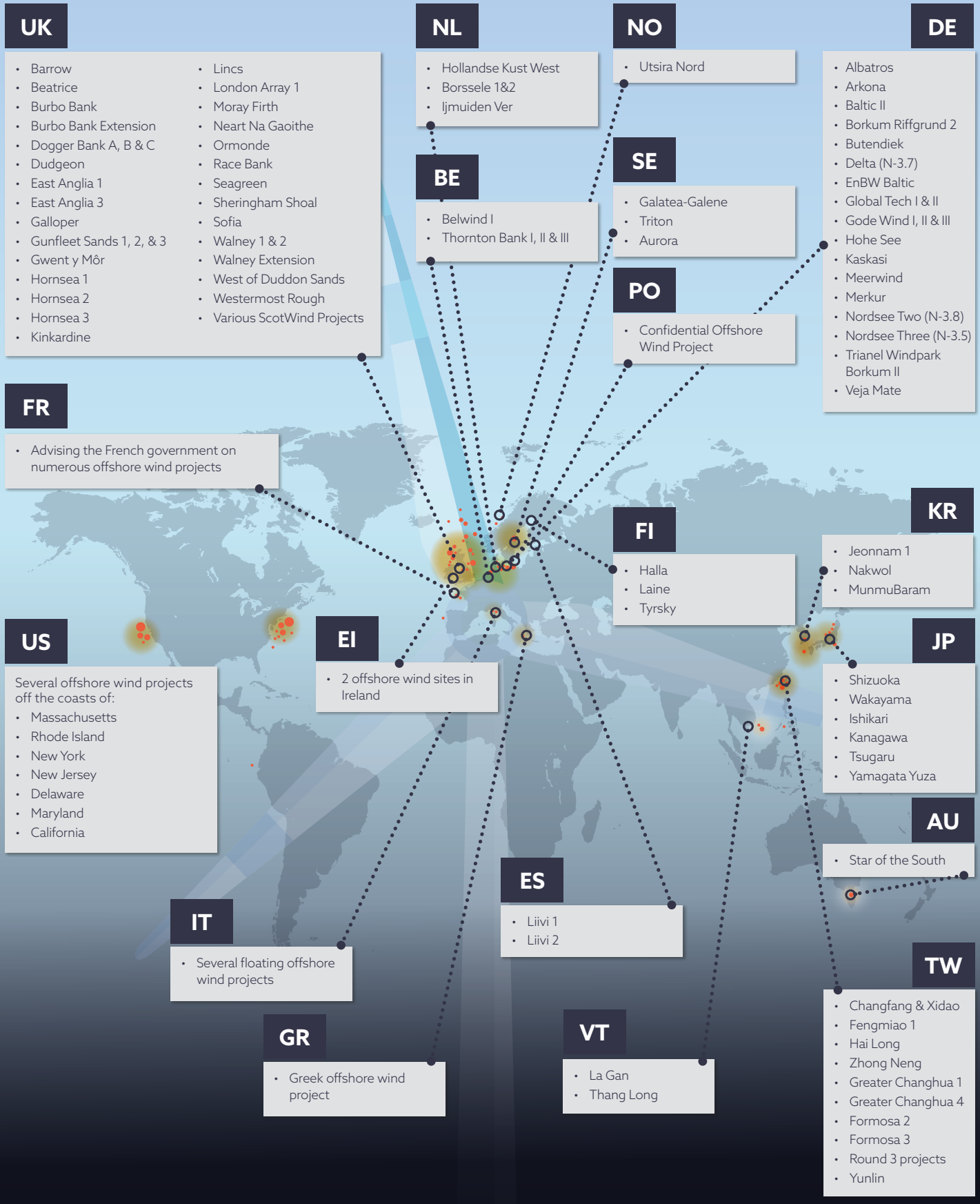
ORRICK
GLOBAL OFFSHORE WIND REPORT

A JURISDICTION BY JURISDICTION UPDATE AND OUTLOOK

2025

orrick

ORRICK'S OFFSHORE WIND TEAM
RECENT EXPERIENCE



UK

- Barrow
- Beatrice
- Burbo Bank
- Burbo Bank Extension
- Dogger Bank A, B & C
- Dudgeon
- East Anglia 1
- East Anglia 3
- Galloper
- Gunfleet Sands 1, 2, & 3
- Gwent y Môr
- Hornsea 1
- Hornsea 2
- Hornsea 3
- Kinkardine
- Lincs
- London Array 1
- Moray Firth
- Neart Na Gaoithe
- Ormonde
- Race Bank
- Seagreen
- Sheringham Shoal
- Sofia
- Walney 1 & 2
- Walney Extension
- West of Duddon Sands
- Westermost Rough
- Various ScotWind Projects

NL

- Hollandse Kust West
- Borssele 1&2
- Ijmuiden Ver

NO

- Utsira Nord

DE

- Albatros
- Arkona
- Baltic II
- Borkum Riffgrund 2
- Butendiek
- Delta (N-3.7)
- EnBW Baltic
- Global Tech I & II
- Gode Wind I, II & III
- Hohe See
- Kaskasi
- Meerwind
- Merkur
- Nordsee Two (N-3.8)
- Nordsee Three (N-3.5)
- Trianel Windpark Borkum II
- Veja Mate

BE

- Belwind I
- Thornton Bank I, II & III

SE

- Galatea-Galene
- Triton
- Aurora

PO

- Confidential Offshore Wind Project

FR

- Advising the French government on numerous offshore wind projects

FI

- Halla
- Laine
- Tyrsky

KR

- Jeonnam 1
- Nakwol
- MunmuBaram

US

Several offshore wind projects off the coasts of:

- Massachusetts
- Rhode Island
- New York
- New Jersey
- Delaware
- Maryland
- California

EI

- 2 offshore wind sites in Ireland

JP

- Shizuoka
- Wakayama
- Ishikari
- Kanagawa
- Tsugaru
- Yamagata Yuza

AU

- Star of the South

ES

- Liivi 1
- Liivi 2

IT

- Several floating offshore wind projects

TW

- Changfang & Xidao
- Fengmiao 1
- Hai Long
- Zhong Neng
- Greater Changhua 1
- Greater Changhua 4
- Formosa 2
- Formosa 3
- Round 3 projects
- Yunlin

GR

- Greek offshore wind project

VT

- La Gan
- Thang Long

OFFSHORE WIND AT ORRICK

> **EXCELLENT TEAM OF PEOPLE THAT DELIVER DEALS RATHER THAN A PROCESS. COMBINATION OF EXPERTISE, COMMERCIAL INSTINCTS AND HUMAN TOUCH.**
>
> WIND INVESTMENT AWARDS

Tamarindo

Legal Advisor of the Year
Wind Investment Awards, *2023*

IJInvestor AWARDS

Legal Advisor of the Year
North America, *2024*
Europe, *2023*

Chambers RANKED IN UK 2025 Leading Firm

Band 2
U.K.: Energy & Natural Resources: Power, Renewables & Alternative, *2025*

Chambers RANKED IN Europe 2024 Leading Firm

Top Ranked
France: Projects & Energy (International), *2024*

Chambers RANKED IN Asia-Pacific 2025 Leading Firm

Top Ranked
Singapore: India Projects & Energy (International Firms), *2025*
Japan Projects & Energy: International, *2025*

LAW360

Practice Group of the Year
Construction, 2024
Technology, 2024
Project Finance, 2022

inspiratia AWARDS 2022 — Asset Asian Awards Triple A

Deal of the Year
Zhong Neng Offshore Wind Farm *2022*

FT FINANCIAL TIMES

19 Financial Times Innovation Awards
for Energy Sector Projects, *2010–2024*

inspiratia

Top 2 Energy Transition
Legal Advisor Globally, *2024*

Top PPA
Legal Advisor, Europe *2024* / Global *2023*

Chambers AND PARTNERS

Band 1 (USA)
Energy Transition
PPP
Renewables & Alternative Energy
Power & Renewables: Transactional, *2024*

vault TOP RANKED 2025

Top 1
Clean Tech / Renewable Energy Law Firm, *2025*

Chambers AND PARTNERS Legal500

Top Ranked
42 individuals ranked globally for
Energy & Infrastructure, *2024*

Contents

INTRODUCTION

Decarbonization Goals Buoy Offshore Wind

Global momentum toward decarbonization has fueled steady growth in offshore wind.

Forecasters see the industry growing 28 percent worldwide in the five years ending in 2028. They expect developers to add 138 GW of capacity in that time, spurred on by decarbonization commitments and energy-transition innovations.

Signs abound of robust global growth in the next few years:

- Annual offshore wind additions are likely to triple by 2028 from 2023 levels.
- New installations are likely to generate 37 GW by 2028, more than triple the amount added in 2023.
- Global capacity of 75 GW in 2023 is predicted to increase by 138 GW by 2028.

The goal of world leaders to triple renewable capacity by 2030 sets the stage for growth for the next few years, but challenges remain.

Inflation, supply-chain constraints and increased capital costs have buffeted the sector in recent years. Some obstacles have receded, but lingering inflation and uncertain public support in some markets may affect the investment and development landscape, including in the United States where recent changes in federal policy may delay some future offshore project development.

Developments by Country

Against this backdrop, Orrick's Global Offshore Wind Report for 2025 delves into trends and developments from more than 30 countries.

The report details market-specific regulatory frameworks, including details on licensing and permitting. Investors, developers and other market participants also can consult the report to:

- Explore decarbonization goals, incentive schemes and auction and tender rounds.
- Get an overview of projects in Asia and Europe, which account for 85 percent market share in offshore wind in 2024 and 2025, and in North and South America.
- Discover details on grid connections, green hydrogen projects and broader market trends.

The report provides information from 31 places, from offshore wind pioneers like Denmark to development leaders in China to more recent market entrants in places such as Colombia, Estonia and the Philippines.

Orrick's Global Offshore Wind Practice

Our global offshore wind team is collaborating on a range of mandates across Asia, Europe and the United States. Some of our credentials are included in the report. We are proud to assist our client with their significant projects in the offshore wind sector and look forward to continuing this work and help move the sector forward in the years to come.

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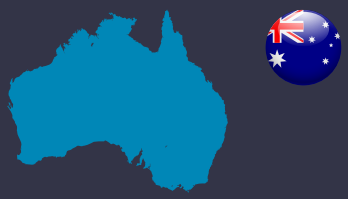

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Introduction

Along with many other governments around the world, the Australian government has pledged to be net zero by 2050. However, Australia is a country rich in coal and has historically been reliant on thermal coal as its primary source of power generation. The current strategy for decarbonising the energy sector and to replace its aging coal-fired generation fleet is through a mix of renewable generation, storage (battery energy storage systems and pumped hydro), expansion of its existing hydro generation and gas peaking to firm power supply. Offshore wind has been a central part of this strategy for the existing Labor government in Australia.

However, the upcoming federal election (expected to be held before 17 May 2025) is poised to determine not only the direction of the energy transition in Australia, but the speed by which it happens as well. Energy policy has emerged as a key battleground between the two major parties with the federal opposition party (the Liberal-National Party) proposing to scale back the renewables roll out, develop a nuclear industry in Australia and provide support for firm gas generation. Senior members of the Liberal-National Party have also spoken out against offshore wind development in certain regions.

Politics aside, offshore wind has significant potential in Australia. The country has vast wind resources, similar to the U.K.'s North Sea, and an estimated 2,000 GW of capacity for offshore wind projects within 100km of the Australian shoreline. Furthermore, Australia has a substantial offshore oil and gas industry with workers skilled in developing major offshore projects. Australia's new legislative framework for offshore wind, passed in November 2021, has paved the way for Australia to take advantage of its offshore wind potential and sparked a wave of activity in the sector.

Australia has now declared six areas around the country as suitable for offshore wind development and awarded feasibility licences to projects in three of those zones. Development of the declared zones is led by the private sector, and the award of feasibility licences allows the successful projects to progress by undertaking studies and refining project layout and design. The most advanced offshore wind projects in Australia are targeting a final investment decision and commencement of construction by the end of the decade. It is widely expected that some form of government revenue support (discussed below) will be required to make this a reality.

Federal and State Regulation

Offshore Electricity Infrastructure Act and Regulations

The *Offshore Electricity Infrastructure Act 2021* (the "**OEI Act**") establishes the regulatory regime for the licencing, construction, operation, maintenance and decommissioning of offshore wind farms in Australia. Importantly, the OEI Act empowers the Minister for Climate Change and Energy (the "**Minister**") to declare an area suitable for the development of offshore wind projects following a period of public consultation and sets out the different types of licences that can be obtained. Six offshore wind zones have been declared suitable for development under the OEI Act (see further below).

