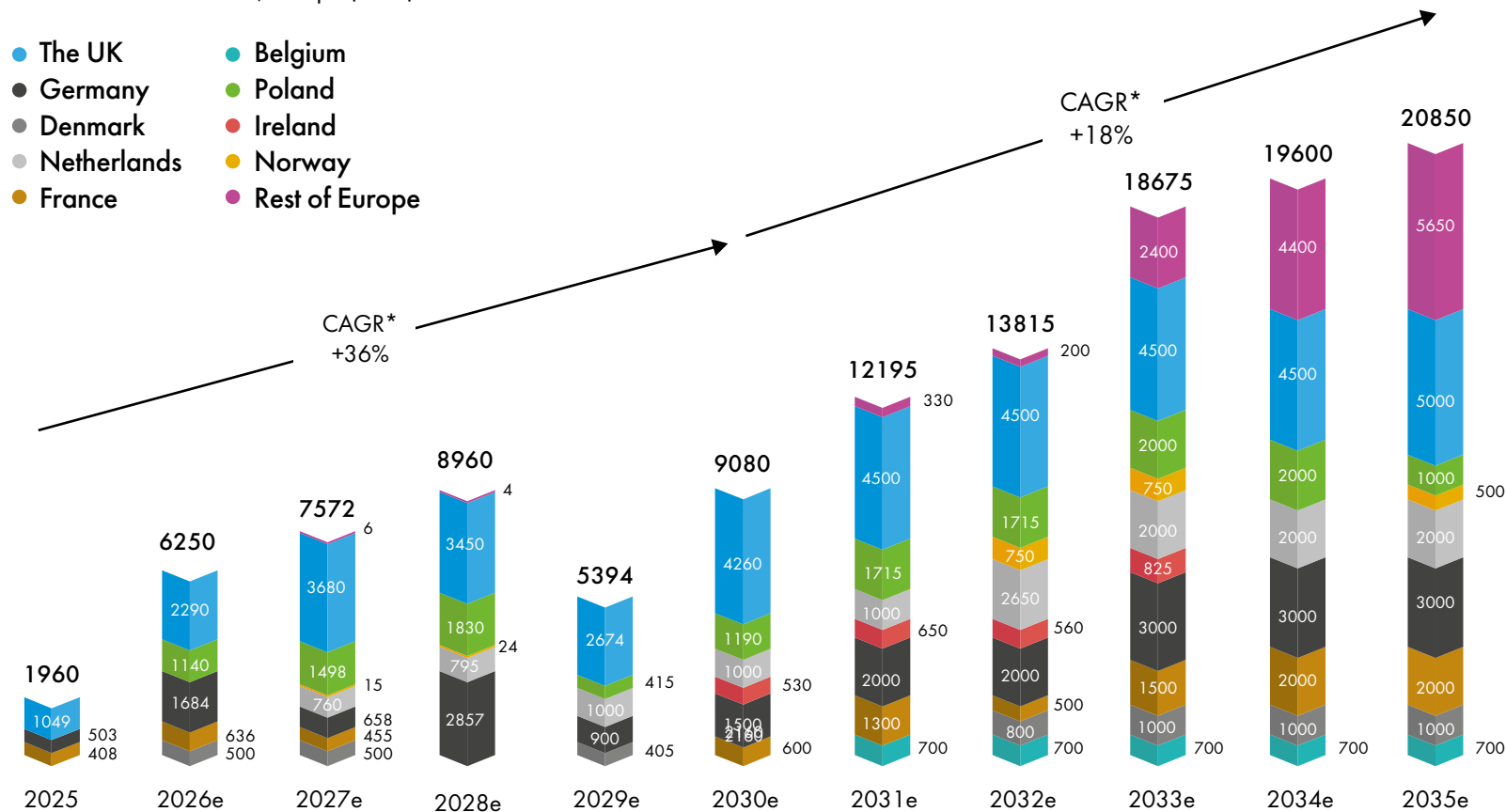
Europe built the world's first fixed-bottom and MW-scale floating offshore wind projects in Denmark

(1991) and Norway (2009), becoming the birthplace of the offshore wind industry. After more than three decades of development, fixed-bottom offshore wind technology has matured, supply

chains and infrastructure have become well-established in countries neighbouring the North and Baltic Seas, and hundreds of thousands of jobs are being created in this region. Although Europe has

lost its capacity leadership to APAC, it remains the world's largest market for floating wind and the primary technology hub for innovation, including on floating foundations. Additionally, the region is home to

New offshore wind installations, Europe (MW)



*Compound Annual Growth Rate. Source: GWEC Market Intelligence, June 2025



the world's two offshore wind turbine technology pioneers, Siemens Gamesa and Vestas, which collectively accounted for 43.8% of global cumulative offshore wind installations by the end of 2025.

Following auction failures in Denmark and the UK as developers struggled with commercial viability, GWEC had downgraded Europe's 2025–2029 offshore wind outlook by 30% last summer compared with the previous year's forecast. Despite continued tender failures and postponed commissioning dates over the past year in markets such as the Netherlands, Germany, Belgium, Denmark and France, we have only slightly downgraded our near-term European outlook (2026–2030) in this year's global report, as the

Europe's offshore wind targets

Unit: GW	2030	2035	2040	2045	2050
EU Wind Power Package	111				317
UK	50*				
Germany	30	≥40		≥70	
Netherlands	21 (by 2032)		30-40		70
Denmark	12.9				
Belgium	5.7		8		
France		15 (18 by 2037)	6 (floating) **		45
Poland	5.9		18		
Norway			30		
Ireland	7***		20		37
Spain	3				
Greece	2				
Portugal	2				
Türkiye		5			

*Including 5 GW of floating wind

**nearly 6 GW by 2040 according to the Ministry of Economy, Finance and Industrial and Digital Sovereignty

*** Including 2GW of floating wind

Source: GWEC Market Intelligence, June 2026

fallout primarily impacts installations after 2030.

At present, the European offshore sector is still recalibrating due to macroeconomic headwinds and delays in permitting and grid connections. However, GWEC Market Intelligence retains a double-digit growth rate projection for Europe over the next decade, expecting annual installations to exceed the 10 GW milestone by 2031. Annual additions could reach 20 GW by 2035, though this remains contingent on timely investments in the supply chain and key enablers like installation vessels, port infrastructure and grid transmission. Currently, the European supply chain for offshore wind nacelles sits at around 10 GW per annum – enough to support projected growth through 2030. Without upfront investment, however, supply bottlenecks are expected to emerge in the early 2030s.

In total, 122 GW of offshore wind capacity is expected to be fed into the grid over the next 10 years (2026–2035). Approximately 30% will be built in the first half of the forecast period (2026–2030), with the remainder installed between 2031 and 2035. Of this 122 GW total, nearly one-third (39 GW) is likely to

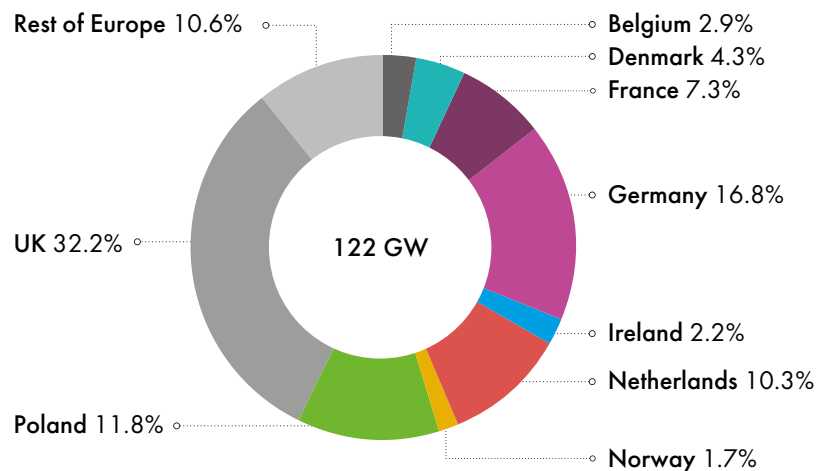
be installed in the UK, followed by Germany (21 GW), Poland (15 GW), the Netherlands (13 GW), France (9 GW) and Denmark (5 GW).

Beyond the GWEC Market Intelligence project pipeline, the following considerations underpin our ten-year growth projection for Europe:

- **Energy security acceleration:** Europe is accelerating renewable energy deployment to achieve energy security in the wake of Russia's invasion of Ukraine, with REPowerEU serving as the EU's core energy security strategy.
 - **Elevated targets:** A Communication to deliver on the EU's offshore renewable energy ambitions under the Wind Power Package has raised the 2030 target to 111 GW (up from the 60 GW set out in the 2020 strategy) and to around 317 GW for 2050 (up from the 300 GW net-zero commitment under the EU Green Deal).
 - **Clean industrial deal:** Passed in early 2025, this initiative outlines concrete actions to transform decarbonisation into a growth driver for Europe's clean energy industries.
 - **European grids package:** Published in December 2025, this package aims to speed up permitting for grids, renewables and energy storage while ensuring public acceptance. It also mandates two-way Contracts for Difference (CfDs), establishing the industry's preferred procurement model across the EU.
- **The Hamburg Declaration:** Signed by energy ministers from nine North Sea countries on 26 January 2026, this agreement confirms the joint ambition to reach 300 GW of offshore wind by 2050, including 100 GW of cross-border capacity. Governments agreed to deploy 15 GW per year from 2031 to 2040 through CfDs, signaling a new era of risk-sharing, and to step up cooperation on offshore renewable hydrogen.
 - **AccelerateEU Strategy:** Unveiled in April 2026 by the European Commission, it identifies offshore wind repowering as a vital measure to strengthen energy security and reduce reliance on fossil fuel imports.
 - **Madrid Call to Action:** Building on last year's 'Copenhagen Call to Action', this WindEurope initiative sets out 10 recommendations to boost electricity supply, link it to demand, and empower consumers.
 - **UK Energy Independence Bill:** The UK government has committed to new legislation to cut costs and boost energy security in response to the Middle East crisis.



Total added between 2026 and 2035 in Europe



Source: GWEC Market Intelligence, June 2025

● **Technology competitiveness:** Fixed-bottom offshore wind has become the most competitive electricity generation technology after onshore wind and solar PV. In addition, the commercialisation of floating wind and power-to-X solutions will unlock the sector's full potential to support the global energy transition.

The UK

As the largest offshore wind market in Europe, the UK currently has more than 10 GW of offshore wind capacity across seven projects under

construction, alongside a pipeline of more than 90 GW of fixed-bottom and floating wind projects at various stages of development.

Prior to the seventh Contracts for Difference (CfD) Allocation Round (AR7), the UK government increased the strike price ceiling from GBP 102/MWh (USD 137/MWh) to GBP 113/MWh (USD 152/MWh) for fixed-bottom offshore wind, and from GBP 245/MWh (USD 329/MWh) to GBP 271/MWh (USD 364/MWh) for floating offshore wind to improve project viability amid rising costs.

In July 2025, the UK government approved CfD reforms, including the extension of contract lengths from 15 to 20 years, for both technologies. In addition, eligibility requirements for fixed-bottom projects were eased, allowing developers to apply for a CfD while still awaiting full planning consent. These adjustments culminated in the AR7 award of 8.4 GW of new offshore wind capacity in February 2026 – the largest offshore wind auction round in history. In response to the ongoing Middle East conflict, the UK government is expected to announce the next round, CfD AR8, in July 2026.

