Summary Report

Floating Offshore Wind Farms Development in APEC Economies for Both Electricity and Green Hydrogen

APEC Energy Working Group

July 2026

Asia-Pacific
Economic Cooperation

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Produced by
Ministry of Energy, Chile
Av. Libertador Bernardo O'Higgins 1449, Santiago Downtown, Building II, 13th Floor
Santiago, Chile

For
Asia-Pacific Economic Cooperation Secretariat
35 Heng Mui Keng Terrace
Singapore 119616
Tel: (65) 68919 600
Fax: (65) 68919 690
Email: info@apec.org
Website: www.apec.org

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Executive Summary

The APEC project titled "Floating Offshore Wind Farms development in APEC economies for both electricity and green hydrogen production" was led by Chile's Ministry of Energy in collaboration with the Asia-Pacific Economic Cooperation (APEC), and co-sponsored by Canada; People's Republic of China; Japan; Peru; Chinese Taipei; and United States. Its primary objective is to promote the advancement of floating offshore wind (FOSW) farms across APEC economies by exploring shared experiences, challenges, and opportunities.

As part of this initiative, the APEC Seminar on "Floating Offshore Wind Farms development in APEC economies for both electricity and green hydrogen production" was held on 24 and 25 of July 2025, in Santiago, Chile. The event convened a diverse group of experts, policymakers, industry leaders, and researchers from across the APEC region to examine the evolving landscape of FOSW technologies and their integration with green hydrogen. The seminar focused on four key areas: opportunities and lessons learned in FOSW development; environmental and social requirements for sustainable deployment; technical challenges in advancing FOSW technologies; and emerging business opportunities from the synergy between offshore wind and green hydrogen.

The seminar generated valuable insights and strategic recommendations, emphasizing enabling policies, environmental and social safeguards, technical barriers, and innovative business models linking offshore wind with hydrogen production. Participants highlighted the importance of regional collaboration, infrastructure investment, and community engagement.

Concluding with a consensus on the strategic role of FOSW in establishing resilient, low-carbon energy systems, the seminar underscored the need for targeted research, supportive regulation, and cross-sector partnerships to fully realize this emerging technology's potential. The insights gathered provide a foundation for future policy development, industry actions, and regional cooperation.

Acronyms and Abbreviations List

CERI: Clean Energy Research Institute.

CfD: Contract for Difference.

ECMPO: Coastal Marine Areas for Indigenous Communities.

ECOE: Environmental Cost of Energy.

ESG: Environmental, social, and governance.

FOSW: Floating Offshore Wind.

GOWA: Global Offshore Wind Alliance.

GW: Gigawatt.

GWEC: Global Wind Energy Council.

HAP: Hierarchical Analytical Process.

INTOG: Innovation and Targeted Offshore Wind Grant.

IRENA: International Renewable Energy Agency.

kW: Kilowatt.

kWh: Kilowatt hour.

LAT: Territorial Analysis Laboratory.

LCOE: Levelized Cost of Energy.

LNG: Liquefied natural gas.

MCDM: Multi-Criteria Decision-Making.

MERIC: Maritime Energy Research and Innovation Centre.

MPA: Marine Protected Area.

NDRC: National Development and Reform Commission.

OSW: Offshore Wind.

O&M: Operation and maintenance.

PPAs: Power Purchase Agreements.

R&D: Research and Development.

SCOE: Social Cost of Energy.

TW: Terawatt.

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1. Introduction

The scarcity of available land in some APEC economies, exacerbated by competition with agriculture and other industries, underscores the need for innovative approaches to electricity generation that minimize land-use conflicts. Offshore Wind (OSW) projects have emerged as a promising solution, with several APEC members—including People's Republic of China; Japan; Republic of Korea; Chinese Taipei; United States; and Viet Nam —already making noteworthy progress in OSW development. Among these efforts, Floating Offshore Wind (FOSW) technology is gaining attention, with various economies exploring its potential at various stages of deployment.

A key challenge for many APEC developing economies lies in the deep waters and steep seabeds near their coastlines—conditions less commonly encountered by European economies with extensive offshore wind experience. This geographic complexity highlights the importance of leveraging the expertise of more developed APEC members to foster regional collaboration and facilitate knowledge sharing in FOSW technology.

To address these challenges, the APEC project "Floating Offshore Wind Farms development in APEC economies for both electricity and green hydrogen production" seeks to advance the adoption of FOSW technology among APEC members. FOSW farms present a strategic solution for regions with limited land and deep coastal waters, providing an opportunity to enhance renewable energy security and system flexibility. Beyond harnessing abundant offshore wind resources, these installations could support the production of green hydrogen, offering a dual benefit of reducing greenhouse gas emissions and contributing to sustainable energy systems.

The APEC project "Floating Offshore Wind Farms development in APEC economies for both electricity and green hydrogen production", led by Chile's Ministry of Energy and co-sponsored by Canada; People's Republic of China; Japan; Peru; Chinese Taipei; and United States, features three outputs:

1. A pre-seminar report detailing the current status of FOSW development across APEC economies.
2. A two-day in-person seminar in Santiago, Chile, held on 24 and 25 of July 2025, focused on sharing experiences, addressing challenges, and identifying opportunities in FOSW development.
3. A post-seminar report summarizing key findings, policy recommendations, and insights from the event's presentations and panel discussions.

This Summary Report, also known as the post-seminar report, outlines the key discussions, trends, and strategic insights from the seminar held in Chile last July. It highlights emerging themes, innovative perspectives, and actionable recommendations. The report serves as a valuable resource for stakeholders seeking to understand the event's outcomes and to guide future policies, research initiatives, and regional cooperation in offshore wind energy and green hydrogen development. **Annex A** includes the pre-seminar report, which provides a detailed overview of the current state of FOSW and OSW projects in the APEC region.

2. Objective of the report

The aim of this report is to provide a comprehensive summary of the key findings, discussions, and insights shared during the APEC seminar on "Floating Offshore Wind Farms development in APEC economies for both electricity and green hydrogen production", held on 24 and 25 of July 2025, in Santiago, Chile.

3. Methodology

To ensure a structured and coherent document, the information presented during the seminar was systematically reviewed and summarised. Notes, presentations, and transcripts were analysed to extract core messages, which were then synthesised into concise narratives. Key topics were identified based on the seminar agenda and participant interventions, and then grouped into major areas of discussion. This process was guided by principles of clarity, relevance, and traceability, ensuring that the final summary accurately reflects the seminar's content and supports informed decision-making.

4. General information about the Seminar

The APEC Seminar titled "Floating Offshore Wind farms development in APEC economies for both electricity and green hydrogen production" was held on 24 and 25 of July 2025, in Santiago, Chile.

The seminar was structured around four main topics:

- Topic 1: Opportunities and lessons learned from the development of Floating Offshore Wind projects in the APEC region.
- Topic 2: Environmental and social requirements in the development of Offshore Wind farms.
- Topic 3: Technical challenges in developing Floating Offshore Wind technology in the APEC region.
- Topic 4: New business opportunities and synergies between the development of Offshore Wind technologies and the production of green hydrogen.

On the first day, 24 of July 2025, Topics 1 and 2 were addressed. The second day, 25 of July 2025, focused on Topics 3 and 4. A detailed agenda for each day can be found in **Annex B**.

Participants

Regarding seminar attendance, a total of 78 participants attended on Day 1, and 58 participated on Day 2. Attendees included policymakers from government, academia, energy trade associations, and industry sectors. The gender distribution was approximately 35% female and 65% male on Day 1, and 32% female and 68% male on Day 2.

Participants represented five APEC economies: Chile; People's Republic of China; Papua New Guinea; United States; and Viet Nam. Additionally, there were representatives from Denmark, Norway, and the United Kingdom (UK).

Experts

Eighteen experts in the field delivered presentations, representing economies such as Chile; People's Republic of China; Denmark; Germany; Norway; Spain; and the UK. Most speakers were affiliated with government, academia, or energy companies involved in offshore wind development. The gender distribution among presenters was approximately 39% female and 61% male.

List of experts:

- Ms Mariel Robles, Project Manager at the Project Development Division in the Ministry of Energy, Chile.
- Ms Amisha Patel, Head of Secretariat of the Global Offshore Wind Alliance (GOWA), Denmark.
- Dr Yiming Zhou, Assistant General Manager at the Huaneng Clean Energy Research Institute (CERI), People's Republic of China.
- Mr Eduardo Acuña, Head of Project Development Division in the Ministry of Energy, Chile.
- Ms Nathalie Almonacid, Research and Development (R&D) Coordinator at the Maritime Energy Research and Innovation Centre (MERIC), Chile.
- Mr Juan Amate, CEO Blue Lines Energia, Spain.
- Mr Andy Riley, Head of Offshore Wind Development for Crown Estate Scotland, UK.
- Mr John Sverre Rønnevik, Global Head of Sustainability and Engineering at Deep Wind Offshore, Norway.
- Dr Cristian Mattar, Director of the Laboratory for the Analysis of the Biosphere of the Territorial Analysis Laboratory, Faculty of Agronomic Sciences, Universidad de Chile, Chile.
- Ms Audrey Jones, Principal Consultant at Howell Marine Consulting, UK.
- Dr Zhang Xin, Deputy Director of the New Energy Institute at the Science and Technology Research Institute of the State Power Investment Corporation, People's Republic of China.
- Dr Gonzalo Tampier, Associate Professor and Director of the Institute of Naval and Maritime Sciences at the Universidad Austral de Chile, Chile.
- Dr Luis Moran, Professor in the Department of Electrical Engineering, Universidad de Concepción, Chile.
- Ms Úna Brosnan, Co-founder and Director at 17 Energy & Renewable UK, UK.
- Ms Corinne Ribbons, International Advisor in the Ministry of Energy, Chile.
- Mr Mauricio Riveros, Energy Sector Lead at InvestChile, Chile.
- Mr Arno van den Bos, Analyst green hydrogen energy and Power-to-X at the International Renewable Energy Agency (IRENA), Germany.
- Ms Marcela Betancur-Díaz, Manager Offshore Renewables and Transport, The Carbon Trust, UK.

5. Overview of the current state of Floating Offshore Wind projects in the APEC region

Ms Mariel Robles, Project Manager at the Project Development Division of Chile's Ministry of Energy, presented an overview of FOSW project development within APEC economies. She emphasized that the region faces several challenges that FOSW technology could help address, including increasing energy demands, land scarcity issues in members such as Japan and Republic of Korea, and the technical difficulties associated with deep-water locations, prevalent in some economies such as Australia; Chile; Japan; Republic of Korea; United States; and Peru.

The Chile's Ministry of Energy conducted an internal study to evaluate the current status of OSW and FOSW in the APEC region. This effort aimed to establish a foundation for the seminar, focusing on challenges, opportunities, and future directions for the technology's advancement across the region. The study relied on desktop research, data collection from publicly available sources, and analysis techniques, enabling the compilation of a comprehensive and standardized dataset to inform development phases across the region.

The study identified three key development phases:

- Phase 1: Concept/Design — Projects in early stages, up to pre-construction.
- Phase 2: Construction — Projects in physical development.
- Phase 3: Operation — Projects already generating energy.

Across all phases, a total of 783 offshore wind projects were recorded in the region, with a total capacity of 536.9 gigawatts (GW). Of these, 82 are floating installations (81.2 GW), 64 are fixed-bottom (80.6 GW), and 637 projects (375.0 GW) did not specify the installation type. Most projects are in the Concept/Design stage (Phase 1).

In terms of capacity by APEC economy, People's Republic of China leads significantly, with 172.3 GW (32% of the regional total), followed by Australia with 96.8 GW (18%), and the Philippines with 58.1 GW (11%). Notably, several economies—including Brunei Darussalam; Indonesia; Malaysia; Mexico; Papua New Guinea; Peru; The Russian Federation; Singapore; and Thailand—currently have no OSW projects in any development stages. These APEC members often have limited wind resources or rely heavily on fossil fuels, which could make project development costly and challenging.

Overall, the APEC region is well-positioned to expand both OSW and FOSW projects. While People's Republic of China dominates in project development, other members demonstrate substantial progress. It is recommended that APEC, alongside European economies, foster knowledge sharing to accelerate the deployment of offshore wind technologies. The full study is available in **Annex A**.

6. Summary and main findings of presentations and panel discussions

This section will present the findings of presentations and panel discussions, by topic:

- Topic 1: Opportunities and lessons learned from the development of Floating Offshore Wind projects in the APEC region.
- Topic 2: Environmental and social requirements in the development of Offshore Wind farms.
- Topic 3: Technical challenges in developing Floating Offshore Wind technology in the APEC region.
- Topic 4: New business opportunities and synergies between the development of Offshore Wind technologies and the production of green hydrogen.

6.1 Topic 1: Opportunities and lessons learned from the development of Floating Offshore Wind projects in the APEC region

The first topic had presentations from five experts on the subject.

- “Floating Offshore Wind, Global Market Trends” by Ms Amisha Patel, Denmark.
- “People’s Republic of China’s practical insights and recent advancements in Floating Offshore Wind development” by Dr Zhou Yiming, People’s Republic of China.
- “Development of Offshore Wind energy projects in Chile” by Mr Eduardo Acuña, Chile.
- “R&D Experiences for scaling up Floating Offshore Wind and its potential in Chile” by Ms Nathalie Almonacid, Chile.
- “Development of Floating Offshore Wind energy: A promoter’s perspective” by Mr Juan Amate from Spain.

6.1.1 Floating Offshore Wind, Global Market Trends

Ms Amisha Patel, Head of Secretariat at GOWA, provided an insightful overview of the global floating offshore wind market and recent developments in her presentation titled “Floating Offshore Wind, Global Market Trends.” She emphasized that FOSW technology unlocks access to vast deep-water wind resources, which constitute approximately 80% of the total offshore wind potential worldwide.

According to the 2025 Global Wind Energy Council (GWEC) Intelligence report, FOSW capacity is expected to begin increasing significantly by 2030. The market is projected to experience a compound annual growth rate from 2030 onwards, rendering the technology commercially viable by 2035. Ms Patel underscored the notable progress within the APEC region, highlighting four prominent FOSW projects. These include:

- The Green Volt project in the UK, developed by Vargronn and Flotation Energy, which secured an INTOG leasing round in September 2024 and has a capacity of 560 MW.
- The Pennavel project in France, awarded a license in May 2024 with a capacity of 250 MW.
- The Firefly project in Republic of Korea, developed by Equinor, which also obtained a feasibility license and has a capacity of 750 MW.

Despite these advancements, only 0.1% of currently operational offshore wind projects utilize floating technology. Additionally, a substantial portion of the global FOSW pipeline remains in early planning stages. Given this scenario, GOWA and other stakeholders are urged to play a pivotal role in accelerating FOSW deployment. Four key drivers were identified to facilitate this growth:

1. **Scaling up**: Larger wind farms are essential to achieve economies of scale. The evolving size of turbines will increase energy output per platform and help reduce costs per megawatt.
2. **Technology and supply chain maturation**: Continuous technological improvements are vital for enhancing performance and reliability. Standardizing components and designs can lower costs, streamline permitting processes, and ensure safety, leveraging insights from pilot and pre-commercial projects.
3. **Policy stability**: Supportive policy and regulatory frameworks are critical. Financial incentives, such as contracts for difference and tailored power purchase

agreements (PPAs), or auctions with floating-specific categories, could encourage project development.

4. **Investor confidence**: Government-industry collaboration is necessary to de-risk projects and attract investment. Demonstrated operational performance from early floating projects can build trust among investors, utilities, and lenders.

Ms Patel also emphasized that the sustainability of the FOSW market hinges on environmental stewardship and coexistence strategies. Developing FOSW responsibly involves rigorous environmental assessments, adopting circular economy principles, and establishing proactive coexistence strategies with marine ecosystems and industries. Existing experience suggests that FOSW could reduce environmental impacts by minimizing seabed disturbance and underwater noise. It holds potential for coexistence with fisheries, provided technological advancements in turbine blade and material recycling are pursued to minimize lifecycle impacts. Further research is also needed on artificial reef effects, avian interactions (currently deemed low risk), and electromagnetic fields. Finally, proactive engagement with fisheries—using tools like Marine Spatial Planning—is essential to mitigate risks and facilitate shared marine space utilization, thereby fostering sustainable development of FOSW.

6.1.2 People's Republic of China's practical insights and recent advancements in Floating Offshore Wind development

Dr Zhou Yiming, Assistant General Manager at the Huaneng Clean Energy Research Institute (CERI), provided an in-depth overview of People's Republic of China's experiences and lessons learned in developing FOSW projects. His presentation highlighted the rapid global momentum towards deep-sea offshore wind initiatives, driven by the urgent need for climate change mitigation and achieving carbon neutrality.

The potential of floating wind technology is significant. According to data from GWEC, global installed capacity is projected to reach 18.9 GW by 2030. Currently, Europe leads with 58%, followed by Asia at 29%, and North America at 13%. This growth is primarily fuelled by abundant wind resources in deep-sea zones beyond 50 meters, which are largely underutilized—less than 0.5% of the potential, despite the world's estimate of over 71,000 GW in global offshore wind resources, with more than 70% in deep-sea areas.

Cost reduction and technological innovation are key drivers for the expansion of FOSW. Since Equinor's Hywind in 2009, costs have declined dramatically. In 2019, the cost to install a floating turbine was approximately USD 5,800 per kilowatt (kW), down by 70% from USD 42,000/kW in 2009. This trend results from technological advances and increased prototype deployment, especially in Japan; United States; France; and the UK. Innovation in floating body designs, especially in the People's Republic of China; Japan; United States; Denmark; and Germany, has accelerated since 2017, fostering patent development.

People's Republic of China possesses extensive offshore wind resources, estimated at 3.08 TW, with around 66%, or approximately 2.04 TW, situated in deep-sea zones. The government's strategic focus is evident through recent initiatives such as the September 2024 Deep-Sea Offshore Wind Power Pilot Program. The plan aims to install over 150 GW of FOSW capacity by 2030, focusing on key sea areas.

People's Republic of China's supply chain has made notable progress, with domestic companies like MingYang, GoldWind, and others developing floating turbines with about 70% industry maturity. Foundations have shifted towards steel-concrete semi-submersible and tension leg platforms, with key players such as Sinohydro and CIMC

Raffles. Mooring systems are progressing rapidly, although reliance on European HMPE ropes persists. Submarine cables are around 60% mature, with local firms like Orient Cable and ZTT Group advancing dynamic cable research.

Despite these advancements, challenges remain, including regulatory complexities, with multiple agencies causing procedural delays, and R&D being concentrated mainly on near-shore solutions. The market lacks sufficient subsidy mechanisms, and high costs impede technological progress. Engineering challenges include developing durable, cost-effective floating foundations, ultra-long blades exceeding 150 meters, and advanced deep-sea generators.

People’s Republic of China’s current Levelized Cost of Energy (LCOE) for FOSW is about USD 0.12/kWh, roughly three times higher than fixed-bottom turbines. This high-cost stems from high unit manufacturing costs, limited scale, and conservative designs.

People’s Republic of China has built five prototypes along the innovation continuum (Figure 1); however, scaling up to achieve industrial maturity remains a key goal.

Figure 1 FOSW prototypes in People’s Republic of China

Typical Project	Three Gorges "Leading"	CSSC Haizhuang "Fu Yao"	CNOOC "Guanlan"	Guoneng “Sharing”	MingYang “OceanX”
Demonstration Year	2021	2022	2023	2024	2024
Site	Yangjiang, GD	Zhanjiang, GD	Wenchang, HN	Putian, FJ	Yangjiang, GD
Capacity (MW)	5.5	6.2	7.25	4.0	8.3 × 2 turbines
Water Depth (m)	30	60	120	35	45
Foundation Type	Semi-sub	Semi-sub	Semi-sub	Semi-sub	Semi-sub
Displacement (t)	13,000	15,600	12,000	9,800	15,000
Weight (t)	4,300	4,000	4,000	4,000	8,200 (steel + concrete)
Mooring System	Catenary	Catenary	Catenary	Catenary	Catenary (Single Point Mooring)
Demonstration Projects					

Dr Yiming emphasized that international collaboration is vital for accelerating FOSW development. Strategies include policy support, joint demonstration projects, and standard harmonization. The goal is to overcome core technical challenges by 2030, achieve a capacity of over 30 GW of FOSW, and develop integrated systems including marine ranching, green hydrogen, and energy storage by 2040, ultimately contributing to People’s Republic of China’s carbon neutrality objectives by mid-century.

6.1.3 Development of Offshore Wind energy projects in Chile

Mr Eduardo Acuña, Head of the Project Development Division at Chile’s Ministry of Energy, provided an overview of the progress in OSW development in Chile. The strategic transition from energy dependence to energy autonomy offers significant opportunities to expand renewable energy capacities, particularly offshore wind, which can play a vital role in decarbonizing sectors responsible for approximately 75% of greenhouse gas emissions, including electricity, transportation, and industry.

Chile possesses outstanding offshore wind potential, with an estimated 957 GW of technical capacity—more than twenty-five times the current installed capacity. Of this potential, 826 GW are in floating wind resources spread along nearly the entire coastline, including areas close to major consumption hubs. High-wind regions such as Coquimbo, Valparaíso, Biobío, Los Lagos, and Magallanes position this economy among leaders in offshore wind development worldwide, taking advantage of proximity to demand centres. This proximity reduces transmission losses, decreases overall system costs, and enhances infrastructure efficiency.

The planned retirement of 28 coal-fired power plants, totalling 5.5 GW—eleven already disconnected, nine scheduled within two to three years, and ten by 2035–2040—presents opportunities to repurpose existing ports, substations, and transmission lines. This reuse can significantly lower project costs and expedite development processes, while also minimizing conflicts related to land use.

Nevertheless, several non-technical challenges remain. Marine spatial planning is still under development, and the permitting process involves multiple agencies, highlighting the need for improved coordination. Infrastructure assessments are ongoing, including upgrades to ports and transmission networks. Additionally, limited environmental and social data hamper early-stage project screening. Balancing offshore siting with fisheries, conservation, and navigation priorities is critical, emphasizing the importance of early community engagement and principles of equity and inclusion to ensure social acceptance and shared benefits.

Efforts are underway to evaluate local capabilities and supply chain readiness, exploring industrial opportunities in floating platforms, cables, maintenance, and offshore services. Offshore wind development also offers potential synergies with green hydrogen production, energy storage, and energy exports.

Supported by the World Bank and collaborating with Denmark; Norway; and United Kingdom, Chile is developing an Offshore Wind Roadmap with initial projects and concession requests already in progress. Strengthening regulatory frameworks, institutional coordination, and active international cooperation—through platforms such as GOWA and APEC—are key strategies aimed at establishing this market as a regional leader in offshore wind.

6.1.4 R&D Experiences for scaling up Floating Offshore Wind and its potential in Chile

Ms Nathalie Almonacid, R&D Coordinator at MERIC, highlighted the vital role of research and development in expanding FOSW in Chile. Scaling FOSW requires substantial investment in R&D and strong multi-sector collaboration. R&D validates early-stage technologies in real environments, reduces investment risks, builds local expertise and infrastructure, and facilitates cross-sector cooperation among industry, academia, and government. Pilot sites and demonstration projects are key milestones in this development journey.

Global leaders in offshore wind R&D provide valuable examples. Norway exemplifies effective collaboration, with government support through ENOVA reducing financial risks. Industry leader Equinor, along with research institutions like SINTEF, NTNU, and UiB, have advanced key solutions such as mooring systems, power integration, and operations, guided by strategic plans like Energi21. The UK has established initiatives such as the Floating Offshore Wind Centre of Excellence (FOSW CoE) led by ORE Catapult, and the Carbon Trust's Joint Industry Programme, fostering industry-academia collaboration. The UK also launched the UK Net Zero Innovation Portfolio with significant funding, supporting multiple floating wind projects. Strategic test sites like Wave Hub and EMEC further support technology validation.