Licenses under the OEI Act

There are four types of licences under the OEI Act:

1. Feasibility licences, which provide a developer with an exclusive right to assess the feasibility of a proposed offshore wind farm for a specified period of up to seven years within the licence area, which can be up to 700 km^2.
2. Commercial licences, which can only be granted to a holder of a feasibility licence and authorise the holder to construct, install, commission, operate, maintain and decommission an offshore wind farm in the licensed area for up to 40 years, with an option to extend subject to ministerial approval.
3. Research and demonstration ("**R&D**") licences, intended for small-scale projects to undertake research and to test or demonstrate emerging technologies such as wave, tidal or ocean thermal. R&D licences may be granted for a maximum of 10 years with the possibility of extension.
4. Transmission and infrastructure ("**T&I**") licences, which allow for the development of transmission and other ancillary infrastructure (including the storage, transmission and conveyance of electricity or a renewable energy product) within or through a licence area. These licences will allow offshore-generated electricity to be connected to onshore grid infrastructure or other end users.

Of interest to most developers is the pathway towards a commercial licence under the OEI Act. Firstly, the process for obtaining a feasibility licence is competitive, run by the Offshore Infrastructure Registrar (the "**Regulator**"), and decided by the Minister based on certain merit criteria. The Regulator administers the licence application process and, importantly, provides additional guidance to prospective applicants.

Cost of licences

When compared to other jurisdictions, the cost of obtaining and maintaining seabed rights for the development of offshore wind in Australia is relatively modest. There is no financial tender for seabed rights, rather projects competing for feasibility licences are assessed on specified merit criteria (including technical and financial capability of the proponent and viability of the project) and levies are charged only to recover the costs of administering and regulating the new offshore industry. For example, the levies imposed on holders of a feasibility licence are:

1. Annual licence levy - A$120,000 plus A$1,000 for each 10 km^2 of licence area over 100 km^2;
2. Annual compliance levy - A$100,000 plus A$5,000 for each 10 km^2 of licence area over 100 km^2; and
3. Annual Commonwealth levy - A$513,342.

The licensing scheme contemplates that a financial offer process may be run to resolve overlapping licence applications that are of equal merit, although to date no such financial offer process has been required. If a financial offer process is run, the successful applicant will be determined by the highest financial offer.

Change in control and trailing liability

A key consideration for international developers is the change in control restrictions that apply to licence holders under the OEI Act. The threshold for change in control is set at 20% of the voting rights or issued securities in the licence holder, which mirrors similar provisions in the *Offshore Petroleum and Greenhouse Gas Storage Act 2006* (the "**OPGGSA**"), the primary legislation for offshore gas and petroleum production in Australia.

Whilst the OEI Act parallels the OPGGSA in respect of the change in control provisions and in many other respects, interestingly it has omitted the OPGGSA's trailing liability regime which was introduced in 2022. Under the OPGGSA, NOPSEMA (which also administers the functions of the Regulator) is empowered to issue remedial directions extending liability to former titleholders of offshore petroleum assets. Liability may also extend to any other person who:

1. has or could have significantly benefitted from the operation of the asset;
2. has been in a position to influence the extent of another person's compliance with the OPGGSA; or
3. has acted jointly with a titleholder in operating the relevant asset.

These powers are intended to be used as a last resort when the asset's current titleholder cannot fulfil its obligation to decommission the asset but their broad ambit captures, and exposes to liability, a wide range of non-titleholder parties. Whether a similar trailing liabilities regime makes its way into the OEI Act is an issue offshore wind developers should watch keenly although, at least for now, it is not proposed on the basis that it may deter investment.

Management plans

A licence holder must have a management plan in place and approved by the Regulator before construction or installation of offshore renewable energy infrastructure. Management plans are a key feature of the regulatory framework and must address various matters including how the licence holder will carry out offshore infrastructure activities (for example, construction methods, operation and maintenance schedules and work health and safety obligations), environmental management, how the licence holder will comply with its decommissioning obligations and the financial security that must be maintained by the licence holder.

The *Offshore Electricity Infrastructure Amendment Regulations 2024* (the "**OEI Regulations**") came into effect on 13 December 2024, which provide crucial detail on management plans and other operational aspects of the regulatory framework, including financial security obligations and the process for notification and approval of final project design.

The OEI Regulations are, in part, based upon the equivalent regulations for petroleum titles in Australia. This offers some benefits for industry participants and the Regulator who are already familiar with the management plan approval process in the context of petroleum titles.

Financial security and decommissioning

The OEI Act requires licence holders with a management plan in place to provide financial security to the Commonwealth of Australia ("**Commonwealth**"). The financial security must be sufficient to cover certain costs, expenses, liabilities and debts, including those that might arise in relation to decommissioning of infrastructure, removal of property and remediation of the licence area and any other affected areas. The OEI Regulations contain much-anticipated detail regarding financial security requirements under the OEI Act, including the amount and form of financial security.

The default standard for decommissioning is removal of all structures, equipment and other property from the licence area, although this is subject to the agreed management plan which may provide for a different approach to decommissioning with approval of the Regulator.

Environmental Legislation

Prospective offshore wind developers must also navigate Australia's environmental legislation. The *Environment Protection and Biodiversity Conservation Act 1999* (the "**EPBC Act**") is Australia's national environmental legislation. It prohibits certain actions, known as "controlled actions," relating to matters of national environmental significance. Whether something is a matter of national environmental significance is a broad concept. The following are just a few matters listed in the EPBC Act:

1. if an action would have a significant impact on a declared World Heritage Property;
2. if an action would have a significant impact on listed threatened species;
3. if an action would have a significant impact on a listed migratory species; or
4. taking an action in a Commonwealth marine area that will have or is likely to have a significant impact on the environment.

Since offshore wind farms are activities likely to significantly impact the Commonwealth marine area, they can only be taken with approval from the Minister for the Environment or if an exemption from the approval is obtained. In practice, developers seeking to construct an offshore wind farm would first refer the action to the Minister for the Environment for a decision regarding whether the action is in fact a "controlled action". Where an action is deemed to be a "controlled action", the Minister for the Environment will then undertake an assessment and approval process to determine whether the project should proceed and whether any conditions should be imposed. Assessments under the EPBC Act consider key impacts such as underwater noise, turbine interactions, electromagnetic fields, disturbance of underwater cultural heritage, vessel interactions and invasive marine species.

The ocean surrounding Australia's coastlines is protected from waste and pollution dumped at sea by the *Environment Protection (Sea Dumping) Act 1981* (the "**Sea Dumping Act**"). The Sea Dumping Act regulates the loading and dumping of waste at sea to promote compliance with Australia's obligations under 1977 Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter. Proponents will need to be aware of the requirements under the Sea Dumping Act as it applies to all vessels, aircraft and platforms in Australian waters. The Sea Dumping Act is administered by DCCEEW and there may be additional Commonwealth approvals necessary subject to location and nature of activities. Further to this, the *Underwater Cultural Heritage Act 2018* (the "**UCH Act**"), also administered by DCCEEW, is aimed at protecting Australia's underwater cultural heritage such as that of shipwrecks, sunken aircrafts and other forms of underwater heritage in Commonwealth waters. Requirements under the UCH Act may also lead to additional Commonwealth approvals, again depending on the location of the project and proposed activities.

State Regulation

Whilst a federal offshore wind regulatory framework is now firmly in place, a gap exists when it comes to state legislation as, any offshore wind projects or associated infrastructure within three nautical miles of the coastline will be governed by the relevant state's legislation. In essence, the further development of state-level regulatory frameworks will be essential to govern the construction and maintenance of both onshore and offshore transmission infrastructure.

The government of the state of Victoria ("**Victorian Government**") has announced its intention to implement legislative reform to support the offshore wind industry and, in May 2024, passed legislation to enable OEI Act feasibility licence holders to conduct investigations in state coastal waters and on public land. The Victorian Government continues to assess the legislative changes needed to facilitate development of offshore wind in the state and, at this stage, the other offshore wind states (NSW, Western Australia and Tasmania) are yet to announce any reforms directed at offshore wind.

In addition to federal environmental approvals, projects will also require state environmental approval for infrastructure and activities located in coastal waters and onshore. For example, projects in the state of Victoria will require approval under the *Environment Effects Act 1978* which will involve preparing an Environmental Effects Statement and a public review process before the project can be approved.

Declared Zones and Successful Projects

Since the OEI Act entered into force in June 2022, the federal government has moved at pace to declare six zones across the country as suitable for offshore wind development and progressed the crucial feasibility licence processes for the declared zones.

The below graphic shows the declared zones and projects that have been awarded licences to conduct feasibility studies in those areas:

MAP 1: AUSTRALIA'S OFFSHORE WIND PROJECTS

Key: Project Name, Developer Consortium, Capacity

1.	**Hunter:** New South Wales		
	Novocastrian Offshore Windfarm	OceanEx Energy	2,000 MW
2.	**Southern Ocean:** Victoria		
	Spinifex	Alinta Energy & Parkwind	1,200 MW
3.	**Gippsland:** Victoria		
	Great Eastern	Corio Generation	2,500 MW
	Star of the South	Copenhagen Infrastructure Partners	2,200 MW
	High Sea Wind	EDP Renewables & ENGIE	1,280 MW
	Gippsland Skies	Mainstream Renewable Power, Reventus Power, AGL Energy and DIRECT Infrastructure	2,500 MW
	Blue Mackerel North	Beach Energy & Parkwind NV	1,000 MW
	Kut-Wut Brataualung	Copenhagen Infrastructure Partners and Gunaikurnai Land and Waters Aboriginal Corporation	2,200 MW
	Ørsted Offshore Australia 1	Ørsted	2,800 MW
	Ørsted Offshore Australia 2	Ørsted	2,000 MW
	Aurora Green	Iberdrola	3,000 MW
	Gippsland Dawn	BlueFloat Energy	3,000 MW
	Navigator North Project	RES Group & Origin Energy	1,500 MW
	Kent Offshore Wind	RWE	2,000 MW
4.	**Indian Ocean:** Western Australia		*11,400 MW
5.	**Illawarra:** New South Wales		*2,900 MW
6.	**Bass Strait:** Tasmania		*20,000 MW

*Potential capacity

Gippsland, Victoria

The Gippsland zone, near Melbourne in Victoria, is the most advanced in Australia with 12 feasibility licences awarded during 2024 representing a total potential generation capacity of 25GW. The shallow coastal waters that extend 20 to 35km from the coast makes fixed-bottom offshore wind development possible in the Gippsland zone.

Although feasibility licences were awarded to successful projects in July 2024, a recent court decision in favour of Floatation Energy[1] opened the door for unsuccessful applications to be reassessed and potentially further licences awarded in the zone. The court case essentially found that it is open to the Minister to grant a feasibility licence for a smaller area than was originally requested by the applicant to resolve an overlap with an application of higher merit. This possibility has since been removed by amendments to the OEI Regulations in late December last year which clarify that the Minister may not offer or grant a feasibility licence in respect of the lower merit application in such circumstances.

Hunter, NSW

The Hunter zone is located off the coast of Newcastle in New South Wales and, due to a steep drop in water depths in the area, is only suitable to floating technology. One project has been awarded a feasibility license in the Hunter zone—the 2GW Novocastrian project developed by Oceanex Energy and Equinor.

Illawarra, NSW

The Illawarra zone is located off the coast of Wollongong in NSW. Again, due to water depths only floating technology is viable. No feasibility licence has been awarded in the Illawarra zone to date and the recent withdrawal of projects from the zone have cast doubt on the development potential of the area.

Southern Ocean region off Victoria

The Southern Ocean region features ideal conditions for offshore wind with strong winds and water depths suitable to fixed bottom offshore wind development in parts of the declared zone. It is also the home of Australia's second largest aluminium smelter meaning the declared zone is adjacent to significant electricity load. In this region, only the Spinifex project developed by Alinta Energy and Parkwind has been awarded a feasibility licence for the development of a 1.2GW offshore wind farm.

Indian Ocean off Bunbury, Western Australia

This zone has strong offshore wind resources and areas suitable for fixed bottom foundations. The declared zone has a maximum size of 3,995 km^2 and potential capacity of 11.4 GW. A competitive feasibility licence process for Bunbury is ongoing with results expected in early 2025.

Bass Strait, Northern Tasmania

Tasmania hosts favourable offshore wind conditions with areas suitable for fixed bottom foundations and strong, consistent winds. The declared area has a maximum size of 7,100 km^2 and a potential capacity of 20GW. The zone is currently open for feasibility licence applications until 12 March 2025.