In relation to seabed leasing, the Crown Estate boosted the Celtic Sea floating wind leasing round (Round 5) from 4 GW to 4.5 GW in October 2023. In 2025, Equinor, Gwynt Glas (EDF Renewables and ESB) and Ocean Winds were selected as preferred bidders for the three 1.5 GW project sites, completing the full leasing capacity allocation in the Celtic Sea.

The UK government intends to unlock space for up to an additional 12 GW of capacity in the region. It introduced a bill last July to establish Great British Energy, a publicly owned clean energy company that will operate in partnership with the

Crown Estate to deliver up to 30 GW in new offshore wind seabed leases by 2030. More recently, in March 2026, the Crown Estate announced plans to launch a new offshore wind leasing round in the first half of 2027, which could yield approximately 6 GW of additional capacity.

To achieve the country's 50 GW offshore wind target by 2030, the UK's Electricity System Operator (ESO) proposed a GBP 58 billion (USD 78 billion) grid investment plan in 2024, aiming to incorporate an additional 21 GW of offshore wind into the grid by 2035 – potentially bringing the country's total offshore wind capacity to 86 GW. To further lower production costs for manufacturers and encourage localised investment, the UK government removed offshore wind energy tariffs in March 2026. GWEC Market Intelligence expects the UK to retain its leading position in offshore wind, with total installed capacity projected to reach 33 GW by 2030 and 56 GW by 2035.

Germany

Germany is Europe's second-largest offshore wind market, with legally binding targets of at least 30 GW by 2030, 40 GW by 2035 and 70 GW by 2045. By the end of 2025, Germany's cumulative offshore wind capacity



had reached approximately 9.5 GW. As of Q1 2026, around 2.5 GW across four projects were under construction, with more than 35 GW under development.

The country was Europe's market leader for annual awarded offshore wind capacity in 2023 and 2024, with 8.8 GW and 8 GW respectively. Momentum stalled last year: although 1 GW of offshore wind capacity was awarded for the N-9.4 area through negative bidding in June 2025, no bids were submitted in the August 2025 auction round for

2.5 GW of offshore wind sites.

Rising project costs, grid connection delays and concerns over Germany's negative bidding auction model have put pressure on the commercial viability of these developments. As a result, Germany cancelled its remaining offshore wind auctions for the year. The government is discussing reforms to the offshore wind support framework, including the potential adoption of a CfD mechanism, and has postponed auctions for the N-10.1 and N-10.2 sites to 2027 to

allow for improvements to the future auction design and overall investment framework.

Despite near-term market challenges that may trigger the cancellation of projects already awarded in 2023-2025 under the previous negative-bidding model, GWEC Market Intelligence expects Germany to add more than 21 GW of offshore wind capacity between 2026 and 2035. This outlook is underpinned by Germany signing the Hamburg Declaration in early 2026, as well as the anticipated

reforms to its national offshore wind framework.

Denmark

As a global offshore wind pioneer, Denmark continues to position the sector as a central pillar of its long-term energy transition strategy. Aiming to expand its offshore wind capacity to 12.9 GW by 2030, the country currently has 2.7 GW of in operation and 1 GW under construction.

Following an offshore wind auction failure in 2024 driven by high costs



and uncertain returns, the Danish Energy Agency launched a new tender in November 2025 under a two-sided CfD support scheme, covering at least 2.8 GW across three offshore areas. This revised model is expected to improve project bankability and strengthen developer interest in future deployments. In March 2026, the European Commission approved a EUR 5 billion (USD 5.8 billion) Danish state aid scheme to support the 800 MW Hesselø and 1 GW North Sea I Mid offshore wind projects. In May 2026, the Danish Energy Agency revealed that several parties had submitted bids for these two areas, with winners expected to be announced early next year.

Additionally, Denmark is advancing large-scale, cross-border infrastructure initiatives. At the North Sea Summit in Hamburg, Denmark and Germany reached an agreement on the 3 GW Bornholm Energy Island in the Baltic Sea, establishing a cost-sharing framework to transform offshore wind from a national asset into a shared European resource for electrification. In February 2026, a broad majority in the Danish Parliament entered into a political agreement ensuring that the plans for the Bornholm Energy Island are

realised and ready for delivery by 2034.

Supported by a strong domestic supply chain for wind turbines, Balance of Plant (BoP) components, port infrastructure and specialised vessels, GWEC Market Intelligence expects Denmark to add 5 GW of offshore wind capacity to the grid over the next decade (2026–2035).

Netherlands

The Netherlands is the third-largest offshore wind market in Europe, with 4.9 GW of capacity in operation by the end of 2025 and another two projects totalling 1.5 GW under construction. To support the EU's decarbonisation objectives, the Dutch government increased its 2030 offshore wind target from 11.5 GW to 22.2 GW and, in 2022, announced tendering timelines and locations for nine projects with a combined capacity of up to 13.4 GW. In 2024, 4 GW of capacity across two projects was successfully awarded.

However, due to deteriorating market conditions, rising project costs and supply chain constraints, the Netherlands reduced the scale of its planned 2025 auction programme from 3 GW to 1 GW. Driven by these same economic pressures, the 1 GW Nederwiek I-A offshore wind site

auction in the North Sea failed to attract any bids in October 2025. In response, the Dutch government introduced an Offshore Wind Energy Action Plan, which features temporary financial support measures to de-risk investments and stimulate electricity demand. The government also confirmed that the Netherlands plans to transition to a two-way CfD mechanism for offshore wind projects starting in 2027.

Since announcing its targets of 50 GW by 2040 and 70 GW by 2050 in September 2023, the Dutch Ministry of Economic Affairs and Climate Policy (EZK) has been identifying additional offshore wind areas, with a draft roadmap pending release. However, EZK informed parliament that its 2030 offshore wind target will be delayed to 2032 due to permitting constraints, grid connection lead times and supply chain pressures.

In April 2025, the Dutch government revised its offshore wind roadmap by removing one proposed development zone to accommodate fishing industry concerns. Furthermore, in July 2025, it scaled back its 2040 ambition from 50 GW to a new target range of 30–40 GW, citing slower-than-expected electricity demand growth alongside persistent cost and infrastructure

challenges. Despite these downward revisions, the Netherlands continues to target approximately 70 GW of operational offshore wind capacity in the North Sea by 2050.

Belgium

Although no new offshore wind capacity has been commissioned since the 487 MW Seamade and 219 MW Northwester 2 projects came online in 2020, Belgium remains Europe's fifth-largest offshore wind market, with 2.3 GW of capacity in operation.

In October 2021, the government increased the capacity to be tendered in the Princess Elisabeth offshore wind zone from 2.25 GW to 3.5 GW and approved a plan to connect the zone's future wind farms to an artificial energy island.

Following an EU grant in December 2022 and an environmental permit in October 2023, the Belgian transmission system operator (TSO), Elia, began foundation work on the world's first artificial energy island in April 2024, with construction scheduled to continue through 2027.

While the tender for the first 700 MW project (Plot I) launched in late 2024 supported by a EUR 682 million (USD 794 million) EU-approved state aid programme, the initiative hit

roadblocks in 2025. In February 2025, Elia temporarily paused the high-voltage direct current (HVDC) portion of the Princess Elisabeth Island project due to surging infrastructure prices, triggering an estimated three-year delay for that specific component. Subsequently, in July 2025, the Belgian government halted the ongoing 700 MW Plot I tender entirely to address legal and regulatory framework uncertainties. A new tender is planned for this year.

Given these combined infrastructure and regulatory delays, GWEC Market Intelligence expects Belgium to bring the Princess Elisabeth offshore wind zone online during the second half of the 2026–2035 forecast period.

France

By the end of 2025, France had 1.9 GW of operational offshore wind capacity and another 1.5 GW across five projects under construction, two of which, at 30 MW each, are demonstration floating wind projects.

Under its 2020 PPE (Programmations pluriannuelles de l'énergie) multiannual energy programme, France committed to tendering 8.75 GW of offshore wind capacity by 2028. Following a subsequent

government consultation on accelerating offshore wind development, the Energy Regulatory Commission (CRE) recommended launching a 10 GW mega-auction before 2027.

In September 2025, France announced the results of its 1.5 GW Centre Manche 2 (AO8) offshore wind tender, its largest to date. Meanwhile, the 1 GW Sud Atlantique-Oléron Island (AO7) offshore auction failed to attract any bids, as developers cited persistent timeline constraints, pricing pressures and intense global competition for capital.

On 14 February 2026, the French government adjusted its offshore wind targets within the PPE3 framework, which outlines the country's energy strategy for the 2026–2035 period. The PPE3 revision extended the timeline for the previous 18 GW target from 2035 to 2037, establishing a revised target of 15 GW to be installed by 2035 instead. To align with this new strategy, France announced plans in April 2026 to bundle the AO9 and AO10 tenders into a single massive auction round totalling approximately 10 GW. This combined tender is expected to launch in the coming months, with

winners selected by late 2026 or early 2027.

Following these structural adjustments, GWEC Market Intelligence forecasts that France will bring 9 GW of offshore wind capacity online between 2026 and 2030, with floating wind accounting for more than one-third of that total.

Poland

While Poland had no operational offshore wind capacity by the end of 2025, approximately 4.5 GW across five projects is under construction.

Poland's baseline framework, the January 2021 act promoting offshore wind in the Baltic Sea, originally targeted 10.9 GW of capacity to be either operational or under development by 2027. Under this first phase, the Energy Regulatory Office (ERO) awarded Contracts for Difference (CfDs) to seven projects totaling 5.9 GW in 2021. Following the adoption of a more ambitious long-term target in April 2023, the government restructured its second-phase auction strategy to implement four distinct competitive rounds – two for 4 GW and two for 2 GW – with the goal of having 18 GW of capacity in development by 2030. As part of this revised roadmap, the ERO held its first 4 GW offshore wind

Market outlook 2026–2035

auction in late 2025, successfully awarding more than 3.4 GW of capacity under a 25-year CfD scheme in December 2025.

Accounting for these auction outcomes and current pipeline progression, GWEC Market Intelligence forecasts that Poland will achieve 6 GW of operational offshore wind capacity by 2030, expanding further to 14 GW by 2035 to secure its position as the fourth-largest offshore wind market in Europe.

Norway

By the end of 2025, Norway had 100.5 MW of operational offshore wind capacity, entirely consisting of floating wind installations, making it the world's largest operational floating offshore wind market.

Over the past three years, Norway has made notable strides in developing commercial-scale offshore wind. The country launched its first commercial, fixed-bottom auction round in March 2023, subsequently awarding the 1.5 GW Sørlige Nordsjø II (Phase 1) project to the Ventyr consortium a year later.

Meanwhile, the allocation process for the Utsira Nord floating wind zone faced initial delays due to

complex state aid and support mechanism discussions surrounding floating wind economics. The selection process concluded in December 2025, when the Ministry of Energy awarded project areas to two consortia: Equinor/Vårgrønn and Harald Hårfagre (Deep Wind Offshore/EDF Renewables).

The selected developers are progressing through a two-year phase of impact assessments before submitting formal licence applications, at which point they will compete for up to NOK 35 billion (USD 3.8 billion) in dedicated state investment support.

Based on these project timelines, GWEC Market Intelligence expects Norway to reach 2 GW of total cumulative offshore wind capacity by 2035, of which 500 MW will be floating wind.

Ireland

Ireland has only 25 MW of operational offshore wind capacity but aims to deploy 5 GW by 2030, alongside an additional 2 GW of floating wind capacity which is currently under development.

Following the issuance of Maritime Area Consents (MACs) in December 2022 for an initial phase of seven

offshore wind projects, Ireland held its first offshore wind auction under the Renewable Electricity Support Scheme (RESS). In May 2023, this inaugural round (ORESS 1) successfully awarded nearly 3.1 GW of combined capacity across four projects.