People's Republic of China supports FOSW development through government policies, industry leadership, and academia. The National Development and Reform Commission (NDRC) funds pilot projects and aims to reduce costs while expanding its supply chain. Major Chinese companies, including Huaneng, CSIC, and SPIC, operate research institutes focused on floating wind technology. Universities contribute through research on control systems and platform design, while test facilities such as Zhejiang University's Huajiachi platform facilitate validation.

Portugal advances FOSW via academic research, industrial innovation, and public funding. Research institutions like INESC TEC and the University of Porto study floating platform dynamics, while EDP Renováveis, through Ocean Winds, leads technological innovations. The Viana do Castelo Technological Free Zone supports manufacturing of WindFloat foundations, with local naval yards actively constructing components. Portugal also participates in European initiatives such as Horizon Europe and OceanERA.

Japan supports FOSW due to geographic similarities with Chile, including deep waters close to shore and seismic activity. Government-backed projects through NEDO, and research associations like FLOWRA and FLOWCON, have initiated early pilot projects and expanded Japan's offshore wind strategy beyond territorial waters. Leading universities and research institutes contribute to technological advancements.

Common enablers include government-backed R&D programs, dedicated test infrastructure, and collaborative models involving industry, academia, and government. These efforts are embedded within long-term strategic plans aligned with decarbonization and economic development goals, accelerating innovation and deployment of FOSW worldwide.

In Chile, research and development is critical for advancing the floating offshore wind industry, particularly given the absence of a shallow continental shelf, which makes floating technology indispensable. With over 6 GW of project proposals concentrated in the Biobío and southern regions, there is significant momentum. R&D efforts are vital for adapting floating platforms to Chile's unique conditions, including seismic activity, complex bathymetry, and extreme weather events. It also plays an essential role in environmental and community impact assessment, developing local supply chains, and establishing training programs. Early-stage test sites, akin to Norway's METCentre, could serve as foundational infrastructure. Despite substantial wind resources and ocean potential, Chile faces limitations such as inadequate infrastructure, ocean space governance, and a developing local supply chain, emphasizing the need for site-specific innovation and coordinated planning. There are notable financial opportunities, including the potential creation of an advanced manufacturing technology centre in the Biobío Region, with an estimated budget of around USD 8.6 million.

To capitalize on FOSW, Chile should develop a strategic roadmap fostering public-private collaboration, dedicated test infrastructure, and global partnerships. Integrating FOSW with regional hydrogen and port development strategies will maximize synergies. Success hinges not only on technological readiness but also on effective coordination, long-term vision, and sustained investment. This sector presents a unique opportunity for Chile to develop distinctive capabilities, lead regional energy transformation, and establish a competitive position in the global renewable energy market.

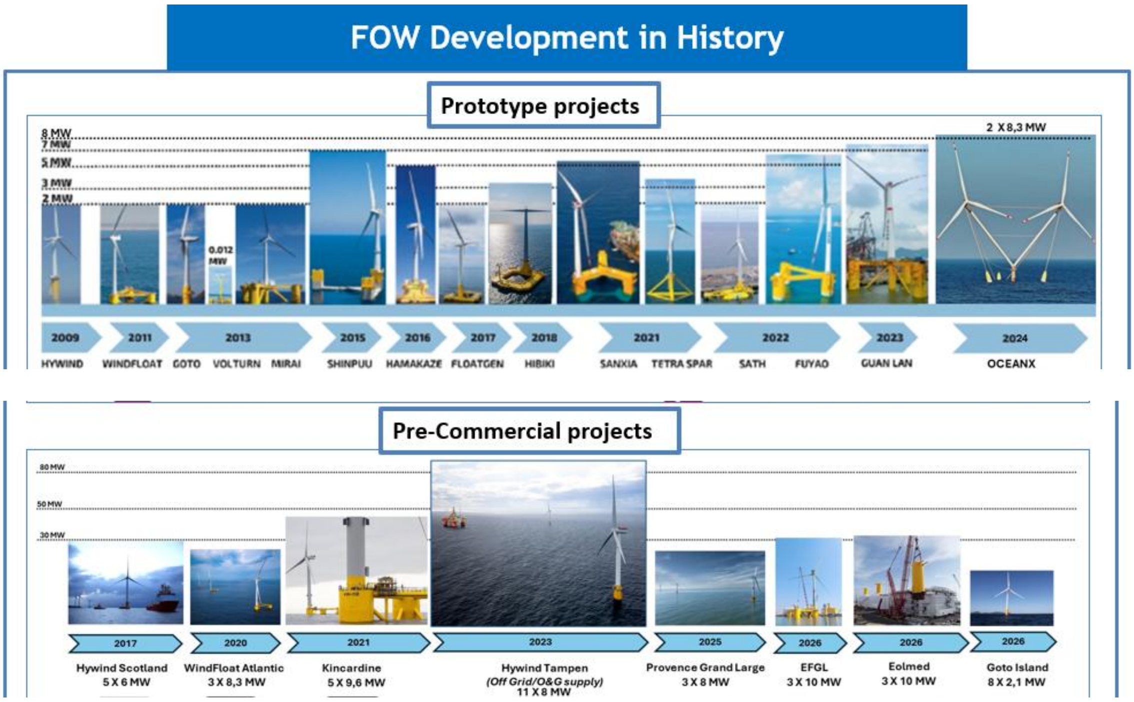
6.1.5 Development of Floating Offshore Wind energy: A promoter's perspective

Mr Juan Amate from Blue Lines Energia, Spain, provided an insightful analysis of FOSW development from a promoter's perspective. His discourse emphasized key advantages of FOSW technology and its strategic importance for expanding renewable energy capacity.

First, FOSW offers access to significant wind resources. Data indicates that 70–80% of global offshore wind potential resides in waters deeper than 60 meters, where wind conditions are notably optimal. As the technology matures, this vast resource base could facilitate competitive LCOE. Second, FOSW enables market expansion by allowing development in regions previously inaccessible due to bathymetric constraints. Compared to fixed-bottom solutions, FOSW presents a reduced environmental footprint, making it an attractive option for sustainable development. Third, the sector benefits from established technical foundations, including advanced design tools, basin testing, and successful demonstration projects that integrate floating and turbine technologies, fostering confidence for future projects. Fourth, FOSW offers efficient and scalable designs that are less dependent on seabed conditions, aligning with standards necessary for broader industrial adoption. Fifth, standardization and industrialization are critical drivers for reducing risks, enhancing market competitiveness, and attracting new players into the supply chain. Moreover, leveraging expertise from naval engineering, oil and gas industries, and port infrastructure reduces operational risks through onshore fabrication and assembly. Utilizing standard vessels and streamlined logistics further optimizes costs. Flexible maintenance strategies can extend asset longevity, while repeated deployment of standardized units shortens learning curves, progressively lowering costs.

The evolution of FOSW technology is demonstrated visually in Figure 2, which depicts progress over the years. Since Europe initiated prototype development in 2009, the leadership in FOSW has shifted towards the Asia-Pacific region. Japan pioneered early efforts from 2013 to 2018, establishing foundational technology, while People's Republic of China emerged as a key player from 2021. People's Republic of China has launched prototypes such as OceanX, rated at 16.6 MW—more than doubling earlier models' capacity. Upcoming projects scheduled for 2025 and 2026 include semi-submersible turbines from CTG, SPIC, and Huaneng, as well as a 16 MW tension leg platform (TLP) by CNOOC. Currently, semi-submersible configurations dominate the landscape, followed by spar and barge types.

Figure 2 FOSW over the years



Europe continues to lead in pre-commercial projects, with deployments in Portugal, Norway, and France. Scotland has been particularly active, with projects like Hywind Scotland (2017) and Kincardine (2021), and over 14.5 GW of seabed rights secured through ScotWind leasing rounds. The UK's Innovation and Technology Offshore Group (INTOG) has facilitated direct supply to oil and gas infrastructure, exemplified by the Green Volt project, which is the first to secure a Contract for Difference (CfD). Other initiatives in the Celtic Sea contribute additional 1.5 GW of seabed rights. Republic of Korea is rapidly emerging, with agreements from five developers for a combined 6 GW, prominently led by Equinor's Bandibuli/Firefox project. Despite delays in leasing procedures, progress in Japan; France; Italy; Portugal; and Spain underscores continued interest and technological advancement.

In Chile, the prospects for FOSW are particularly promising due to favourable geographic, climatic, and infrastructural conditions. Coastal waters ranging from 60 to 200 meters depth are well-suited for proven floating technologies. Strong, consistent winds—up to 10.8 m/s at 150 meters—coupled with optimal wave patterns, reduce structural loads and enhance turbine durability. The proximity of suitable sites to demand centres simplifies transmission infrastructure, often obviating the need for offshore substations. Additionally, strategic site selection can reduce conflicts with marine ecosystems, fisheries, and local communities, positioning Chile as an ideal environment for scalable, sustainable FOSW deployment.

FOSW is vital for Chile's energy transition, especially as traditional thermal plants are phased out by 2030–2040. It provides a reliable, high-capacity power source crucial for decarbonization and energy security. Unlike intermittent solar or expensive liquefied natural gas (LNG), FOSW offers consistent energy output aligned with local demand, supporting sustainable economic development while reducing dependency on fossil fuels.

In conclusion, Chile represents a strategic opportunity for FOSW development. Its favourable geography and technological trends position it for regional leadership. To realize this potential, short-term reforms in concession laws, grid planning, environmental procedures, and port infrastructure are necessary. Implementing mechanisms like two-sided CfDs will be pivotal in attracting investment and establishing Chile as a global benchmark in offshore wind energy.

6.2 Topic 2: Environmental and social requirements in the development of Offshore Wind farms.

The second topic had presentations from four experts on the subject.

- “Floating Offshore Wind – A View from Scotland” by Mr Andy Riley, UK.
- “Beyond the bids: Environmental and social commitments in Offshore Wind development” by Mr John Sverre Rønnevik, Norway.
- “Where to install Offshore Wind farms in Chile? A geospatial analysis based on legal and environmental perspectives” by Dr Cristian Mattar, Chile.
- “The environmental impacts of Floating Offshore Wind: What’s known and what’s unknown” by Ms Audrey Jones, UK.

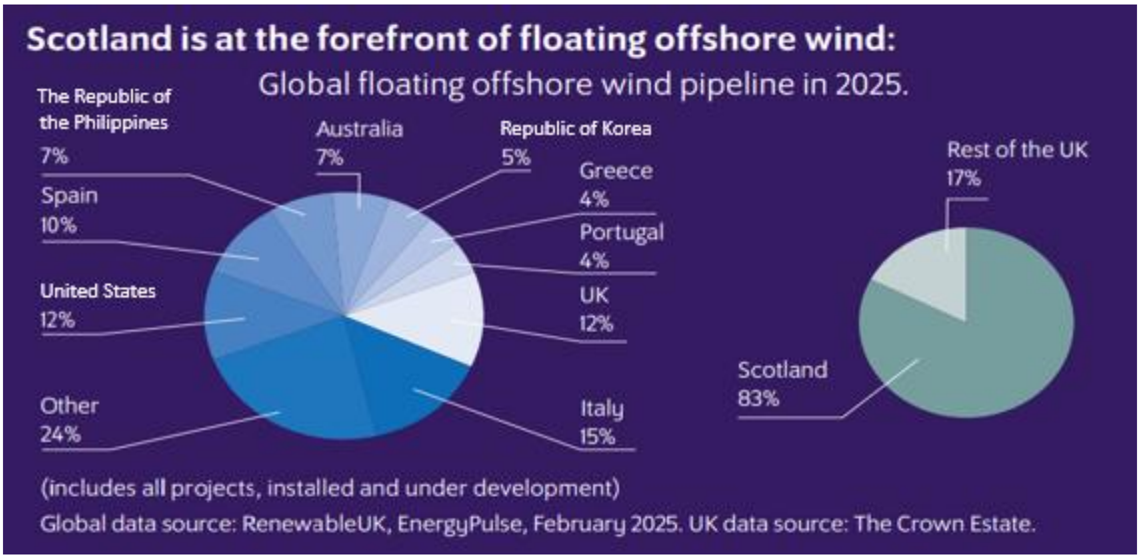
6.2.1 Floating Offshore Wind – A View from Scotland

Mr Andy Riley, Head of Offshore Wind Development for Crown Estate Scotland, provided an overview of Scotland’s experience in developing FOSW technology, highlighting the sector’s progress, opportunities, and challenges.

Crown Estate Scotland manages property rights on behalf of the Scottish people, including land, coastline, and seabed. It leased the seabed up to 12 nautical miles for activities such as cables, pipelines, and aquaculture. For offshore renewable energy projects, gas, and carbon storage rights extend out to 200 nautical miles. Marine Scotland oversees marine planning and project consents, but Crown Estate Scotland issues leases once all necessary permissions are obtained.

Scotland plays a pivotal role in the UK’s FOSW sector, which is evolving as a critical part of its renewable energy strategy. The UK accounts for about 12% of the global floating offshore wind pipeline (Figure 3). Most of this activity occurs in Scottish waters, which host approximately 83% of UK's FOSW projects, underscoring Scotland's strategic importance and potential in advancing FOSW technology and achieving the UK’s net-zero goals.

Figure 3 Global FOSW pipeline in 2025



Currently, Scotland operates two FOSW projects: the Kincardine project, with a capacity of 49.5 MW using semi-submersible foundations, and Hywind Scotland, a 30 MW project based on spar foundations. Under development, the Pentland project stands out as a 100 MW pilot initiative. The ScotWind Leasing round includes 20 projects—15 of which are floating—amounting to around 21 GW of potential capacity. Additionally, the INTOG leasing round plans for 12 floating projects with an estimated 5.4 GW capacity. These efforts position Scotland as a global hub for floating wind innovation and large-scale deployment.

Despite considerable progress, the sector faces several challenges. Key issues include technological maturity, cost reduction, supply chain readiness, infrastructure development, and regulatory processes. To make FOSW commercially viable at scale, the industry aims to cut project costs by 45%. This includes reducing capital costs and operational expenses to achieve strike prices below GBP 100/MWh by 2030 and below GBP 70/MWh by 2050. Strategies such as industrialization, learning-by-doing, and lifecycle innovation are vital for reaching these targets.

The supply chain's capacity limitations pose risks to timely project delivery. Beyond turbine manufacturing, components like foundations, moorings, and system integration require capacity expansion. Enhancing competitiveness through innovation is crucial, but technical immaturity in some components remains a concern. Additionally, promoting domestic content is politically sensitive, affecting local economic development and policy alignment.

Infrastructure development is critical for scaling FOSW. Scotland is transforming the former Haventus Ardersier site, a 450-acre facility previously used for oil and gas operations, into a hub for manufacturing, storage, and assembly, with GBP 400 million in investment. Similarly, the Port of Cromarty Firth, a well-established port servicing renewable, received GBP 55 million to expand its facilities, creating an integration hub for offshore wind.

Finally, securing project approvals remains complex. Current processes, such as 'like-for-like' mitigation, and increasing competition for marine space with fishing and other sectors complicate planning. Effective spatial planning is essential, guided by resource assessments like LCOE. Coordinating plans and policies will ensure sustainable and equitable use of marine resources, supporting Scotland's growth in the floating offshore wind sector.

In summary, Scotland's experience demonstrates the sector's vast potential and the need for strategic collaboration, innovation, and careful planning to overcome existing challenges and unlock future opportunities in floating offshore wind technology.

6.2.2 Beyond the bids: Environmental and social commitments in Offshore Wind development

Mr John Sverre Rønnevik, a leading figure at Deep Wind Offshore and representing the Royal Norwegian Embassy in Santiago, provided a detailed and insightful overview of the environmental, social, and governance (ESG) considerations critical to OSW, with particular emphasis on FOSW. His presentation underscored the importance of embedding comprehensive ESG metrics within project development to promote sustainability, resilience, and social acceptance.

A key lesson highlighted by Rønnevik pertains to the limitations of relying solely on easily quantifiable metrics such as LCOE. Indeed, while LCOE is useful for comparing different technologies, it fails to account for broader impacts on communities and ecosystems, or issues of equitable benefit and risk distribution. When critical factors—such as environmental and social impacts—are difficult to quantify, they tend to be undervalued or overlooked. Therefore, he advocates integrating additional metrics like the Social Cost of Energy (SCOE) and the Environmental Cost of Energy (ECOE).

SCOE aims to quantify societal impacts, including affordability, equity, public health, and system resilience. Despite extensive discourse within academic and policy circles, SCOE remains underutilized in actual project procurement and investment processes. Governments can play a pivotal role by embedding SCOE into auction mechanisms, incentivizing projects that contribute to local employment, community development, and enhanced grid resilience, aligning project incentives with societal priorities.

ECOE, still in its developmental stage, is the most urgent aspect of ESG assessment for FOSW. It seeks to quantify lifecycle environmental impacts—such as biodiversity loss, seabed disturbance, resource consumption, and circularity—per unit of energy produced (kWh). For instance, some renewable projects, like desert solar farms, typically exhibit low carbon emissions but may have high water requirements and ecological disruption. Incorporating ECOE provides a more holistic environmental assessment, extending beyond traditional carbon-focused metrics, thus enabling better-informed decision-making.

Rønnevik emphasizes that all energy projects entail a spectrum of impacts—some negative, but many positive—such as creating jobs, fostering innovation, and increasing energy system resilience. An effective ESG strategy balances these factors and adopts a 'triple bottom line' approach—encompassing environmental sustainability, social responsibility, and economic viability. Policy frameworks designed to prioritize ESG performance can incentivize projects delivering broader societal benefits, beyond mere cost competitiveness.

Norway exemplifies these principles through its strategic FOSW roadmap. The economy's vast offshore oil and gas expertise, advanced floating platform design capabilities, and a well-established supply chain have positioned it as a leader in floating wind technology. Site selection considerations—such as visual impact restrictions and fishing industry concerns—also influence development plans, often resulting in optimized LCOE. Norway's landmark 1500 MW SNII project, awarded in 2024, signifies its transition from fixed-bottom to large-scale floating wind development. The government aims to deploy 30 GW of offshore wind capacity by 2040 (see Figure 4), driven by the dual goals of renewable energy generation and job creation. Support measures include over USD 3 billion allocated to the first commercial FOSW tender, complemented by early-stage support via the Enova small-scale grant program, which de-risks innovative projects and fosters cost reductions.

Figure 4 Norway's roadmap for floating offshore wind

Norway's leadership is exemplified by pioneering projects such as Hywind Demo (2009), the world's first full-scale floating wind turbine; TetraSpar (2021), recognized as the first fully industrialized floating foundation; and Hywind Tampen (2023), the largest floating wind farm, which supplies power directly to offshore oil and gas installations. As of 2024, Norway's offshore wind supply chain export value has reached approximately USD 4 billion—more than doubling since 2022. This shift underscores a strategic pivot towards renewable energy sectors.

Norwegian companies, including Equinor, continue to operate globally, contributing to projects such as Dogger Bank, Hywind Scotland, and the Firefly project in Republic of Korea, reinforcing Norway's leadership and export capacity in floating wind technology.

Mainstream Renewable Power also expands FOSW initiatives across Asia and South America, further exemplifying Norway's commitment to international cooperation and innovation.

From a procurement perspective, Norway adopts a qualitative-first auction approach exemplified by the Utsira Nord tender. This model emphasizes project maturity, technical capability, environmental impact, and supply chain robustness over simple cost metrics. Successful bidders undergo rigorous environmental assessments, reflecting Norway's advanced legal framework, exemplified by the 2022 Norwegian Transparency Act, which mandates transparent, responsible business conduct.

This strategic focus on ESG integration and purpose-driven criteria serves to promote sustainable sector growth. By moving away from merely cost-based selection processes, Norway advocates prioritizing societal and environmental benefits, which fosters long-term resilience and acceptance. Such models offer valuable insights for emerging markets, including Chile.

Chile, with its existing permitting infrastructure for bottom-fixed offshore wind, can adopt a phased approach like Norway's. Early focus on bottom-fixed projects allows for learning and capacity building while supporting future expansion into floating wind technology. The Chilean government could facilitate this transition by assisting with impact assessments, ensuring grid capacity, and incentivizing power purchase agreements, creating a conducive environment for early projects, and laying the groundwork for floating wind development. Ultimately, adopting Norway's integrated and purpose-oriented approach can foster a resilient, sustainable offshore wind sector in Chile.

6.2.3 Where to install Offshore Wind farms in Chile? A geospatial analysis based on legal and environmental perspective

Dr Cristian Mattar, Director of the Laboratory for the Analysis of the Biosphere at the Territorial Analysis Laboratory (LAT), from the Faculty of Agronomic Sciences at the Universidad de Chile, offered a perspective about where to install offshore wind farms in Chile based on a geospatial analysis built on legal and environmental perspectives.

Since 2014, the LAT has been actively engaged in OSW development, contributing through a series of analytical studies and strategic assessments. The initial report, *"Offshore Wind Potential in Chile – A First Approach"*, published in 2014, laid the groundwork for understanding the economy's OSW opportunities. Subsequent publications have explored key dimensions such as the LCOE, the legal and regulatory framework, and the potential for OSW in isolated regions. More recently, LAT's efforts have shifted toward identifying optimal locations for project deployment, reflecting a maturing focus on implementation and spatial planning.

In Chile, several regions exhibit high OSW potential but are located near areas with significant environmental restrictions. This presents a complex challenge for identifying suitable sites for offshore wind farm development. To address this, the LAT has undertaken a preliminary geospatial analysis using a Hierarchical Analytical Process (HAP). This method offers a rapid and structured approach to evaluating environmental and spatial constraints, providing an initial assessment of where offshore wind installations could be most viable. The objective is to support informed decision-making by balancing technical potential with environmental considerations.

Initial results from LAT's geospatial analysis indicate that using *a priori* mapping based on environmental and spatial restrictions significantly enhances site selection for OSW farms. Approximately 65% of Chile's marine territory exhibits low limitations for offshore wind development, suggesting substantial untapped potential. Among the most promising regions are Los Ríos, Araucanía, and Biobío, which combine favourable wind conditions with a supportive legal framework.

Looking ahead, future work will incorporate sensitivity analyses of the LCOE across different marine regions. This will involve integrating environmental and economic factors through a combined Hierarchical Analytical Process and Multi-Criteria Decision-Making (MCDM) framework. These efforts aim to provide a more comprehensive and balanced evaluation of offshore wind feasibility in Chile.

6.2.4 The environmental impacts of Floating Offshore Wind: What's known and what's unknown

Ms Audrey Jones, Principal Consultant at Howell Marine Consulting, presented on the environmental impacts of FOSW, highlighting what is known and what remains uncertain. The expansion of offshore wind, both fixed and floating, offers significant decarbonization potential but also presents complex ecological challenges. Addressing these is vital for sustainable development, marine ecosystem protection, and informed policy.

For fixed offshore wind, key concerns include impacts on seabirds, marine mammals, and benthic habitats. Seabirds face risks from collisions, displacement, and prey availability changes; however, studies show high avoidance behaviour with minimal collisions. Marine mammals are affected by noise during construction, electromagnetic fields, and prey shifts, with mitigation strategies such as adjusted piling schedules, though further research is needed for floating technologies. Benthic habitats suffer from habitat loss, sedimentation, and shifts in community composition due to turbine and cable installation, with mitigation measures focusing on minimizing scour protection and cable armouring.