1. Seadragon Offshore Wind Pty Ltd v Minister for Climate Change and Energy [2024] FCA 1290.

Victoria's Offshore Wind Strategy

Legislated Offshore Wind Targets

In March 2024, Victoria became the first state in Australia to legislate offshore wind generation targets which form part of the state government's plan to replace energy generated by closing coal-fired power stations. The following three staged targets were legislated:

1. 2 GW by 2032;
2. 4 GW by 2035; and
3. 9 GW by 2040.

To provide certainty and to facilitate ongoing collaboration with communities, local government, unions and investors, the Victorian government releases periodic Offshore Wind Implementation Statements, with the third and most recent being released in December 2023. The Offshore Wind Implementation Statement provides essential guidance regarding Victoria's renewable generation targets, revenue support, workforce development and transmission plans.

In addition to its ambitious generation targets outlined above, the Victorian government is increasing the state's renewable energy targets to 65 percent by 2030 and 95 percent by 2035. Offshore wind has a large role to play in realising Victoria's ambitious goals.

Revenue Support

The Victorian Government has acknowledged the need for government financial support and is currently developing a contract for difference ("**CFD**") scheme to support the first tranche of offshore wind projects in the state. The details of the scheme remain subject to consideration by the Victorian Government, however, based on information released to date it is understood the CFDs will be awarded through a competitive tender process which will likely commence in 2025 and complete in 2026. The CFDs are expected to provide revenue support for up to 20 years and the Victorian Government has suggested that an 'availability style' payment may be considered which would be a shift from traditional government support contracts for renewables in Australia.

One aspect of the CFD regime that developers should monitor closely is the Victorian Government's proposed position on termination for convenience. CFDs awarded under the previous VRET1 and 2 schemes in Victoria may be terminated by the state paying an amount representing the reduced debt capacity of the project without any return to equity. This position may not be sufficient to support investment into offshore wind in Victoria given the high capital costs relative to onshore renewables.

Local content requirements are another area of focus. Typically, major construction projects which receive Victorian Government support require minimum local content of 90% during construction and 80% during operations. It is proposed that these requirements are softened for the first tranche of offshore wind projects, however, final details of the state's requirements are yet to be released. The industry eagerly awaits further details on the proposed CFD design including crucial local content requirements.

At this stage, no revenue support scheme targeting offshore wind has been proposed by the other states or by the federal government.

Transmission

VicGrid, a department within the Victorian Department of Energy, Environment and Climate Action, is leading the development of transmission infrastructure in the state and will coordinate offshore wind connections. Over the course of 2023, VicGrid undertook a project options assessment to identify onshore connection points to facilitate 2-2.5 GW of generation capacity in both the Gippsland and Portland areas. In the 'Offshore Wind Energy Transmission" - Gippsland Options Assessment Report published in March 2024, it was confirmed that the Gippsland preferred option is a new set of 330 kV or 500 kV HVAC overhead transmission lines from a new connection hub near Giffard to an area near Loy Yang Power Station. The Victorian Government has now called for expressions of interests from the private sector to build, own and operate the transmission infrastructure under a PPP model. Access to the transmission infrastructure will be governed by Victoria's new access rights regime which will cap the new generation capacity that can connect, providing a degree of certainty to developers in relation to curtailment risk.

Whilst VicGrid will coordinate the rollout of onshore transmission, it is expected that offshore wind projects will be responsible for constructing their own offshore transmission infrastructure (such as offshore substations and export cables) up to the common connection point. This means that each project will have their own offshore transmission infrastructure and landing sites to develop.

Currently, VicGrid is putting in place a long-term strategic plan – the Victorian Transmission Plan ("**VTP**") to ensure the State has the right infrastructure in the right place at the right time to support the energy transition. Offshore wind forms part of the VTP and VicGrid's scenario planning assumes the State's offshore wind targets will be met.

New South Wales has its own plans for development of Renewable Energy Zones in the state under the *Electricity Infrastructure Act 2020* and the Electricity Infrastructure Roadmap, although has not at this stage announced any specific REZ projects for offshore wind.

Port Infrastructure

Significant redevelopment of port infrastructure is required to support the offshore wind industry in Australia and is a key dependency for the early projects. Existing ports are not equipped to handle the turbines and specialised vessels required for offshore wind projects.

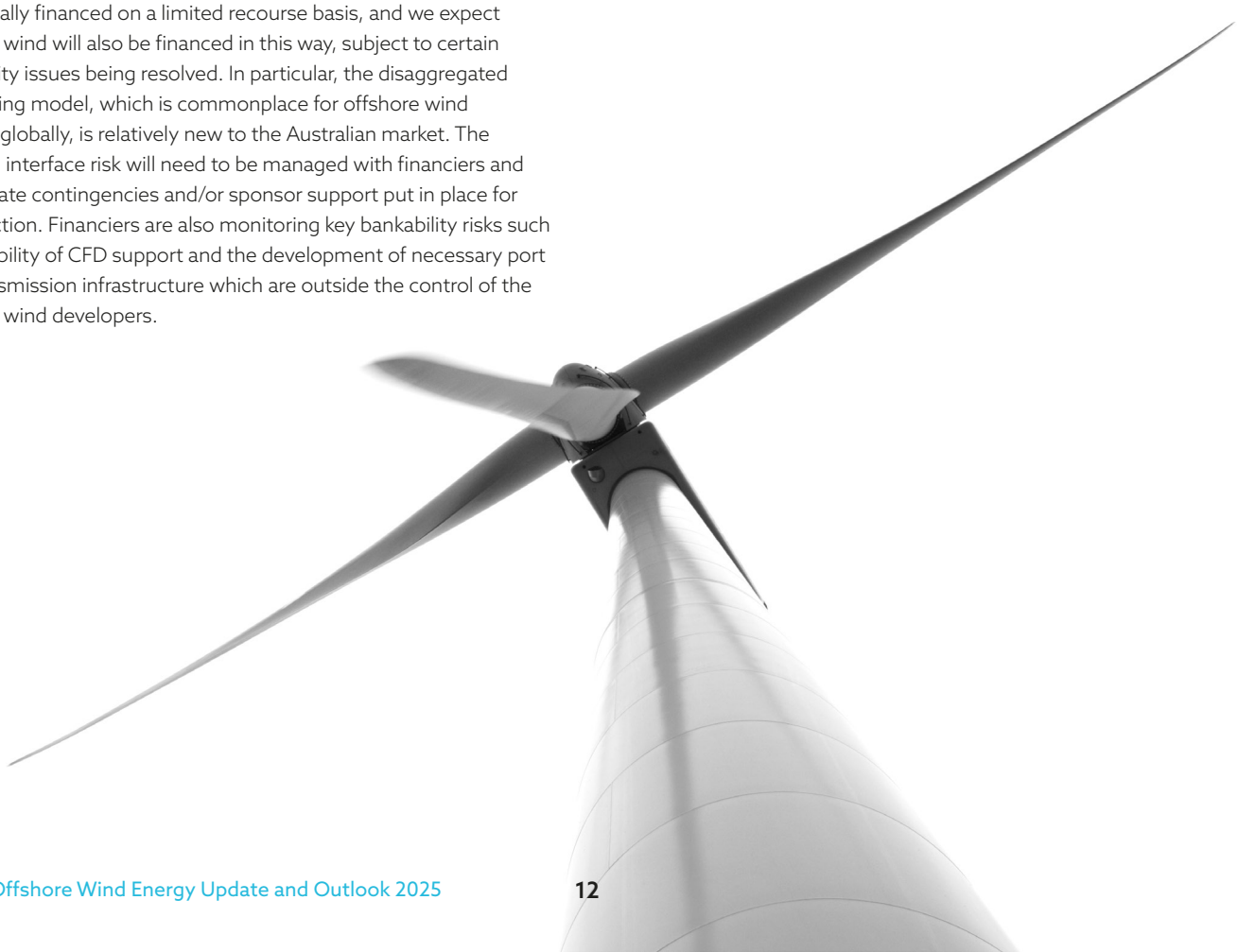
The Port of Hastings was originally selected by the Victorian Government as its preferred assembly port, however, the redevelopment of the Port of Hastings (known as the 'Victorian Renewable Energy Terminal' project) has suffered setbacks due to environmental concerns. Alternatives are being assessed such as the Port of Geelong in Victoria and the Port of Bell Bay in Tasmania, which have both announced redevelopment plans and have the potential to act as hubs for construction and maintenance of offshore wind farms in the region. It is also likely that more than one port solution will be required to support the development of up to 25GW of projects in the Gippsland region of Victoria.

Further details of the Victorian government's strategy to procure the necessary port infrastructure are expected in the coming months.

Financing Offshore Wind in Australia

A range of government funding options are available for offshore wind projects in Australia. The Australian Renewable Energy Agency ("**ARENA**") can provide early-stage grant funding for development activities and the Clean Energy Finance Corporation ("**CEFC**"), Australia's green bank, can provide both debt and equity finance. The CEFC has historically led the banking market into new clean energies and will play a key role financing offshore wind in Australia.

There is a deep financing market for renewables in Australia consisting of local and international banks and export credit agencies. Renewables are typically financed on a limited recourse basis, and we expect offshore wind will also be financed in this way, subject to certain bankability issues being resolved. In particular, the disaggregated contracting model, which is commonplace for offshore wind projects globally, is relatively new to the Australian market. The resulting interface risk will need to be managed with financiers and appropriate contingencies and/or sponsor support put in place for construction. Financiers are also monitoring key bankability risks such as availability of CFD support and the development of necessary port and transmission infrastructure which are outside the control of the offshore wind developers.



BELGIUM

authored in collaboration with

LOYENS & LOEFF

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Belgium remains one of the most active European countries in the offshore wind sector. The total installed capacity of offshore wind in Belgium amounts to approximately 2.3 GW. In 2024, all Belgian offshore wind farms together injected 7 TWh of electricity into the transmission grid, representing 9.2% of total electricity consumption in Belgium that year. There are currently nine operational wind farms in the Belgian part of the North Sea, operated by eight different entities. In 2024, the "second offshore wind phase" was launched with the publication of tender documents for the development of a new wind farm in the first of three plots in the Princes Elisabeth Zone. With the "second offshore wind phase", up to 3.5 GW additional capacity will be installed, bringing Belgium's total installed offshore wind capacity to up to 5.8 GW by the end of 2030.

The First Offshore Wind Phase

Belgium's first offshore wind zone (the "**Eastern Zone**") was completed and became fully operational by the end of 2020 (see Map 2).

This Eastern Zone comprises nine wind farms in total.

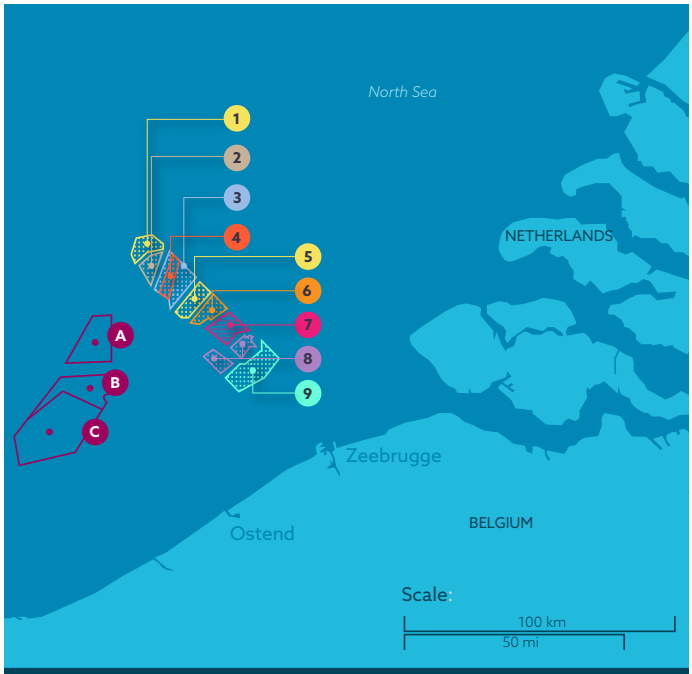
Whilst C-Power, Belwind, Northwind, Nobelwind and Norther are connected directly to the onshore transmission system by using a dedicated cable (this is also called radial connection), Northwester 2, Rentel and the two SeaMade wind farms (Seastar and Mermaid) are connected with the Modular Offshore Grid (hereinafter "**MOG I**"), developed by the Belgian transmission system operator ("**TSO**"), Elia.

MOG I is an offshore platform that connects the above-mentioned offshore wind farms to the Belgian onshore grid through various undersea cables.

MOG I has been operational since 2019 and secures the transport of the energy generated by these wind farms to the mainland.

Upon its commissioning in 2018, the Rentel wind farm still operated with a single cable connecting its platform to the mainland, a configuration known as a "radial" connection. When Elia developed a meshed transmission grid for the subsequent wind farms, it incorporated Rentel's export cable into the MOG I system.