The consultation process for ORESS 2 opened in the summer of 2023, but the 900 MW ORESS 2.1 auction at the Tonn Nua site – originally scheduled for 2024 – was subsequently postponed and awarded to Ørsted in November 2025.

Ireland's Future Framework for Offshore Renewable Energy (May 2024) outlines a long-term pathway to 20 GW of offshore wind by 2040 and at least 37 GW by 2050. To support this roadmap, the draft South Coast Designated Maritime Area Plan (DMAP) – the country's first spatial plan for marine-based renewable energy – identifies four development zones off the southern coast. Although metocean surveys for four offshore wind zones, including Tonn Nua, were completed in May 2025, Wind Energy Ireland has warned that the country's offshore ambitions are in jeopardy without immediate government action.

Given that a project from the ORESS 1 round has since withdrawn its consent application, and in consideration of wider macroeconomic challenges, GWEC Market Intelligence projects that Ireland will miss its 2030 target and reach only 2.7 GW of offshore wind capacity by 2035.

Portugal

The 25 MW WindFloat Atlantic (WFA) facility is Portugal's only operational offshore wind project to date.

The country's initial 2022 strategy to auction 3–4 GW of floating wind capacity was subsequently upgraded to a more ambitious 10 GW target, though the initial launch was postponed to 2023. Following the release of draft development areas in January 2023, an interministerial working group proposed a phased allocation framework: an initial 3.5 GW across three zones to be offered through near-term competitive procedures, with the remaining capacity allocated in subsequent phases running through 2030.

A call for expressions of interest for the inaugural tender was launched in October 2023, covering the Figueira da Foz (2 GW), Viana do Castelo (1



GW) and Leixões (500 MW) zones. While this exercise generated strong industry momentum, drawing responses from 50 developers across 10 countries, the commercial auction round expected in 2025 did not materialise. Therefore, delay is expected to achieve the country's ambitious floating wind target.

Spain

Spain has 12 MW of operational offshore wind capacity, of which 2 MW is floating. The country is targeting up to 3 GW by 2030 under the government's Roadmap for the Development of Offshore Wind and Marine Energy, published in December 2021.

Although the Spanish Ministry for the Ecological Transition and the Demographic Challenge (MITECO) has opened a public consultation on a draft ministerial order to establish the regulatory foundations for the country's first floating offshore wind tender, it remains highly unlikely that Spain's first commercial floating project will be built before the end of this decade.

Sweden

Sweden has commissioned five offshore wind projects since 1997. Following the decommissioning of the 10.5 MW Utgrunden wind farm in 2018, the country's net installed offshore wind capacity stood at 191

MW at the end of 2025.

After the government established an annual offshore wind generation target of 120 TWh in 2022, the Swedish Energy Agency identified marine areas capable of supporting roughly 30 GW of capacity. However, following strong objections from the Swedish Armed Forces, the government denied permits to 13 pipeline projects in November 2024, removing nearly 32 GW of potential capacity.

To recover this lost momentum, Sweden's Agency for Marine and Water Management submitted a revised maritime spatial proposal to

the government in January 2025, mapping out alternative development zones along the western and northern coasts to support long-term offshore targets.

Finland

With 71 MW of offshore wind capacity in operation, Finland is the ninth-largest offshore wind market in Europe. In December 2021, the Finnish government approved an auction model for leasing public waters managed by Metsähallitus, the state enterprise responsible for land and water management. The leasing of state-owned waters for two commercial-scale projects – Korsnäs and Tahkoluoto, Pori (July 2022) –



preceded a November 2023 decision to launch tendering procedures for five additional offshore wind projects in public waters.

In May 2024, transmission system operator Fingrid Oyj identified five grid connection zones viable for the 2030s. After approving in December 2024 legislation enabling tenders within Finland's Exclusive Economic Zone (EEZ), the government aimed to launch its inaugural offshore wind tender last autumn; however, the process has faced delays and did not conclude on schedule.

Estonia

Estonia has no operational offshore wind capacity to date. Following a November 2023 tender announcement by the Consumer Protection and Technical Regulation Authority (CPTRA), the Liivi 2 offshore wind farm zone was awarded in December 2023, followed by Liivi 1 in January 2024.

After receiving 10 applications for three additional sites in April 2024, the CPTRA awarded the Saare 2.1 and Saare 2.2 areas in June 2024, and the Saare 1 area in January 2025.

Although more than 4 GW of offshore

wind capacity across four projects was successfully awarded through these competitive rounds, GWEC Market Intelligence expects Estonia to build a more modest 1.5 GW of cumulative capacity by 2035, given the country's challenging market and financing conditions.

Lithuania

Lithuania has no operational offshore wind turbines but is positioning the sector as a strategic pillar of its long-term energy independence and decarbonisation strategy. Under its national energy framework, Lithuania plans to develop two offshore wind projects in the Baltic

Sea near Palanga, with a combined capacity of 1.4 GW.

The National Energy Regulatory Council (NERC) launched the country's first offshore wind auction in March 2023, announcing the winner of the 700 MW project in October 2023, with commissioning originally scheduled for 2030. However, the project's commercial operation date (COD) has since faced delays due to a lack of visibility regarding grid connections and the finalisation of the offtake agreement.

NERC's second tender in January



2024, for an additional 700 MW project, received only a single bid and was subsequently discontinued. Following the approval of updated auction conditions, this second tender was relaunched on 9 June 2025, with bids accepted through September 8. However, in October 2025, the offshore tender was cancelled due to limited developer interest and weak market competition.

Greece

Greece enjoys some of the most promising offshore wind resources in the Mediterranean region, primarily in deep-water areas. Under its revised National Energy and Climate Plan (NECP), the country aims to support around 1.9 GW of initial offshore wind development by 2030, while longer-term policy ambitions target approximately 6 GW of capacity by 2035.

Despite these strong policy ambitions, the market has experienced persistent regulatory delays. Consequently, no commercial offshore wind projects are likely to be built until the second half of the 2026–2035 forecast period.

Romania

No offshore wind capacity has been installed in the Black Sea to date.

Under the Offshore Wind Energy Bill passed in April 2024, Romania plans to bring its first offshore wind project online by 2032. A draft law introduced in July 2023 enables the auctioning of 3 GW of capacity via a CfD support scheme.

With backing from the EU and the World Bank Group, a new offshore wind roadmap released in September 2024 highlights a potential for up to 7 GW of capacity within Romania's Exclusive Economic Zone (EEZ) in the Black Sea.

In May 2025, the Ministry of Energy launched a call for expressions of interest for a comprehensive study to identify suitable development areas in the Black Sea, supporting the eventual rollout of at least 3 GW of capacity by 2035. This initiative marks the first operational step in implementing the country's Offshore Wind Energy Law.

Türkiye

Türkiye possesses substantial offshore wind resource potential. An initial invitation to apply for the development of a 1.2 GW offshore wind project in 2018 was unsuccessful due to insufficient site preparation.

Under its National Energy Plan

(2022), Türkiye is targeting 5 GW of operational capacity by 2035. Furthermore, a World Bank Group offshore wind roadmap, released in collaboration with the Ministry of Energy and Natural Resources (MENR) in November 2024, outlines a technical potential of up to 7 GW by 2040.

At the 15th Turkey Wind Energy Congress (TÜREK 2026), the Minister of Energy and Natural Resources described offshore wind as one of the country's primary strategic energy priorities for the coming decade. The Minister confirmed that four distinct offshore wind development zones – located near Bozcaada, Edremit, Gökçeada and Saros Bay – have been formally identified, with the country's first offshore wind YEKA auction expected to take place once the permitting processes are complete.

Despite improved policy visibility, the Turkish market remains at a pre-commercial stage, facing near-term challenges related to regulatory clarity, grid readiness, financing frameworks and supply chain development. GWEC Market Intelligence expects Türkiye to have at least 1.2 GW of offshore wind capacity in operation by the end of 2035.

Asia Pacific

Japan is a pioneer in offshore wind development in the APAC region,

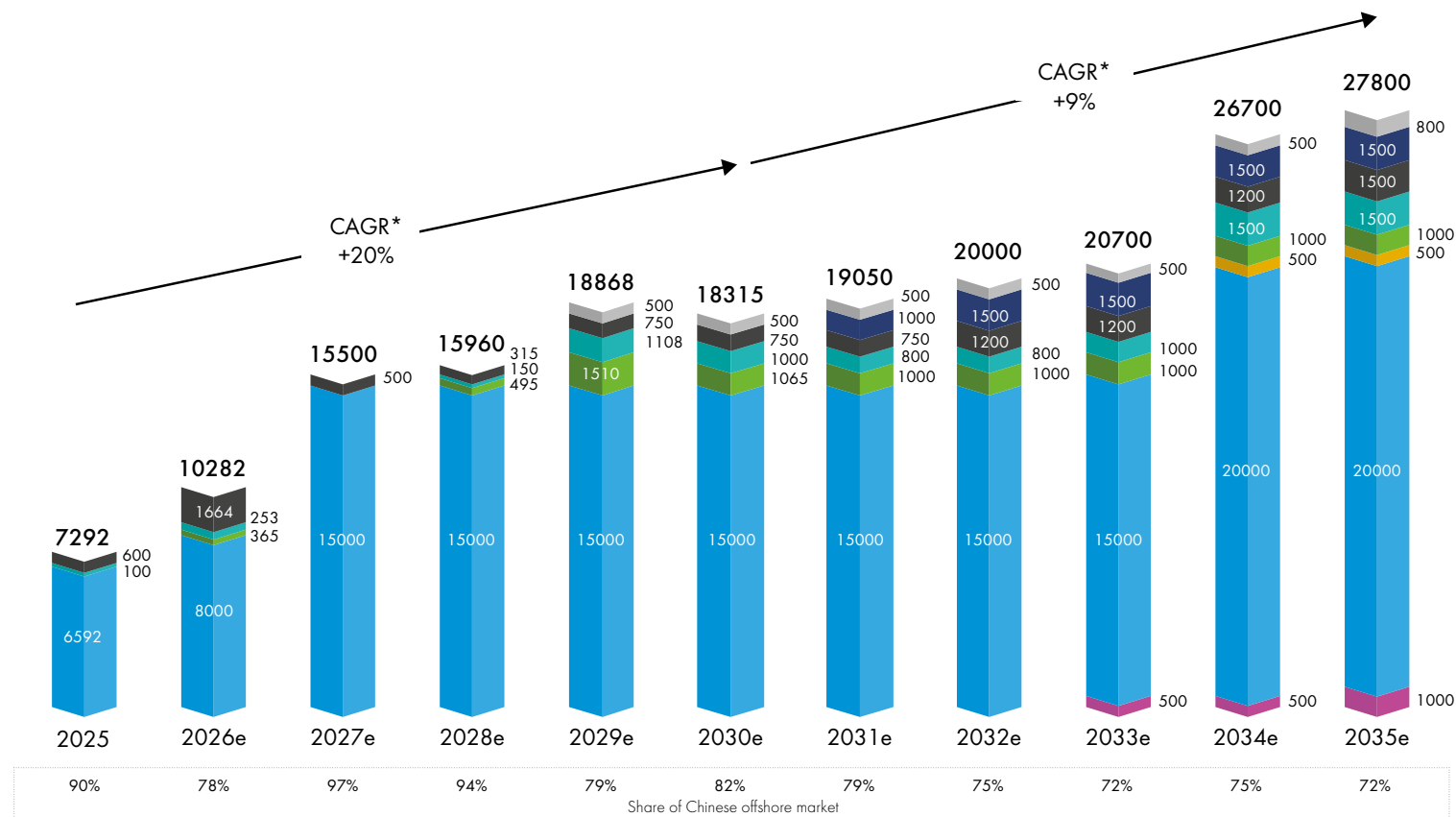
having installed its first offshore wind project more than two decades ago. The region saw very little offshore wind development until 2017, when the Chinese market started taking

off. Thanks to outstanding growth in China, APAC replaced Europe as the leading offshore wind market in new installations in 2020, and in total installations in 2022.