Cumulative effects are prominent in UK waters, impacting species like kittiwakes, and marine mammals, as well as seabank habitats. Project-level compensation within Marine Protected Areas (MPAs) remains challenging, prompting exploration of strategic approaches like artificial nesting sites, predator management, and MPA re-designation to effectively address cumulative impacts.

Regarding FOSW, ecological data remains limited, but potential impacts include increased seabed footprint from anchors and cables, alterations in ocean stratification and primary productivity, and changes in underwater noise and entanglement risks from dynamic moorings. Conversely, there may be ecological benefits such as feeding hotspots and reduced vessel traffic. Persistent knowledge gaps concern ecosystem-level effects and species behaviour around floating structures.

Innovative monitoring techniques are advancing understanding. These include multiplatform surveys using aerial drones, autonomous underwater vehicles, and surface vessels, as well as environmental DNA (eDNA) sensors for biodiversity assessments. UK initiatives such as ECOWind, ECOFlow, and OWEC integrate ecological insights into policy, planning, and project development. Research projects like ECOWINGS, ACCELERATE, PELAgIO, and BOWIE focus on seabird interactions, seabed mobility, ecosystem dynamics, and benthic biodiversity, contributing valuable knowledge to guide sustainable offshore wind growth.

In conclusion, offshore wind development must balance energy ambitions with ecological integrity. Fixed and floating technologies present distinct risks, necessitating tailored mitigation measures, strategic compensation, and ongoing research. Collaboration among government, industry, and academia is essential to achieve nature-positive, sustainable marine spatial planning and ensure the long-term health of marine ecosystems.

6.3 Topic 3: Technical challenges in developing Floating Offshore Wind technology in the APEC region.

The third topic had presentations from four experts on the subject.

- "Research and Application of Key Technologies for Offshore Wind Farm Operation Optimization and Integrated Monitoring" by Dr Zhang Xin, People's Republic of China.
- "Challenges and opportunities for the development of Offshore Wind in Chile: findings from the MERIC offshore wind Seminar 2024" by Dr Gonzalo Tampier, Chile.
- "Challenges of integrating Offshore Wind farms to weak interconnected power systems: Lessons learned for the Chilean case" by Dr Luis Moran, Chile.
- "A UK overview on its approach to commercialising Floating Offshore Wind" by Ms Úna Brosnan, UK.

6.3.1 Research and Application of Key Technologies for Offshore Wind Farm Operation Optimization and Integrated Monitoring

Dr Zhang Xin, Deputy Director of the New Energy Institute at the Science and Technology Research Institute of the State Power Investment Corporation, People's Republic of China, provided a comprehensive overview of strategies for overcoming technical barriers in OSW development, emphasizing innovations derived from People's Republic of China's experience.

The global offshore wind sector is rapidly evolving into an essential component of the clean energy transition. Driven by technological advancements and increasing demand, the industry is advancing toward large-scale, deep-sea installations, with turbines now reaching capacities of up to 26 MW. This growth improves energy efficiency, reduces greenhouse gas emissions, and significantly supports global carbon neutrality targets. As economies of scale become central, Offshore Wind is poised to play a vital role within sustainable energy systems worldwide.

Nonetheless, deploying deep-sea OSW farms presents notable technical and operational challenges. One primary issue is suboptimal resource utilization, as current designs necessitate wide turbine spacing—typically 5-15 rotor diameters—to minimize wake effects. Such spacing leads to underutilized marine areas and restricts total output per unit area. Grid integration also poses a critical challenge; these remote, deepwater projects require extensive upgrades to existing transmission infrastructure, which escalates costs and complicates connection processes.

Operational and maintenance (O&M) in deep-sea environments further hinder development. The remoteness and extreme depths make routine repairs and emergency interventions more complex and costly. Additionally, the development of reliable, real-time monitoring and fault detection technologies—crucial for ensuring operational reliability—is still progressing, especially under harsh offshore conditions.

Innovations to optimize offshore wind operations are vital. Wake control technology, for instance, is gaining prominence. By strategically designing turbine layouts and employing advanced control strategies, developers can mitigate wake effects—

turbulence and energy deficits caused by upstream turbines—thus improving overall efficiency. Cutting-edge research, including multi-source assimilation modelling, enhances the accuracy of wake predictions and supports adaptive, dynamic control in real time.

Furthermore, floating hybrid systems integrating wind turbines with wave energy converters hold considerable promise. These systems increase energy output per unit area, reduce downtime through wave attenuation (which prolongs turbine lifespan and lowers maintenance costs), and enable shared infrastructure—such as floating platforms, transmission lines, and substations. These synergies can lower the LCOE by up to 10%, stabilize power supply, and improve grid resilience. The combined generation approach not only boosts economic viability but also delivers environmental benefits, such as wave height reduction (approximately 30%), which facilitates safer maintenance operations.

International initiatives have demonstrated the viability of wave hybrid systems. For example, Enel Green Power's PB3 PowerBuoy, CorPower's C4 device tested in Portugal, and People's Republic of China's underwater and floating wave energy prototypes showcase the global interest and technological progress in integrated offshore renewable systems. These developments highlight the potential of wind-wave hybrid solutions to decouple resource utilization from high costs, aiding the broader transition to sustainable energy.

In conclusion, addressing technical challenges through innovations such as wake control and hybrid systems, coupled with supportive policies and ongoing research, is essential for unlocking the full potential of deep-sea offshore wind. These advancements will make offshore wind a cornerstone of future clean energy systems, contributing to global decarbonization efforts.

6.3.2 Challenges and opportunities for the development of Offshore Wind in Chile: findings from the MERIC offshore wind Seminar 2024

Dr Gonzalo Tampier, Associate Professor and Director of the Institute of Naval and Maritime Sciences at Universidad Austral de Chile, provided an overview of the key outcomes from the MERIC OSW Seminar hosted in Chile in December 2024. The event was extraordinarily successful, attracting over 100 attendees in person and 450 online, predominantly from the industry sector. It marked the first large-scale identification of the main stakeholders interested in developing OSW in Chile, bringing together international institutions alongside local experts to share valuable insights.

The seminar concluded with two primary findings. First, there is a pressing need for a dedicated research and technology development centre or network to support the adaptation, validation, and acceleration of OSW technologies tailored to Chile's specific conditions. Establishing such an entity would promote long-term viability by considering economic, social, and environmental factors. Second, the seminar emphasized the importance of defining management models for marine spaces. Currently, Chile's approach is fragmented and project-specific; however, a transition toward a more centralized, government-led management system is critical. This new model would involve extensive dialogue with industry stakeholders and foster a strategic, sustainable approach for offshore wind development.

Key challenges identified include the development of a strategic foundation, regulatory certainty, infrastructure gaps, environmental and social integration, and legal reforms. To ensure long-term success, Chile must adopt an integrated approach inspired by international best practices from Portugal and Spain. Central to this effort is developing a comprehensive, centralized marine space governance model, moving away from fragmented project management. A clear roadmap will be instrumental in guiding these governance reforms.

Creating stable, transparent policies through a robust regulatory framework is essential to attract investment and build public trust. Strengthening local research capacity—particularly in operations and maintenance—is equally important, with demonstration projects being vital to assess technologies and operational strategies before commercial scale-up. Addressing local conditions, such as Chile's absence of extreme storms but presence of tsunamis and limited data on offshore weather, will require innovative solutions. Leveraging local expertise in sectors like fishing and agriculture, as well as utilizing locally developed infrastructure such as concrete structures, can help overcome these challenges.

Environmental and social considerations are central to a sustainable OSW strategy. It is crucial to understand and mitigate impacts on marine biodiversity, including whales and endemic bird species, and to work collaboratively with artisanal and industrial fisheries, especially in regions like Biobío. Pilot projects that engage directly with local communities have demonstrated success in building trust and identifying mutual benefits.

Legal and institutional hurdles also need to be addressed. Currently, Chile's legal framework restricts offshore concessions within 12 nautical miles, excluding promising areas farther offshore. This limitation must be re-evaluated to unlock its full offshore wind potential. Furthermore, unresolved regulatory issues, such as those related to the Coastal Marine Areas for Indigenous Communities (ECMPO) framework concerning indigenous coastal spaces, hinder project progress across sectors like aquaculture and community development. Active participation in regulatory reform is therefore essential.

Chile's inherent strengths—in its medium- and small-sized shipyards, with proven capabilities in maritime industries, and specialized research facilities—offer significant opportunities for innovation. Local knowledge from fishers, scientists, and maritime professionals further strengthens the potential for a developed, locally grounded offshore wind sector. Harnessing these assets will be critical to realizing Chile's offshore wind ambitions.

6.3.3 Challenges of integrating Offshore Wind farms to weak interconnected power systems: Lessons learned for the Chilean case

Dr Luis Moran, Professor in the Department of Electrical Engineering at Universidad de Concepción, Chile, discussed the challenges associated with integrating OSW farms into Chile's weak interconnected power system, drawing lessons from local experience.

Chile's electrical grid is undergoing a major transformation, with renewable sources accounting for nearly 68% of the energy mix, primarily from solar and onshore wind. Despite this progress, the high penetration of intermittent renewables complicates grid control, especially when combined with existing reliance on thermal power, which still supplies 32% of the energy. Thermal generation remains vital during periods of low hydropower output and nighttime when solar energy is unavailable. Nevertheless, this dependency on fossil fuels presents environmental concerns and underscores the need for cleaner, more stable energy options.

Offshore wind presents significant opportunities for Chile. Its proximity to densely populated areas can reduce transmission costs, while its consistent energy output makes it suitable for meeting base load and nighttime demand. Chile´s offshore wind potential is vast, estimated at over ten times its current electricity consumption.

Additionally, Chile can capitalize on existing coal plant infrastructure scheduled for decommissioning, particularly in regions with strong wind resources. Repurposing these facilities can facilitate grid integration and support economic transition in affected communities. OSW development aligns with Chile's broader industrial strategy, offering synergy with infrastructure investments, especially in green hydrogen production, creating a pathway for a sustainable, high-skilled industry.

Nevertheless, significant challenges remain, particularly regarding transmission infrastructure. The existing system is centralized in the congested central region, requiring the construction of costly, politically complex new transmission lines to connect offshore farms. While some connection points exist, such as at Huachipato, a comprehensive, strategic approach is necessary.

Chile must learn from international experience, especially from Europe and Asia. Critical lessons include the need for advanced control systems to stabilize the grid and manage reactive power issues associated with long AC cables. Additionally, offshore wind farms must be incorporated into a broader strategy for system stability, particularly during disturbances. Finally, the surplus electricity generated can be converted into green hydrogen for export, turning a potential excess into an economic opportunity.

In conclusion, offshore wind has the potential to significantly aid Chile's energy transition, but realizing this potential requires investments in transmission, sophisticated control strategies, and innovative system integration that ensure long-term grid stability and reliability.

6.3.4 A UK overview on its approach to commercialising FOSW

Ms Úna Brosnan, Co-founder, and Director of 17 Energy & Renewable UK, provided an overview of the UK's approach to commercializing FOSW. She outlined the key technical challenges faced by the UK sector and the innovative strategies being implemented to address them, emphasizing the importance of scaling and industrialization.

A primary challenge remains reducing costs, particularly in foundation design, mooring and anchoring systems, and dynamic cables that must withstand harsh marine environments. Standardization and scalability of foundation structures, along with innovations in mooring materials like high-strength synthetic fibres, are critical for cost-effective deployment. Similarly, advances in dynamic cable technology—aimed at improving durability and simplifying installation—are vital to minimize failures and maintenance costs.

Wind turbine technology also encounters limitations related to resource availability and motion control, especially in floating applications. Improving turbine stability and optimizing energy capture in variable sea conditions are essential for enhancing performance and operational reliability. The development of larger, higher-capacity turbines is a key driver for reducing the LCOE over time.

Grid integration remains a significant hurdle as offshore projects expand. The remote location of farms increases the complexity and cost of connecting to existing infrastructure, with congestion becoming a pressing issue in UK's central grid. Addressing this requires expanding grid capacity and developing innovative solutions to facilitate reliable power transfer.

Industrialization and port infrastructure are equally important. Ports must be capable of supporting large components, enabling onshore assembly, and managing complex logistics, including wet storage and stage-wise construction. The lack of specialized facilities can slow project timelines and increase costs, underscoring the need for strategic port upgrades.

Supply chain resilience is another critical factor. Ensuring the availability of high-quality materials and developing industry expertise are necessary to meet the sector's growing demand. Building a local supply chain capable of producing large components and supporting ongoing innovation is essential for cost reduction and project scale-up.

Operation and maintenance (O&M), particularly for deeper floating installations, remains a challenge. Developing autonomous inspection tools such as drones and underwater robots, alongside predictive maintenance enabled by sensors and digital twins, will improve safety, reduce downtime, and lower costs.

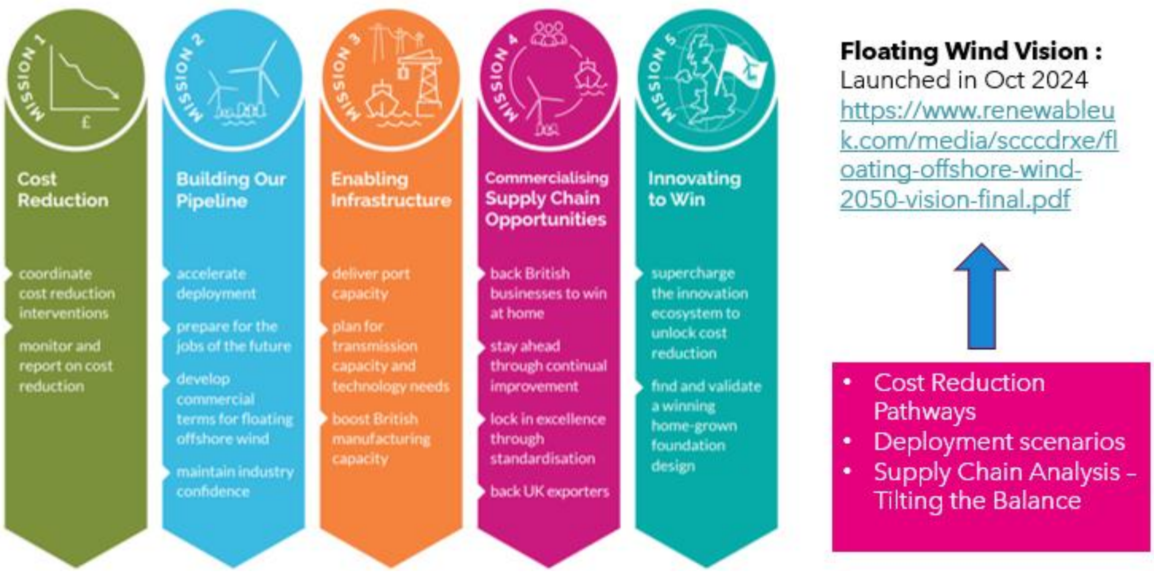
In terms of innovation, research efforts focus on enhancing floating platform designs for better stability and hydrodynamics, advancing mooring systems with new materials, and improving dynamic cable robust standards. The use of robotics and digital solutions in O&M is transforming how offshore farms are maintained, offering safer, more efficient approaches.

Looking ahead, Scotland's pioneering role in floating wind demonstrates the importance of pipeline development with projects like the 20 GW awarded in the SCOTWIND leasing round, including multiple demonstration sites. The upcoming Round 5 auction in the Celtic Sea, scheduled for 2025, is expected to allocate up to 12 GW, with significant capacity dedicated to floating wind, further cementing the UK's leadership in this sector.

The UK's approach to commercializing FOSW is anchored in policy support mechanisms such as the Contracts for Difference (CfD). The sixth Allocation Round (AR6) in 2024 included GBP 270 million in initial funding, with strike prices set to incentivize innovation. Notably, the Green Volt project, a joint venture between Flotation Energy and Vårgrønn, secured a 400 MW contract at a highly competitive strike price of GBP 139.93/MWh, underscoring the sector's rapid progress.

Finally, the UK's Floating Wind Vision launched in October 2024 sets strategic priorities for positioning the UK as a global leader (Figure 5). It focuses on scaling supply chains, fostering innovation, and integrating floating wind into the broader energy system. With strong government backing and investor confidence, the UK remains committed to delivering sustainable, high-value projects that unlock the socio-economic potential of floating wind and help achieve net-zero targets by 2050.

Figure 5 UK Floating Wind Vision



6.4 Topic 4: New business opportunities and synergies between the development of Offshore Wind technologies and the production of green hydrogen

The fourth topic had presentations from four experts on the subject.

- "Building a New Market: Lessons from Chile's green hydrogen Journey" by Ms Corinne Ribbons, Chile.
- "OSW, a promising foreign investment for local development and green energy in Chile" by Mr Mauricio Riveros, Chile.
- "Global trends in offshore wind and opportunities for green hydrogen" by Mr Arno van den Bos, Germany.
- "Green hydrogen and offshore Wind" by Ms Marcela Betancur-Díaz, UK.

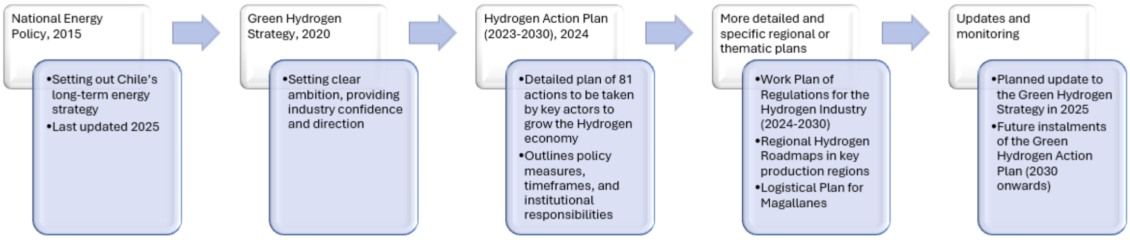
6.4.1 Building a New Market: Lessons from Chile's green hydrogen Journey

Ms Corinne Ribbons, International Advisor at the Chilean Ministry of Energy, shared valuable insights from Chile's development of the Green Hydrogen Strategy, highlighting lessons applicable to OSW.

Developing a new industry like OSW requires a clear political framework and strategic direction to de-risk projects and attract investment. Importantly, this framework does not need to be perfect initially; a phased approach of providing industry signals followed by incremental policy development has proven effective, as seen in Chile's hydrogen initiatives.

Chile's policy formulation involves a tiered process: the long-term vision is set by the National Energy Policy, first established in 2015 and recently updated, providing overarching strategic guidance. Building on this, the 2020 National Green Hydrogen Strategy sets specific goals and ambitions, fostering initial confidence. This is complemented by the Hydrogen Action Plan, which details specific, time-bound actions with assigned responsibilities, offering a clear implementation roadmap. Furthermore, detailed publications such as logistics plans, regional roadmaps, and regulatory change frameworks deliver granular guidance to support sector growth.

Figure 6 Guidance for developing GH2 projects in Chile



Such initiative-taking engagement is crucial for building social license and mitigating local resistance—common issues in large-scale projects globally. For offshore wind, early and transparent stakeholder engagement is vital, especially with fishing communities, maritime sectors, local populations, and defence interests, addressing concerns about marine biodiversity from the outset. A major challenge is that project development often outpaces policy and regulatory updates. Chile has seen eight offshore wind projects seek maritime concessions amid an undeveloped roadmap, underscoring the need for institutional learning and a coordinated regulatory approach.

Offshore wind should also explore synergies with other sectors. Lessons from the hydrogen industry, especially in Magallanes, highlight the importance of shared infrastructure like ports. Chile's state oil company ENAP has been instrumental in facilitating port and infrastructure development, which can be leveraged for wind energy projects. Additionally, integrating hydrogen as a storage solution can address transmission bottlenecks; placing hydrogen production facilities near offshore wind farms allows for energy conversion and storage on land, reducing the necessity for long, costly transmission lines.

In summary, Chile's phased policy approach, stakeholder engagement, and infrastructure sharing strategies provide a robust framework to support the sustainable growth of offshore wind, while addressing key technical, regulatory, and social challenges.

6.4.2 OSW, a promising foreign investment for local development and green energy in Chile

Mr Mauricio Riveros, Energy Sector Lead at InvestChile, shared insights into why offshore wind presents a promising avenue for foreign investment and sustainable development in Chile.

InvestChile is a government agency dedicated to attracting foreign direct investment, having facilitated over USD 56 billion across more than 400 projects since late 2023. Its core mission is to foster a supportive, pro-business environment that simplifies processes from project prospecting to construction and reinvestment, making Chile an attractive destination for renewable energy investments.

Chile's unique geographical and infrastructural advantages position it favourably for OSW development. Its lengthy, narrow coastline means no location is more than 100 kilometres from the sea, facilitating access to offshore wind resources. Notably, high-resource areas are close to demand centres, offering logistical benefits. Additionally, many potential sites for offshore wind coincide with decommissioned or soon-to-be-decommissioned coal plants, allowing the reuse or reinforcement of existing transmission infrastructure. This synergy significantly reduces the costs and logistical challenges of building new transmission lines.

Offshore wind also offers a solution to Chile's grid stability challenges. It can provide a reliable base load capacity and increased system flexibility as the share of intermittent renewables grows, supporting its decarbonization goals. Moreover, Chile's established an ambitious green hydrogen strategy has driven significant port and transmission infrastructure development. The offshore wind industry can leverage these existing assets, creating efficiencies that accelerate project timelines and reduce costs.

These advantages have attracted considerable private sector interest. Currently, eight projects are seeking maritime concessions, potentially representing a USD 20 billion investment and a capacity of 7 GW. Such projects promise to generate substantial, high-quality employment, underscoring that OSW investments offer regional economic growth alongside energy diversification.

However, several challenges need addressing. A key consideration is the market development model—whether Chile adopts a centralized approach, where the government manages site selection and studies, or a decentralized model, which shifts more risk to developers. A centralized approach could de-risk projects and attract more investors. Additionally, current maritime concession fee structures are relatively high—comparable to markets like the UK but above emerging markets such as the US—which could hinder project competitiveness. The permitting process, already complex in Chile, requires streamlining to meet investor expectations and facilitate timely project development.

Supply chain development is critical. Chile must explore mechanisms such as CfD to support project financing and help build a robust local supply chain with skilled labour. To succeed, the government is actively developing an offshore wind roadmap with clear regulations and policies, critical for unlocking its considerable offshore wind potential and fostering a sustainable, investment-friendly ecosystem.

In conclusion, Chile's geographical and infrastructural strengths, combined with proactive policy measures, position it well to become a key player in offshore wind. Addressing regulatory, financial, and logistical challenges will be essential to translating proposals into impactful, long-term projects.

6.4.3 Global trends in Offshore Wind and opportunities for green hydrogen

Mr Arno van den Bos, Analyst in green hydrogen Energy and Power-to-X at IRENA, discussed global trends in OSW and its significant opportunities for green hydrogen production. IRENA's recent FOSW Outlook, commissioned by Japan's METI during the G7 2023 Presidency, highlights key themes including market developments and leadership in FOSW, the technological foundations underpinning FOSW, and the importance of ancillary developments such as port infrastructure, operation and maintenance (O&M), and standardization efforts. From an environmental perspective, the report addresses the sustainability impacts of FOSW, emphasizing biodiversity conservation and ecological considerations. A notable focus is the potential for coupling FOSW with hydrogen production, leveraging its high-capacity factors. Because electrolysers function most efficiently at around 50% capacity, offshore wind's performance profile aligns well with hydrogen generation needs, making the pairing both technically feasible and potentially cost-effective. To replace the current 70 million tonnes of globally produced grey hydrogen, approximately 900 GW of dedicated FOSW capacity would be necessary, illustrating the enormous market potential. However, most FOSW projects currently prioritize economies of scale and cost reductions over direct hydrogen integration, signalling a need for targeted policies and investments to foster sector synergies. Several pilot projects exemplify these emerging opportunities: Oyster in the UK is exploring direct turbine-to-electrolyser connections; Scotland's Dolphyn is testing a 10 MW integrated electrolyser on a semi-submersible platform; France's Lhyfe has demonstrated offshore hydrogen generation with a 1 MW electrolyser system; and Germany's H2Mare is trialling seawater desalination units to supply electrolysers integrated within wind turbines, further illustrating innovative approaches to coupling offshore wind and hydrogen. These developments point to a promising future where FOSW not only drives renewable electricity but also plays a vital role in decarbonizing the hydrogen economy.