MAP 2: BELGIUM'S OFFSHORE WIND ZONES



Key

Eastern Zone

1. - SeaMade (Zone Mermaid 2020): Otary/ENGIE Electrabel Offshore Energy - 487 MW Capacity

2. - Northwester 2 (2020): Parkwind/Sumitomo Corporation - 219 MW Capacity

3. - Nobelwind (2017): Parkwind/Sumitomo Corporation - 165 MW Capacity

4. - Belwind (2010): Parkwind - 171 MW Capacity

5. - Seastar: Otary/ENGIE Electrabel Offshore Energy - 487 MW Capacity

6. - Northwind (2014): Parkwind - 216 MW Capacity

7. - Rentel (2018): Otary - 309 MW Capacity

8. - C-Power (2009-2013): C-Power Holdco (with, as major shareholders: Z-Kracht, Socofe, S.R.I.W. Environnement and DEME Concessions)/RWE/Marguerite Wind/EDF Energies Nouvelles/DEME/NUHMA - 325 MW Capacity

9. - Norther (2019): Elicio/Eneco/Diamond Generating Europe - 370 MW Capacity

Princess Elisabeth Zone

A – Fairybank - up to 1,400 MW - tender expected 2024

B – Noordhinder Noord - up to 1,225 MW - tender expected 2024

C – Noordhinder Zuid - up to 700 MW - tender expected 2024

Current Belgium Wind Farm Zones

The Second Offshore Wind Phase

The Belgian government's maritime spatial plan for the period of 2020-2026 established the second offshore wind zone called the "Princess Elisabeth Zone" ("**PEZ**").

The PEZ is divided into three plots. There is one plot for the development of a 700 MW offshore wind project and there are two plots for the development of a 1,225 to 1,400 MW offshore wind project each.

The concessions have a term of 40 years (this includes the construction phase, operational phase and decommissioning phase), and will be awarded to the winning bidder pursuant to a competitive tender procedure.

On 25 November 2024, the tender for the first plot in the PEZ was published, with a target commissioning date for the project of 2029.

The federal government adopted the Royal Decree of 3 June 2024 on the tendering procedure and criteria of the tender in the Belgian law Gazette on 1 July 2024.

The current timeline for the tendering procedure for the first plot contemplates a preparation period of eight months (running from 25 November 2024 to 24 July 2025). During this period, the potential bidders will prepare their tender submissions and ask questions to the Directorate General for Energy of the FPS Economy.

Following this preparation period, a submission period of 1 month (25 July 2025 - 24 August 2025) takes place, which is followed by an evaluation period (running from 25 August 2025 – 25 November 2025) which can be extended by 3 months, if necessary.

The tendering documents are divided into four categories:

- the "general documents", covering the tender documents proper, explanatory notes drafted from the federal energy regulator ("**CREG**") and the submission form;
- the "technical documents", which encompass permits for the cables, parcel description and technical conditions for the project;
- the "financial document", containing a financing and business plan template document and an accompanying note on how to fill in this template; and
- the "citizen participation documents" which provide clarifications as how this criterion will be assessed during the evaluation phase, and the application form for citizen participation.

The Minister of the Energy is expected to award the domain concession for the first plot in the PEZ by 26 December 2025 at the latest.

When identifying the PEZ tender criteria, the Belgian federal government was guided by five core principles, which should ensure that the development of the PEZ maximally secures social welfare gains: (i) ensuring the highest possible injection of renewable energy into the Belgian grid, (ii) limiting the risks for investors so that energy can be produced at the lowest possible cost, (iii) having the lowest possible energy price with the possibility of fixed-price Power Purchase Agreements (PPAs), (iv) enabling citizen participation and (v) avoiding windfall profits. All three tender procedures for the PEZ will be based on the same principles.

The tenders for plots 2 and 3 in the PEZ are scheduled to take place between 2026 and 2028, and each project is expected to be operational by 2030.

Admissibility Criteria

To participate in a tender in the PEZ, a prospective bidder must meet eight admissibility criteria which are set out in detail in the Royal Decree of 3 June 2024. These include (i) the possession of technical capabilities, to be demonstrated by an already installed capacity of at least 300 MW of offshore wind energy. This must be demonstrated in the bid and must concern an active role in the project management; mere financial participation is not sufficient; (ii) financial strength and stability, to be evidenced by a minimum holding of a certain amount of assets (EUR 75 million for the plot 1 tender and EUR 140 million for the plot 2 and plot 3 tenders) and the submission of a financial guarantee at the time of participation in the tender procedure (EUR 70 million for the first plot and EUR 140 million for plot 2 and plot 3); (iii) compliance with technical requirements for the grid connection; (iv) a maximum strike price of EUR 95 / MWh to be included in the bids. This implies that bids with a strike price exceeding this amount will be automatically rejected; (v) a description of the design of the production plant showing that the requested technical and functional specifications will be met and that the minimum installed capacity of 695 MW for plot 1 and 1225 MW for plot 2 and plot 3 will be achieved; (vi) at least 1% of the CAPEX of the project must be allocated to citizen participation, supported by a detailed citizen participation plan outlining how this will be implemented; (vii) organisational and professional capacity, to be demonstrated by an organisational chart, a detailed financial structure including shareholder distribution and UBO documentation, and a safety management system description with guidelines for the installation's lifecycle, addressing public safety, cybersecurity, environmental protection, and incident prevention; and (viii) the absence of exclusion grounds (such exclusion grounds including, for example, that the prospective bidder cannot be considered as an enterprise in financial distress nor may it be subject to an outstanding recovery order under state aid, the bidder must have fulfilled all its obligations regarding the payment of tax debts and social security contributions and the bidder may not have been convicted in the past five years for participation in a criminal organization, bribery, fraud, terrorist offenses or activities, money laundering or terrorism financing, child labor or human trafficking, or the employment of third-country nationals residing illegally).

Award Criteria

Qualifying bids will be assessed based on the following two award criteria: (i) strike price level for 90% of the assessment whereby the bidder with the lowest strike price will get the maximum of 90 points; and (ii) the level of citizen participation for 10% of the assessment.

This second criterion has the potential to influence bid rankings for citizen participation up to 4% of the project's CAPEX, which is an additional 3% beyond the minimum 1% admissibility threshold.

Bidders can earn additional points as follows:

- up to 3 points for citizen participation regardless of whether it is indirect citizen participation or direct citizen participation;
- up to 4 additional points for direct citizen participation; and
- up to 3 points for efforts on citizen participation, awareness-raising and active involvement to be included in the citizen participation plan.

The Belgian State will then award the domain concession.

Support Schemes

Existing Offshore Wind Projects

For the existing windfarms, the traditional Belgian renewable energy support schemes remain in place and consist essentially of a system of green certificates as well as a cable subsidy. Offshore wind farm operators have three or four revenue streams, namely:

- Revenue from the sale of electricity under a power purchase agreement;
- Revenue from the green certificates. These certificates are issued by the federal regulator at a rate of one certificate per MWh and can be sold to Elia at a guaranteed price. Elia recovers the associated costs through a surcharge on its network tariffs. Unlike certificates awarded to onshore wind farms, there is currently no functional market for certificates granted to offshore wind farms. As a result, Elia effectively serves as the "purchaser of last resort." This mechanism has generally ensured adequate and predictable revenue streams for the projects.
- Revenue from the sale of guarantees of origin; and
- Potentially, revenue from the provision of ancillary services to Elia.

The subsidy level is governed by the rules on the guaranteed certificate price.

For the first four projects (Belwind, Nobelwind, Northwind and C-Power), the price is set directly by law, namely at EUR 107 per MWh for the electricity generated from the first 216 MW of the installed capacity, and EUR 90 per MWh for the electricity generated from additional installed capacity. The minimum price applies for a period of 20 years from commissioning of each installation.

For the five latest "phase 1" projects, the price formula is calculated on the basis of a levelized cost of energy (hereinafter "**LCOE**").

For Rentel and Norther, a corrected electricity reference price was implemented. The electricity reference price is "corrected" by factoring in (i) the revenue from guarantees of origin, (ii) the effect of energy losses between production and injection into the transmission grid and (iii) a correction factor (which as a rule equals 0.10 in principle, but which the CREG must periodically adapt for each concession, in light of the PPA selling price). The LCOE for Rentel is EUR 129.8/MWh. For Norther this is EUR 124.00/MWh. However, during certain periods of negative imbalance or day-ahead prices, the certificates price is set at zero. The support term is nineteen years from commissioning of each installation.

For Northwester 2, Seastar and Mermaid, the LCOE is EUR 79/MWh. The key novelty for these three projects is a system of monthly prepayments and of ex post settlements, which should ensure a more stable revenue stream. The subsidy term is 17 years from commissioning of each installation or 31 December 2037 if this is earlier. The support is also limited to 63,000 full load hours of electricity production at wind farm level. The same rule on zero-pricing of certificates in case of negative imbalance and day-ahead prices applies as for Rentel and Norther.

In addition to the above, existing offshore wind projects have previously received a cable subsidy, whereby Elia funds part of the cable required to connect an offshore wind project to the transmission system. For wind projects C-Power, Belwind, Nobelwind and Northwind, a subsidy of EUR 25 million, spread over five years, was provided for the connection installation between the wind project and the onshore sub-station. For the other 'first phase' wind projects, these were connected to MOG I and the minimum price for the purchase of green certificates was increased by an amount to cover and finance the total cost of the undersea cable.

The initial subsidy scheme for offshore wind farms in Belgium closely resembled a 1-sided contract-for-difference ("**CfD**"), which guaranteed operators a fixed price for the energy they injected into the grid. However, during the energy crisis that commenced in 2022, the Belgian federal government amended the subsidy mechanism for the five latest offshore wind farms – Rentel, Norther, Seastar, Mermaid and Northwester 2 – by introducing a 2-sided CfD mechanism based on the LCOE for each project.

The changes established different indexation mechanisms depending on the date of the financial close for each wind farm:

- Rentel and Norher (with financial close between 1 May 2016 and 30 June 2018): 30% of the LCOE will be indexed to the consumption price index, but only when this index exceeds 2.19% per year;
- Seastar, Mermaid and Northwester 2 (with financial close after 1 July 2018): the LCOE is indexed in relation to the consumption price index, but the threshold for indexation is when the index exceeds 2% per year.

Under this (revised) system, the operator receives a payment from the TSO if the reference price (market price) is lower than the LCOE. Conversely, if the reference price exceeds the LCOE, the operator is required to make a payment to the TSO.

Unlike the initial 1-sided CfD mechanism, which was based on a guaranteed price, the revised 2-sided CfD introduces a balancing mechanism in order to avoid windfall profits. Here, the key determinant of payments or contributions is the difference between the reference price and the LCOE.

In summary, the amendment of the support mechanism shifts the financial relationship between operators and the TSO, making it dependent on market conditions (reference price vs. LCOE) and incorporating a balancing component where operators may both receive payments or make payments, depending on how the market compares to the LCOE.

PEZ Offshore Wind Projects

For the PEZ Projects, a 2-sided CfD support mechanism will be applied. This support mechanism contemplates that the concession holder receives additional compensation from the Belgian State if the market price is below a certain strike price, but it also entails a payment obligation for the concession holder in case of energy prices which exceed the strike price (thereby avoiding excessive windfall profits). All revenues in excess of the strike price will then have to be transferred to the Belgian State.

The compensation amount is determined monthly, based on the difference between the strike price offered by the concession holder and the electricity reference price (which is multiplied with a correction factor). A positive compensation amount thus results in a payment from the Belgian State to the concession holder and a negative compensation amount in a payment from the concession holder to the Belgian State.

The total government support under the mechanism is capped at a maximum volume of electricity corresponding to 80,000 full-load hours of production by all installations in the concession area, within the 20-year subsidy period starting from the project's commissioning date.

There are two indexation possibilities for the strike price. A one-time indexation of 100% of the strike price based on interest rates and raw materials as at the point at which the project reaches financial close or at the latest one year after the award of the domain concession and an annual indexation of a portion of 30% of the strike price corresponding to the operation and maintenance of the project based on the consumption price index.

In addition, a carve-out or opt-out can be applied for a long term PPA. In a period of three years after the final installation of the wind farm, the concession holder will be allowed to carve out up to 50% of the total electricity production from the 2-sided CfD mechanism, provided this portion of the electricity production is contracted through a PPA with a fixed price that does not exceed the strike price with more than 3 EUR/MWh (subject to the same partial indexation as under the CfD regime).