Considering the strategic role assigned to offshore wind in China's 15th Five-Year Plan, GWEC Market Intelligence believes that China will continue to dominate growth in the

Offshore wind growth to 2034 in Asia Pacific (MW)

- China
- Taiwan (China)
- South Korea
- Japan
- Vietnam
- India
- Australia
- Philippines



*Compound Annual Growth Rate. Source: GWEC Market Intelligence, June 2025

region in the near term, with its market share expected to reach 97% in 2027.

As the offshore wind market becomes more diversified in the APAC region, China's market share will drop to 82% in 2030 and 72% in 2035, with GW-level offshore wind capacity expected to start coming online in Japan, South Korea and Vietnam. A first batch of offshore wind project development is likely to take place in emerging markets such as Australia and India towards the end of the forecast period.

In total, 193 GW of offshore wind capacity is predicted to be added in the next 10 years, of which 41% will be built in 2026–2030 and the remainder in 2031–2035. The top five markets in APAC additions in the next decade will be China (153 GW), Taiwan (China) (10 GW), South Korea (8 GW), Japan (8 GW) and Vietnam (7 GW).

China not only operates 90% of APAC's offshore wind fleet but also possesses the region's most mature supply chain. Elsewhere in the region, restrictive local content requirements (LCRs) applied during the first phase of the Round 3 tender established a localised supply chain in Taiwan (China), enabling

European turbine suppliers Siemens Gamesa and Vestas to produce offshore nacelles locally. However, following a WTO dispute over Taiwan's LCRs – which had driven up Capex and caused project delays – Taiwan relaxed the requirements for the second phase of the Round 3 tender.

Meanwhile, driven by the offshore wind ambitions and supply chain security concerns of the South Korean and Japanese governments, several joint ventures between European suppliers and local players have been established over the past few years. Consequently, localised offshore wind supply chains are expected to gradually take shape in both countries towards the end of this decade.

According to the APAC wind energy supply chain deep dive, Building the APAC Wind Energy Supply Chain for a 1.5°C World, released by GWEC in late 2024, APAC wind energy demand can be met through the existing regional wind supply chain in an open-door scenario. However, the concentration risk is high. Excluding China, the APAC region is unlikely to meet the level of offshore wind power installations required to meet the Paris climate target. In addition, bottlenecks are expected

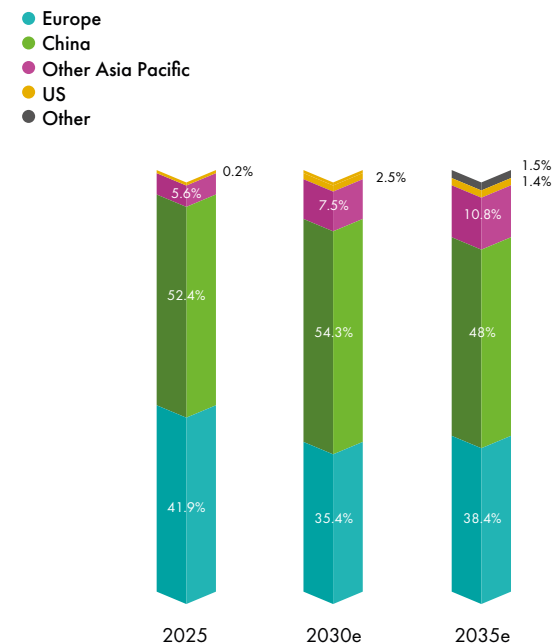
for all components except towers, foundations and cables. New markets including Vietnam, the Philippines, India and Australia – where offshore wind is in the early stages of development – are still facing the challenge of developing local supply chains while building the necessary skills and workforce.

Scaling up local supply chains is critical to filling in the gap, unlocking APAC's growth potential and securing supply chain security. Despite geopolitics complicating the move to regional collaboration, political commitment and cooperation are essential to accelerate wind growth. Working together across the region helps raise confidence on supply chain investment and allows cooperation on shared challenges including grid transmission, ports, vessels and skilled workforce.

China

China added 6.6 GW of new offshore wind capacity in 2025, consolidating its global leadership in both annual and cumulative installations. While most offshore wind projects commissioned before 2025 were located nearshore, deepwater expansion is expected to become the primary growth driver under the upcoming 15th Five-Year Plan

Total installations

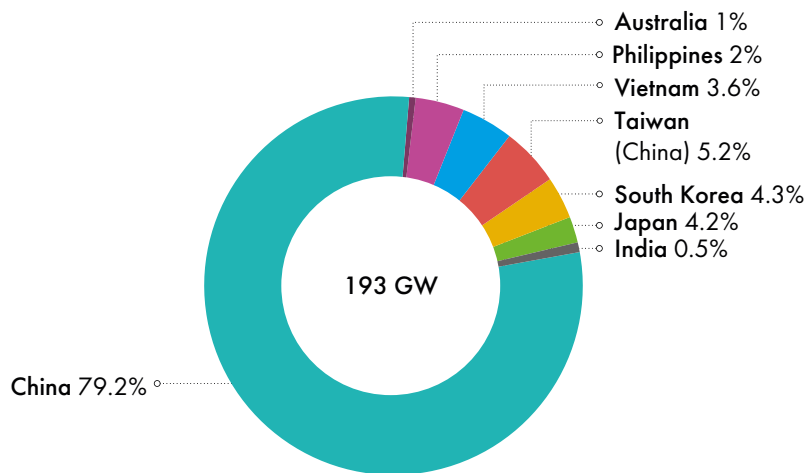


Source: GWEC Market Intelligence

(2026-2030). This framework formally establishes, for the first time, a national offshore wind development target of at least 100 GW by 2030.

A market-oriented pricing mechanism took effect for all Chinese renewables on 1 June 2025. To ensure deepwater projects remain commercially viable under

Total offshore wind added between 2025 and 2034



Source: GWEC Market Intelligence, June 2025

this new framework, coastal provinces including Jiangsu, Guangdong and Shandong have introduced hybrid support mechanisms that combine competitive bidding with reference pricing linked to local coal benchmarks. To facilitate this structural shift from nearshore to deepwater development, grid integration and long-distance transmission planning are increasingly being prioritised.

Supported by approximately 30

coastal industrial parks and an annual turbine manufacturing capacity exceeding 20 GW, China possesses the world's most robust supply chain to back its offshore wind ambitions. Consequently, GWEC Market Intelligence expects China to retain its dominant global position, with total installed capacity projected to surpass 115 GW by 2030 and 200 GW by 2035.

Taiwan (China)

Taiwan remains the largest offshore wind market in the APAC region after

China. Steady commissioning activity in the past four years brought Taiwan's cumulative installed capacity to approximately 3.6 GW, with more than 2 GW across four projects currently under construction.

Due to insufficient capacity allocations in the Round 3.1 and Round 3.2 tenders, alongside some developers withdrawing their development rights, Taiwan's 2030 and 2035 targets have been downgraded from 13.1 GW and 20.6 GW to 10.9 GW and 18.3 GW, respectively. In late 2024, Taiwan removed local content requirements (LCRs) as eligibility or award criteria for future allocation rounds, after reaching an understanding with the EU on a trade dispute over LCRs.

The upcoming Round 3.3 auction will allocate 3.6 GW of capacity, with the application window open from April to September 2026 and project awards expected by the end of the year. This new framework shifts away from price-based competition toward a qualification-based selection process, focusing heavily on developers' execution track records, financial strength and delivery capabilities. A minimum tariff floor has been introduced to support project bankability, with awarded

assets expected to achieve grid connection between 2030 and 2031.

GWEC Market Intelligence expects Taiwan to reach 8 GW of offshore wind capacity by 2030 and 14 GW by 2035, securing its position as APAC's second-largest offshore wind market.

South Korea

Having commissioned new capacity over the past year, South Korea reached 355 MW of operational offshore wind capacity by the end of 2025. The market is positively transitioning from policy ambition towards an implementation-focused and execution-driven phase. The government formally revised its 2030 offshore wind target to 10.5 GW, replacing earlier, less realistic ambitions of 14–20 GW.

The Special Act on the Promotion of Offshore Wind Power Deployment and the Development of Related Industries shifts the market away from fragmented, developer-led site selection towards a government-led planned site system. Under this approach, authorities conduct early-stage spatial planning, environmental reviews and grid coordination before projects enter competitive auctions. Seven offshore wind development zones have

already been designated under this new framework.

Following the auction schedule announced in 2024, the country awarded 689 MW of fixed-bottom offshore wind capacity last year. A subsequent 1.8 GW auction round – covering 1 GW of fixed-bottom, 400 MW of floating, and 400 MW of public-led projects – was launched in May 2026. Local industry updates indicate that this latest auction round was more than twice oversubscribed, highlighting robust developer interest that has intensified competition and placed potential downward pressure on prices.

The government is also placing greater emphasis on grid readiness, project maturity, local supply chains and industrial contributions as the market transitions from the Renewable Portfolio Standard (RPS) mechanism towards a fully auction-based support framework.

In light of recent project-level challenges, with awarded projects either suspended or discontinued, GWEC Market Intelligence adjusted its Q1 2026 Outlook and expects the country to miss its 10.5 GW target by 2030. Total installed capacity is instead projected to reach around 3 GW by 2030 and 8.6 GW by 2035,

making South Korea APAC's third-largest offshore wind market.

Japan

The Japanese government first established offshore wind development targets in late 2020 under its Vision for the Offshore Wind Industry, aiming to auction 10 GW of capacity by 2030 and 30–45 GW by 2040. In August 2025, it released an updated vision, specifically targeting 15 GW of floating wind capacity by 2040.

Project execution has lagged behind the country's policy ambitions. After commissioning the 16.8 MW Goto floating wind project (the country's first commercial-scale floating wind farm) and the 220 MW Kitakyushu Hibikinada project in Q1 2026, Japan's total operational offshore wind installations recently surpassed the 500 MW milestone.

In April 2026, the revised Marine Renewable Energy Sea Area Utilization Act came into force, officially extending the legal framework for offshore wind development into Japan's Exclusive Economic Zone (EEZ) and laying the groundwork for large-scale deepwater and floating deployment. Nevertheless, commercial viability remains a key structural challenge.

Rising construction, financing and supply chain costs have made FIDs increasingly difficult to reach, prompting several international developers to reduce their exposure to the market.

In response, Japan is expected to recalibrate its auction designs and broader market mechanisms to improve project bankability and restore investor confidence. The fourth auction round, originally planned for 2025, was postponed to 2026 as part of these market reforms. Re-auction plans were announced for three sites previously awarded to a Mitsubishi-led consortium in 2021 through the country's first round of fixed-bottom offshore wind auction.

Meanwhile, efforts to build local industrial capacity are ramping up. Vestas has announced plans to establish a nacelle assembly facility in Japan by 2029, with the potential for future expansion into full nacelle manufacturing. GWEC Market Intelligence forecasts that Japan will reach 3.5 GW of offshore wind capacity by 2030, expanding to 8.4 GW by 2035.

Vietnam

Vietnam has more than 5 GW of installed wind capacity, but no

operational offshore wind projects. All the capacity commissioned to date comes from onshore (approximately 4.5 GW) and intertidal (approximately 1 GW) wind developments. Under its revised PDP8, Vietnam targets 6–17 GW of offshore wind by 2035, while the original 6 GW target for 2030 has been officially deferred.