6.4.4 Green hydrogen and Offshore Wind

Ms Marcela Betancur-Díaz, Manager of Offshore Renewables and Transport at The Carbon Trust, UK, explored the potential benefits of integrating green hydrogen production with OSW. She emphasized that this combination can significantly enhance the strategic value of renewable energy systems by improving economic viability and operational flexibility. In regions where grid connection costs are high or limited, hydrogen offers a viable alternative or supplementary revenue stream, supporting more stable production, increased overall energy output, and alignment with broader decarbonization and energy security objectives. This approach also enables geographic expansion of renewable energy projects and the integration across sectors, reinforcing OSW's role in achieving clean energy targets.

From a global perspective, the demand for green hydrogen reached approximately 100 million tonnes in 2024, accounting for about 2.5% of final energy consumption. Although interest and capacity for green hydrogen are growing, most supply is still derived from fossil fuels, with electrolysis capacity expanding from 30 MW in 2021 to an estimated 1.4 GW by 2024. Barriers such as high capital costs, limited policy support, and constraints on renewable deployment still impede large-scale development. Nevertheless, green hydrogen remains vital for decarbonizing hard-to-electrify sectors like industry, aviation, maritime transport, and process heating. Recent advancements in electrolysers technology—particularly proton exchange membrane electrolysers—coupled with market mechanisms like Power Purchase Agreements and sector coupling, are poised to accelerate market growth, with global targets reaching 520 GW capacity by 2030.

Despite promising developments, the high cost of hydrogen production remains the primary challenge preventing wider adoption. Cost reduction strategies are intricately linked to supportive policies, industry-standardization, and improved infrastructure. Initiatives that could foster this include competitive auctions for offshore wind projects, clear deployment targets, aligned permitting processes, and investments in ports and supply chains. Furthermore, the tendency for offshore wind projects to operate flexibly—adjusting hydrogen output based on wind availability—can unlock value through participation in ancillary services and export opportunities like ammonia and methanol. Certification schemes such as Guarantees of Origin help verify renewable credentials, building consumer trust and policy support. Successful examples of integrated projects—like Germany's AquaVentus and the Netherlands' NorthH2—illustrate how offshore wind and hydrogen can be interconnected within comprehensive development frameworks, leveraging fixed and floating wind, electrolysis, storage, and logistics infrastructure.

Realizing the potential of OSW–hydrogen synergy requires enabling conditions such as effective maritime spatial planning, structured licensing rounds, and robust grid infrastructure. On the hydrogen side, establishing reliable transmission, storage, and certification mechanisms—supported by demand incentives—are vital. Coordinating strategies that align offshore wind and hydrogen roadmaps, backed by pilot programs and international collaboration, will be crucial to demonstrating feasibility, reducing costs, and accelerating deployment. While numerous barriers remain, targeted policy initiatives, early project development efforts, and cross-sector cooperation are essential to harness the full potential of offshore wind and green hydrogen. These technologies offer a scalable pathway for clean energy transition, positioning economies to lead in renewable exports and sustainable development.

7. Policy recommendations and best practices

7.1 Topic 1: Opportunities and lessons learned from the development of Floating Offshore Wind projects in the APEC region

A consistent recommendation emphasized accelerating FOSW development by enabling larger wind farms to achieve economies of scale and through continuous technological and supply chain maturation. This involves leveraging insights from pilot and pre-commercial projects and standardizing components and designs to reduce costs and streamline permitting. Policy stability, characterized by supportive regulatory frameworks and financial incentives like Contracts for Difference (CfDs) or Power Purchase Agreements (PPAs), is crucial for fostering investor confidence. Government-industry collaboration, underpinned by demonstrated operational performance from early projects, builds trust among investors and lenders. Best practices include rigorous environmental assessment, circular economy principles, and proactive coexistence strategies with marine ecosystems, facilitated by comprehensive Marine Spatial Planning tools. People’s Republic of China's noteworthy progress, driven by strategic initiatives and a robust supply chain, and Chile's vast FOSW potential, aligned with repurposing existing infrastructure and green hydrogen synergies, exemplify opportunities within APEC.

7.2 Topic 2: Environmental and social requirements in the development of Offshore Wind farms.

Discussions highlighted the critical need to expand evaluation metrics beyond the Levelized Cost of Energy (LCOE) to include the Social Cost of Energy (SCOE) and the Environmental Cost of Energy (ECOE). SCOE would quantify societal impacts such as affordability, equity, and resilience, while ECOE would assess lifecycle environmental impacts, including biodiversity loss, seabed disturbance, and material circularity. Governments are advised to embed these broader ESG considerations into auction designs, rewarding projects that deliver demonstrable social and environmental value. Rigorous Environmental Impact Assessments, community consultation processes, and the integration of local knowledge are essential for biodiversity protection and marine spatial planning. Innovative monitoring approaches enhance comprehensive biodiversity assessments, contributing to nature-positive outcomes.

7.3 Topic 3: Technical challenges in developing Floating Offshore Wind technology in the APEC region.

Key technical challenges in FOSW development include suboptimal resource utilization due to wake effects, complex grid integration for remote deep-sea projects, and the excessive costs and difficulties of operation and maintenance (O&M) in harsh marine environments. Recommended solutions include implementing wake control technology to optimize turbine layouts and mitigate turbulence, and developing floating hybrid wind-wave energy systems to enhance spatial productivity and reduce LCOE. Advanced O&M strategies, such as optical fibre sensing for real-time structural health monitoring and optimized lubrication systems for predictive maintenance, are crucial. Addressing corrosion through robust material science and a networked monitoring framework is also paramount. For grid integration in weak interconnected systems, advanced control systems for reactive power management, strategic OSW implementation for system stability, and leveraging green hydrogen to manage surplus energy were identified as key practices, drawing lessons from international experiences, including People's Republic of China's typhoon-resistant designs.

7.4 Topic 4: New business opportunities and synergies between the development of Offshore Wind technologies and the production of green hydrogen

To maximize the synergy between FOSW and green hydrogen production, policy recommendations and best practices underscore the need for integrated strategic planning. Governments must establish clear, long-term policy frameworks and roadmaps that align FOSW and hydrogen development, fostering a predictable regulatory environment to attract vital investment. Key initiatives include enhancing shared infrastructure, particularly port upgrades and grid reinforcement, and designing innovative financing mechanisms like Contracts for Difference (CfD) to de-risk projects. Promoting robust R&D, supporting pilot projects, and fostering public-private partnerships are essential for technological maturation and supply chain development. Continuous international collaboration and knowledge sharing remain paramount to accelerate these dual-use energy transitions across APEC economies.

8. Conclusions and recommendations

The APEC Seminar on "Floating Offshore Wind Farms development in APEC economies for both electricity and green hydrogen production" concluded with a fruitful exchange of insights, experiences, and future perspectives from a diverse group of experts and stakeholders. Over two days, participants addressed key aspects of FOSW development, offering insights highly relevant for the region's energy transition.

The first topic examined opportunities and lessons from existing FOSW projects. Case studies from various APEC and European economies highlighted enabling policies, investment frameworks, and regional cooperation models that have supported early-stage development. Discussions underscored the importance of long-term planning, stakeholder engagement, and adaptable regulatory environments to foster growth.

The second topic focused on environmental and social requirements for offshore wind deployment. Experts emphasized the need for rigorous environmental impact assessments, community consultations, and the integration of local knowledge. Discussions also covered biodiversity conservation, marine spatial planning, and the roles of Indigenous and coastal communities in shaping sustainable project outcomes.

The third topic addressed technical challenges, including infrastructure limitations, grid integration, and the need for innovation in mooring systems, floating platforms, and maintenance strategies. Speakers highlighted the importance of regional R&D collaboration and workforce development to overcome these barriers and accelerate technology maturity.

The fourth topic explored new business opportunities and synergies between offshore wind and green hydrogen. Speakers emphasized the potential for co-located infrastructure, shared supply chains, and hydrogen's role in decarbonizing hard-to-abate sectors. They also discussed market design, financing mechanisms, and the importance of public-private partnerships in scaling dual-use projects.

Several cross-cutting themes emerged across the discussions, including the need for increased technical maturity through demonstration projects and targeted R&D, strengthening supply chains and local capacity, establishing clear supportive policies, and investing in port and transmission infrastructure. The importance of risk mitigation mechanisms like Contracts for Difference (CfDs), environmental stewardship, community engagement, and social license to operate was also highlighted. Additionally, fostering regional and international knowledge sharing, along with promoting synergies with green hydrogen, was recognized as essential to accelerating FOSW deployment.

These insights reinforce the strategic significance of FOSW and green hydrogen in building sustainable, resilient, and inclusive energy systems across the APEC region. The seminar's outcomes provide a strong foundation for ongoing dialogue, collaboration, and tangible actions among policymakers, industry, researchers, and communities.

9. Annex

Annex A: Current Status of Floating Offshore Wind development in APEC economies.

Annex B: Seminar agenda.

Annex A: Current Status of Floating Offshore Wind development in APEC economies

Executive Summary

This pre-seminar report, prepared for the APEC Project EWG 106 2024 A ("Floating Offshore Wind Farms development in APEC economies for both electricity and green hydrogen production"), presents a preliminary assessment of Offshore Wind (OSW) and Floating Offshore Wind (FOSW) development across the Asia-Pacific Economic Cooperation (APEC) region. Analysis, based on publicly available data, reveals significant potential for OSW and FOSW but also highlights considerable disparities in development levels among member economies.

People's Republic of China's dominance in OSW is undeniable. It holds a substantial share of the region's total OSW capacity and maintains a leading position across all project development phases analysed in this document: concept/design, construction, and operation. Other APEC economies showing significant activity include Australia; Japan; Republic of Korea; The Republic of the Philippines; Chinese Taipei; United States; and Viet Nam. Nevertheless, the report emphasizes that a substantial majority of identified projects are in the initial concept/design phase.

The report offers a detailed economy-by-economy breakdown of OSW and FOSW projects, their capacities, and developmental stages. This granular analysis reinforces the uneven distribution of OSW and FOSW activities within the APEC region. A critical observation is the complete absence of identified OSW projects in several member economies. Further investigation is needed to understand the underlying reasons for this lack of progress, including potential barriers to entry or the absence of supportive policy frameworks. This analysis will be a crucial part of the upcoming seminar.

The report acknowledges limitations due to reliance on publicly available data, which may underrepresent the actual level of activity in certain regions, as well as the type of installation of every project. Despite this, the report offers a valuable starting point for discussions during the upcoming seminar. The increasing scarcity of land in many APEC economies, combined with the challenging geographic conditions of many coastal areas, underscores the potential of FOSW as a sustainable and land-efficient solution for electricity generation. This pre-seminar report is intended to foster collaboration and knowledge sharing among APEC members, paving the way for the development of strategies to promote and accelerate FOSW technology adoption across the region.

1. Introduction

The scarcity of available land in many APEC economies, exacerbated by competition with agriculture and other industries, underscores the need for innovative approaches to electricity generation that minimize land-use conflicts. Offshore Wind (OSW) projects have emerged as a promising solution, with several APEC members—including People's Republic of China; Japan; Republic of Korea; Chinese Taipei; United States; and Viet Nam—already making significant progress in OSW development. Among these efforts, Floating Offshore Wind (FOSW) technology is gaining attention, with various economies exploring its potential at different stages of deployment.

A key challenge for many APEC developing economies lies in the deep waters and steep seabeds near their coastlines—conditions less commonly encountered by European economies with extensive offshore wind experience. This geographic complexity highlights the importance of leveraging the expertise of more developed APEC economies to foster regional collaboration and facilitate knowledge sharing in FOSW technology.

To address these challenges, the APEC project "Floating Offshore Wind Farms Development in APEC economies for electricity and green hydrogen production" seeks to advance the adoption of FOSW technology among member economies. FOSW farms present a strategic solution for regions with limited land and deep coastal waters, providing an opportunity to enhance renewable energy security and system flexibility. Beyond harnessing abundant offshore wind resources, these installations could support the production of green hydrogen, offering a dual benefit of reducing greenhouse gas emissions and contributing to sustainable energy systems.

The APEC project "Floating Offshore Wind Farms Development in APEC Economies for Electricity and Green Hydrogen Production", led by Chile's Ministry of Energy and co-sponsored by Canada; People's Republic of China; Japan; Peru; Chinese Taipei; and United States, features several key outputs. These include:

- A pre-seminar report detailing the current status of FOSW development across APEC economies.
- A two-day in-person seminar in Santiago, Chile, scheduled for July 2025, focused on sharing experiences, addressing challenges, and identifying opportunities in FOSW development.
- A post-seminar report summarizing key findings, policy recommendations, and insights from the event's presentations and panel discussions.

This document serves as the pre-seminar report, providing an overview of FOSW development in APEC economies and setting the stage for deeper discussions during the seminar.

2. Objective of the report

The objective of this report is to provide an overview of the current status of FOSW development across APEC economies. This information aims to serve as a foundation for informed discussions during the seminar, focusing on the challenges, opportunities, and future directions for advancing FOSW technology in the region.

3. Methodology

This report was created using a combination of data collection and analysis techniques, primarily based on publicly available sources. The key methods applied are as follows:

- Literature Review and Secondary Data Collection: A comprehensive review of relevant literature and publicly accessible databases was conducted, prioritizing high-quality and reliable sources.
- Selection of Reliable Sources: Efforts were made to choose authoritative sources, including specialized databases known for their accuracy and credibility in the field.
- Data Collection Limitations: The analysis relied on publicly available and non-cost data, which may have excluded restricted or proprietary information. English-language sources were prioritized for their greater accessibility.

This methodological approach enabled the collection of a robust dataset, though it is important to note the limitations posed by time and resource constraints.

A structured database was developed to organize the collected data by economy, including the following key details:

- Economy Name
- Project Name
- Installed Capacity (MW)
- Development Status
- Installation type (fixed-bottom, floating or not specified)

To standardize the classification of project statuses across various sources, three main development phases were defined:

- Phase 1: Concept/Design – Projects in early development stages, up to the pre-construction phase.
- Phase 2: Construction – Projects that have begun physical construction.
- Phase 3: Operation – Projects that are operational and generating energy.

Development zones without active projects, as well as projects marked as "Cancelled" or "Standby," have not been included in the database creation.

Database created Is presented in section 5.2 of this document.

4. APEC members are invited to participate

APEC delegates, experts and participants are invited to update the information contained in this document as necessary. The updated information should be sent to the Project Overseers (PO) of this APEC project: Ms. Adelaida Baeriswyl (abaeriswyl@minenergia.cl) and Mr. Pablo del Canto (pdelcanto@minenergia.cl) by **31 July 2025**. The new data will be included as an Annex in the post-seminar report for this project.

5. Status of Offshore Wind (OSW) and Floating Offshore Wind (FOSW) developments in APEC region

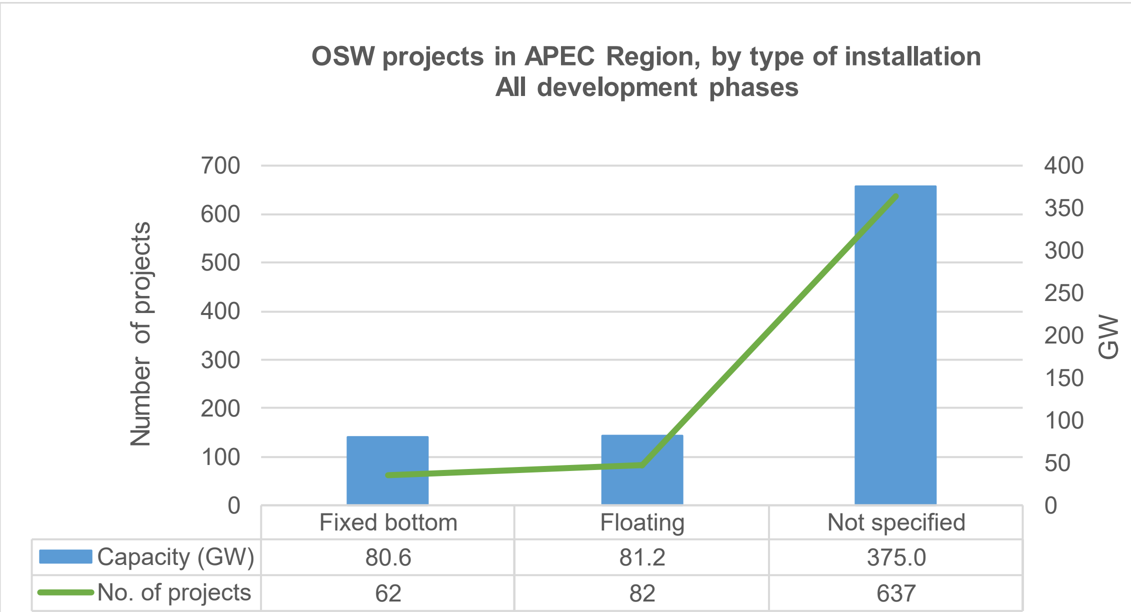
The section 5.1 offers an overview of the capacity of offshore wind projects in the APEC region, including floating offshore wind, organized by their stage of development. It also highlights the region's most advanced economies within the sector. In section 5.2, a detailed information by economy is presented, including list of projects, state of development and type of installations.

5.1 Information of the APEC Region

5.1.1 General information

In the APEC region, a total of 781 offshore wind projects, representing 536.8 GW, were identified across all development phases, including concept/design, construction, and operation. Among these projects, 82 are categorized as floating installations (81.2 GW), 62 are fixed-bottom installations (80.6 GW), and 637 projects (375.0 GW) did not specify their installation type. Most of these projects are in Phase 1 of development, which is in the Concept/Design stage.

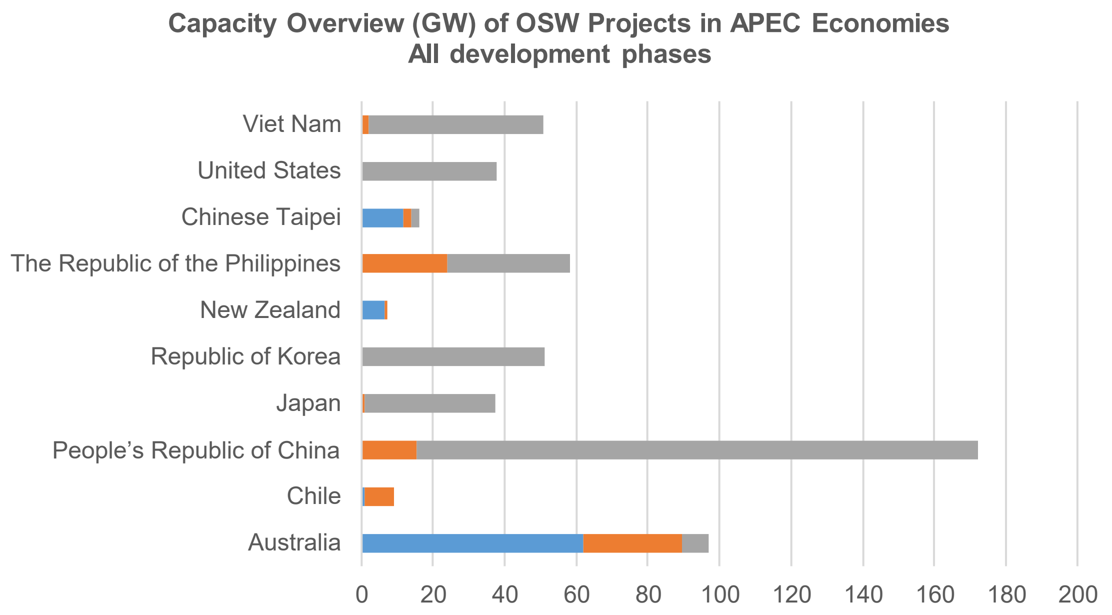
Chart 1 OSW Installation Types in the APEC Region: Capacity Overview – All development phases



Source: See Section 5.2 and references.

An analysis of OSW capacity in gigawatts (GW) by economy reveals that People's Republic of China is the dominant force in this sector within the APEC region, boasting a remarkable 172.3 GW, which accounts for 32% of the total capacity. Following People's Republic of China are Australia with 96.8 GW (18%) and the Republic of the Philippines with 58.1 GW (11%). Notably, no OSW projects are currently under any development stage in the following economies: Brunei Darussalam; Indonesia; Malaysia; Mexico; Papua New Guinea; Peru; The Russian Federation; Singapore; and Thailand.

Chart 2 Capacity Overview (GW) of OSW Projects in APEC Economies – All development phases



	Australia	Chile	People's Republic of China	Japan	Republic of Korea	New Zealand	The Republic of the Philippines	Chinese Taipei	United States	Viet Nam
Fixed bottom	62.0	0.9				6.3		11.5		
Floating	27.6	8.0	15.3	0.8		1.0	24.1	2.5		2.0
Not specified	7.3		157.0	36.7	51.3		34.0	2.1	37.9	48.8

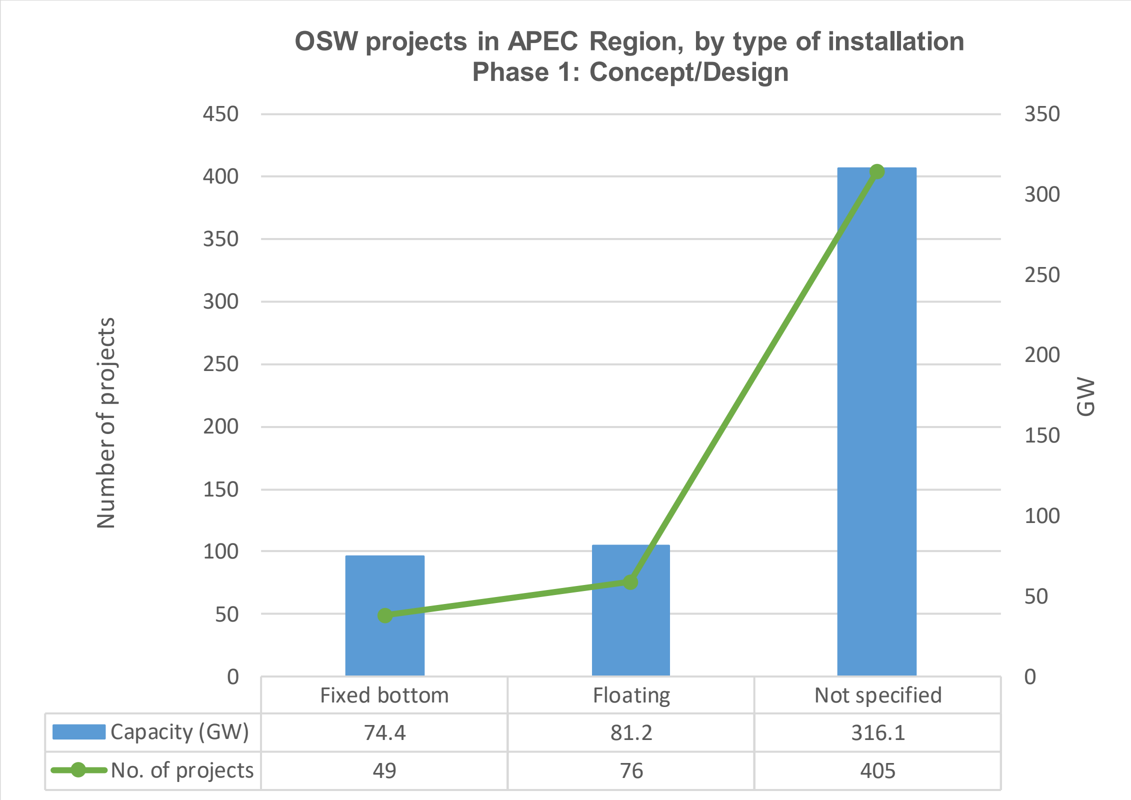
Capacity (GW)

Source: See Section 5.2 and references.