Any other ancillary services such as guarantees of origin and balancing costs can be agreed separately subject to a market-based price and to be assessed by the authorities. An additional 25% of the electricity produced can be carved out for 'pay as produced' PPAs with citizens, SMEs, local authorities, including municipalities, educational institutions and associations subject to application of the conditions for direct citizen participation and other conditions. A one-time opt-in to the 2-sided CfD can be applied in the event such PPA is terminated before the end of the subsidy scheme.

(Inter)connecting the new offshore wind farms

Elia is working on the necessary reinforcement of both the offshore and onshore grids to ensure that increasing volumes of electricity generated offshore can be transported efficiently and can be injected into the onshore grid without (structural) congestion.

The PEZ projects will be connected to the onshore transmission grid via a second Modular Offshore Grid ("**MOG II**"), which will be realised by the construction of the Princess Elisabeth Island ("**PEI**"). The commissioning of the PEI is expected in the course of 2028, with the PEZ's first wind projects to be operational soon after (as noted above).

The PEI is set to become a "power hub" in the North Sea and will facilitate the transmission of electricity both from offshore wind farms and from the U.K. and Denmark to the mainland.

It is seen as one of the flagship projects of the previous federal government's energy policy: 12 hectares of new Belgian territory off the coast, constructed by renowned Belgian dredging giants Deme and De Nul.

Recent controversy has however emerged in the media and political sphere regarding the cost increase of MOG II and whether this additional cost will be passed on to end-customers through Elia's grid charges. Despite this debate, MOG II is still expected to serve as the infrastructure for connecting the PEZ wind farms.

Elia is, however, considering postponing the next phase in the construction of the PEI (the construction of the direct current infrastructure), which accounts for approximately 40% of the island's planned capacity and which would be the final and most expensive phase. Alternative scenarios are also currently being explored, including potentially delaying the development of direct current infrastructure. However, Elia has emphasised that other construction plans for the PEI are not affected – the alternating current infrastructure, which will transmit electricity from the first two offshore wind farms to the PEI, remains unchanged (the relevant contracts relating thereto, accounting for about 60% of the island's total capacity, have already been approved, and construction is underway).

No further update is available as at the date of publication of this Report.

In order to accommodate the future inflow of offshore generated electricity, not only MOG II is of importance. The onshore grid will also have to be reinforced. Elia plans to achieve this, principally by means of the Ventilus and Boucle-du-Hainaut projects. Ventilus is located on Flemish territory and is therefore subject to Flemish regional planning and permits decisions, whereas Boucle-du-Hainaut is located in the Walloon region and is therefore subject to Walloon regional planning and permit decisions.

Conclusion

Belgium is a country with long-standing energy production from offshore wind, as seen by its completion of the first offshore wind phase. The federal government fully supports the further rollout of offshore wind.

The "second offshore wind phase" promises continued levels of power generation, with a tender process that has adapted to the new reality of offshore wind tender processes and a strong emphasis by the Belgian authorities on citizen participation.

With the tender process for the first plot of the PEZ having been released, bidders will look forward to the award of this project later this year and the award of the projects for plot 2 and plot 3 during 2026 to 2028.

Belgium's ambitious timeline for the realisation of the PEZ projects will be highly dependent upon the implementation of necessary grid reinforcements (both MOG 2 and onshore, as noted above). Such reinforcements are therefore crucial to ensuring that Belgium's "second offshore wind phase" is as successful as the first.

BRAZIL

authored in collaboration with

Lefosse

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Brazilian Offshore Market

With almost 7,500 km of coastline and rich offshore wind resources, Brazil is set to pioneer the development of offshore wind in Latin America. Over the past 12 months, the Brazilian offshore wind market has continued to pick up momentum, including progressing the establishment of a clear regulatory framework that includes the regulation of granting seabed rights for offshore wind power generation projects.

Big Potential – Potential for 700 GW?

According to some officials and members of the current Brazilian government, Brazil has the potential to develop up to 700 GW of offshore wind capacity. Brazil's potential for offshore wind development is based on the length of its coastline, the depth of waters available, and the strength of the winds that blow off its coastline, especially in waters adjacent to Brazil's northeast states. Even though offshore wind electricity generation is not expected to effectively start until 2028, the current projects under review have already positioned Brazil among the world's leading powers in the sector.

Although the offshore wind installation capex is not yet as competitive as other consolidated power generation sources in Brazil (such as onshore wind and solar), as the offshore industry and technologies evolve and become more mature, it is expected that such capex costs will drop, as seen in other offshore wind markets. In this regard, observations from other, more mature, offshore wind markets demonstrate that incentives (including subsidies and tax credits) and macro support programs will be key for Brazil's offshore wind market to be successful.

A Legislative and Regulatory Journey that has finally begun

On 25 January 2022, the Brazilian government published the initial guidelines for offshore power generation—namely, Federal Decree No. 10.946/2022 (the "**Federal Decree**")—known as the Regulatory Framework for Offshore Energy. This long-awaited framework was a key first step for facilitating an investment boost that will hopefully meet the country's ambitions regarding offshore wind power.

The Federal Decree created a landmark piece of legislation in Brazil, through prescribing the conditions for the leasing of seabed in inland waters, territorial seas and on the continental shelf for offshore power generation projects. The Federal Decree took effect on 15 June 2022.

Subsequently, on 20 October 2022, the Ministry of Mines and Energy (the "**MME**") published two ordinances to regulate the provisions of the aforementioned Decree: (i) The Ordinance No. 52/ GN/MME (Ordinance No. 52); and (ii) The Ordinance No. 3/MME/ MMA (Ordinance No. 3). This regulatory initiative has been well received by market players. In an offshore wind market that is still taking its initial steps, visibility and clarity from a regulatory standpoint are key to enabling and fostering investment.

Since the publication of the Federal Decree, various developers and investors have announced their plans for several gigawatt-scale offshore wind farms in Brazil, including Shell announcing in March 2022 that it plans for 17 GW of offshore wind in Brazil.

Based on information disclosed by the Brazilian Institute of Environment and Renewable Natural Resources ("**IBAMA**"), as of November 2024, the list of offshore wind power projects undergoing environmental licensing includes almost 96 projects, totalling roughly 234 GW of capacity.

Approval of a Legal Framework for Offshore Wind

The Federal Decree and the Ordinances, although well received, did not attain the status of a Law.

In this context, it is worth mentioning that, simultaneously with the issuance of the aforementioned regulations, the National Congress was discussing Bill of Law No. 576/2021("PL 576"), which also aimed at offshore energy resources.

In 2022, as PL 576 was still navigating the lengthy legislative process within the National Congress, the former administration introduced the Federal Decree and Ordinances No. 52 and No. 03, aiming to expedite the creation of a Brazilian offshore regulatory framework

Thus, up until recently, offshore wind power regulation was progressing on two fronts: (i) by means of sublegal instruments (such as the Federal Decree and the Ordinances No. 52 and No. 03); and (ii) through the Brazilian National Congress, by means of PL. 576/2021.

This situation persisted until January 2025, when PL 576 was finally signed by Brazilian President Luiz Inacio Lula da Silva and enacted into Law No.15,097, of 10 January 2025 ("**Law 15,097**").

Law 15,097 points that are worth noting

- Akin to the Federal Decree, Law 15,097 also addresses the assignment of offshore spaces, including inland waters under federal jurisdiction, the territorial sea, the exclusive economic zone, and the continental shelf).
- Law 15,097 provides for two types of Seabed Rights Assignment Procedures, with two different legal regimes (authorization or concession):
  a. The permanent offer: the granting authority designates zones for use based on the requests from project developers, and the seabed rights will be granted through an authorization; and
  b. The planned offer: the granting authority provides pre- defined energy prisms in accordance with the government's spatial planning, through a bidding procedure (thus, the seabed rights will be granted to the winner through a concession agreement).
- Without prejudice to other criteria defined in the bidding notice, Law 15,097 establishes that the winner will be defined according to the highest value offered as governmental participation.
- According to Law 15, 097, governmental participation comprises the payment of (i) a signature bonus (payment offered for the grant, set out in the respective bidding notice and grant); (ii) an area occupancy fee, calculated in Brazilian reals per square kilometer (BRL/km^2), payable annually; and (iii) a proportional participation, which shall be paid monthly, according to the percentage to be established in the bidding notice of the energy effectively generated and traded relative to each energy

It is worth noting that the draft of Law 15,097, as approved by the Senate, contained several "jabutis" (*i.e.* provisions that are not related to the main subject of the text and that marked the text during its legislative process), which provided for obligations to contract energy in fixed amounts or tax incentives that could result in an increase in electricity tariffs, as well as the contracting of coal-fired thermoelectric plants, natural gas and small hydroelectric plants (SHPs) These provisions were vetoed by President Lula when signing Law 15,097.

Though the suppression of the "jabutis" was well received by the market, these vetoes may be overturned in the near future, by an absolute majority of the votes cast by deputies and senators.

Power Purchase Agreements

In Brazil, power purchase agreements ("**PPAs**") can either be entered into as a result of: (i) generators bidding into an auction in the regulated market with the lowest bidders winning the offtake capacity (in this case the PPA is a standard form agreement and the buyer is any distributor or a party accredited in the auction to buy energy); or (ii) wholesale energy trading in the free market (in this case the PPA is not a standard form agreement but rather an agreement that follows certain rules prescribed in legislation).

For auction-based PPAs, one of the main challenges to offshore wind projects in Brazil is that the power which is generated from an offshore wind project in Brazil would be more expensive than the energy generated by other renewable energy projects (e.g., solar).

As such, offshore wind projects would currently lose out in the power auctions mentioned above (as cheaper sources of renewable power are available).

On the bright side, however, Law 15, 097 provides for the possibility of specific energy auctions for offshore projects, at the government's discretion – the Brazilian government has not yet disclosed whether and when such auctions will occur.

What's Next?

The MME is pushing forward with the necessary technical discussions to regulate and complement Law 15,097, in order to implement the Seabed Assignment Procedures and effectively promote the development of the Brazilian offshore potential.

According to Thiago Barral, Secretary of Energy Development and Planning Department at the MME, certain aspects of Law 15,097, such as criteria for prioritising areas, classification of areas, and port infrastructure, are under review by the MME.

Green Hydrogen in Brazil – A USD 200 Billion Investment Opportunity Over the Next 20 Years

Brazil has the opportunity to become one of the world leaders in the production of green hydrogen. The total opportunity will amount to USD 15-20 bn in revenue by 2040, with the majority (USD 10-12 bn) of such green hydrogen being used to serve the domestic market, especially trucking, steel production and other energy-intensive industries. Another USD 4-6 bn could come from exports of green hydrogen-derivatives, such as ammonia, to the United States and Europe, as the landed costs of Brazilian green hydrogen would be competitive compared to exports from other countries.[1]

In 2022, the Brazilian government took initial steps towards the development of its hydrogen market and industry, by creating the Brazilian Hydrogen Program (the "**PNH2**") to develop studies, produce technical reports and provide relevant strategic insights to the consolidation of a competitive hydrogen market in the country.

In 2024, the National Congress enacted the long-awaited Law No. 14,948, of 2 August 2024, known as the Low Carbon Hydrogen Legal Framework ("**Low Carbon Hydrogen Law**").

The new rules focus on promoting the low-carbon hydrogen industry in Brazil, and stimulating actions focused on research and development of new technologies.

According to the MME, the green hydrogen projects already registered total R$ 212 bn in investments, mostly in the Northeast region.

1. Source: article published by McKinsey & Company on 25 November 2021.

Low Carbon Hydrogen Law points that are worth noting

- The Low Carbon Hydrogen Law lays the foundations for structuring the National Low Carbon Hydrogen Policy (the **"Policy"**), which aims to promote the development of the low carbon hydrogen industry and enhance its role as a driver for the energy transition. The Policy includes instruments such as the PNH2, the creation of the Low Carbon Hydrogen Development Program (PHBC) and the Brazilian Hydrogen Certification System (SBCH2). These measures should contribute to the definition of efficient public policies and boost the long-term development of the industry.
- The Low Carbon Hydrogen Law adopted the principle of technological neutrality and did not restrict any production route, in line with the objective of encouraging the various low carbon hydrogen production methodologies and valuing the multiple alternatives that exist in the country.
- The Low Carbon Hydrogen Law also established tax incentives, by creating the Special Incentive Regime for Low Carbon Hydrogen Production (REHIDRO). Companies benefiting from REHIDRO will be able to take advantage of the suspension of PIS/Cofins and PIS/Cofins-Import on local purchases and imports of new machinery, apparatus, instruments and equipment, as well as construction materials and services for use or incorporation in infrastructure works associated with hydrogen projects. The incentives will be valid for 5 years, starting on 1 January 2025.