Over the past year, Vietnam's offshore wind policy framework has gradually taken shape. Resolution 253/2025/QH15, which became effective in March 2026, introduces an accelerated approval mechanism allowing the Prime Minister to approve offshore wind investment policies and select investors during the 2025–2030 period without conventional land-use auctions or bidding procedures.

For the 2031–2035 phase, approval authority is expected to shift to provincial governments under a competitive bidding framework. Meanwhile, Decision 1824/QD-BCT established regional tariff ceilings for offshore wind in 2025, providing an initial pricing reference for early-stage power purchase agreement (PPA) negotiations, while Decree 58/2025/ND-CP introduced minimum contracted output provisions to improve revenue



visibility during debt repayment periods.

Vietnam has begun early-stage offshore wind site investigations, with marine survey rights approved for 10 projects representing a total capacity of more than 10 GW. In view of the revised PDP8 targets and current project development status, commercial offshore wind projects are unlikely to come online before the end of this decade. However, a total of 7 GW of offshore wind capacity is expected to be added between 2031 and 2035, positioning Vietnam as APAC's fifth-largest offshore wind market.

The Philippines

While the Philippines has no installed offshore wind capacity, it is gradually transitioning from early-stage policy development towards project execution, supported by robust regulatory reforms and growing investor interest.

In the near term, the Green Energy Auction Program (GEAP) is expected to be the primary driver for offshore wind development. The upcoming GEA-5 auction is designed to allocate 3.3 GW of fixed-bottom offshore wind capacity, representing the country's first dedicated offshore wind auction

round. The upward adjustment of the price ceiling to PHP 11/kWh is expected to improve project bankability, after earlier tariff levels were widely considered insufficient to support commercial viability.

In February 2026, the National Grid Corporation of the Philippines (NGCP) approved the country's first offshore wind grid connection agreements, covering 1.65 GW of projects and marking an important step towards project readiness ahead of the auction.

Policy reforms regarding project ownership structures continue to elevate market attractiveness. The introduction of 100% foreign ownership for renewable energy projects has removed a major long-standing barrier to international investment and helped attract a growing pool of international offshore wind developers.

So far, around 15 offshore wind service contracts with a combined potential capacity of approximately 9 GW have been awarded. At the same time, the government is attempting to streamline project development through the EVOSS digital permitting platform and revised offshore wind guidelines. The updated framework introduces a



pre-development Certificate of Authority, which allows developers to conduct feasibility studies without consuming their full contract terms, thereby reducing upfront financial burdens during the early stages of project development.

Australia

Despite being home to some of the world's best technical resource potential for offshore wind, no turbines have been installed in Australian

waters yet.. While the federal government has yet to publish binding national offshore wind targets, the State of Victoria is spearheading development by targeting 2 GW by 2032, 4 GW by 2035 and 9 GW by 2040. The declared Gippsland zone anchors Australia's near-term offshore wind pipeline.

The market is confronting commercial and execution headwinds, with several developers

withdrawing from Australian offshore wind projects over the past year amid rising capital costs, global supply chain pressures and localised policy uncertainty.

Victoria's Offshore Wind Energy Implementation Statement originally outlined plans to launch the state's first Request for Proposal (RFP) process in September 2025, with contracts expected to be awarded before October 2026. However, the

auction process has since faced delays amid ongoing uncertainty surrounding transmission infrastructure, project readiness and broader market conditions. The first tender is expected to proceed later this year.

GWEC Market Intelligence expects Australia to commission its first offshore wind projects in the early 2030s, with total installed capacity projected to reach 2 GW by 2035.

Americas

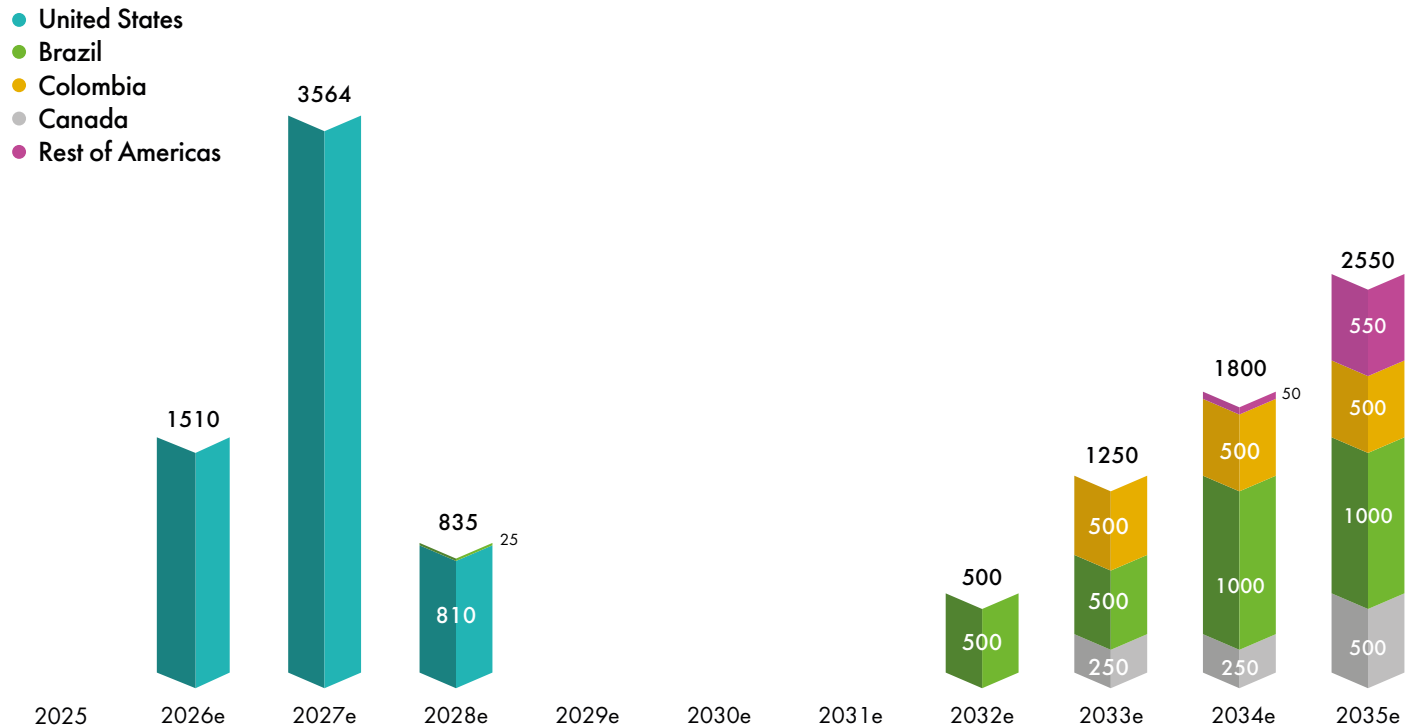
The United States is the only country with active offshore wind installations in the Americas. At the end of 2023, the US market consisted of two small-scale projects: the 30 MW Block Island

wind farm in Rhode Island and the 12 MW Dominion Virginia demonstration project. Following the commissioning in 2024 of its first utility-scale project – the 130 MW South Fork wind farm – total offshore wind installations in the region reached 172 MW by the end of 2025.

In total, 12 GW of offshore wind capacity is predicted to be built in the Americas over the next 10 years (2026–2035). Of this total, 5.9 GW (49%) is expected to be commissioned over the next five years (2026–2030), with the remaining 6.1 GW (51%) delivered between 2031 and 2035.

Because Latin America's near-term pipeline is limited to two demonstration turbines in Brazil totalling 25 MW, nearly all installations projected for the first half of the forecast period (2026–2030) will come from the US. Given current US policy on renewable energy, we do not anticipate new

Offshore wind growth to 2035 in Americas



Source: GWEC Market Intelligence, June 2025

offshore wind capacity being built in the country during the second half of the forecast period (2031–2035). Regional growth in the 2031–2035 window is expected to shift to Canada and Latin America.

Geographically, 6.9 GW (57%) of the predicted ten-year capacity is expected to come from North America, and 5.1 GW (43%) from Latin America. The top five markets for installations over the next decade will be the US (5.9 GW), Brazil (3.0 GW), Colombia (1.5 GW), Canada (1.0 GW) and Chile (0.6 GW).

United States

In the United States, a vulnerable domestic supply chain combined with severe macroeconomic headwinds had already created a challenging environment for the offshore wind industry prior to the Trump administration taking charge in January 2025. We believe that offshore wind has no future under the current administration.

A Presidential Executive Order in early 2025 temporarily suspended all offshore wind energy leasing on the Outer Continental Shelf (OCS), followed by the Bureau of Ocean Energy Management (BOEM) cancelling all wind energy areas designated on the OCS since 2014.

The past few months also saw orders by the US federal government to halt construction activities at five projects over security concerns.

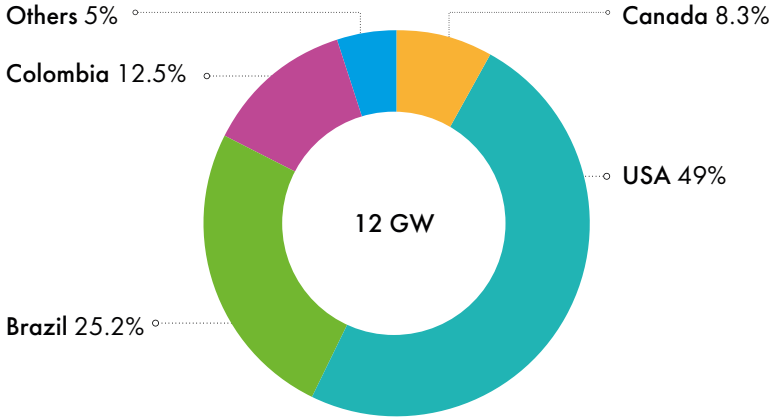
Despite this adverse policy shift, projects already far advanced in construction have continued towards completion. By Q1 2026, the 806 MW Vineyard Wind 1 project completed construction, while another 5 GW of offshore wind capacity across four projects remains under construction.

Assuming the Revolution Wind, Coastal Virginia Offshore Wind (CVOW), Empire Wind 1 and Sunrise Wind projects are successfully completed, approximately 5.9 GW of cumulative offshore wind capacity will be added between 2026 and 2028. However, given the long lead times required to deliver offshore wind assets and a significant retraction in investor confidence, new capacity additions are highly unlikely between 2029 and 2035, irrespective of future political developments.

Canada

Discussions regarding offshore wind development in Canada date back to 2009, when Ontario released its Green Energy and Green Economy Act. Serious discussion at the federal level did not materialise until April

Total added between 2026 and 2035 in Americas



Source: GWEC Market Intelligence

2022, when the federal government and the province of Nova Scotia agreed to modernise the Canada-Nova Scotia Offshore Petroleum Board (CNSOPB) by expanding its mandate to include offshore renewable energy development within joint areas.

In September 2022, Nova Scotia committed to offering leases for 5 GW of offshore wind energy by 2030, marking the country's first structured roadmap for the sector. By March 2023, the federal

government, alongside Nova Scotia and Newfoundland and Labrador, initiated regional strategic environmental assessments. Three months later, the federal Ministry of Natural Resources introduced legislation establishing the formal regulatory framework for offshore renewables.

Following these milestones, Nova Scotia designated its first four offshore wind development zones, while the newly formed Canada-Nova Scotia Offshore Energy



Regulator (CNSOER) opened the pre-qualification window for the country's inaugural offshore wind auction in October 2025.