5.1.2 Phase 1: Concept/Design

In the APEC region, a total of 530 offshore wind projects have been identified in Phase 1: Concept/Design, representing a combined capacity of 471.7 GW. Among these, 76 projects are categorized as floating installations (81.2 GW), 49 as fixed-bottom installations (74.4 GW), while 405 projects (316.1 GW) did not specify their installation type.

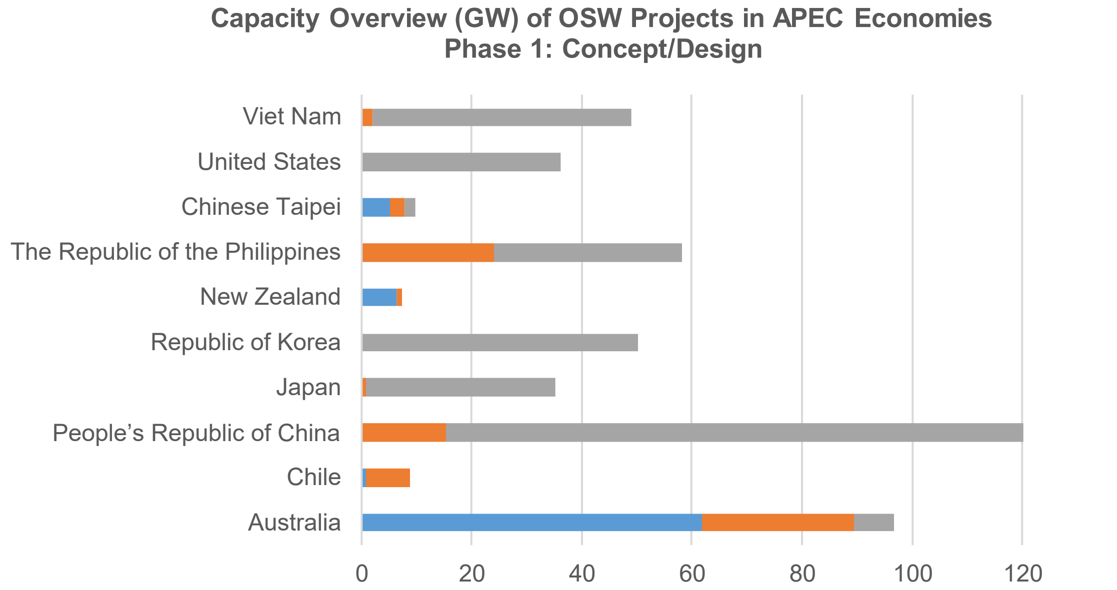
Chart 3 Installation Types in the APEC Region: Capacity Overview – Phase 1: Concept/Design



Source: See Section 5.2 and references.

In Phase 1: Concept/Design, People's Republic of China leads the APEC region in offshore wind capacity, reaching an impressive 120 GW, including 15.2 GW from floating installations. Australia and the Republic of the Philippines follow as key contributors, supporting People's Republic of China's dominance in this sector.

Chart 4 Capacity Overview (GW) of OSW Projects in APEC Economies – Phase 1: Concept/Design



	Australia	Chile	People's Republic of China	Japan	Republic of Korea	New Zealand	The Republic of the Philippines	Chinese Taipei	United States	Viet Nam
Fixed bottom	62.0	0.9				6.3		5.2		
Floating	27.6	8.0	15.2	0.7		1.0	24.1	2.5		2.0
Not specified	7.3		105.0	34.4	50.1		34.0	2.1	36.2	47.0

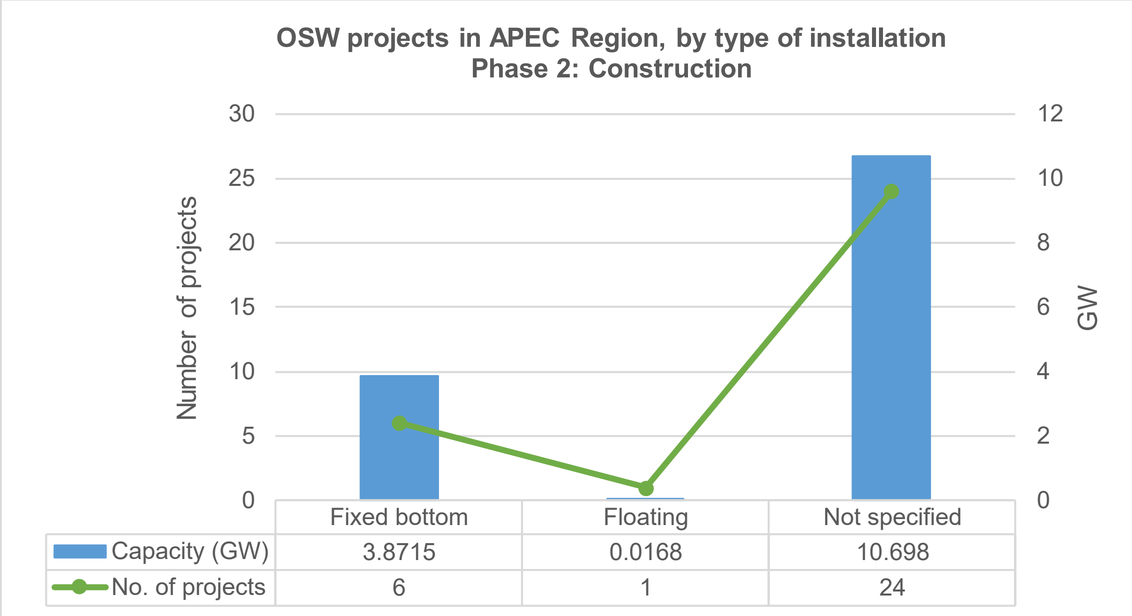
Capacity (GW)

Source: See Section 5.2 and references.

5.1.3 Phase 2: Construction

In the APEC region, a total of 31 offshore wind projects have been identified in Phase 2: Construction, representing a combined capacity of 14.6 GW. Among these, 1 project has been categorized as floating installation (0.017 GW), 6 as fixed-bottom installations (3.9 GW), while 24 projects (10.7 GW) did not specify their installation type.

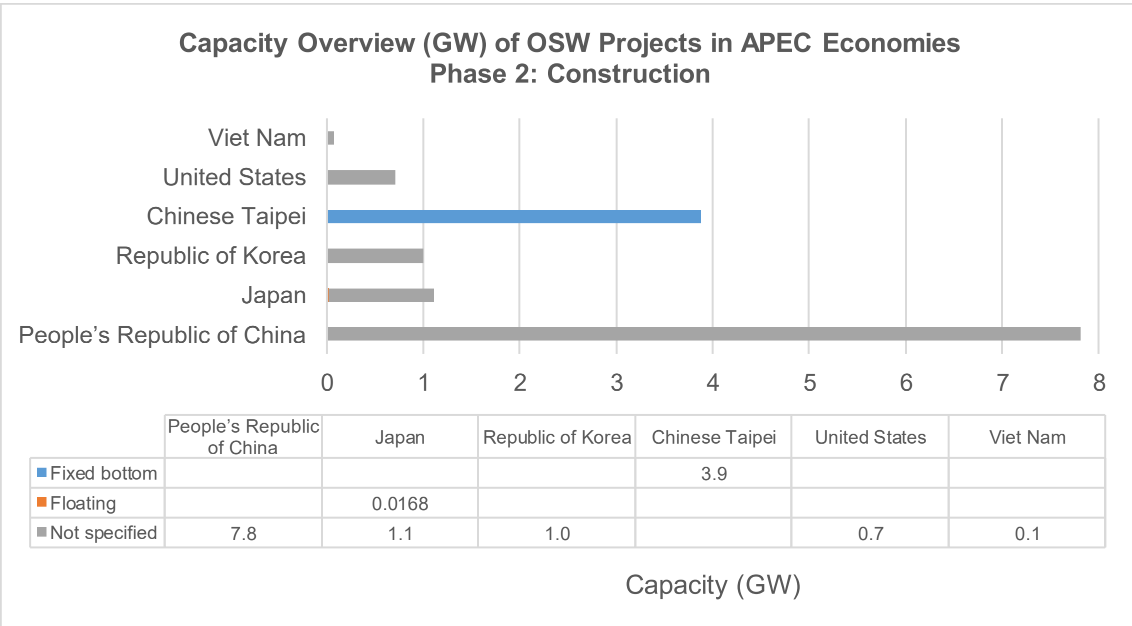
Chart 5 Installation Types in the APEC Region: Capacity Overview – Phase 2: Construction



Source: See Section 5.2 and references.

Regarding Phase 2, the following economies have projects under construction: People's Republic of China; Japan; Republic of Korea; Chinese Taipei; United States; and Viet Nam.

Chart 6 Capacity Overview (GW) of OSW Projects in APEC Economies – Phase 2: Construction

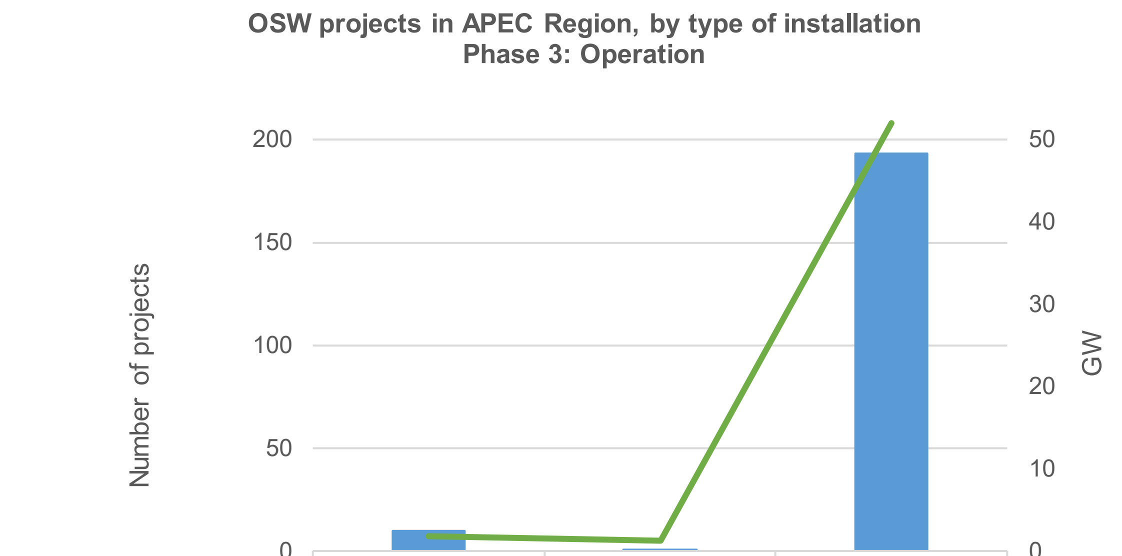


Source: See Section 5.2 and references.

5.1.4 Phase 3: Operation

In the APEC region, a total of 220 offshore wind projects have been identified in Phase 3: Operation, representing a combined capacity of 50.7 GW. Among these, 5 projects are categorized as floating installations (0.035 GW), 7 as fixed-bottom installations (2.4 GW), while 208 projects (48.3 GW) did not specify their installation type.

Chart 7 Installation Types in the APEC Region: Capacity Overview – Phase 3: Operation

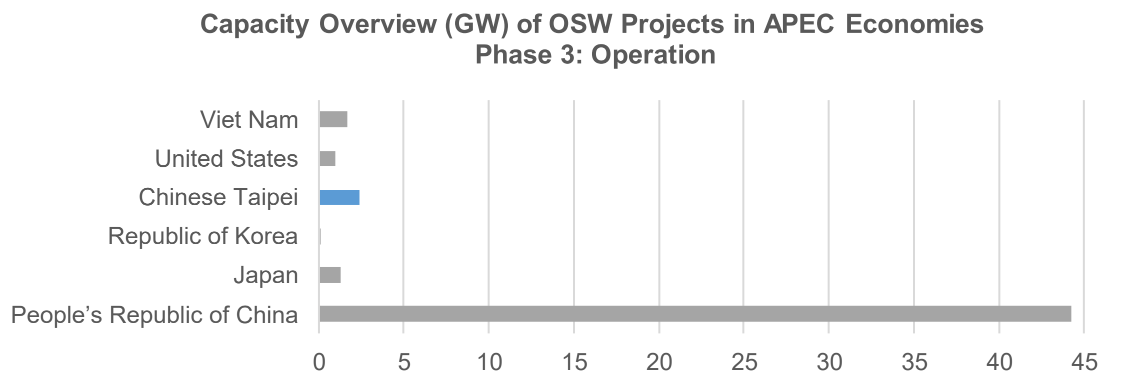


	Fixed bottom	Floating	Not specified
Capacity (GW)	2.4132	0.0353	48.25145
Number of projects	7	5	208

Source: See Section 5.2 and references.

Like those presented in Phase 2, the following economies have projects in operation: People's Republic of China, followed at a distance by Japan; Republic of Korea; Chinese Taipei; United States; and Viet Nam.

Chart 8 Capacity Overview (GW) of OSW Projects in APEC Economies – Phase 3: Operation



	People's Republic of China	Japan	Republic of Korea	Chinese Taipei	United States	Viet Nam
Fixed bottom				2.4		
Floating	0.0323	0.003				
Not specified	44.2	1.2	0.1		0.9	1.7

Capacity (GW)

Source: See Section 5.2 and references.

5.2 Information by APEC economy

The following section provides a comprehensive listing of offshore wind projects in various stages of development across each APEC economy, categorizing the type of projects as either fixed-bottom, floating, or not specified.

5.2.1 Australia

Australia has a pipeline of 47 OSW projects, with a total capacity of 96.8 GW, all of which are currently in the Concept or Design phase (Energise Renewable, 2025a). Based on the available information, 11 out of the 47 projects have been identified as floating-type installations.

Table 1 OSW projects in Australia

N°	Project name	MW	Status	Type
1	Aurora Green	3000	Concept / Design	Fixed-bottom
2	Barwon	1000	Concept / Design	Floating
3	Bass Coast North	300	Concept / Design	Floating
4	Bass Coast South	700	Concept / Design	Floating
5	Bass Offshore Wind Energy project	2010	Concept / Design	Fixed-bottom
6	Bass Strait	4000	Concept / Design	Floating
7	Bass Strait Wind Farm	3500	Concept / Design	Not specified
8	Blue Mackerel North	1000	Concept / Design	Fixed-bottom
9	Bunburt (DIRECT)	3000	Concept / Design	Fixed-bottom
10	Bunbury (Oceanex)	2000	Concept / Design	Fixed-bottom
11	Cape Winds	2000	Concept / Design	Fixed-bottom
12	Catalpa Offshore Wind Farm	Not specified	Concept / Design	Not specified
13	Cliff Head (demo)	60	Concept / Design	Fixed-bottom
14	Gippsland Dawn	2085	Concept / Design	Fixed-bottom
15	Gippsland Skies	2500	Concept / Design	Fixed-bottom
16	Gladstone 1	3000	Concept / Design	Fixed-bottom
17	Gladstone 2	3000	Concept / Design	Fixed-bottom
18	Great Eastern	2500	Concept / Design	Fixed-bottom
19	High Sea Wind	1300	Concept / Design	Fixed-bottom
20	Illawarra	2000	Concept / Design	Floating
21	Kent	2000	Concept / Design	Fixed-bottom
22	Kingston Offshore Wind Farm	600	Concept / Design	Fixed-bottom
23	Kut-Wut Brataualung	2200	Concept / Design	Fixed-bottom
24	Latitude 35	2000	Concept / Design	Floating
25	Leeuwin	3000	Concept / Design	Fixed-bottom
26	Mid West Wind	1100	Concept / Design	Fixed-bottom
27	Midwest	3000	Concept / Design	Fixed-bottom
28	Myalup Offshore Windfarm	1900	Concept / Design	Fixed-bottom
29	Navigator North Project	1500	Concept / Design	Fixed-bottom
30	Novocastrian	2000	Concept / Design	Floating
31	Perth Aeeay	1000	Concept / Design	Fixed-bottom
32	Port Kembla	8000	Concept / Design	Floating
33	Port of Brisbane	4000	Concept / Design	Floating
34	Portland	750	Concept / Design	Not specified
35	Project 01	2800	Concept / Design	Fixed-bottom
36	Project 02	2000	Concept / Design	Fixed-bottom
37	Samphire	3000	Concept / Design	Fixed-bottom
38	South of Perth	2000	Concept / Design	Fixed-bottom

N°	Project name	MW	Status	Type
39	South Pacific	1600	Concept / Design	Floating
40	Southern Queensland	2000	Concept / Design	Not specified
41	Southern Winds	1200	Concept / Design	Fixed-bottom
42	Spinifex	1000	Concept / Design	Fixed-bottom
43	Star of the South	2200	Concept / Design	Fixed-bottom
44	Ulladulla	2000	Concept / Design	Floating
45	Velella	3000	Concept / Design	Fixed-bottom
46	Western Australia (Green Energy Partners)	1000	Concept / Design	Fixed-bottom
47	Western Vic	1000	Concept / Design	Not specified

Source: Energy Renewable (2025a).

5.2.2 Brunei Darussalam

According to the Brunei Darussalam Ministry of Energy (2021), this economy has no OSW projects at any stage of development.

5.2.3 Canada

Canada is undertaking efforts to initiate a first Call for Bids (i.e. seabed auction) process for offshore wind in the Canada-Nova Scotia offshore. The Government of Canada and the Province of Nova Scotia jointly provided a Strategic Direction to the Canada-Nova Scotia Offshore Energy Regulator in September 2025 to initiate the process for this inaugural Call for Bids (Government of Canada, 2025). The Strategic Direction includes the objective to award licences for at least 3 GW of offshore wind energy, in support of Nova Scotia's target of 5 GW by 2030.

5.2.4 Chile

Chile has a pipeline of 8 OSW projects, with a total capacity of 8.9 GW, all of which are currently in the Concept or Design phase (Ministry of Energy, 2024). Based on the available information, 7 out of the 8 projects have been identified as floating-type installations.

Table 2 OSW projects in Chile

N°	Project name	MW	Status	Type
1	Viento Azul Biobío	960	Concept / Design	Floating
2	Golfo de Arauco Sustentable	900	Concept / Design	Fixed-bottom
3	Biobío Sustentable	1500	Concept / Design	Floating
4	Lile	1100	Concept / Design	Floating
5	Ardena	1100	Concept / Design	Floating
6	Brisas Marinas	1100	Concept / Design	Floating
7	Espejo de agua	1100	Concept / Design	Floating
8	Agua Azul	1100	Concept / Design	Floating

Source: Ministry of Energy, Chile (2024).

5.2.5 People's Republic of China

People's Republic of China has a pipeline of over 400 OSW projects, which summarise around 172 GW, in different stages of developments (TGS, 2025d). Based on the available information, at least 25 projects have been identified as floating-type installations.

Table 3 OSW projects in People's Republic of China

N°	Project name	MW	Status	Type
1	Donggang (CN8e)	1008	Concept / Design	Not specified
2	Datang Dalian Zhuanghe I (CNB1)	98.8	Operation	Not specified
3	Daliang Zhuanghe #3 CTGNE (CN2v)	303.15	Operation	Not specified
4	Huneng Dalian Zhuanghe II (CN2U)	300	Operation	Not specified
5	Huneng Dalian Zhuanghe IV – phase 1 (CNA9)	350	Operation	Not specified
6	Huneng Dalian Zhuanghe IV – phase 2 (CNB0)	200	Operation	Not specified
7	Daliang Zhuanghe Offshore Wind Farm Site V Project (CNC3)	252	Construction	Not specified
8	SPIC Dalian Huayuankou II (CN2x)	178.8	Concept / Design	Not specified
9	SPIC Dalian Huayuankou I (CN2Y)	220.5	Concept / Design	Not specified
10	Huaneng Liaodong Bay Offshore Wind Power Project (CNM7)	2050	Concept / Design	Not specified
11	Huludao Suizhong H1 (CNM9)	500	Concept / Design	Not specified
12	Shanhaiguan Offshore Wind Power Phase I 500 MW Parity Demonstration Project (CNM6)	500	Concept / Design	Not specified
13	Laoting Yuetuo Island 300 MW Demonstration (Tangshan – Area 3) (CN1x)	304	Concept / Design	Not specified
14	Laoting Bodhi Island 300 MW Demonstration (CN70)	300	Operation	Not specified
15	Huanghua Port Offshore Wind Power Project (CNT8)	1300	Concept / Design	Not specified
16	Three Gorges Tianjin Nangang Offshore Wind Power Demonstration Project (CNK5)	204	Construction	Not specified
17	Shandong Energy Bozhong A (CN7W)	501	Operation	Not specified
18	Shandong Energy Bozhong B (CNK6)	399.5	Operation	Not specified
19	Shandong Bozhong B2 (CNj1)	501.5	Operation	Not specified
20	Shandong Energy Bozhong Offshore Wind G Site North (CNP1)	400	Concept / Design	Not specified
21	Shandong Energy Bozhong Offshore Wind G Site South (CNT9)	300	Concept / Design	Not specified
22	Guohua Bozhong I (CNU2)	500	Concept / Design	Not specified
23	Three Gorger Shandong Changyi Laizhou Bay – Phase 1 (CN4y)	300	Operation	Not specified
24	Three Gorger Shandong Changyi Laizhou Bay – Phase 2 (CN6J)	400	Concept / Design	Not specified
25	CTG Laizhou Marine Ranch Fusion Demo (CNC0)	304	Operation	Not specified
26	Datang Laizhou Bay Demonstration Project (CN95)	200	Concept / Design	Not specified
27	Zhaoyuan Open Sea (CNU5)	2600	Concept / Design	Not specified
28	Huaneng Shandong Peninsula North BW Site (CNk8)	510	Construction	Not specified
29	Penglai Oilfield Clean Energy Comprehensive Utilization Adjustment Capacity Construction Supporting project (CNM5)	34	Concept / Design	Not specified
30	Huaneng Shandong Peninsula North K Site (CNQ0)	504	Concept / Design	Not specified
31	CGN Peninsula North 5 (CNF3)	600	Concept / Design	Not specified