Conclusion

Throughout 2024, the Brazilian government took significant strides to advance its offshore energy and hydrogen markets. As we enter 2025, Brazil is now intensifying its commitment to develop and consolidate its legal and regulatory framework, while promoting investment to key projects.

Such framework is pivotal for a sustainable energy future and for combating climate change. It attracts investments, while ensuring environmental and safety standards, and facilitating the integration of clean energy into the broader energy system.

To achieve this, Brazil must focus on immediate actions, including the ongoing development of regulatory frameworks and the establishment of long-term domestic and international demand to secure project funding.

Specifically for the offshore wind framework, further implementing the infralegal framework will be crucial to provide the industry with the legal certainty, clarity, and guidance needed to attract stakeholders and investors.

In parallel, regulating the Low Carbon Hydrogen Law and developing a green hydrogen industry will require a collaborative effort – from both the private and public sectors, in order to establish and consolidate a competitive hydrogen market.

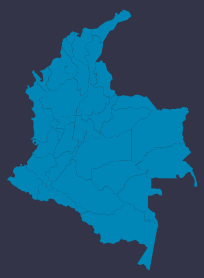
By nurturing such a robust regulatory framework and fostering meaningful dialogues, the Brazilian government can craft a comprehensive national long-term strategy. This strategy will not only secure Brazil's position as a global leader in sustainable offshore energy and green hydrogen technologies but also contribute significantly to a cleaner and greener future.

1. Source: article published by McKinsey & Company on 25 November 2021.

COLOMBIA

authored in collaboration with

POSSE HERRERA RUIZ



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Introduction

The Colombian government has pledged to be net-zero by 2050 and to be at the forefront of the energy transition in Latin and South America. This ambition is now furthered with Colombia now seeking to take advantage of its offshore wind through its inaugural offshore wind auction, with awards expected by mid-2025.

Colombia has huge potential for offshore wind, with not only an estimated 109 GW of capacity for offshore wind projects in the country, but also high wind speeds, particularly in the La Guajira region, where wind speeds consistently exceed 10 m/s and estimated net capacity factors approach 70%. However, Colombia's coast has a number of protected environments, busy shipping routes and a number of hydrogen activities. As such, it is estimated that the potential development capability is more in the region of approximately 50 GW.

This potential will not be realised overnight, and Colombia has only started to implement legislation aimed at developing its offshore wind resources in 2022, following the release of the offshore wind roadmap for Colombia. The announcement of Colombia's inaugural offshore wind auction, which will see successful bidders announced in August 2025, illustrates that Colombia is taking positive steps to realising its potential.

Legislation

In 2022, the Colombian government, with the support of the World Bank, released its offshore wind roadmap, which targets between 3 GW and 9 GW of installed capacity between 2030 and 2050.

Shortly after the release of the roadmap, the Colombian government (through the Ministry of Mines and Energy and the General Maritime Directorate ("**DIMAR**")) subsequently published a resolution (Resolution 40284, as amended) which defines the framework for the competitive allocation of areas for designated offshore wind development.

The framework is a two-step process inspired by the Danish model for granting of permits and licences and is divided into: (i) a temporary permit occupation of sea spaces; and (ii) a concrete offshore wind concession application process. The Colombian National Hydrocarbons Agency ("**ANH**"), in cooperation with DIMAR, is responsible for advancing the seabed leasing round with DIMAR granting the permits and licences to successful bidders. The ANH harnesses its substantial experience in bidding rounds for offshore hydrocarbons concessions.

The framework enables temporary occupation permits to be granted for areas designated for offshore wind development. The permits grant developers the exclusive right to determine feasibility of selected projects for a maximum of eight years. The temporary occupation permits are issued by DIMAR in respect of areas designated by DIMAR as part of a competitive awarding process.

Following the grant of temporary occupation permits, developers can (but are not obliged to) request a maritime concession from DIMAR in respect of the relevant area to construct and operate a wind farm for up to 30 years. Maritime concessions are granted only if the developer has complied with the requirements set out in the relevant temporary occupation permit and has submitted all requisite documentations and legal permits to DIMAR.

Under a maritime concession, there are a number of obligations that must be satisfied. Most notably, developers have an obligation to both comply with the 'Curve S' (a graphical representation of the accumulated construction progress of a project as a function of time, which compares the actual progress made against that planned in the construction schedule, with the purpose of establishing project deviations and taking timely corrective actions) and the construction timeline set out in the conditions to the concession.

Compliance with obligations both under the temporary occupation permit and the maritime concession are guaranteed through a performance bond with a value proportional to the estimated capital expenditures of the project.

Developers must also obtain permits from a number of other authorities to conduct activities and develop an offshore wind farm. Colombia's legal system obligates the state to conduct thorough environmental impact assessments to mitigate risks and also to respect the rights of ethnic communities. The Colombian Constitutional Court has protected rights of artisanal fishermen, in particular, the right to participation and spaces for consultation in the design of "megaprojects." Therefore, obtaining the necessary consents and permits for developing an offshore wind farm in Colombia may not be straightforward.

Round 1

The announcement of the regulatory framework was coupled with the announcement on 5 December 2023 of Colombia's first leasing round to licence maritime blocks to developers of offshore farms. The area for auction is located in the Central Caribbean, near the Colombian provinces of Magdalena, Atlantico, Bolivar and Sucre.

Under the leasing rules, developers must provide a plan to develop their offshore wind farm within 10 years of the grant of the temporary occupation permit, and each wind farm must have a capacity of at least 200 MW.

Nine bidders, including local and international companies, successfully prequalified to submit bids in December 2024. The deadline for bid submissions is 29 May 2025 with awards announced in mid-August 2025. Successful bidders will acquire an exclusive right over the selected area for eight years to conduct feasibility studies for their project. This temporary permit will become a 30-year concession once the projects are considered feasible.

Offtake

It remains to be seen how Colombia will adapt their current offtake models to offshore wind. The roadmap states that the Ministry of Mines and Energy need to analyse potential support mechanisms suitable for offshore wind, such as power purchase agreements, contracts for differences and bilateral agreements with corporate entities, and decide on the process to award such offtake agreements.

Under Law 1955 of 2019 and associated regulations, energy traders must source no less than 10% of their energy needs from non-conventional renewable energy sources through long-term PPAs assigned pursuant to certain market mechanisms (such as auction rounds) that are established under applicable regulation (this encourages transparent and efficient price formation and allows for efficient costs to be passed through to regulated end users).

As a result, the Colombian government has organised long-term renewable energy PPAs where project developers and energy distributors / traders commit to 15-year PPAs, which is a mechanism that could be used again to ensure offtake of energy produced by future offshore wind projects.

Offshore wind projects could also qualify for fixed payments under the Colombian government's existing reliability charge scheme, in proportion to the firm energy they can deliver to the system over a period of 20 years. The reliability charge scheme provides a fixed payment amount to generators for the firm energy that it would be able to provide to the system in the event there is a scarcity in supply of energy. During scarcity events, plants under the reliability charge scheme must generate their firm energy commitments, such energy being paid at a capped price in the spot market.

Constraints Facing the Development of Colombia's Offshore Wind Industry

In addition to the issues noted above, there are a number of other constraints facing the development of Colombia's offshore wind industry.

- **State-Owned Partner:** The latest version of the terms of reference of the auction lease round requires investors to enter into a joint venture with a state-owned or mixed capital energy company, which is to say a company with experience in the energy sector that is totally or partially owned by the Colombian State.
- **Tax Incentives:** Whilst Colombia has published resolutions which establish the licensing regime for the development of offshore wind, there are currently no government subsidies or revenue support schemes that apply. However, there are powerful tax incentives for non-conventional renewable energy projects. It is critically important when structuring an offshore wind project to optimise the use of these incentives.
- **Grid:** One major constraint facing the development of offshore wind farms in Colombia, as identified in the roadmap, is the limited onshore transmission capacity, particularly in the La Guajira region where there is no surplus capacity. The development of offshore wind farms in such region would require enhancements to the grid infrastructure to take on this additional power. This in turn requires free prior and informed consent (FPIC) processes with ethnic groups that could cause delays. Coordinating the commissioning of transmission capacity and generation projects remains a challenge.

In addition, Colombia's grid is currently fragmented because technical restrictions limit the transfer of energy from the Andean region to the Caribbean and vice versa. Given the amount of electricity that can be produced through offshore wind farms, thought may also need to be placed into whether there is sufficient demand in the Caribbean area of Colombia for such power.

Conclusion

It is clear that Colombia has great potential for offshore wind, and we could see Colombia lead the way alongside Brazil to be a pioneer in offshore wind in Southern and Latin America. The legislative regime and the infrastructure for offshore wind is still underdeveloped but the publication of the roadmap and the subsequent Resolution 40284 indicate Colombia is taking steps to achieve its vast offshore wind potential. The ongoing auction round has gathered the attention of several notable investors such as BlueFloat, Copenhagen Infrastructure Partners, Jan de Nul, DEME and Colombia's National Oil Company, Ecopetrol, who are currently prequalified to submit bids.

Colombia must now take further steps to continue to develop the regulatory framework to establish a subsidy regime and to improve the current infrastructure.

DENMARK

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A True Pioneer

Denmark was the first country in the world to complete an offshore wind project in 1991. The Vindeby offshore wind project totalled 5 MW at a time when offshore wind was still very much an unfamiliar concept. In June 2020, the Danish government announced a new climate package which included the creation of two offshore energy islands that would act as hubs to connect several offshore wind projects. The two energy islands would consist of the natural island of Bornholm in the Baltic Sea and an artificial island to be created in the North Sea (although the projects have since been delayed). Together, the islands would be expected to host an aggregate electrical capacity of at least 5 GW, with the potential to increase this to 12 GW in the future.

The past year has also seen: (i) Denmark launch a tender process for at least 6 GW of offshore wind capacity, which is to be split across 6 offshore wind projects to be commissioned by 2030 and which includes an over-planting option, meaning the tender projects could achieve an aggregate capacity of 10 GW or more (although, as discussed below, the initial tender achieved disappointing results with no bids submitted and the subsequent tender, due to take place in 2025, has been cancelled); (ii) numerous projects being progressed to varying degrees; (iii) a number of older offshore wind projects (including the 166 MW Nysted project, which was commissioned in 2003) seeking lifetime extensions; and (iv) significant activity in, and support for, the Power-to-X space.

North Sea Energy Island

The Danish government approved plans to construct an artificial multi-phase North Sea Energy Island in February 2021, to be located 80 km off Denmark's west coast. The government planned to take a minimum 50.1% stake in the project, with a legal framework to be developed to tender the remaining 49.9% stake. Construction of the island was originally expected to start in 2026, with the island expected to begin to be operable by 2033 (parties to the green sub-agreement to the Finance Act 2022, signed in December 2021, have agreed to develop the North Sea Energy Island to its full capacity as soon as possible, with 2040 as the target point). The first phase incorporates 3 GW of renewable energy capacity, and it is envisaged that eventually, the North Sea Energy Island will connect and distribute power from surrounding offshore wind farms, incorporating up to 10 GW of renewable energy capacity. The North Sea Energy Island may also connect to various European countries, including Belgium, the Netherlands and Germany.

The official tender was due to be launched in Q2 2023. The Danish government announced in June 2023 that it was delaying the commencement of the tender process to allow time for the project to be more closely examined, given the high projected costs of the scheme and subsequently announced that it was exploring whether the energy island should be established on a foundation made up of several large platforms rather than a single artificial energy island. As at the date of this report, no further details have been published.

Bornholm Energy Island

The Bornholm Energy Island will be located on the island of Bornholm in the Baltic Sea. Technical facilities on the island will serve as a hub for offshore wind farms off the coast, supplying at least 3 GW of energy (with overplanting, the aggregate capacity of the energy island could reach 3.8 GW). The offshore wind farms which will connect to the island will be constructed approximately 20 km to the south and south-west of Bornholm. The Danish parliament has set a target of 2030 to carry out these activities. In May 2024, the Danish Energy Agency (the "**DEA**") published its 'Plan for Program Bornholm Energy Island', outlining the framework for the future energy island and the adjacent coastal areas.

Similar to the North Sea Energy Island, neighbouring European countries could benefit from the Bornholm Energy Island. In June 2023, an agreement was signed between Denmark and Germany to establish a connection between the countries premised on the island. The German transmission system operator, 50Hertz, and the Danish TSO, Energinet, have agreed to collaborate on the project. The German and Danish grids would therefore be connected by way of an interconnector. The two TSOs began the tendering process for key technologies in November 2023. 50Hertz is currently awaiting permitting and expects to then be able to commence construction. Energinet is awaiting environmental permits and the results of archaeological excavations, which are due to complete in 2025.