Based on this progress, GWEC Market Intelligence expects Canada's first commercial offshore wind project to come online late in the forecast period, with 1 GW projected by 2035.

Brazil

While Brazil has no operational offshore wind capacity to date, the country has achieved substantial regulatory breakthroughs. In 2025, Brazil approved two landmark legal frameworks to structure and promote the sector: Law No. 15,097/2025 and Law No. 15,103/2025.

The first serves as the baseline framework for offshore power generation, establishing clear rules for maritime areas under federal jurisdiction, including territorial waters and the Exclusive Economic Zone (EEZ). It allows developers to secure development rights through two allocation models: a 'permanent offer' mechanism, whereby companies propose specific areas of interest, and a 'planned offer' mechanism, whereby the government pre-defines areas and conducts public auctions.

Complementing this, Law No. 15,103/2025 created the Energy Transition Acceleration Program (PATEN), which offers targeted fiscal and financial incentives for renewable energy infrastructure.

Building on this framework, the National Energy Policy Council (CNPE) instituted the Offshore Wind Energy Working Group in October 2025. At the beginning of Q2 2026, the CNPE approved Resolution 1/2026, establishing strategic guidelines for implementing the offshore wind law, including specific rules for defining development zones, site allocation and permitting procedures.

We believe that commercial-scale offshore wind development in Brazil is expected to gain significant traction from 2032. A small-scale demonstration project led by the SENAI Institute of Innovation in Renewable Energy (ISI-ER) and SENAI-RN is likely to be deployed before the end of this decade.

Colombia

Colombia's northern coast – specifically across the La Guajira, Atlántico and Bolívar departments – offers excellent technical conditions for offshore wind development due to strong wind resources, shallow

waters and proximity to primary port infrastructure. In response to this potential, the Colombian government launched in 2022 its Roadmap for Offshore Wind Energy, aiming to deploy an initial 1 GW of installed capacity as part of a broader long-term strategy targeting 3 GW by 2035, 7 GW by 2040 and 13 GW by 2050.

In late 2024, the Ministry of Mines and Energy launched the country's first seabed area allocation process. Nine companies successfully pre-qualified for the competitive seabed auction, and Copenhagen Infrastructure Partners (CIP) formally secured the site development rights in December 2025. The government is actively refining the administrative process based on this first round to accelerate future allocation phases.

Given plans to introduce a CfD support scheme for the first auction round before 2028, GWEC Market Intelligence expects approximately 1.5 GW of offshore wind capacity to be commissioned during the second half of the forecast period (2031–2035).

Floating Offshore Wind

The world's first MW-scale floating offshore wind turbine was installed in Norway in 2009. By the end of 2025, 278 MW of floating wind projects had been commissioned worldwide. Following more than a decade of testing with demonstration projects across Europe, North America and Asia, floating wind technology transitioned past the demonstration stage and entered the pre-commercial phase in the early 2020s.

In our 2025 offshore wind report, GWEC Market Intelligence predicted that the commercialisation of floating wind would be achieved by the end of this decade. However, despite no shortage of projects securing site control, recent developments suggest that commercialisation is unlikely to be realised until the early 2030s. The rationale behind this timeline adjustment includes:

- **Macroeconomic headwinds:** Inflation, high capital costs and supply chain constraints have severely challenged the commercial viability of even fixed-bottom projects over the past three years. Because floating wind is inherently more expensive than fixed-bottom technology, this

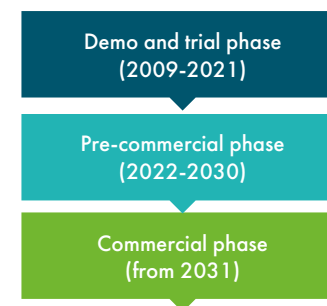
challenging environment has hit floating wind viability particularly hard. Consequently, projects that had already secured site control in the UK, Australia and South Korea have been relinquished or put on hold.

- **Offtake contract instability:** Around 2.5 GW of floating wind projects had been awarded offtake contracts by the end of 2025, but nearly 1 GW of that capacity, including the 750 MW Bandibuli project, has since been cancelled or delayed. This indicates that merely securing an offtake contract is no longer enough to greenlight development towards a Final Investment Decision (FID); power purchase agreement (PPA) prices and terms must be robust enough to support a viable business case.
- **Regulatory delays in China:** China's first 1 GW commercial floating wind project, originally planned to come online by 2027, appears to be stalled due to complex maritime approval processes.
- **US political woes:** The 14.5 GW of floating wind projects that won seabed leases in California and the Gulf of Maine are at risk as regulatory headwinds persist for

offshore wind under the current US administration.

- **Misalignment on targets and auctions:** Despite more than 90 GW of government targets being announced worldwide, committed floating wind auctions remain inconsistent with these ambitions. Political action is required to solidify the pipeline for the 2030s, but future auction volumes will likely remain contingent on the success of projects currently holding offtake contracts.
- **Low technological standardisation:** The readiness level of floating foundations remains low compared with fixed-bottom solutions. There is very little standardisation among the more than 50 existing floating foundation designs, and only a handful have been tested at full scale. This lack of standardisation makes it difficult to achieve economies of scale, mitigate risk, and drive down capital and operational expenditure.
- **Port infrastructure, mooring and anchoring vessels:** Foundation manufacturing and assembly require massive upfront investment in port infrastructure. This is coupled with an increased demand for specialised mooring and anchoring vessels capable of supporting these complex

Roadmap of floating offshore wind commercialisation





installations.

- **Supply chain bottlenecks:** Supply bottlenecks for floating foundations and floating wind turbines are likely to emerge starting in 2033, particularly if restrictive trade policies and local content requirements (LCRs) are enforced in Europe.

GWEC Market Intelligence therefore

has downgraded its global floating wind forecast and predicts 1 GW to be built globally by 2030 – 60% lower than the previous year’s projection.

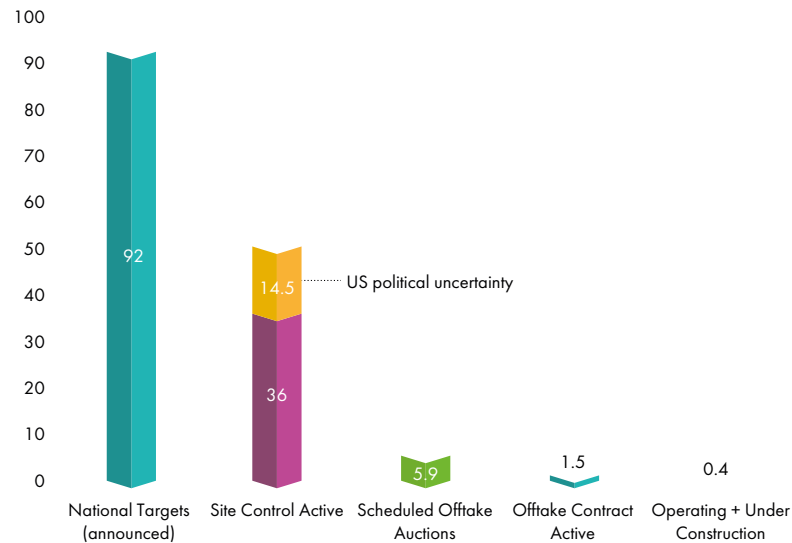
Norway, the UK, China, France and Portugal are the top five markets in net floating wind installations today. By the end of 2035, we expect the UK, China, France, South Korea and Portugal to be the top five floating markets.

GWEC Market Intelligence predicts floating wind to become fully commercialised from the early 2030s, with multi-GW levels of new installations expected to be achieved from 2033 onward. Therefore, only 4% (0.8 GW) of the total projected new additions (18.5 GW) will be installed in the first half of the forecast period.

As for regional distribution, we expect Europe to contribute 64.7% of the total installations to be added in the next 10 years (2026–2035), followed by APAC (35.2%) and LATAM (0.1%). By the end of 2035, a total of 18.8 GW of floating wind is likely to be installed worldwide, raising its contribution to total offshore wind installations from today’s 0.3% to 4.6%.

Our near-term outlook (2026–2030) is primarily based on projects under construction, alongside the existing floating project pipeline that has already been awarded offtake contracts and announced commercial operation dates (CODs). For the medium-term outlook (2031–2035), we applied a top-down approach that factors in national floating wind targets, scheduled auction timelines, and project pipelines with secured site control.

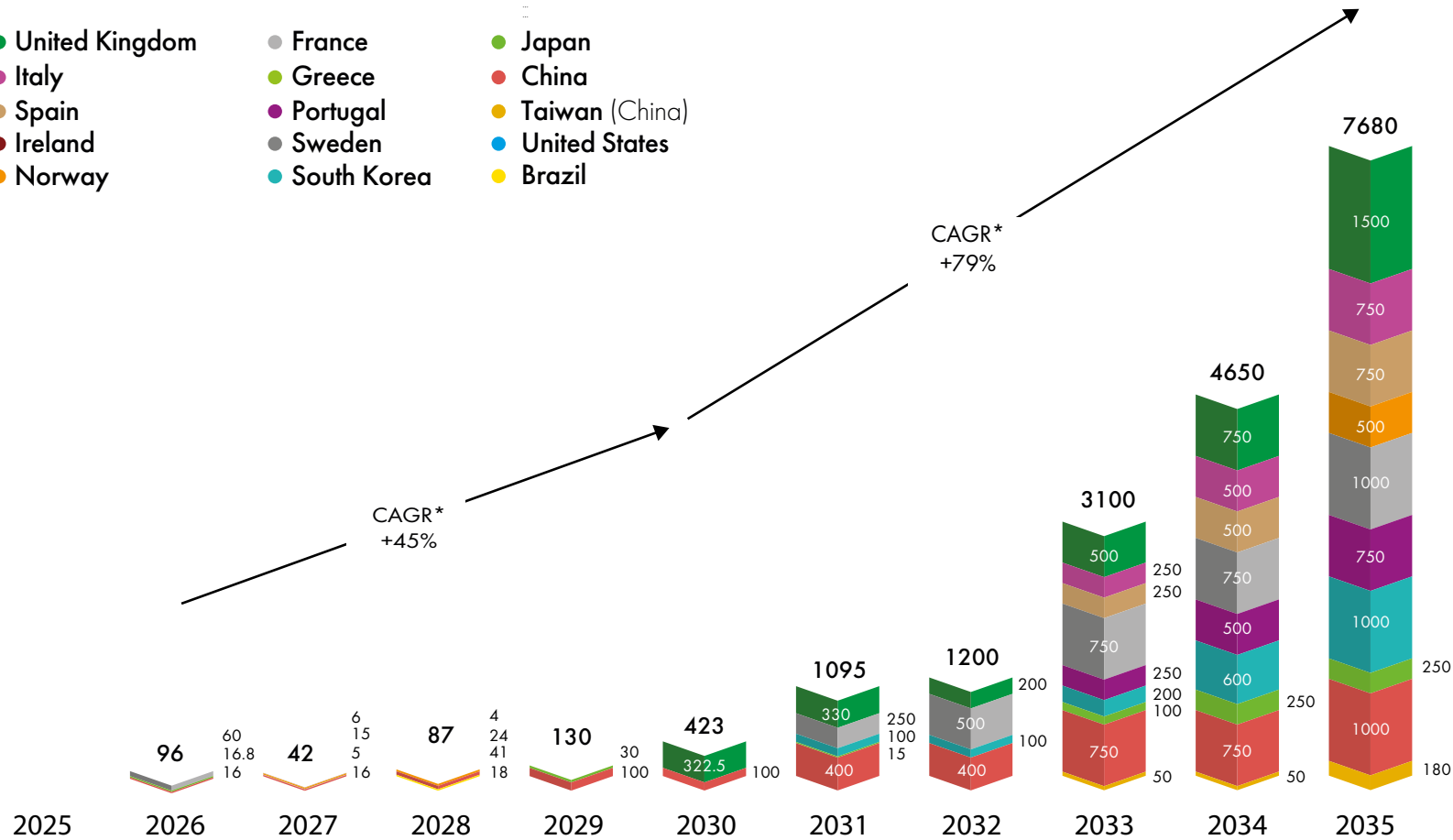
Low firm offtake volumes put national targets at risk



Source: GWEC Market Intelligence, May 2026

New floating wind installations, Global (MW)**

- United Kingdom
- France
- Japan
- Italy
- Greece
- China
- Spain
- Portugal
- Taiwan (China)
- Sweden
- United States
- Ireland
- South Korea
- Brazil
- Norway



*Compound Annual Growth Rate., **Note: this floating wind outlook is already included in GWEC's global offshore wind forecast.
Source: GWEC Market Intelligence

APPENDIX



Global Offshore Wind Report 2026 - Methodology and Terminology

Data definitions and adjustments

GWEC reports installed and fully commissioned capacity additions and total installations. New installations are gross figures not deducting decommissioned capacity. Total installations are net figures, adjusted for decommissioned capacity.