N°	Project name	MW	Status	Type
32	CGN Peninsula North 3 Phase 1 (CNC1)	300	Concept / Design	Not specified
33	CTG Shandong Yantai (Muping) BDB6 – phase 1 (CNB7)	300.6	Operation	Not specified
34	CTG Shandong Yantai (Muping) BDB6 – phase 2 (CNX2)	300	Concept / Design	Not specified
35	Huaneng Shandong Peninsula North L Site (CNu9)	504	Concept / Design	Not specified
36	Shandong Peninsula North N2 (CNX1)	900	Concept / Design	Not specified
37	Shandong Peninsula North N1 (CNX6)	1100	Concept / Design	Not specified
38	SPIC Shandong Energy Peninsula South 5 Phase II (CNP0)	300	Concept / Design	Not specified
39	Guohua Peninsula South 600 MW Offshore Wind Farm Phase II (CNL4)	297.5	Construction	Not specified
40	Guohua Peninsula South 600 MW Offshore Wind Farm Phase I (CNL3)	306	Construction	Not specified
41	Shandong Haiwei Peninsula South U site (CNP3)	450	Operation	Not specified
42	SPIC Shandong Peninsula South Site U Phase I (CNk3)	450.5	Operation	Not specified
43	SPIC Shandong Energy Peninsula South 5 Phase I (CNO9)	603.5	Concept / Design	Not specified
44	Huaneng Shandong Peninsula South 4 (CNB8)	300	Operation	Not specified
45	SPIC Shandong Peninsula South (BDN3#) (CNB9)	301.6	Operation	Not specified
46	SPIC Shandong Peninsula South Site V (CNK4)	500	Operation	Not specified
47	Qingdao Jimo (CN89)	300	Concept / Design	Not specified
48	Qingdao Shenyuanhai Demonstration – phase I (CNC5)	1000	Concept / Design	Not specified
49	Three Gorges Qingdao Deep Water Offshore Wind (CNE9)	4000	Concept / Design	Not specified
50	Huaneng Guanyun – phase 1 (CN57)	303.3	Operation	Not specified
51	Xiangshui Intertidal pilot Project – Goldwind – GW 100/2500 (CN48)	2.5	Operation	Not specified
52	Xiangshui Intertidal pilot Project – Goldwind GW 3000 kW DEC FD 119A (CN0S)	6	Operation	Not specified
53	Xiangshui Intertidal pilot Project – Shangai Electric – SEC 2000 (CN14)	2	Operation	Not specified
54	Xiangshui Demonstration (CN51)	202	Operation	Not specified
55	Xiandshui Intertidal Pilot Project – Shanghai Electric W2000 M – 93 – 70 (CN49)	2	Operation	Not specified
56	SPIC Binhai North H1 100 MW (CN3W)	100	Operation	Not specified
57	SPIC Binhai North H2 400 MW (CN4C)	400	Operation	Not specified
58	SPIC Binhai South H3# 300 MW (CN4H)	300	Operation	Not specified
59	Datan Jiangsu Binhai 300 MW (CN23)	300	Operation	Not specified
60	People’s Republic of China Energy Sheyang South H5 (CNG6)	400	Concept / Design	Not specified
61	People’s Republic of China Energy Sheyang South H4 (CNG5)	300	Concept / Design	Not specified

N°	Project name	MW	Status	Type
62	People's Republic of China Energy Sheyang South H3 (CNG4)	300	Concept / Design	Not specified
63	CTG Dafeng H8-1 (CNG7)	200	Concept / Design	Not specified
64	Huaneng Sheyang H1 (CN0K)	301.5	Operation	Not specified
65	Sheyang Huineng H4 (CN9T)	300	Concept / Design	Not specified
66	CGN juzhi Sheyang South H5 (CN9V)	400	Concept / Design	Not specified
67	Longyuan Sheyang H2 (CN0M)	301.5	Operation	Not specified
68	Sheyang Longyuan South H2-1 expansion (CN9S)	103.5	Operation	Not specified
69	JSGX Dafeng H1 (CN7P)	200	Concept / Design	Not specified
70	SPIC Jiangsu Dafeng H3 300 MW (CN3N)	302.4	Operation	Not specified
71	Longyuan Jiangsu Dafeng (H4) 300 MW (CN7R)	301.15	Operation	Not specified
72	Dafeng H5 (CN7S)	206.4	Operation	Not specified
73	Dafeng H6 (CN7V)	300	Operation	Not specified
74	Three Gorges New Energy Jiangsu Dafeng 300 MW (CN4V)	300.7	Operation	Not specified
75	JSGC Dafeng H10 (CN7t)	150	Concept / Design	Not specified
76	JSGC Dafeng H2 (CN7Q)	300	Concept / Design	Not specified
77	JSGC Dafeng H16 (CN7U)	200	Concept / Design	Not specified
78	CTG Dafeng H9 (CNG1)	200	Concept / Design	Not specified
79	CTG Dafeng H15 (CNG2)	200	Concept / Design	Not specified
80	Longyuan Jiangsu Dafeng (h12) 200MW (Concession) (CN30)	200	Operation	Not specified
81	Longyuan Jiangsu Dafeng (h7) 200MW (Concession) (CN3K)	200	Operation	Not specified
82	CTGNE Jiangsu Dafeng H8-2 (CN9E)	300	Operation	Not specified
83	CTG Dafeng H17 (CN7y)	200	Concept / Design	Not specified
84	Huaneng Dafeng – phase 1 (CN35)	301.6	Operation	Not specified
85	Huaneng Dafeng – phase 2 (CN7I)	103.5	Operation	Not specified
86	Guohua Dongtai 4 H2 (CN06)	302.4	Operation	Not specified
87	Jiangsu Luneng Dongtai 200 MW Concession (CN32)	200	Operation	Not specified
88	Zhugensha H2 (CN70)	302	Operation	Not specified
89	Guohua Dongtai 5 (CN2G)	200	Operation	Not specified
90	Rudong H14 (CN9R)	200	Operation	Not specified
91	Rudong H15 (CN6K)	200	Operation	Not specified
92	Rudong H2 (CN5U)	350	Operation	Not specified
93	SPIC Rudong H7 (CN4L)	400	Operation	Not specified
94	Jiangsu Rudong Jiangjiasha H2 300 MW (CN4K)	300	Operation	Not specified
95	Jiangsu longyuan Chiang Sand H1 300 MW (CN2F)	300	Operation	Not specified
96	Jiangjiasha (CND3)	50	Operation	Not specified
97	Hydropower Rudong Offshore Wind Farm (intertidal) 100 MW demonstration project – phase 2 (CN63)	80	Operation	Not specified
98	Hydropower Rudong Offshore Wind Farm (intertidal) 100 MW demonstration project – phase1 (CN1T)	20	Operation	Not specified
99	Huaneng Rudong 300 MW – South (CN3Y)	146.4	Operation	Not specified
100	Huaneng Rudong 300 MW – North (CN82)	156	Operation	Not specified

N°	Project name	MW	Status	Type
101	Rudong H13 (CN4J)	150	Operation	Not specified
102	CSI Jiangsu Rudong H3-1 300 MW (CN4B)	302.4	Operation	Not specified
103	CSI Jiangsu Rudong H3-2 100 MW (CN9U)	100	Operation	Not specified
104	SPIC Rudong H4 (CN4Z)	400	Operation	Not specified
105	Rudong H5 (CN5A)	300	Operation	Not specified
106	Rudong H8 (CN5B)	300	Operation	Not specified
107	Rudong H10(CN5C)	400	Operation	Not specified
108	Rudong H6 (CN5D)	400	Operation	Not specified
109	Jiangsu Rudong 150 MW Offshore (intertidal) Demonstration Wind Farm – Phase II (CN0o)	50	Operation	Not specified
110	Jiangsu Rudong 150 MW Offshore (intertidal) Demonstration Wind Farm – Phase I (CN59)	99.3	Operation	Not specified
111	Longyuan Rudong Intertidal Trial Wind Farm (CN07)	32	Operation	Not specified
112	Longyuan Rudong Intertidal Trial Wind Farm – Extension (CN2E)	49.2	Operation	Not specified
113	Jiangsu Rudong 150 MW Offshore (intertidal) Demonstration Wind Farm – extension (CN0P)	50	Operation	Not specified
114	Rudong Offshore Wind Farm Demonstration Project – Expansion Project (200 MW) (CN2Z)	200	Operation	Not specified
115	CGN Rudong Demonstration (CN61)	152	Operation	Not specified
116	CGN Rudong – phase 2 (CNA8)	150	Concept / Design	Not specified
117	Qidong H1 (CN8U)	250.5	Operation	Not specified
118	Qidong H2 (CN8S)	252.25	Operation	Not specified
119	Qidong H3 (CN8T)	300	Operation	Not specified
120	Shanghai Deep SEA #1 (CNx9)	600	Concept / Design	Not specified
121	Chongming Phase I (CNY4)	850	Concept / Design	Not specified
122	Hengsha phase I (CNY3)	650	Concept / Design	Not specified
123	Shanghai Deep SEA #2 (CNY0)	1400	Concept / Design	Not specified
124	Shanghai Deep SEA #4 (CNY2)	1000	Concept / Design	Not specified
125	Shanghai Deep SEA #3 (CNY1)	1300	Concept / Design	Not specified
126	Shangai Lingang Demonstration – 2 (CN3E)	100.8	Operation	Not specified
127	Shangai Lingang Demonstration – 1 (CN45)	100	Operation	Not specified
128	Shangai far & Deep-SEA Floating Demo (CN5S)	25	Concept / Design	Not specified
129	Shengsi 7 (CN0Q)	252	Concept / Design	Not specified
130	Shangai Donghai Bridge I (CN01)	102	Operation	Not specified
131	Shengsi 5 + 6 (CN72)	282	Operation	Not specified
132	Donghai bridge Offshore Wind Farm – phase II (Extension) project (CN46)	102.2	Operation	Not specified
133	Fengxian – phase 1 (CN43)	206.4	Operation	Not specified
134	Fengxian – phase 2 (CN44)	256	Concept / Design	Not specified
135	Zheneng Shengsi 2 (CN3f)	400	Operation	Not specified
136	Shengsi (CN0R)	396	Concept / Design	Not specified
137	Shengsi 3 & 4 (CN3G)	400	Concept / Design	Not specified
138	Shanghai Jinshan I (CNH1)	306	Concept / Design	Not specified
139	Zhejiang Jiansing 2 (CN13)	300	Operation	Not specified

N°	Project name	MW	Status	Type
140	Zhejiang Jiansing 1 (CN1W)	300.4	Operation	Not specified
141	Daishan 2 (CN1V)	306	Concept / Design	Not specified
142	Huaneng Daishan 1 (CN2H)	306	Construction	Not specified
143	Shanghai Jinshan Phase II (CNI7)	200	Concept / Design	Not specified
144	Shanghai Donghai Bridge III (CNI8)	153	Concept / Design	Not specified
145	Fengxian - phase IV (CNL9)	200	Concept / Design	Not specified
146	Xiangshan 3 (CNy8)	450	Concept / Design	Not specified
147	CGN Daishan 4 (CN18)	234	Operation	Not specified
148	Zhoushan Putuo 2 (CNx8)	500	Concept / Design	Not specified
149	Mingyang Putuo District 6 Zone 2 Phase II (CNx4)	50	Concept / Design	Not specified
150	Guodian Zhoushan Putuo District 6 Zone 2 (CN41)	252	Operation	Not specified
151	CGN Xiangshan Tuci (CNG0)	280	Construction	Not specified
152	Xiangshan No. 4 (CNZ0)	751.5	Concept / Design	Not specified
153	Xiangshan No. 5 (CNZ1)	450	Concept / Design	Not specified
154	Xiangshan No. 6 (CNZ2)	450.9	Concept / Design	Not specified
155	Guodian xiangshan 1 - phase 1 (CN64)	254.2	Operation	Not specified
156	Guodian xiangshan 1 - phase 2 (CN2D)	504	Construction	Not specified
157	Zheneng Taizhou 1 (CNG8)	300	Operation	Not specified
158	Wenling # 1 (CN4G)	504	Concept / Design	Not specified
159	Wenling # 2 (CNU1)	504	Concept / Design	Not specified
160	Huadian Yuhuan 1 North (CN66)	154	Operation	Not specified
161	Huadian Yuhuan 1 South (CN67)	75	Operation	Not specified
162	Huaneng Yuhuan 2 (CNF2)	508	Concept / Design	Not specified
163	Dongtou II (CN4U)	210	Concept / Design	Not specified
164	Dongtou I (CNU3)	300	Concept / Design	Not specified
165	Cangnan # 6 (CNy5)	210	Concept / Design	Not specified
166	Datang linhai #1 (CNX7)	504	Concept / Design	Not specified
167	Goldwind Technology Wenzhou Deep Offshore Wind Power (CNI6)	10	Concept / Design	Not specified
168	Ruian 1 - phase 1 (CN4s)	308	Concept / Design	Not specified
169	Ruian 2 (CNF1)	600	Concept / Design	Not specified
170	Pingyang No. 1 Offshore Wind Power Project (CNM8)	615.6	Concept / Design	Not specified
171	Cangnan # 1 - phase 1 (CN0U)	400	Operation	Not specified
172	Cangnan 1 200 MW Extension Project (CN06)	204	Construction	Not specified
173	Cangnan # 2 (CN6H)	306	Operation	Not specified
174	Cangnan # 4 (CN4T)	400	Operation	Not specified
175	Cangnan # 3 (CN05)	798	Concept / Design	Not specified
176	Huaneng Cangnan # 2 Phase II (CNp2)	308	Concept / Design	Not specified
177	Cangnan # 5 (CNZ6)	798	Concept / Design	Not specified
178	Fujian Ningde Xiapu Area B (CN50)	288	Concept / Design	Not specified
179	Ningde Deepwater A (CNU8)	800	Concept / Design	Not specified
180	Fujian Ningde Xiapu Area C (CN9Y)	350	Concept / Design	Not specified
181	Fujian Ningde Xiapu Area D (CN9z)	400	Concept / Design	Not specified
182	Mazu Island (CNK0)	304	Concept / Design	Not specified
183	CR power Lianjiang Open Sea Offshore Wind farm (CNK9)	702	Construction	Not specified
184	Changle Area J (CNp6)	656	Concept / Design	Not specified
185	Changle Area I (North) (CNU4)	314	Concept / Design	Not specified
186	Changle Area I (South) (CNP5)	314	Concept / Design	Not specified
187	Changle Area B (CN5Z)	100	Concept / Design	Not specified
188	Changle Area C - Phase 2 (CNC4)	300	Operation	Not specified

N°	Project name	MW	Status	Type
189	Minnan Offshore Wind Power Base Area B-2 (CNz3)	1600	Concept / Design	Not specified
190	CTG Changle Area H (CNB3)	100	Concept / Design	Not specified
191	People's Republic of China Resource Power Changle Area D, E (CNF7)	411	Concept / Design	Not specified
192	Changle Area A (CN5Y)	300	Operation	Not specified
193	CTGC Pingtan - Phase 1 (CMD7)	111	Operation	Not specified
194	Changle Area K (CNP7)	558	Concept / Design	Not specified
195	SPIC Changle Smart Offshore Wind Innovation Deminstration Project (CND8)	152	Concept / Design	Not specified
196	Changle Area C – phase 1 (CN6A)	200	Operation	Not specified
197	Pingtan Caoyu (CN08)	300	Concept / Design	Not specified
198	Pingtan Area B (CN07)	450	Concept / Design	Not specified
199	CEEC Pingtan Area A Offshore Wind Power Project (CN02)	450	Construction	Not specified
200	Fujian Pingtan Datang Changjiangao (CN3P)	75	Operation	Not specified
201	Pingtan Changjiangao Offshore Extension Project (CNV0)	1100	Operation	Not specified
202	CGN Pingtan Island (CN2j)	240	Operation	Not specified
203	Pingtan Strait Gongtie Dual-purpose Bridge Lighting Project (CNA7)	33.5	Operation	Not specified
204	Zhongmin Fujian XEMC Test Turbine (Nearshore) (CN2R)	5	Operation	Not specified
205	Pingtan V-type Floating Projects (CN8F)	1000	Concept / Design	Floating
206	Huadian Fujian Fuqing Haitan Strait (CN40)	302.8	Operation	Not specified
207	Fuqing Xinghua Bay – phase 2 (CN4N)	298.7	Operation	Not specified
208	Fuqing Xinghua Bay – phase 1 (prototype test site) (CN4N)	78.4	Operation	Not specified
209	Fujian Sanchuan Shicheng Fishing Port (CN4R)	200	Operation	Not specified
210	Longyuan Putan Nanri Island I – 400 MW Project – phase 1 (CN99)	220	Operation	Not specified
211	Longyuan Putan Nanri Island I – 400 MW Project – Demonstration 16 MW (CN3B)	18	Operation	Not specified
212	Putian Nanri Island II – 348 MW (CN8H)	348	Concept / Design	Not specified
213	Longyuan Nanri island Floating Project (CND6)	4	Operation	Floating
214	Fujian Sanchuan Putian City Flat Bay Zone F (CN3J)	200	Operation	Not specified
215	Fujian Putian City Flat Bay – 50 MW (CN1Z)	50	Operation	Not specified
216	Fujian Putian City Flat Bay Two (Zone B) (CN3A)	246	Operation	Not specified
217	Fujian Putian City Flat Bay Three (Zone C) (CN7H)	308	Operation	Not specified
218	Putian Pinghai Bay DE (CN3U)	400	Concept / Design	Not specified
219	Shanghai Donghai Bridge I	102	Operation	Not specified
220	DDHI Composite Bucket Foundation Test Project Offshore Wind Farm	2.5	Operation	Not specified

N°	Project name	MW	Status	Type
221	Huaneng Sheyang H1 Offshore Wind Farm	301.5	Operation	Not specified
222	Shengsi 1 Offshore Wind Farm	396	Concept / Design	Not specified
223	Longyuan Putian Nanri Island I - 400MW Project - phase 2 Offshore Wind Farm	180	Operation	Not specified
224	Zhejiang Jiaxing 2 Offshore Wind Farm	300	Operation	Not specified
225	Zheneng Jiaxing1 Offshore Wind Farm	300.4	Operation	Not specified
226	CGN Shanwei Houhu Offshore Wind Farm	500	Operation	Not specified
227	Datang Jiangsu Binhai 300MW Offshore Wind Farm	300	Operation	Not specified
228	Dafeng (Shanghai Electric) Intertidal Demonstration Turbine Offshore Wind Farm	2	Operation	Not specified
229	Datang International Shantou Lemen I	245	Operation	Not specified
230	Huaneng Hainan Wenchang 1# Offshore Wind Farm	200	Concept / Design	Not specified
231	Hainan Dongfang 1 Offshore Wind Farm	350	Concept / Design	Not specified
232	Huaneng Dalian Zhuanghe II Offshore Wind Farm	300	Operation	Not specified
233	Longyuan Putian Nanri Island I - 400MW Project - Demonstration - 16 MW Offshore Wind Farm	16	Operation	Not specified
234	Shanghai Lingang Demonstration - 2 Offshore Wind Farm	1008.8	Operation	Not specified
235	Sinohydro Tianjin Nangang - phase 1 Offshore Wind Farm	90	Operation	Not specified
236	CGN Yangjiang Nanpeng Island Offshore Wind Farm	401.5	Operation	Not specified
237	Yuedian Yangjiang Shapa Offshore Wind Farm	302.2	Operation	Not specified
238	Shanghai Lingang Demonstration - 1	100	Operation	Not specified
239	CSIC Jiangsu Rudong H3-1 300MW Offshore Wind Farm	302.4	Operation	Not specified
240	Cangnan #4 Offshore Wind Farm	400	Operation	Not specified
241	Three Gorges Shandong Changyi Laizhou Bay - phase 1 Offshore Wind Farm	300	Operation	Not specified
242	Jiangsu Rudong 150MW Offshore (Intertidal) Demonstration Wind Farm - phase I Offshore Wind Farm	99.3	Operation	Not specified
243	Ledong Offshore Wind Farm	600	Concept / Design	Not specified
244	Hainan Lingao Offshore Wind Farm	600	Concept / Design	Not specified
245	Hainan Danzhou Offshore Wind Farm	300	Concept / Design	Not specified
246	CGN Huizhou I Offshore Wind Farm	250	Operation	Not specified
247	CECEP Yangjiang Nanpeng Island Offshore Wind Farm	300	Operation	Not specified
248	CTGNE Yangjiang Shapa - phase I Offshore Wind Farm	300	Operation	Not specified
249	Shanghai Far & Deep-Sea Floating Demo	25	Concept / Design	Not specified
250	Liuao Area B Offshore Wind Farm	400	Concept / Design	Not specified
251	Liuao Area C Offshore Wind Farm	400	Concept / Design	Not specified

N°	Project name	MW	Status	Type
252	Liuao Area D Offshore Wind Farm	402	Concept / Design	Not specified
253	Changle Area C - phase 1 Offshore Wind Farm	200	Operation	Not specified
254	Jieyang Jinghai 150MW Expansion Project Offshore Wind Farm	392	Concept / Design	Not specified
255	Shenquan-phase 1 I Offshore Wind Farm	315.5	Operation	Not specified
256	Zhuhai Jinwan Offshore Wind Farm	300	Operation	Not specified
257	Cangnan #2 Offshore Wind Farm	306	Operation	Not specified
258	Whenzhou Intertidal Offshore Wind Farm	1200	Concept / Design	Not specified
259	Three Gorges Shandong Changyi Laizhou Bay - phase 2 Offshore Wind Farm	400	Concept / Design	Not specified
260	CGN Shanwei Jiazi I Offshore Wind Farm	503.1	Operation	Not specified
261	CGN Shanwei Jiazi II Offshore Wind Farm	403	Operation	Not specified
262	Guangdong Yudean Zhanjiang Wailuo-phase 3 (Xinliao) Offshore Wind Farm	206.4	Operation	Not specified
263	Zhanjiang Xuwen-North Offshore Wind Farm	300	Operation	Not specified
264	Mingyang Yangjiang Qingzhou IV Offshore Wind Farm	503	Operation	Not specified
265	CTGNE Yangjiang Shapa - phase III - A1 Offshore Wind Farm	300	Operation	Not specified
266	CGN Yangjiang Fanshi I Offshore Wind Farm	1000	Construction	Not specified
267	CGN Huizhou II PA Offshore Wind Farm	456	Operation	Not specified
268	Laoting Bodhi Island 300MW Demonstration Offshore Wind Farm	300	Operation	Not specified
269	Huaneng Shantou Lemen 2 Offshore Wind Farm	594	Operation	Not specified
270	Zhuhai Guishan Demonstration - phase 2 Offshore Wind Farm	81.8	Operation	Not specified
271	CTGNE Yangjiang Shapa - phase II Offshore Wind Farm	400	Operation	Not specified
272	Guangdong Yudean Zhanjiang Wailuo-phase 2 Offshore Wind Farm	200	Operation	Not specified
273	JSGX Dafeng H2 Offshore Wind Farm	300	Concept / Design	Not specified
274	JSGX Dafeng H10 Offshore Wind Farm	150	Concept / Design	Not specified
275	JSGX Dafeng H16 Offshore Wind Farm	200	Concept / Design	Not specified
276	Huaneng Rudong 300MW - North Offshore Wind Farm	156	Operation	Not specified
277	Zhuhai Guishan Demonstration-phase 1 Offshore Wind Farm	121.35	Operation	Not specified
278	Zhanjiang Xuwen-South Offshore Wind Farm	300	Operation	Not specified
279	Shenquan - phase 2 Offshore Wind Farm	502	Operation	Not specified
280	Yuedian Yangjiang Qingzhou I Offshore Wind Farm	407	Operation	Not specified
281	Yuedian Yangjiang Qingzhou II Offshore Wind Farm	600	Concept / Design	Not specified