The tender process for the development of the energy island was expected to be announced in Q2 2024. However, in June 2024, the DEA announced adjustments to the tender process for the project, citing

a strained supplier market for both offshore wind and electrical infrastructure. The DEA stated that it is currently evaluating the most appropriate process for the offshore wind tender material and expects to provide more information soon. In January 2025, the Danish government informed the relevant stakeholders that the legal framework to execute the next stage of the Bornholm Energy Island is not in place and that restarting negotiations will depend on the formation of a new German government. As at the date of this report, no further details have been published.

Project Pipeline

As well as the Energy Islands, there are several offshore wind projects which are currently in the pipeline. Pursuant to the Energy Agreement of 29 June 2018, the Danish government set a target of approximately 55% of Danish energy consumption to be derived from renewable energy by 2030. Pursuant to the Climate Agreement on Green Power and Heat of 25 June 2022 (the "**2022 Agreement**"), the Financial Act 2022 and a supplementary political agreement signed on 30 May 2023, at least 9 GW of additional offshore wind is to be tendered for construction by the end of 2030.

MAP 3: DENMARK'S OFFSHORE WIND PROJECTS

As well as the 3 GW of offshore wind planned for Bornholm Energy Island, the 9 GW target includes 6 GW of six new projects, the tender process for which kicked-off in April 2024. The projects include 3 sites comprising, in aggregate, 3 GW at "North Sea I", 1 GW at site "Kattegat", 1 GW at site "Kriegers Flak II" and a 0.8–1.2 GW at site "Hesselø".

Each of the projects has an option for overplanting, with the exception of Hesselø (which has a maximum capacity of 1.2 GW). Map [x] left illustrates the proposed locations of the Bornholm Energy Island and the other projects forming part of the tender process.

The invitations to tender for these projects include a requirement for the minimum capacity of each project to be operational by 2030 (or 2029, in the case of Hesselø). There will be no subsidies for these projects and bidders will compete on offering the highest fixed annual payment to the state (*i.e.*, negative bidding, similar to the German model) for the right to use the site for a period of 30 years in a "pay-to-play" model. In addition (i) the state will be entitled to a 20% ownership share of each project (likely to be structured as a 20% equity stake in the relevant project company) and (ii) bidders will be required to cover their own grid connection costs

The deadline for tender submissions for the North Sea I was 5 December 2024 and the tender round saw no bids submitted, which industry participants have described as a major disappointment but not a surprise, on the basis that the bidding parameters do not reflect current market realities.

The deadline for tender submissions for the other projects forming part of the April 2024 tender was originally set for 1 April 2025. However, following the disappointing tender result for North Sea I, the Danish government in January 2025 cancelled the planned tender for Hesselø, Kattegat II, and Kriegers Flak II, with a view to re-launching the tender in spring 2026. According to the press release, the revised tender will present more attractive terms, including the option of state subsidies and more flexibility for bidders. Further details of the revised tender are expected to be published in due course.

The Hesselø project was originally scheduled to be fully commissioned by the end of 2027, with a capacity of between 800 MW and 1.2 GW (depending on tender results). However, as noted above, the tendering process is only commenced in April 2024 and has now been further delayed. The tendering process had previously begun and was suspended in June 2021 to afford the DEA more time to carry out further preliminary site investigations after areas of soft clay were discovered 20-30 metres below the seabed, which would make such areas unsuitable for supporting fixed-bottom foundations and turbines. The 2022 Agreement officially relocated the project site to the south side of the originally designated area.

Ongoing offshore wind projects include Thor, which was announced by the DEA in February 2019 and will be located in the North Sea west of Nissum Fjord, 22 km from the shore of Jutland. It will have a capacity of up to 1 GW and is expected to be connected to the grid between 2025 and 2027. The DEA received a total of six applications from consortia and companies that qualified to participate in the tender process. RWE was announced as the winner of a lottery draw in December 2021. While the TSO had responsibility for offshore grid connections for earlier projects, RWE will also be responsible for developing and constructing access to the Danish electricity grid. In June 2024, it was announced that the European Investment Bank has committed to providing a EUR 1.2 billion loan to support RWE's development of the project. In October 2024, the project was granted a construction permit, enabling RWE to commence construction in early 2025.

The Thor project will follow a CfD model where RWE is entitled to receive a price premium calculated at the difference between the tendered bid price (DKK 0.01/kWh) and the reference price (the spot price of electricity in the relevant area) during the years when the offered bid price is higher than the reference price, but will pay the Danish state during the years when the reference price is higher than the offered bid price (capped at DKK 2.8 billion). Given RWE's bid price of 0.01/kWh, in reality there will be no financial assistance provided by the state to RWE and the wind farm will be run on purely commercial terms, with power sold to the grid on a merchant basis or through corporate power purchase agreements.

In addition to the projects discussed above, other projects are also moving forward. Vattenfall's 168 MW Vesterhav Syd and 176 MW Vesterhav Nord became operational, with the former being connected to the Danish grid in January 2024 and the latter being connected March 2024. In January 2024, TotalEnergies acquired an 85% interest in the 240 MW Jammerland Bugt offshore wind project from European Energy and a 72.2% equity stake in the 165 MW Lillebaelt South nearshore wind project from European Energy and SONFOR, the feasibility studies for which were both approved in Spring 2024. Lillebaelt South was granted a construction permit in November 2024 and Jammerland Bugt received its construction permit in December 2024. Both projects are planned to begin commercial operations in 2029.

Permits and Licences

Until recently, there were two procedures for obtaining permits to construct and operate offshore wind projects in Denmark: (i) tenders announced via the Danish government; and (ii) the 'open-door' procedure (for projects which had not already been reserved by the Danish government's spatial plan for tenders). In December 2023, the Danish government announced that the 'open-door' scheme would be closed to new applicants, meaning 24 of the 33 projects proposed under the scheme would be cancelled and that the three applications awaiting determination (Vikinge Banke, Kadet Banke and Paludan Flak) would be rejected. This followed the scheme's suspension by the Danish government in February 2023 due to potential conflicts with EU state aid rules. The move was widely criticised by industry participants, some of which brought successful appeals to the Danish Energy Complaints Board. In May 2024, the Energy Complaints Board ruled against the DEA's rejection of European Energy's 5 offshore wind projects that were proposed as part of the 'open-door' scheme, as well as 7 other participating projects that also appealed to the Danish Energy Complaints Board following their cancellation, each of which will now be sent back to the DEA for reconsideration. Additionally, in June 2024, the Energy Complaints Board referred the DEA's decision to reject a feasibility study permit for the Kadet Banke, Paludan Flak and Vikinge Banke projects back to the DEA for reconsideration.

For future projects, it is now only possible to obtain permits to construct and operate offshore wind projects in Denmark through the government-led tendering process. Tenders are run by the DEA for larger-scale offshore wind projects in a designated location with a specific capacity. The DEA is responsible for assessing and issuing all licences. Three licences are required throughout the project lifecycle: a licence to carry out preliminary investigations; a licence for construction of the offshore wind project; and a licence for the utilisation of energy.

ESTONIA

authored in collaboration with

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Introduction

Estonia has set ambitious targets for renewable energy. The Energy Sector Organisation Act (passed in 2016) requires that, by 2030, at least 65% of Estonia's total energy consumption must come from renewable sources, with 100% of the country's electricity being generated from renewable energy.

Against this backdrop, and with an estimated 7 GW of potential offshore wind capacity, Estonia's offshore wind sector is quickly gaining momentum as the country seeks to diversify its energy sources, reduce greenhouse gas emissions and meet its ambitious climate and renewable energy targets.

Current Status

The Maritime Spatial Plan, adopted in May 2022, sets out various areas that are potentially suitable for construction of offshore wind parks and cables in the Estonia Exclusive Economic Zone. Since the adoption of the Maritime Spatial Plan, activity in the Estonian offshore wind market has accelerated.

Prior to December 2023, Estonia had adopted a developer-led approach to offshore wind site exclusivity selection. Site exclusivity for three offshore wind projects was awarded to developers during this stage, including: (i) the 1.4 GW Sareemaa project, under development by Saare Wind Energy and Van Oord; (ii) the 1.2 GW Saare-Liivi project, under development by Utilitas; and (iii) the 2 GW Liivi lahe project, under development by Enefit Green.

Between December 2023 and June 2024, the Estonian government conducted auctions for four successful additional offshore wind sites: (i) the Liivi 1 and Liiv 2 sites, which were both awarded to a consortium comprising Ignitis Renewables and Copenhagen Infrastructure Partners; and (ii) the Saare 2.1 and Saare 2.2 sites, which were both awarded to Norway's Deep Wind. The auction winners will now commence superficies licence proceedings and environmental impact assessments in relation to the auctioned projects.

Estonia's offshore wind auction experience has not been all smooth sailing. In January 2024, the Saare 1 auction received no bids and neither did the Saare 3 auction in July 2024. However, in December 2024, the Estonia government announced that the Saare 1 auction would be relaunched and on 23 January 2025, Oxan Energy was announced as the winner of the auction.

Additionally in January 2025, the Estonian government also invited developers to bid for a license to construct the 552 MW Saare 7 offshore wind farm. Developers can bid, by 18 March 2025, for the 158.9 square kilometre offshore wind plot based around 11km west of the island of Saaremaa. If more than one application meets the required criteria, the government will organise an auction, after which the winning bidder will be granted the building permit in relation to the project.

The Maritime Spatial Plan also introduced a special Innovation Area, primarily intended for floating foundation wind turbine whose environmental impact is equivalent to or smaller than conventional solutions. In October 2023, Poland's Respect Energy Holding announced a cooperation with BaltiConnect to develop an 820 MW floating offshore wind project in the Innovation Area, which will also comprise a pilot deployment of foundation technology with hydrogen and ammonia production.

TABLE 1: EXISTING PIPELINE

Developers	Project	Capacity MW	Area km²	Initiation of proceedings	Estimated date of commissioning
Saare Wind Energy OÜ and Van Oord	Saaremaa	1400	197,5	2020	2031
Utilitas Wind OÜ	Saare-Liivi	1200	301,01	2021	2030
Enefit Green	Liivi lahe	2010	168,08	2024	2030
Ignitis Renewables and Copenhagen Infrastructure Partners	Liivi 1	900	77,7	2024	N/A
Ignitis Renewables and Copenhagen Infrastructure Partners	Liivi 2	1400	114,9	2024	N/A
Deep Wind Offshore AS	Saare 2.1	1560	163,8	2024	N/A
Deep Wind Offshore AS	Saare 2.2	840	88,5	2024	N/A
Oxan Energy	Saare 1	900	88,0	2025	N/A
Respect Energy Holding and BaltiConnect	Pilot	820	TBC	TBC	2032

In addition to the above projects, early-stage development work and legislative planning is being undertaken by the Estonian government, in partnership with the Latvian government, in relation to the proposed 1 GW cross-border offshore wind project named 'ELWIND'. This project is intended to increase the region's energy independence and security and improve interstate electricity connectivity as between Latvia and Estonia. The project aims to create a high capacity (at least 700-1000 MW, over 3 TWh per year) offshore wind park by 2030. In July 2023, ELWIND received funding in the amount of EUR 18.8 million to carry out environmental impact assessment studies. ELWIND is expected to be tendered in 2026 (with the tender rules to be published in due course).

Other Features of Regulatory Regime and Market

The Environmental Charges Act requires that for a wind farm located at sea, the owner or authorised user of the wind farm must pay a fee of 0.5% of revenue from electricity generation to the local government unit within the impact area of the offshore wind farm and compensate fishermen for any reduction in catch caused by the wind farm. In addition, a developer must pay an annual seabed lease fee for the sea area. The fee is calculated as follows: 1.5% [(MWh of electricity produced by the wind farm x 4000) x (average day-ahead price of electricity in Estonian price area of Nord Pool)].

As the offshore wind projects in Estonia are in the early stages of development, there are no corporate PPAs for these projects at this stage. However, the renewables corporate PPA market in Estonia is developing, and several renewable energy developers already employ corporate PPA agreements for other technologies. While it remains to be seen how the offtake market for offshore wind projects in Estonia will develop, the expectation is that corporate PPAs will have a key role to play.

Finally, and similar to Latvia and other countries in the Baltic region, interconnection is a key feature of Estonia's offshore wind plans. In addition to the ELWIND offshore wind project (mentioned above), Estonia is a member of the Baltic Energy Market Interconnection Plan (intended to which will supports the energy transition of the Baltic Sea region and aims to achieve an open and integrated energy market amongst in the EU countries of the Baltic region) and is also participating in the development of the Nordic-Baltic Hydrogen Corridor for the transportation of green hydrogen (which is expected to transport up to 2.7 million tons of renewable hydrogen annually between the participating countries by 2040).