Historic installation data has been adjusted based on the input GWEC received. GWEC made the

adjustments to both new and cumulative installations over the course of time.

All currency figures in \$ are given in US Dollars.

Definition of regions

GWEC adjusted its definition of regions in 2018 and maintains these in the 2024 edition, specifically for Latin America and Europe.

Latin America: South, Central America and Mexico

Europe: Geographic Europe including Norway, Russia, Switzerland, Turkey, Ukraine

Sources for the report

GWEC collects installation data from regional or country wind associations. For the supply side data, GWEC collects directly from wind turbine

OEMs and component suppliers.

Used terminology

GWEC uses terminology to the best of our knowledge. With the wind industry evolving certain terminology is not yet fixed or can have several connotations. GWEC is continuously adapting and adjusting to these developments.

Acronyms

AI	Artificial Intelligence	DPPA	Direct Power Purchase Agreement	JV	Joint Venture	PATEN	Energy Transition Acceleration Program, Brazil
ANH	National Hydrocarbons Agency, Colombia	EC	European Commission	LATAM	Latin America	PDP	Power Development Plan
ANEEL	National Agency of Electric Energy, Brazil	EIA	Environmental Impact Assessment	LCOE	Levelised Cost of Energy	PEM	Marine Spatial Planning Guidelines
APAC	Asia Pacific	EPC	Engineering, Procurement, and Construction	LCRs	Local Content Requirements	PEP	Philippine Energy Plan
AR	Allocation Round	EPE	Energy Research Office, Brazil	LNG	Liquefied Natural Gas	PHP	Philippine Peso
ASEAN	Association of Southeast Asian Nations	ERO	Polish Energy Regulatory Office	MACs	Maritime Area Consents	PPA	Power Purchase Agreement
AUD	Australian Dollar	ESB	Electricity Supply Board, Ireland	MCEE	Ministry of Climate, Energy and Environment, South Korea	PPE	Programmations pluriannuelles de l'énergie, France
B2B	Business to Business	ESG	Environmental, Social and Governance	MDB	Multilateral Development Banks	PtX	Power-to-X
BIS	Bureau of Indian Standards	ESO	Electricity System Operator	MDIC	Ministry of Ports and Airports and Ministry of Industry, Brazil	PUG	Single Window Portal, Brazil
BOEM	Bureau of Ocean Energy Management	ESEM	Electricity Services Entry Mechanism	MITECO	Ministry for the Ecological Transition and the Demographic Challenge	PV	Photovoltaic
BOP	Balance of Plant	ETO	Energy Transition Outlook, DNV	MME	Ministry of Mines and Energy, Brazil	RESS	Renewable Electricity Support Scheme, Ireland
BRL	Brazilian Real	ETRI	Electronics and Telecommunications Research Institute	MNRE	Ministry of New and Renewable Energy, India	RFP	Request for Proposal Process, Australia
CAPEX	Capital Expenditure	EU	European Union	MPI	Multipurpose Interconnectors	R&D	Research and Development
CCGT	Combined Cycle Gas Turbine	EVOSS	Energy Virtual One-Stop Shop	MSP	Marine Spatial Planning	RPS	Renewable Portfolio Standard
CfD	Contract for Difference	EZK	Dutch Ministry of Economic Affairs and Climate Policy	MW	Megawatt	RTK	Real-Time Kinematic
CEM	Brazilian Offshore Wind Coalition	FID	Final Investment Decision	MWh	Megawatt-hour	SECI	Solar Energy Corporation of India
CIB	Clean Industry Bonus, United Kingdom	FTE	Full-time Equivalent	NEM	National Electricity Market, Australia	SENAI	National Service of Industrial Learning, Brazil
CIP	Copenhagen Infrastructure Partners	FX	Foreign Exchange	NEA	National Energy Administration, China	SGRE	Siemens Gamesa Renewable Energy
CNPC	China National Petroleum Corporation	G2G	Government-to-Government	NECP	National Energy and Climate Plan	SOE	State-Owned Enterprise
CNPE	National Energy Policy Council, Brazil	GEA	Green Energy Auction	NERC	National Energy Regulatory Council, Lithuania	ToR	Terms of Reference
CNSOER	Canada-Nova Scotia Offshore Energy Regulator	GEAP	Green Energy Auction Program, Philippines	NESO	National Energy System Operator	TransCo	National Transmission Corporation
CNSOPB	Canada-Nova Scotia Offshore Petroleum Board	GOWA	Global Offshore Wind Alliance	NGCP	National Grid Corporation of the Philippines	TSO T	transmission System Operator
COA	Certificate of Authority	GOWR	Global Offshore Wind Report	NSESO	National Energy System Operator	TÜREK	Turkey Wind Energy Congress
COD	Commercial Operation Date	GW	Gigawatt	O&M	Operations and Maintenance	TW	Terawatt
CPTRA	Consumer Protection and Technical Regulation Authority, Estonia	GWh	Gigawatt-hour	OCS	Outer Continental Shelf	TWh T	terawatt-hour
CRE	Energy Regulatory Commission, France	GWEC	Global Wind Energy Council	OEM	Original Equipment Manufacturer	TWG	Technical Working Group
CWEA	Chinese Wind Energy Association	HV	High Voltage	OEP	Ocean Energy Pathway	UCL	University College London
CVOW	Coastal Virginia Offshore Wind	HVDC	High Voltage Direct Current	OFW	Offshore Wind	UK	United Kingdom
DC	Direct Current	IEA	International Energy Agency	OPEX	Operating Expenditure	US	United States
DIP	Declaration of Interference Process	IEC	International Electrotechnical Commission	OPEC	Organization of the Petroleum Exporting Countries	VGF	Viability Gap Funding
DMAP	Designated Maritime Area Plan, Ireland	INR	Indian Rupee	ORESS	Offshore Renewable Electricity Support Scheme	WACC	Weighted Average Cost of Capital
DNV	Det Norske Veritas	IRENA	International Renewable Energy Agency	OSS	One-Stop Shop Bill, South Korea	WFA	WindFloat Atlantic
DOE	Department of Energy	ISTS	Inter-State Transmission System			WTO	World Trade Organization
DOI	Department of the Interior					WTIV	Wind Turbine Installation Vessel
						YEKA	Renewable Energy Resource Area Model, Türkiye

About GWEC Market Intelligence

GWEC Market Intelligence provides a series of insights and data-based analysis on the development of the global wind industry. This includes a market outlook, country profiles, policy updates, deep-dives on global wind supply chain and offshore wind among many other exclusive insights.

GWEC Market Intelligence derives its insights from its own comprehensive databases, local knowledge and leading industry experts.

The market intelligence team consists of several strong experts with long-standing industry experience across the world.

GWEC Market Intelligence collaborates with regional and national wind associations as well as its corporate members and MI subscribers.

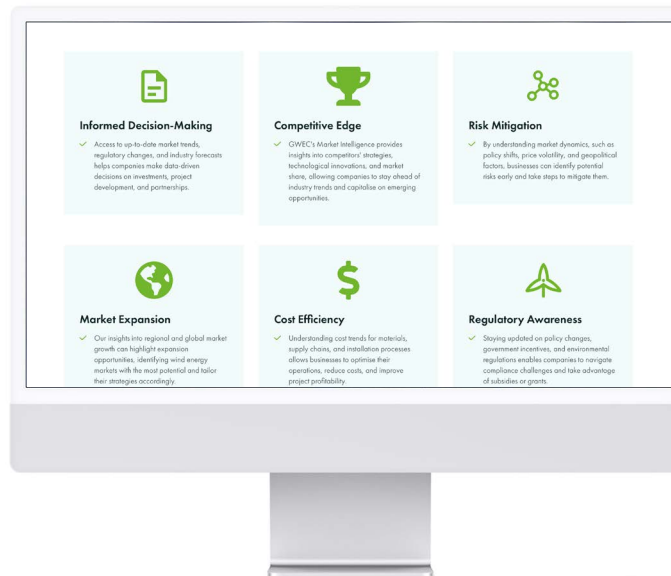
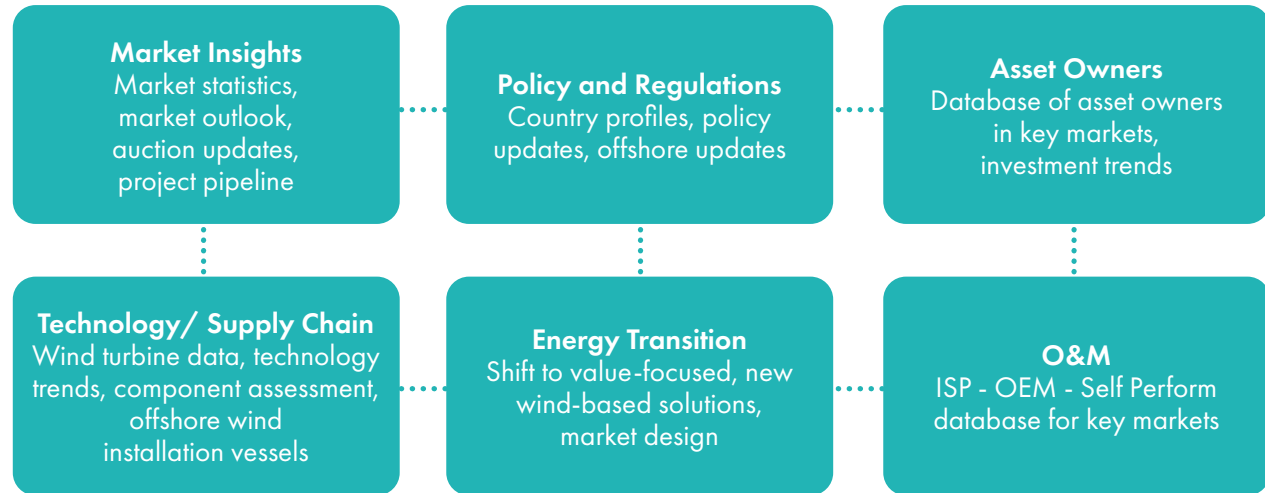
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- Wind energy associations
- Market Intelligence subscription

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GWEC Market Intelligence Areas



GWEC Market Intelligence is housed on a Members-only area on the GWEC website for our members and subscribers to have all of our insights on the global wind industry at their fingertips.