N°	Project name	MW	Status	Type
282	SPIC Jieyang Huilai II Offshore Wind Farm	500	Concept / Design	Not specified
283	SPIC Jieyang Qianzhan I and II Offshore Wind Farm	1000	Concept / Design	Not specified
284	Mingyang Jieyang Huilai III Offshore Wind Farm	500	Concept / Design	Not specified
285	Mingyang Jieyang Qianzhan III Offshore Wind Farm	500	Concept / Design	Not specified
286	CGN Jieyang Huilai V Offshore Wind Farm	1000	Concept / Design	Not specified
287	CGN Jieyang Huilai I Offshore Wind Farm	800	Concept / Design	Not specified
288	Three Gorges Yangjiang Qingzhou VII Offshore Wind Farm	1000	Concept / Design	Not specified
289	Three Gorges Yangjiang Qingzhou VI	1000	Construction	Not specified
290	Three Gorges Yangjiang Qingzhou V	1000	Concept / Design	Not specified
291	CGN Yangjiang Fanshi II Offshore Wind Farm	1008	Concept / Design	Not specified
292	Huadian Yangjiang Qingzhou III Offshore Wind Farm	500.6	Operation	Not specified
293	Guangdong Yudean Zhanjiang Wailuo-phase 1 Offshore Wind Farm	198	Operation	Not specified
294	Longyuan Putian Nanri Island I - 400MW Project - phase 1 Offshore Wind Farm	220	Operation	Not specified
295	CTGNE Yangjiang Shapa - phase III - A2 Offshore Wind Farm	100	Operation	Not specified
296	Mingyang Yangjiang Shapa Offshore Wind Farm	300.4	Operation	Not specified
297	CTGNE Yangjiang Shapa - phase V Offshore Wind Farm	300	Operation	Not specified
298	CTGNE Yangjiang Shapa - phase IV Offshore Wind Farm	300	Operation	Not specified
299	Shanghai Electric Shantou Zhongpeng I Offshore Wind Farm	1000	Concept / Design	Not specified
300	Shanghai Electric Shantou Zhongpeng II Offshore Wind Farm	1000	Concept / Design	Not specified
301	Shanghai Electric Shantou Zhongpeng III Offshore Wind Farm	1000	Concept / Design	Not specified
302	Shanghai Electric Shantou Nanpeng I Offshore Wind Farm	1000	Concept / Design	Not specified
303	Shanghai Electric Shantou Nanpeng II Offshore Wind Farm	1000	Concept / Design	Not specified
304	Shanghai Electric Shantou Nanpeng III Offshore Wind Farm	1000	Concept / Design	Not specified
305	Shanghai Electric Shantou Qinpeng I Offshore Wind Farm	1000	Concept / Design	Not specified
306	Shanghai Electric Shantou Qinpeng II Offshore Wind Farm	1000	Concept / Design	Not specified
307	Shanghai Electric Shantou Qinpeng III Offshore Wind Farm	1000	Concept / Design	Not specified
308	Shanghai Electric Shantou Qinpeng IV Offshore Wind Farm	500	Concept / Design	Not specified
309	CSIC Jiangsu Rudong H3-2 100MW Offshore Wind Farm	100	Operation	Not specified

N°	Project name	MW	Status	Type
310	Shenergy Lingang 6MW Demonstration Offshore Wind Farm	12.5	Operation	Not specified
311	CGN Rudong - phase 2 Offshore Wind Farm	150	Concept / Design	Not specified
312	Huaneng Dalian Zhuanghe IV - phase 1 Offshore Wind Farm	350	Operation	Not specified
313	Huaneng Dalian Zhuanghe IV - phase 2 Offshore Wind Farm	200	Operation	Not specified
314	Liuao Area E Offshore Wind Farm	400	Concept / Design	Not specified
315	Liuao Area F Offshore Wind Farm	400	Concept / Design	Not specified
316	Zhangpu Liuao phase II Offshore Wind Farm	400.2	Operation	Not specified
317	SPIC Shandong Peninsula South 3 (BDN3#) Offshore Wind Farm	301.6	Operation	Not specified
318	CTG Shandong Peninsula North 3 phase 1 Offshore Wind Farm	300	Concept / Design	Not specified
319	Dalian Zhuanghe Offshore Wind Farm Site V Project Offshore Wind Farm	250	Concept / Design	Not specified
320	OceanX Floating Wind Farm	16.6	Operation	Floating
321	CTGNE Yangjiang Shapa - phase III - floating demo	5.5	Operation	Floating
322	Zhanjiang 6.2 MW floating demo	6.2	Operation	Floating
323	CGN Floating Ranch Demo		Concept / Design	Floating
324	Donghai Bridge Auctioned Offshore Wind Farm	200	Concept / Design	Not specified
325	CNOOC Shantou Offshore Wind Farm	1000	Concept / Design	Not specified
326	Pudong New District Donghai Bridge Project Offshore Wind Farm	45.5	Operation	Not specified
327	West-Dongfang CZ7 Offshore Wind Farm	1500	Concept / Design	Not specified
328	West-Dongfang CZ8 Offshore Wind Farm	500	Concept / Design	Not specified
329	West-Dongfang&Ledong CZ9 Offshore Wind Farm	1500	Concept / Design	Not specified
330	CGN Huizhou II PB Offshore Wind Farm	300	Operation	Not specified
331	Datang Nanao Lemen I Extension Offshore Wind Farm	354	Concept / Design	Not specified
332	Shenquan-phase 1 II	91	Operation	Not specified
333	SPIC Zhanjiang Xuwen 300MW Capacity Addition project Offshore Wind Farm	300	Operation	Not specified
334	Qinzhou C1 Offshore Wind Farm	579	Concept / Design	Not specified
335	Qinzhou C2	321.9	Concept / Design	Not specified
336	Fangchenggang I A	705.5	Operation	Not specified
337	Fangchenggang I F1-1 Offshore Wind Farm	200	Concept / Design	Not specified
338	Fangchenggang II F1-2 Offshore Wind Farm	350	Concept / Design	Not specified
339	Fangchenggang II F2 Offshore Wind Farm	550	Concept / Design	Not specified
340	Shenergy Hainan CZ2 Offshore Wind Power Demonstration Project phase I Offshore Wind Farm	600	Construction	Not specified
341	Wanning Floating Wind Project Phase 1	100	Concept / Design	Floating

N°	Project name	MW	Status	Type
342	Datang Hainan Danzhou CZ3 - Phase 1 Offshore Wind Farm	600	Construction	Not specified
343	Wanning Floating Wind Project Phase II	800	Concept / Design	Floating
344	Guohua Peninsula South 600MW Offshore Wind Farm Phase I Offshore Wind Farm	306	Construction	Not specified
345	Guohua Peninsula South 600MW Offshore Wind Farm Phase II Offshore Wind Farm	297.5	Construction	Not specified
346	CNOOC Wenchang deep-sea floating wind power	7.25	Operation	Not specified
347	Pingyang No.1 Offshore Wind Power Project Offshore Wind Farm	615.6	Concept / Design	Not specified
348	Shenergy Hainan CZ2 Offshore Wind Power Demonstration Project phase II Offshore Wind Farm	600	Concept / Design	Not specified
349	Putian Meizhou Bay Offshore Wind Farm	400	Concept / Design	Not specified
350	Yangjiang Sanshan Island VI Offshore Wind Farm	502.2	Concept / Design	Not specified
351	Yangjiang Sanshan Island V Offshore Wind Farm	504	Concept / Design	Not specified
352	Yangjiang Sanshan Island III Offshore Wind Farm	504	Concept / Design	Not specified
353	Yangjiang Sanshan Island I Offshore Wind Farm	504	Concept / Design	Not specified
354	Yangjiang Sanshan Island II Offshore Wind Farm	504	Concept / Design	Not specified
355	Yangjiang Sanshan Island IV Offshore Wind Farm	504	Concept / Design	Not specified
356	Jiangmen Chuandao I Offshore Wind Farm	400	Concept / Design	Not specified
357	Jiangmen Chuandao II Offshore Wind Farm	414	Concept / Design	Not specified
358	Gaolan II Offshore Wind Farm	500	Concept / Design	Not specified
359	Gaolan I Offshore Wind Farm	504	Concept / Design	Not specified
360	Shanwei Honghaiwan III Offshore Wind Farm	500	Concept / Design	Not specified
361	Shanwei Honghaiwan V Offshore Wind Farm	500	Concept / Design	Not specified
362	Shanwei Honghaiwan VI Offshore Wind Farm	500	Concept / Design	Not specified
363	YueDong Offshore Wind Power Base 3-1 Offshore Wind Farm	1000	Concept / Design	Not specified
364	YueDong Offshore Wind Power Base 3-2 Offshore Wind Farm	1000	Concept / Design	Not specified
365	YueDong Offshore Wind Power Base 3-3 Offshore Wind Farm	1000	Concept / Design	Not specified
366	YueDong Offshore Wind Power Base 3-4 Offshore Wind Farm	1000	Concept / Design	Not specified
367	YueDong Offshore Wind Power Base 3-5 Offshore Wind Farm	1000	Concept / Design	Not specified
368	YueDong Offshore Wind Power Base 4-1 Offshore Wind Farm	1000	Concept / Design	Not specified

N°	Project name	MW	Status	Type
369	YueDong Offshore Wind Power Base 4-2 Offshore Wind Farm	1000	Concept / Design	Not specified
370	YueDong Offshore Wind Power Base 4-3 Offshore Wind Farm	1000	Concept / Design	Not specified
371	Shandong Energy Bozhong Offshore Wind G Site South Offshore Wind Farm	300	Concept / Design	Not specified
372	Ming Yang Shanwei Honghaiwan IV Offshore Wind Power Demonstration Project Offshore Wind Farm	505.4	Concept / Design	Not specified
373	Zhanjiang Xuwen East I Offshore Wind Farm	408	Concept / Design	Not specified
374	Zhanjiang Xuwen East II Offshore Wind Farm	300	Concept / Design	Not specified
375	Guodian Power Guangxi Beihai N5 Offshore Wind Farm	1600	Concept / Design	Not specified
376	L1 Floating Wind Farm	766	Concept / Design	Floating
377	L2 Floating Wind Farm	766	Concept / Design	Floating
378	M1 Floating Wind Farm	766	Concept / Design	Floating
379	M2 Floating Wind Farm	766	Concept / Design	Floating
380	M3 Floating Wind Farm	766	Concept / Design	Floating
381	M4 Floating Wind Farm	766	Concept / Design	Floating
382	M5 Floating Wind Farm	766	Concept / Design	Floating
383	M8 Floating Wind Farm	766	Concept / Design	Floating
384	M7 Floating Wind Farm	766	Concept / Design	Floating
385	Guangxi deep sea N1 Floating Wind Farm	801.25	Concept / Design	Floating
386	Guangxi deep sea N2 Floating Wind Farm	801.25	Concept / Design	Floating
387	Guangxi deep sea N3 Floating Wind Farm	801.25	Concept / Design	Floating
388	Guangxi deep sea N34 Floating Wind Farm	801.25	Concept / Design	Floating
389	Guangxi deep sea N4 Floating Wind Farm	801.25	Concept / Design	Floating
390	Guangxi deep sea N51 Floating Wind Farm	801.25	Concept / Design	Floating
391	Guangxi deep sea N52 Floating Wind Farm	801.25	Concept / Design	Floating
392	Guangxi deep sea P1 Floating Wind Farm	801.25	Concept / Design	Floating
393	Shandong Peninsula North N2 Offshore Wind Farm	900	Concept / Design	Not specified
394	Wanning Fixed Wind Project Phase 1 Offshore Wind Farm	108	Concept / Design	Not specified
395	CSSC Zhangzhou Offshore Wind Farm	200	Concept / Design	Not specified
396	Ming Yang Shanwei Honghaiwan I Offshore Wind Farm	500	Concept / Design	Not specified
397	Ming Yang Shanwei Honghaiwan II Floating Wind Farm	500	Concept / Design	Not specified
398	Datang Hainan Danzhou CZ3 -Phase 2 Offshore Wind Farm	600	Concept / Design	Not specified
399	Zhanjiang Xuwen East III Offshore Wind Farm	500	Concept / Design	Not specified
400	Zhangzhou Liuao I-1 Offshore Wind Farm	208.7	Concept / Design	Not specified

N°	Project name	MW	Status	Type
401	Goldwind Qinhuangdao JD1-2 Offshore Wind Farm	500	Concept / Design	Not specified
402	Hebei Construction Investment Xiangyun Project Offshore Wind Farm	250	Concept / Design	Not specified

Source: TGS (2025d).

5.2.6 Hong Kong, China

The government of Hong Kong, China, has examined the feasibility of offshore wind farms and will assess the latest technological advancements and cost-effectiveness for possible inclusion in the 2029–2033 development plans.

5.2.7 Indonesia

No OSW projects have been identified at any stage of development in Indonesia (Yudiawan Fajar Kusuma, 2024).

5.2.8 Japan

Japan has a pipeline of 64 OSW projects, with a total capacity of 37.5 GW, spanning various stages of development (Norton Rose Fulbright, 2023). Based on the available information, 6 out of the 49 projects have been identified as floating-type installations.

Table 4 OSW projects in Japan

N°	Project name	MW	Status	Type
1	Kagoshima offshore Windfarm	1500	Concept / Design	Not specified
2	Satsuma (JP91)	600	Concept / Design	Not specified
3	Fukiagehamaoki	969	Concept / Design	Not specified
4	Minami – SSE Pacífico offshore Windfarm	30	Concept / Design	Not specified
5	Wakayama – RWE (JP4H)	1000	Concept / Design	Not specified
6	Wakayama – West (JP82)	750	Concept / Design	Not specified
7	Albatross FAWT Demo (JP4E)	0.02	Concept / Design	Floating
8	INFLUX (JP3C)	625	Concept / Design	Not specified
9	Enshunada – SSE Pacífico	650	Concept / Design	Not specified
10	Progression Energy Floating Project (JP1C)	800	Concept / Design	Not specified
11	Minami Izu – SSE Pacífico (JP85)	500	Concept / Design	Not specified
12	Isumi – INFLUX (JP2R)	696	Concept / Design	Not specified
13	Kujukuri – Eurus Energy (JP3H)	450	Concept / Design	Not specified
14	Sakura (JP1T)	520	Concept / Design	Not specified
15	Choshi – Mitsubishi and C-Tech (JPoF)	403	Concept / Design	Not specified
16	Kashima (JP09)	159.6	Concept / Design	Not specified
17	Hitachi Zosen / Naval Industries (JP72)	Not specified	Concept / Design	Not specified
18	WindFloat Fukushima (JP1Z)	30	Concept / Design	Floating
19	Kuji – INFLUX (JP3P)	816	Concept / Design	Not specified
20	Kuji – BW Ideol and Tohoku Electric (JP2O)	700	Concept / Design	Floating
21	Hirono – INFLUX (JP3J)	720	Concept / Design	Not specified
22	Mutsu - Ogawara Port Offshore Wind Power Project	240	Concept / Design	Not specified

N°	Project name	MW	Status	Type
23	Rumoi – Tomamae (JP3O)	750	Concept / Design	Not specified
24	Ishikari – COSMO (JP74)	1000	Concept / Design	Not specified
25	Minami Shirebeshi – INFLUX (JP2Q)	931	Concept / Design	Not specified
26	Ganu – INFLUX (JP3M)	576	Concept / Design	Not specified
27	Shimamaki – CIP (JP2K)	585	Concept / Design	Not specified
28	Shimamaki – Vena Energy (JP2Y)	600	Concept / Design	Not specified
29	Shimamaki – Cosmo Eco Power (JP2T)	1000	Concept / Design	Not specified
30	Hiyama – Mitsubishi (JP4M)	1500	Concept / Design	Not specified
31	Ishikari Bay – Marubeni (JP 81)	1000	Concept / Design	Not specified
32	Hiyama – J-Power (JP75)	722	Concept / Design	Not specified
33	Matsumae – INFLUX (JP3N)	552	Concept / Design	Not specified
34	Mutsu Bay – JWD (JP56)	800	Concept / Design	Not specified
35	Mutsu Bay – INFLUX (JP3K)	1200	Concept / Design	Not specified
36	Aomori South – Jera (JP0Z)	615	Concept / Design	Not specified
37	Tsugaruhanto (JP3L)	672	Concept / Design	Not specified
38	Happou-Noshiro – Iberdrola (JP58)	375	Concept / Design	Not specified
39	Noshiro Port (JP30)	84	Operation	Not specified
40	Noshiro, Mitane, Oga – Mitsubishi and C-Tech (JP0E)	532	Concept / Design	Not specified
41	Akita Ofsshore Wind (JP29)	54.6	Operation	Not specified
42	SSE Pacífico Prospective Japanese Projects (JP1Y)	2500	Concept / Design	Not specified
43	Yurihonjo - Mitsubishi, VENTI, C-Tech (JP0D)	910	Concept / Design	Not specified
44	Auction Area – Marubeni Corporation	450	Concept / Design	Not specified
45	RWE (JP1J)	694	Concept / Design	Not specified
46	Toki Phase 1 and Phase 2	1000	Concept / Design	Not specified
47	Aichi Floating Demonstration – Hitachi Zosen (JP2Z)	15	Concept / Design	Floating
48	Awara – Chubu Electric (JP86)	200	Concept / Design	Not specified
49	Awara – J-Power Energy (JP84)	350	Concept / Design	Not specified
50	Kitakyushu – INFLUX (JP3Q)	612	Concept / Design	Not specified
51	Hibikinada (JP43)	238	Construction	Not specified
52	NEDO Next Generation Floating Wind Turbine System (JP47)	3	Operation	Floating
53	Oronoshima (JP3R)	732	Concept / Design	Not specified
54	Karatsu - Kansai Electric (JP2N)	676.2	Concept / Design	Not specified
55	Sumitomo (JP73)	420	Concept / Design	Not specified
56	Goto - Offshore Wind Power Generation LLC	16.8	Construction	Floating
57	Kyudhu – GIP (JP90)	1000	Concept / Design	Not specified
58	Chosi – Chiba	390.6	Operation	Not specified
59	Saikai-Enoshima	300	Operation	Not specified
60	Oga-Katagami-Akita	210	Operation	Not specified
61	Yuza – Yamagata	450	Construction	Not specified
62	Murakami - Tainai - Nigata	210	Operation	Not specified
63	Isumi - Chiba	410	Construction	Not specified
64	Iwau-Minamishiribeshi	Not specified	Concept / Design	Not specified

Source: Norton Rose Fulbright (2023)

5.2.9 Republic of Korea

Republic of Korea has a pipeline of 53 OSW projects, with a total capacity of 51.3 GW, spanning various stages of development (Norton Rose Fulbright, 2024a).

Table 5 OSW projects in Republic of Korea

N°	Project name	MW	Status	Type
1	Gunsan Port	3	Operation	Not specified
2	Yeonggwang Yaksu	4.3	Operation	Not specified
3	Woljeong	5	Operation	Not specified
4	Southwest Phase 1	60	Operation	Not specified
5	Yeonggwang Gun	34.5	Operation	Not specified
6	Tamra	30	Operation	Not specified
7	Jeonnam 1, 2 and 3	897	Construction	Not specified
8	Halim	100	Construction	Not specified
9	Sinan Government Project	4100 2100 2000	Concept / Design	Not specified
10	Ansan Pungdo	200	Concept / Design	Not specified
11	Anma	532	Concept / Design	Not specified
12	Gochang	76.2	Concept / Design	Not specified
13	Yeonggwang Nakwol	364.8	Concept / Design	Not specified
14	Yeonggwang Chilsan	151.2	Concept / Design	Not specified
15	Yeonggwang Yawol	108	Concept / Design	Not specified
16	Yeonggwang Hanbit	375	Concept / Design	Not specified
17	Shinan Eoui	99	Concept / Design	Not specified
18	Abhae	84.5	Concept / Design	Not specified
19	Jeonnam Sinan	300	Concept / Design	Not specified
20	Haewoori (floating)	1500	Concept / Design	Not specified
21	Sinan Ul	396.8	Concept / Design	Not specified
22	Wando Geumil 1 and 2	600	Concept / Design	Not specified
23	Wando	148.5	Concept / Design	Not specified
24	Cheongsapo	40	Concept / Design	Not specified
25	Dadaepo	60	Concept / Design	Not specified
26	Gijang	200	Concept / Design	Not specified
27	Ulsan	136	Concept / Design	Not specified
28	Handong-Pyeongdae	105	Concept / Design	Not specified
29	Ulsan City	6100	Concept / Design	Not specified
30	South West	2700	Concept / Design	Not specified
31	Jindo (MyeongRyang, Manho and Jindo Baram)	420 990 1800	Concept / Design	Not specified
32	Seohae	495	Concept / Design	Not specified
33	Neulsaem Ui	510	Concept / Design	Not specified
34	Hanee Baram	2000	Concept / Design	Not specified
35	Incheon	1600	Concept / Design	Not specified
36	Gray Whale (floating)	1500	Concept / Design	Not specified
37	Maenggoldo	600	Concept / Design	Not specified
38	Geomundo	500	Concept / Design	Not specified
39	Bandibuli (floating)	800	Concept / Design	Not specified
40	Donghae 1 (floating)	200	Concept / Design	Not specified
41	Haesong	1000	Concept / Design	Not specified
42	MunmuBaram (floating)	1125	Concept / Design	Not specified
43	Jodo	517	Concept / Design	Not specified
44	Yokjido 1	384	Concept / Design	Not specified

N°	Project name	MW	Status	Type
45	Jindo	855	Concept / Design	Not specified
46	Jindo	3200	Concept / Design	Not specified
47	KF Wind (floating)	1125	Concept / Design	Not specified
48	Hanbandodado	1245	Concept / Design	Not specified
49	Portfolio of 4 projects	6000	Concept / Design	Not specified
50	Dado	900	Concept / Design	Not specified
51	Bobae	600	Concept / Design	Not specified
52	Taean - Manipo Offshore Wind Farm	504	Concept / Design	Not specified
53	West Sea Energy 1	1500	Concept / Design	Not specified

Source: Norton Rose Fulbright (2024a).

5.2.10 Malaysia

No OSW projects have been identified at any stage of development in Malaysia (Hazim, 2024).

5.2.11 Mexico

No OSW projects have been identified at any stage of development in Mexico (Tapia, 2023).

5.2.12 New Zealand

New Zealand has a pipeline of 8 OSW projects, with a total capacity of 7.3 GW all of which are currently in the Concept or Design phase (Energise Renewable, 2025b). Based on the available information, 1 out of the 8 projects has been identified as floating-type installation.

Table 6 OSW projects in New Zealand

N°	Project name	MW	Status	Type
1	South Taranaki	900	Concept / Design	Fixed-bottom
2	Taranaki	1000	Concept / Design	Fixed-bottom
3	Taranaki A	1000	Concept / Design	Fixed-bottom
4	Taranaki B	1000	Concept / Design	Fixed-bottom
5	Tarakani Offshore Wind	1000	Concept / Design	Fixed-bottom
6	Waikato (Blue Float)	1400	Concept / Design	Fixed-bottom
7	Waikato (Oceanex)	1000	Concept / Design	Floating
8	Wellington	Not specified	Concept / Design	Fixed-bottom

Source: Energy Renewable (2025b).

5.2.13 Papua New Guinea

No OSW projects have been identified at any stage of development in Papua New Guinea (Chai, 2021).

5.2.14 Peru

No OSW projects have been identified at any stage of development in Peru.

5.2.15 The Republic of the Philippines

The Republic of the Philippines has a pipeline of 74 OSW projects totalling 66.1 GW, in different stages of development (TGS, 2025b). Based on the available information, 28 out of the 74 projects have been identified as floating-type installations.

Table 7 OSW projects in The Republic of the Philippines

N°	Project name	MW	Status	Type
1	Aparri Bay	600	Concept / Design	Not specified
2	Guimaras Strait	600	Concept / Design	Not specified
3	San Miguel Bay Offshore Wind Farm	600	Concept / Design	Not specified
4	Frontera Bay Floating Wind Farm	450	Concept / Design	Floating
5	Guimaras 1 Offshore Wind Power Project Floating Wind Farm	600	Concept / Design	Floating
6	Northern Luzon Offshore Wind Power Project Floating Wind Farm	2000	Concept / Design	Floating
7	Bagac Bay Offshore Wind Project	500	Concept / Design	Not specified
8	Northern Mindoro Offshore Wind Power Project	2000	Concept / Design	Not specified
9	Oton Bank Offshore WPP Floating Wind Farm	510	Concept / Design	Floating
10	Calatagan Offshore Wind Project Floating Wind Farm	1024	Concept / Design	Floating
11	Manila Bay Wind Power Project Floating Wind Farm	1248	Concept / Design	Floating
12	San Enrique Bank Offshore Wind Project Floating Wind Farm	420	Concept / Design	Floating
13	Lubang and Looc Island Wind Power Project Floating Wind Farm	800	Concept / Design	Floating
14	Lucena Wind Power Project Offshore Wind Farm	475	Concept / Design	Not specified
15	ACX3 Tayabas Bay Wind Power Project Floating Wind Farm	275	Concept / Design	Floating
16	San Lorenzo Bank Offshore Wind Power Project Offshore Wind Farm	593	Concept / Design	Not specified
17	Bulalacao Bay Offshore Wind Energy Project Floating Wind Farm	1200	Concept / Design	Floating
18	Calatagan Offshore Wind Farm Floating Wind Farm	1400	Concept / Design	Floating
19	Claveria Offshore Wind Farm Floating Wind Farm	1600	Concept / Design	Floating
20	ACX3 San Miguel Bay Project Offshore Wind Farm	500	Concept / Design	Not specified
21	GS2 Offshore Wind Power Project Offshore Wind Farm	728	Concept / Design	Not specified
22	NOM FL1 Offshore Wind Project Floating Wind Farm	3038	Concept / Design	Floating
23	GS4 Offshore Wind Power Project Offshore Wind Farm	910	Concept / Design	Not specified
24	GS1 Offshore Wind Project Floating Wind Farm	474	Concept / Design	Floating
25	EDC Guimaras Strait II Wind Power Project Offshor	600	Concept / Design	Not specified
26	Negros Offshore Wind Power Project Floating Wind Farm	500	Concept / Design	Floating

N°	Project name	MW	Status	Type
27	Negros 2 Offshore Wind Power Project Floating Wind Farm	500	Concept / Design	Floating
28	Cavite Offshore Wind Power Project Floating Wind Farm	300	Concept / Design	Floating
29	Ilocos Norte Onshore and Offshore Wind Power Floating Wind Farm	900	Concept / Design	Floating
30	Aurora Offshore Wind Power Project Floating Wind Farm,	600	Concept / Design	Floating
31	Iloilo-Guimaras Offshore Wind Power Project Offshore Wind Farm	1000	Concept / Design	Not specified
32	Camia Bay Wind Power Project Floating Wind Farm	500	Concept / Design	Floating
33	Frontera II Wind Power Project Floating Wind Farm	600	Concept / Design	Floating
34	Guimaras - Negros Occidental Wind Power Project Offshore Wind Farm	600	Concept / Design	Not specified
35	Tablas Strait Offshore Wind Project,	600	Concept / Design	Not specified
36	Semirara II Offshore Wind Power Project,	1000	Concept / Design	Not specified
37	Negros Oriental Onshore and Offshore Wind Power Project	1700	Concept / Design	Not specified
38	Balayan Nearshore Wind Power Project	78	Concept / Design	Not specified
39	Capalonga-Jose Panganiban Offshore Wind Power Project Floating Wind Farm	450	Concept / Design	Floating
40	San Miguel Bay 1 Offshore Wind Power Offshore Wind Farm	1600	Concept / Design	Not specified
41	Ilocos Norte Offshore wind Power Project Floating Wind Farm	900	Concept / Design	Floating
42	Tayabas Bay Wind Power Project	500	Concept / Design	Not specified
43	Pagbilao Offshore Wind Power	300	Concept / Design	Not specified
44	Lamon Bay Wind Power	700	Concept / Design	Not specified
45	Offshore Wind Luzon E-1	555	Concept / Design	Not specified
46	Haraya IV - Negros Occidental Offshore Wind Project	1215	Concept / Design	Not specified
47	Malay Wind Power Project	500	Concept / Design	Not specified
48	Basiad Bay Offshore Wind Power Project	800	Concept / Design	Not specified
49	Dagupan Offshore Wind Power Project	350	Concept / Design	Not specified
50	San Miguel Bay Offshore Wind	1000	Concept / Design	Not specified
51	Samar Norte Offshore Wind Project	650	Concept / Design	Not specified
52	Tablas Strait Offshore Wind Project 3	600	Concept / Design	Not specified
53	Tablas Strait Offshore Wind Project 2	600	Concept / Design	Not specified
54	Balayan Bay Wind Power Project	750	Concept / Design	Not specified
55	Lanao Del Norte Wind Power Project	100	Concept / Design	Not specified
56	Iloilo Strait Offshore Wind Power Project	100	Concept / Design	Not specified
57	East Panay Offshore Wind Power Project	500	Concept / Design	Not specified
58	Cagayan West Offshore Wind Power Project	1024	Concept / Design	Not specified
59	Balayan Bay Wind Power Project	100	Concept / Design	Not specified
60	Cavite Offshore Wind Project	994	Concept / Design	Not specified
61	Cagayan Wind Power Project	500	Concept / Design	Not specified
62	Guimaras UGS-1 Offshore Wind Power Project Offshore Wind Farm	460	Concept / Design	Not specified

N°	Project name	MW	Status	Type
63	Guimaras UGS-2 Offshore Wind Power Project Offshore Wind Farm	630	Concept / Design	Not specified
64	Garza Wind Power Project	550	Concept / Design	Not specified
65	Pagudpud-Sta. Praxedes Claveria Offshore Wind Project Floating Wind Farm	440	Concept / Design	Floating
66	WPS Z1 Offshore Wind Power Project Floating Wind Farm	360	Concept / Design	Floating
67	Zambales 2 Wind Power Project Floating Wind Farm	510	Concept / Design	Floating
68	Tambobo Bay Wind Energy Project Floating Wind Farm	992	Concept / Design	Floating
69	Mariveles Offshore Wind Farm Floating Wind Farm	1500	Concept / Design	Floating
70	Bulalacao Offshore Wind Farm Project	3100	Concept / Design	Not specified
71	Negros Occidental Offshore Wind Power Project	700	Concept / Design	Not specified
72	Claveria Offshore Wind Power Project	250	Concept / Design	Not specified
73	Vigan Offshore Wind	300	Concept / Design	Not specified
74	San Miguel Bay 2 Offshore Wind	1500	Concept / Design	Not specified

Source: TGS (2025b).

5.2.16 The Russian Federation

No OSW projects have been identified at any stage of development in The Russian Federation (TGS, 2025c).

5.2.17 Singapore

No OSW projects have been identified at any stage of development in Singapore.

5.2.18 Chinese Taipei

Chinese Taipei has a pipeline of 27 OSW projects, with a total capacity of 16.1 GW, spanning various stages of development (Norton Rose Fulbright, 2024b). Based on the available information, 2 out of the 27 projects have been identified as floating-type installations.

Table 8 OSW projects in Chinese Taipei

N°	Project name	MW	Status	Type
1	Formosa 1	128	Operation	Fixed-bottom
2	Changhua	109.2	Operation	Fixed-bottom
3	Greater Changhua 1	605.2	Operation	Fixed-bottom
4	Greater Changhua 2a	294.8	Operation	Fixed-bottom
5	Hai Long 2a, 2b and 3	1022	Construction	Fixed-bottom
6	Yunlin	640	Construction	Fixed-bottom
7	Changfang - Xidao	600	Operation	Fixed-bottom
8	Formosa 2	376	Operation	Fixed-bottom
9	Changhua 2	294.5	Construction	Fixed-bottom
10	Hai Xia 1	300	Concept / Design	Fixed-bottom
11	Greater Changhua 2b and 4	920	Construction	Fixed-bottom
12	Zhongneng	300	Operation	Fixed-bottom
13	Feng Miao	500	Construction	Fixed-bottom

N°	Project name	MW	Status	Type
14	Formosa 3 / Haiding 2	600	Concept / Design	Fixed-bottom
15	Wei Lan Hai Changhua (previously known as Huan Yang)	440	Concept / Design	Fixed-bottom
16	Formosa 4	495	Construction	Fixed-bottom
17	Hai Xia 2	300	Concept / Design	Fixed-bottom
18	Wo Neng1, 2	1000~1500	Concept / Design	Fixed-bottom
19	Xu Feng 1, 2, 3	1350~2,100	Concept / Design	Not specified
20	Youde	700	Concept / Design	Not specified
21	Formosa 6	800	Concept / Design	Fixed-bottom
22	Greater Changhua 3	570	Concept / Design	Fixed-bottom
23	Feng Miao 2	600	Concept / Design	Fixed-bottom
24	Formosa 3 / Haiding 1	360	Concept / Design	Fixed-bottom
25	Deshuai	240	Concept / Design	Fixed-bottom
26	Hsinchu Winds of September	1000	Concept / Design	Floating
27	Hai Shuo - Formosa 5	1536	Concept / Design	Floating

Source: Norton Rose Fulbright (2024b).

5.2.19 Thailand

No OSW projects have been identified at any stage of development in Thailand.

5.2.20 United States

United States has a pipeline of 40 OSW projects, with a total capacity of 37.9 GW, spanning various stages of development (Norton Rose Fulbright, 2024c).

Table 9 OSW projects in United States

N°	Project name	MW	Status	Type
1	Garden State Offshore Wind	1000	Concept / Design	Not specified
2	Revolution Wind	704	Construction	Not specified
3	Sunrise residual	900	Concept / Design	Not specified
4	Sunrise Wind 1	924	Concept / Design	Not specified
5	MarWin	248	Concept / Design	Not specified
6	Momentum Wind	846	Concept / Design	Not specified
7	Coastal Virginia Offshore Wind Pilot Project (CVOW) – Research Lease	12	Operation	Not specified
8	Coastal Virginia Offshore Wind Pilot Project (CVOW) – Commercial Lease	2600	Concept / Design	Not specified
9	Ocean Wind 1	1100	Concept / Design	Not specified
10	Atlantic Shores Offshore Wind South (Project 1)	1510	Concept / Design	Not specified
11	Atlantic Shores Offshore Wind South (Project 1)	890	Concept / Design	Not specified
12	Bay State Wind	800	Concept / Design	Not specified
13	Vineyard Wind 1	800 (400/400)	Operation	Not specified
14	Kitty Hawk	3500	Concept / Design	Not specified
15	Empire Wind 1	810	Concept / Design	Not specified
16	Empire Wind	1260	Concept / Design	Not specified
17	South Fork Wind Farm	132	Operation	Not specified
18	Skipjack 1	120	Concept / Design	Not specified
19	Skipjack 2	808	Concept / Design	Not specified
20	Beacon Wind 1	1230	Concept / Design	Not specified

N°	Project name	MW	Status	Type
21	Beacon Wind Residual	1200	Concept / Design	Not specified
22	SouthCoast Wind	2400	Concept / Design	Not specified
23	Vineyard Northeast	1607	Concept / Design	Not specified
24	Ocean Wind 2	1148	Concept / Design	Not specified
25	New England Wind Phase 2 (Commonwealth Wind)	1232	Concept / Design	Not specified
26	New England Wind Phase 1 (Park City Wind)	800	Concept / Design	Not specified
27	Bluepoint Wind	868	Concept / Design	Not specified
28	Attentive Energy One	1400	Concept / Design	Not specified
29	Attentive Energy Two	1342	Concept / Design	Not specified
30	Community Offshore Wind	1384	Concept / Design	Not specified
31	Atlantic Shores Offshore Wind Bight	924	Concept / Design	Not specified
32	Vineyard Mid-Atlantic	523	Concept / Design	Not specified
33	Total Energies Carolina Long Bay (TE-CLBay)	667	Concept / Design	Not specified
34	Carolina Long Bay Offshore Wind Project	570	Concept / Design	Not specified
35	Atlantic Shores Offshore Wind North (ASOW North)	-	Concept / Design	Not specified
36	Canopy Offshore Wind Project	1600	Concept / Design	Not specified
37	North Coast (Humboldt) CIP	-	Concept / Design	Not specified
38	Atlas Wind Project	-	Concept / Design	Not specified
39	Golden State Wind project	-	Concept / Design	Not specified
40	Even Keel Wind	-	Concept / Design	Not specified

Source: Norton Rose Fulbright (2024c)

5.2.21 Viet Nam

Viet Nam has a pipeline of 58 OSW projects, with a total capacity of 50.8 GW, spanning various stages of development (TGS, 2025b). Based on the available information, at least 1 out of the 58 projects has been identified as floating-type installation.

Table 10 OSW projects in Viet Nam

N°	Project name	MW	Status	Type
1	Nguyen Viet Khai (Intertidal) – (VN59)	173	Concept / Design	Not specified
2	Khai Long (Intertidal) – Phases 2+3 (VN1R)	200	Concept / Design	Not specified
3	Ngoc Hien (VN1B)	3000	Concept / Design	Not specified
4	Vien An Dong – Thi Tran Rach Goc – Vien An (VN57)	50	Operation	Not specified
5	Tan An 1 – Phase 2021-2025 (VN1F)	100	Operation	Not specified
6	Ca Mau Phase 1	190	Operation	Not specified
7	Ca Mau Phase 2	185	Concept / Design	Not specified
8	Ca Mau 2 Offshore Wind	2000	Concept / Design	Not specified
9	Tan Thuan Phases 1 and 2	75	Operation	Not specified
10	Dong Hai I – Phases 1 and 2	100	Operation	Not specified
11	Dong Hai III	388	Concept / Design	Not specified
12	Hoa Binh 1 – Phases 1 and 2	100	Operation	Not specified
13	Hoa Binh 2	50	Operation	Not specified
14	Bac Lieu - Phases 1 and 2	99.2	Operation	Not specified
15	Bac Lieu – Phase 3	142	Concept / Design	Not specified

N°	Project name	MW	Status	Type
16	Soc Trang 1 Phase 1	30	Operation	Not specified
17	Pu Cuong 1	400	Concept / Design	Not specified
18	Pu Cuong 2	1000	Concept / Design	Not specified
19	V1-7 Dong Hai 1 – Trung Nam	100	Operation	Not specified
20	V1-7 Dong than 1 – Thai Hoa	80	Construction	Not specified
21	Tra Vinh	1000	Concept / Design	Not specified
22	Tra Vinh V4	2000	Concept / Design	Not specified
23	Gulf Energy	1000	Concept / Design	Not specified
24	REE	1000	Concept / Design	Not specified
25	Truong Long Hoa V1, V2, V3	144	Operation	Not specified
26	Hiep Thanh V1- 5+6	78	Operation	Not specified
27	Binh Dai Cluster	1000	Concept / Design	Not specified
28	Marshal Ben Tre – Phase 1 (Intertidal) (VN28)	125	Concept / Design	Not specified
29	Ben Tre 2 – Nexif 1 (VN29)	30	Concept / Design	Not specified
30	Ben Tre 2 – Nexif 2+3 (VN68)	50	Concept / Design	Not specified
31	Ben Tre 5 – Thanh Hai 1+2+3+4	126	Operation	Not specified
32	Ben Tre – Gulf Energy (VN0X)	2300	Concept / Design	Not specified
33	Ben Tre 7 (Intertidal) (VN48)	81	Concept / Design	Not specified
34	V1-3 Ben Tre (VN83)	29.4	Operation	Not specified
35	VPL Ben Tre (VN35)	30	Operation	Not specified
36	Binh Dai – Phases 1, 2 and 3	128	Operation	Not specified
37	Tan Phu Dong 1 (Intertidal) (VN1D)	100	Operation	Not specified
38	Tan Phu Dong 2 (Intertidal) (VN1C)	50	Operation	Not specified
39	Can Gio Phase 1H (VN2C)	100	Operation	Not specified
40	Can Gio Phase 2 (VN2D)	1000	Concept / Design	Not specified
41	Ben Tre – Mainstream – AIT (VN96)	500	Concept / Design	Not specified
42	FECON Vung Tau (VN0S)	500	Concept / Design	Not specified
43	Sembcorp and PTSC (VN2N)	2300	Concept / Design	Not specified
44	HBRE Vung Tau (VN86)	500	Concept / Design	Not specified
45	Than Long – Phase 5	800	Concept / Design	Not specified
46	Binh Thuan - AES (VN1T)	4000	Concept / Design	Not specified
47	La Gan (VN87)	3500	Concept / Design	Not specified
48	Macquarie (VN0K)	3000	Concept / Design	Not specified
49	Ninh Thuan – Floating (VN0J)	2000	Concept / Design	Not specified
50	Ninh Thuan 1 and 2	3400	Concept / Design	Not specified
51	An Thuan (VN0E)	250	Concept / Design	Not specified
52	Phu Yen 2 (VN0D)	4500	Concept / Design	Not specified
53	Binh Dinh 1, 2 and 3	2600	Concept / Design	Not specified
54	Hon Trau – Phase 1A, 2ª and 2B	2000	Concept / Design	Not specified
55	Ky Anh – Duc Thang Phase 1 and 2	350	Concept / Design	Not specified
56	Ky Anh – Eco Land	498	Concept / Design	Not specified
57	Ky Nam 2 – Thien Long	270	Concept / Design	Not specified
58	Hai Phong – Corio Generation (VN1S)	1000	Concept / Design	Not specified

Source: TGS (2025b).

6. Conclusions & Recommendations

This report provides a comprehensive overview of the current status of FOSW in APEC economies, serving as a foundation for discussion and collaboration. The upcoming seminar in July 2025 will be a crucial platform for stakeholders to exchange best practices, explore innovative solutions, and establish strategic partnerships. The successful deployment of FOSW will require coordinated efforts among policymakers, industry leaders, and research institutions. Leveraging regional expertise, fostering public-private collaboration, and developing supportive regulatory frameworks will be essential to overcoming existing challenges and unlocking the full potential of offshore wind energy.

Recommendations for enhance this report, and also to promote this type of technology among APEC members include:

- **Strengthen Data Collection**: More comprehensive and standardized data collection on OSW and FOSW projects across all APEC economies is crucial for accurate assessment and effective planning. The invitation for APEC members to update the information include in this report before July 31, 2025, is a critical first step.
- **Foster Collaboration**: The July 2025 seminar should prioritize fostering collaboration between advanced and developing APEC economies, promoting technology transfer.
- **Address Regulatory Hurdles**: Identify and address regulatory barriers and promote the development of supportive policy frameworks that encourage private sector investment in OSW and FOSW.
- **Research & Development**: Invest in research and development to improve the cost-effectiveness and efficiency of FOSW technologies, particularly for deep-water sites.

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Annex B: Seminar agenda

SEMINAR

FLOATING OFFSHORE WIND FARMS DEVELOPMENT IN APEC ECONOMIES FOR BOTH ELECTRICITY AND GREEN HYDROGEN PRODUCTION

EWG_106_2024A

DAY 1

Thursday, 24 July 2025

8:50 - 9:20 h Registration.

9:20 - 9:30 h Introduction.

9:30 - 9:40 h Welcome words from the Chilean Minister of Energy, Mr. Diego Pardow.

9:40 - 10:00 h **Current status of Floating Offshore Wind development in APEC economies.**
Ms. Mariel Robles | Ministry of Energy | Chile.

10:00 - 12.40 h **TOPIC 1**

OPPORTUNITIES AND LESSONS LEARNED FROM THE DEVELOPMENT OF FLOATING OFFSHORE WIND PROJECTS IN THE APEC REGION.

Overview of the Global FLOW market and developments. *(remote)*
Ms. Amisha Patel | GOWA | Denmark.

China's practical insights and recent advancements in Floating Offshore Wind development.
Dr. ZHOU Yiming |Huaneng Clean Energy Research Institute | China.

Development of Offshore Wind energy projects in Chile.
Mr. Eduardo Acuña | Ministry of Energy | Chile.

R&D Experiences for scaling up Floating Offshore Wind and its potential in Chile.
Ms. Nathalie Almonacid | MERIC | Chile.

Development of Floating Offshore Wind energy: A promoter's perspective. *(remote)*
Mr. Juan Amate | Blue Lines Energia | Spain.

Interactive panel discussion.

12:40 - 14:40 h Lunch break.

CHILE AVANZA CONTIGO GOBIERNO DE CHILE

14:40 - 16.40 h **TOPIC 2**

ENVIRONMENTAL AND SOCIAL REQUIREMENTS IN THE DEVELOPMENT OF OFFSHORE WIND FARMS.

Scotland's experience of Floating Offshore Wind to date and the opportunities and issues faced as the sector develops.
Mr. Andy Riley | The Crown Estate Scotland | The United Kingdom.

Beyond the bids: Environmental and Social Commitments in Offshore Wind development.
Mr. John Sverre Rønnevik | Deep Wind Offshore in representation of Royal Norwegian Embassy in Santiago | Norway.

Where to install Offshore Wind farms in Chile? A geospatial analysis based on legal and environmental perspectives. *(remote)*
Dr. Cristian Mattar | Universidad de Chile | Chile.

The environmental impacts of Floating Offshore Wind: What's known and what's unknown. *(remote)*
Ms. Audrey Jones | Howell Marine Consulting | The United Kingdom.

Interactive panel discussion.

16:40 - 16:50 h Summary of key findings Day 1.

16:50 h End Day 1.

DAY 2

Friday, 25 July 2025

9:00 - 9:30 h Registration.

9:30 - 9:40 h Introduction.

09:40 - 12.00 h **TOPIC 3**

TECHNICAL CHALLENGES IN DEVELOPING FLOATING OFFSHORE WIND TECHNOLOGY IN APEC ECONOMIES.

Perspectives on overcoming technical barriers and leveraging innovations from China's experience.
Dr. ZHANG Xin | State Power Investment Group Science and Technology Research Institute | China.

Challenges and opportunities for the development of Offshore Wind in Chile: findings from the MERIC Offshore Wind Seminar 2024.
Dr. Gonzalo Tampier | Universidad Austral de Chile - MERIC | Chile.

Challenges of integrating Offshore Wind farms to weak interconnected power systems: Lessons learned for the Chilean case.
Dr. Luis Moran | Universidad de Concepcion | Chile.

A UK overview on its approach to commercialising floating offshore wind.
Ms. Úna Brosnan | 17 Energy & Renewable UK | The United Kingdom.

Interactive panel discussion.

12:00 - 12:40 h **TOPIC 4**

NEW BUSINESS OPPORTUNITIES AND SYNERGIES BETWEEN THE DEVELOPMENT OF OFFSHORE WIND TECHNOLOGIES AND THE PRODUCTION OF GREEN HYDROGEN.

Building a New Market: Lessons from Chile's Green Hydrogen Journey.
Ms. Corinne Ribbons | Ministry of Energy | Chile.

OSW, a promising foreign investment for local development and green energy in Chile.
Mr. Mauricio Riveros | InvestChile | Chile.

12:40 - 14:40 h Lunch break.

14:40 - 16:00 h **Global trends in offshore wind and opportunities for Green Hydrogen.**
Mr. Arno van den Bos | IRENA | Germany.

Green Hydrogen and Offshore Wind.
Ms. Marcela Betancur-Díaz | Carbon Trust | The United Kingdom.

Interactive panel discussion.

16:00 - 16:20 h Summary of the Seminar (including key policy recommendations and best practices).

16:20 h End Day 2.