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GWEC Market Intelligence Package 2026

Product	Frequency	Expected Release date
1. Wind Energy Stats/Market Data		
Wind Stats 2025 (historic annual, accumulative, decommission data)	Annual	April 2026
Global Wind Report 2026	Annual	April 2026
Wind Energy Statistics (wind energy penetration rate, jobs)	Annual	April 2026
2. Country Profiles/Policy Updates		
Country Profiles Onshores/Country Profiles Offshore	Annual	April 2026 (onshore) June 2026 (offshore)
Ad-hoc Policy Updates	Ad-hoc	
3. Market Outlook		
Global Wind Market Outlook 2026-2030 (Q1 and Q3) Database + Report	Semi-Annual	April 2025 (Q1 Outlook) November 2025 (Q3 Outlook)
India Market Outlook Report 2026-2030	Annual	TBC
4. Supply Side Data		
Global Wind Turbine Supply Side Data Report 2025 (by OEM, by technology, by turbine ratings, models and drive train, etc)	Annual	May 2026
5. Auctions/Tenders		
Global Wind Auction	Quarterly	Q4 2025 results in March
Auction Trends and Learnings	Quarterly	Q1 2026 in May, Q2 2026 in August, Q3 2026 in Nov
6. Offshore Wind Market		
Global Offshore Wind Report 2026	Annual	June 2026
Global Offshore Project Pipeline (database, in-operatio and under-construction) and summary report	Annual	June 2026
Global Offshore Turbine Installation Vessel Database and Report	Annual	October 2026
7. Components Assessment		
Blades (Q4 2026), Gearbox (Q4 2025), Generator (Q4 2024), Global Wind Supply Chain Deep Dive (Q4 2023), Blades (Q4 2020)	Special Report	December 2026
8. Wind Asset Owners/Operators		
Asset Owners and Operators Database (Onshore & Offshore Ranking)	Annual	September 2026
Asset Owners and Operators Status Report 2026 (including strategical trends)	Annual	
9. O&M		
O&M Service Provider Database (ISP - OEM - Self-perform)	Annual	February 2026
O&M Service Provider Status Report 2026 (including regional trends and strategies)	Annual	
10. Energy transition, Digitalisation, New Technologies		
Auction design, community engagement and social acceptance for permitting, localisation, trade, supply chain and grid associated policy analysis	Special Report/Position Paper	Throughout the year

GWEC Global Leaders

The Global Wind Energy Council's Global Leaders are an exclusive leadership group of decision-makers and top-tier members who form the basis of the Association's Executive Committee, which drives the work programme and plays a major role in shaping GWEC's priorities for its efforts in the short and long-term strategy.



Siemens Energy

We are Siemens Energy – a global leader in energy technology. The energy transition is the greatest challenge our generation faces. How do we reduce emissions while also increasing energy supply? It is an uphill battle. And there is no silver bullet. But finding solutions has always been in our DNA. For more than 150 years our engineers have been spearheading the electrification of the world. Today we are a team of 100,000 sharing the same passion, vision and values. Our diversity makes us strong and helps us to find answers together with our partners. Located in 90 countries, Siemens Energy operates across the whole energy landscape. From conventional to renewable power, from grid technology to storage to electrifying complex industrial processes. Our mission is to support companies and countries with what they need to reduce greenhouse gas emissions and make energy reliable, affordable, and more sustainable. Let's energize society.



Ørsted

The Ørsted vision is a world that runs entirely on green energy. Ørsted develops, constructs, and operates offshore and onshore wind farms, solar farms, energy storage facilities, renewable hydrogen and green fuels facilities, and bioenergy plants. Moreover, Ørsted provides energy products to its customers. Ørsted is the only energy company in the world with a science-based net-zero emissions target as validated by the Science Based Targets initiative

(SBTi). Ørsted ranks as the world's most sustainable energy company in Corporate Knights' 2022 index of the Global 100 most sustainable corporations in the world and is recognised on the CDP Climate Change A List as a global leader on climate action.



GE Vernova

Addressing the urgent need to build a more sustainable electric power system while improving the trajectory of climate change emissions are global priorities and we take our responsibility seriously. That is our mission at GE Vernova: continuing to electrify the world while simultaneously working to help decarbonize it. If we want our energy future to be different...we must be different. Our mission is embedded in our name. We retain our treasured legacy, "GE," in our name as an enduring and hard-earned badge of quality and ingenuity. "Ver" / "verde" signal Earth's verdant and lush ecosystems. "Nova," from the Latin "novus," nods to a new, innovative era of lower carbon energy that GE Vernova will help deliver. Together, we have The Energy to Change the World.



Iberdrola

With over 170 years of history behind us, Iberdrola is now a global energy leader, the number one producer of wind power, and one of the world's biggest electricity utilities in terms of market capitalisation. We have brought the

energy transition forward two decades to combat climate change and provide a clean, reliable and smart business model, to continue building together each day a healthier, more accessible energy model, based on electricity.



Vestas

Vestas is the energy industry's global partner on sustainable energy solutions. We design, manufacture, install, and service wind turbines across the globe, and with +151 GW of wind turbines in 86 countries, we have installed more wind power than anyone else. Through our industry-leading smart data capabilities and +129 GW of wind turbines under service, we use data to interpret, forecast, and exploit wind resources and deliver best-in-class wind power solutions. Together with our customers, Vestas' more than 29,000 employees are bringing the world sustainable energy solutions to power a bright future.



Equinor

We are looking for new ways to utilise our expertise in the energy industry, exploring opportunities in new energy and driving innovation in oil and gas around the world. We know that the future has to be low carbon. Our ambition is to be the world's most carbon-efficient oil and gas producer, as well as driving

innovation in offshore wind and renewables. We plan to reach an installed net capacity of 12-16 GW from renewables by 2030, two-thirds of this will be from offshore wind. With five decades of ocean engineering and project management expertise, focus on safe and efficient operations, in depth knowledge of the energy markets, skilled personnel and a network of competent partners and suppliers, Equinor is uniquely positioned to take a leading role in the offshore wind industry. From building the world's first floating wind farm to building the world's biggest offshore wind farm we are well underway to deliver profitable growth in renewables be a leading company in the energy transition.



CIP

Founded in 2012, Copenhagen Infrastructure Partners P/S (CIP) is a global fund manager and leading investor in energy infrastructure. CIP builds value that matters by developing and constructing critical infrastructure projects that shape the future of energy.

Through its funds, CIP invests in power generation (solar and wind), energy storage, transmission and distribution, advanced bioenergy, low-carbon fuels and carbon capture.

With 15 funds currently under management, CIP is trusted by over 200 of the world's largest and most sophisticated institutions, having raised EUR ~37 billion to date. CIP has projects in more than 30 countries, with presence on the ground through a network of +2,300 professionals.



SSE Renewables

SSE Renewables is a leading developer and operator of renewable energy, headquartered in the UK and Ireland, with a growing presence internationally. Its strategy is to lead the transition to a net zero future through the world-class development, construction and operation of renewable power assets and it is building more offshore wind energy than any other company in the world. Part of the FTSE-listed SSE plc, SSE Renewables is taking action to double its installed renewable energy capacity to 8GW by 2026 as part of its Net Zero Acceleration Programme, and increase renewables output fivefold to over 50TWh annually by 2031.



Envision Energy

Envision Energy is a world-leading green technology company, providing renewable energy system solutions for global enterprises, governments, and institutions. With the mission of 'solving the challenges for a sustainable future', Envision Energy continuously reduces the production, storage, and synergy costs of renewable energy through technological innovation. Encompassing three major business sectors - Smart Wind Turbines, Energy Storage, and Green Hydrogen Solutions, Envision Energy collaboratively constructs comprehensive solutions for energy transformation. It also manages Envision-Hongshan Carbon-Neutral Fund and owns Envision Racing Formula E team, who conquered the Formula E Teams' Championship in 2023.

Today, Envision Energy leverages its global network of R&D and engineering centers across China, the United States, UK, France, Germany, Denmark, etc. to continuously lead global green

technology development. Envision Energy joined the Science Based Targets initiative (SBTi) and committed to achieving the "Business Ambition for 1.5°C" in 2021. It has achieved carbon neutrality across its global operations by 2022 and will achieve carbon neutrality throughout its value chain by 2028.

Envision was ranked second in Fortune's 2021 "Change the World" list and was ranked among the Top 10 of the 2019 'World's 50 Smartest Companies' by the MIT Technology Review.



Masdar

Abu Dhabi Future Energy Company (Masdar) is the UAE's clean energy champion and one of the world's fastest-growing renewable energy companies, advancing the development and deployment of renewable energy and green hydrogen technologies to address global sustainability challenges. Established in 2006, Masdar has developed and partnered projects in over 40 countries, helping them to achieve their clean energy objectives and advance sustainable development. Masdar is jointly owned by Abu Dhabi National Oil Company (ADNOC), Mubadala Investment Company (Mubadala), and Abu Dhabi National Energy Company (TAQA), and under this ownership the company is targeting a renewable energy portfolio capacity of at least 100 gigawatts (GW) by 2030.



Suzlon

The Suzlon Group is one of the leading renewable energy solutions providers in the world with ~20.7 GW* of wind energy capacity installed across 17 countries. Headquartered at Suzlon One Earth in Pune, India; the Group comprises of Suzlon Energy Limited and its subsidiaries. A vertically integrated organisation, with in-house research and development (R&D) centres in Germany, the Netherlands, Denmark,

and India, Suzlon's world-class manufacturing facilities are spread across multiple locations in India. With over 29 years of operational track record, the Group has a diverse workforce of over 6,200 employees. Suzlon is also India's No. 1 wind energy service company with the largest portfolio of over 14.7 GW in wind energy assets. The Group has ~6 GW of installed capacity outside India. Suzlon offers a comprehensive product portfolio led by the 2 MW and 3 MW series of wind turbines.



Octopus Energy

At Octopus Energy Generation, we're building green power for the future. From large solar projects to wind farms which harness the abundant wind on land and at sea, to more localised, people-led renewables in the form of the Fan Club, the Collective and onsite generation connected directly to businesses - we're committed to driving the green energy revolution faster than ever before. We've invested in energy projects and energy transition companies spanning 20 countries and 18 technologies. As one of the largest renewable energy investors in Europe, we manage more than 270 large-scale green energy projects with a combined capacity of 3.9 GW. That's enough energy to power 2.6 million homes every year - and we're building more by the minute.



Ming Yang Smart Energy

Founded in 2006, Ming Yang Smart Energy Group (601615.SL, MYSE.L) is a leading smart energy provider with a diverse portfolio including wind, solar, storage, and hydrogen. We offer cutting-edge equipment, engineering, and services, and have built a robust eco-system for sustainable energy solutions. Recognized among

China's top 500 and the global new energy elite, Ming Yang partners with clients to drive technological innovation and support a green, low-carbon energy future. Ming Yang is steadfast in its corporate mission of "Innovating Clean Energy for All." Leveraging the surging trend of global green and digital economic development, the company is committed to creating "new quality productivity." It reshapes technological innovation and the industrial chain layout, actively steering towards "global clean energy intelligence" and "inclusive clean energy." Ming Yang is dedicated to building a comprehensive circle and a cohesive group, completing the layout of the entire industry, ecology, and globalization of new energy. By constructing a high-quality and sustainable industrial ecosystem, Ming Yang expands application scenarios and creates a "new model" of energy transformation. This not only aids the green and low-carbon transformation of global energy but also propels Ming Yang forward on the global track of the green economy, striving to become a world-class enterprise.

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Global Wind Energy Council

The Unicorn Factory
Av. Infante D. Henrique 143 S09
Lisbon, Portugal

info@gwec.net

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