Support Scheme

Estonia plans to launch a support scheme for offshore wind energy, with a reverse auction for a 20-year contract for difference (**"CfD"**) in 2025. The initial proposed plan consisted of separate reverse auctions for onshore and offshore wind farms, both starting with an initial volume of 4 TWh, with the option to increase the volume by an additional 2 TWh (*i.e.*, 4+4+2=10 TWh in total). However, in August 2024 it was decided to scale down the reverse auction plan for offshore wind to 2 TWh.

The aid scheme is specifically designed to support domestic electricity consumption, meaning that electricity sold outside Estonia will not be eligible for the aid. Under the proposed scheme, to qualify for the aid, the offshore wind farm projects must start producing power to the grid by 31 December 2033. The European Commission has also approved a €2.6 billion Estonian scheme to support renewable offshore wind energy to foster the transition towards a net-zero economy,

Auctions are expected to take place in 2025. These initiatives are expected to reduce electricity prices by 2.4 cents per kWh by 2030, saving consumers up to €5 billion over 20 years. Estimated cost of subsidies for electricity consumers is € 130 million per year, *i.e.* € 2,6 billion for 20 years.

Challenges

The main challenges for offshore wind development in Estonia include slow planning and permit processes, geopolitical risks and uncertainty regarding the availability of grid connection capacity.

In 2023, the Estonian government published the results of an audit on accelerating the development of renewable energy projects in Estonia. One of the main goals was to accelerate the permit procedures related to the development of wind parks. Building on the recommendations set out in the audit results, in May 2024 the Estonian parliament passed legislation to accelerate the processes of the deployment of renewable energy. The legislation establishes the superficies licence as a new type of licence for offshore wind farms, and introduced a streamlined process for obtaining environmental and building permits specifically created for offshore wind farms. This consolidated approach is expected to significantly reduce the time required for administrative proceedings, making the process of obtaining the necessary permits easier and faster.

The integration of large renewable projects requires upgrades to grid infrastructure, which could lead to delays and/or additional costs. In 2023, a security deposit of 70% of the connection fee or €38,000 per MVa was introduced to discourage so-called 'phantom' connections. During 2025 The government aims to introduce fixed fees per MW of grid connection capacity, which is intended to provide more certainty for developers.

In the wake of Sweden's decision to stop issuing licenses for offshore wind farms around its coast in November 2024 (citing security concerns), it remains to be seen to what extent Estonia's defence radar operations will be a factor in Estonia's offshore wind ambitions and what this will mean for developers (for example, whether radar design compensation measures (and associated cost sharing arrangements) will be a feature of projects as the market continues to develop).

FINLAND

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Introduction

The onshore wind power sector has been a cornerstone in Finnish electricity production for years, with onshore wind power comprising the second largest form of electricity production in Finland in 2024. Currently, the cumulative installed capacity of wind power is approximately 8,400 MW. The only operational offshore wind farm in Finland is the Tahkoluoto offshore wind farm, located in the Gulf of Bothnia, which became operational in 2017. This offshore wind farm was the world's first wind farm to be built and operated in frozen sea conditions and served as a demonstration project. With a capacity of approximately 44 MW and featuring 11 wind turbines, the Tahkoluoto offshore wind farm marked an important milestone in Finland's offshore wind journey, providing essential insights for future projects, as during an average winter, all the near coastal areas in Finland become frozen.

The Finnish coastline, especially the western sea areas of Finland, have been identified as being particularly well-suited for extensive offshore wind power production. Therefore, Finland is actively advancing its offshore wind power sector and aims to make it an essential part of its energy production mix, with the Finnish government setting ambitious targets for offshore wind power capacity by 2035, and is working to create a competitive advantage for Finland in the Baltic Sea region in the energy transition, including the promotion of offshore wind power. As such, the development of offshore wind power in Finland is expected to grow significantly during this decade, with initiatives announced for the Finnish territorial waters, its exclusive economic zone ("**EEZ**"), and the Åland Islands.

Despite the ambitious goals set for offshore wind, the Finnish (and global) renewable energy sector has encountered some challenges and constraints in recent years. The prolonged difficulties following the onset of the Ukraine war have slowed down market activity in general. Increased interest rates, inflation, and rising costs have negatively impacted the economics of these CapEx-intensive projects. Additionally, relatively low but fluctuating electricity prices and uncertain outlook for the growth in electricity demand in Finland have also contributed to the postponement of investment decisions regarding renewable energy projects in general, including offshore wind.

Allocation of Rights in the Territorial Waters and EEZ

It is important for potential developers looking at developing offshore wind projects in Finland to understand that there are separate regimes which apply depending on whether such offshore wind project is to be developed in the territorial waters of mainland Finland or the Åland Islands, or in the EEZ. The regime applicable in the Finnish autonomous region of the Åland Islands has not been covered by this report.

Offshore Wind in the Finnish Territorial Waters

The Finnish territorial waters are the property of the Finnish State. An exception to this are the water areas owned by the Finnish autonomous region of the Åland Islands, located between Finland and Sweden. Metsähallitus is a Finnish state-owned enterprise which is responsible for managing Finland's territorial waters. As part of this role, Metsähallitus is responsible for carrying out the initial development of offshore wind power projects within Finland's territorial waters, which it will then auction with the successful bidders being granted rights of use in that specific site for the purposes of offshore wind power development.

The Finnish offshore wind power sector achieved a significant milestone in 2022, when the Finnish Government approved the first areas for offshore wind development (namely, the Korsnäs project and an extension of the abovementioned Tahkoluoto project) and Metsähallitus granted rights of use to such areas. At the end of 2023, the Finnish Government made a decision on the selection of five additional offshore wind power areas for future auctions after which Metsähallitus initiated the auction processes for two of these areas, which have an approximate installed capacity of 3,000 MW in aggregate. Auctions for the remaining three projects are expected to follow. Please see Map 4 below for an overview of these five areas.

The auctions are open to everyone in the international market, with both domestic and foreign operators welcomed to participate with the auction processes focussing on a number of objective criteria *e.g.*, financial criteria, expertise, and ESG practices. Metsähallitus will execute, amongst others, a right of use agreement with the investor winning the auction process. Such investor is responsible for, *inter alia*, obtaining necessary permits needed to develop offshore wind in the auctioned area.

Offshore wind development in the Åland Islands is also progressing, and the aim is for the government of Åland to initiate an auction process before the end of June 2025. The timeline and scope of the auction will be detailed in due course.

New Legislation for Offshore Wind in the Finnish Exclusive Economic Zone

In 2024, the Finnish Government made a major step towards promoting the green transition and offshore wind power when it proposed a new set of rules for wind power development in the Finnish EEZ. For years, the regulatory framework for offshore wind in the EEZ was unclear and this caused uncertainty amongst investors and developers. Thus, the Finnish Government presented a proposal to the Finnish Parliament for a new act regulating offshore wind power in the EEZ. The new legislation aims to create a predictable and encouraging operating environment, *e.g.*, by streamlining the development process and ensuring fair competition. The new Offshore Wind Power Act entered into force on 1 January 2025, with the first round of competitive tendering to possibly commence by the end of 2025, with a decision on the first winner anticipated during summer 2026.

According to the new legislation, exclusivity for wind power production in the EEZ is granted through a three-step process. First, the Finnish Government will select an area for offshore wind development within the EEZ. The strategic environmental assessment to be conducted for deciding on the areas will commence in early spring 2025, with the decision on the first area to be tendered currently anticipated to be published in fall 2025. Next, the Finnish Energy Authority will arrange a tender process to grant developers an exclusive right to apply for an exploitation permit for the selected seabed area. Finally, the winning bidder is entitled to apply for an exploitation permit. Should the winning bidder not apply for the exploitation permit, the runner-up is entitled to apply for it under the same terms. The evaluation in the tender process is based on both the price offered (*i.e.* exploitation fee payable once the wind farm has been commissioned for its intended use) and qualitative factors such as financial capabilities, expertise, and environmental impacts.

Incentive Schemes

There is no incentive scheme in Finland for offshore wind power or related grid arrangements, and it is not expected that such incentive schemes for offshore wind power would be implemented during the tenure of the current Finnish Government. However, there are existing subsidy schemes for projects that utilise renewable electricity, and some new subsidies are planned to support the clean transition.

For example, the Ministry of Economic Affairs and Employment has between years 2022–2024 granted so-called RRF energy subsidies in total of EUR 469 million for 77 projects. The projects that have received such subsidies include projects that invest in energy storage, carbon capture and utilisation, renewable hydrogen and power-to-methanol projects and electrification of industry. The RRF energy subsidy has also been granted for the construction of solar power facilities and biogas facilities. In addition, Business Finland has granted RRF energy subsidies for clean hydrogen projects with 'IPCEI' status in total of EUR 61.3 million and RRF energy subsidies in total of EUR 4.9 million for the projects focusing on electrification of industry. These RRF energy subsidies are funded through the European Union's Recovery and Resilience Facility ("**RRF**").

Permitting

Overview of the Permitting Process

In Finland, the permitting of an offshore wind power project differs depending on whether the project is located in the territorial waters of mainland Finland or the Åland Islands, or in the EEZ. The permitting scheme in the Åland Islands, which to some extent differs from that of mainland Finland, has not been covered by this report.

As a preliminary phase, before or in connection with its planning and permitting process, if a proposed project consists of at least 10 wind turbines or has a capacity of at least 45 MW, it will require an environmental impact assessment ("**EIA**") to be carried out, as well as potentially a Natura assessment. EIAs may be also required for smaller wind power projects on a case-by-case basis. Both the EIA and Natura assessment are steered by the relevant municipal Centre for Economic Development, Transport and the Environment, which is also the authority that may grant deviation permits from certain nature conservation regulations. In case of international consultation in relation to an EIA, which becomes relevant when a project is likely to cause a significant adverse transboundary impact, the coordinating authority is, however, the Finnish Environment Institute.

In addition to the EIA, the construction of an offshore wind power project in the territorial waters requires a land use plan (so called "partial master plan") for the project area. The municipality is responsible for the master planning process, and it is typically carried out at the same time as the EIA. The master plan serves as a basis for the building permit that is applied from the municipality based on such master plan. There is no planning in the EEZ and thus no building permit is needed. Exclusive right for offshore wind development in the EEZ is established through an exploitation permit, granted in a tendering organised by the Energy Authority. However, one of the purposes of the new EEZ legislation has been to make the permitting for offshore wind in the territorial waters and EEZ as similar as possible.

In addition, construction of an offshore wind power project will always require a water permit issued by the Regional State Administrative Agency. Several other permits and statements may also be required, including flight obstacle permits by the Finnish Transport and Communications Agency, expropriation and project permits for connecting power lines, Border Guard statement, as well as approvals by the Defence Forces and the Defence Command regarding the placement of the wind turbine generators, exploration of territorial waters, and measurements on the topography of the sea bottom, and whether these are required or not will be assessed on a case-by-case basis.

Main Challenges and Ongoing Streamlining of the Permitting Processes

The permitting processes of wind power projects are well established in Finland, and the administration is generally considered to function in a professional and predictable manner. However, lengthy land use planning, permitting and administrative court processes are considered to some extent to hinder and slow down the implementation of new projects, including offshore wind power projects, in Finland. In addition, the municipalities, which are responsible for, among other things, master plan processes and granting of building permits, have a significant role in the implementation of offshore wind power projects being developed in Finnish territorial waters. Therefore, changes in the political power relations of the municipal decision-making bodies may impact project development.

Having said that, offshore wind projects can currently take advantage of a temporary legislative scheme, applicable until the end of 2026, pursuant to which the permitting authority should grant priority over other permit applications to environmental and water permits for certain green transition projects including renewable energy plants, offshore wind power plants, and related water management projects. The priority also applies to the handling of appeals regarding said permits at the appeal courts until the end of year 2028.

There are also two ongoing legislative renewal processes which aim to streamline the Finnish permitting processes and to unify permitting and supervisory practices. The target of the first reform is to establish a new national Permit and Supervisory Authority, which would replace the Regional State Administrative Agencies and the Centres for Economic Development, Transport and the Environment. The second reform concerns the handling of certain environmental issues at the new Permit and Supervisory Authority, and provides, among other things, a target handling time of at most 12 months for certain green transition projects, including offshore wind power plants, and that the above-mentioned priority treatment of certain environmental and water permit applications would be extended to apply until the end of year 2030 at the permit authority and until the end of year 2032 at the appeal courts. Within the legislative amendment process, the threshold for the EIA process would be lowered so that the EIA process would be required for wind power projects with at least 7 WTGs and/or a total output of 45 MW. The proposed new legislation is expected to enter into force on 1 January 2026.

Grid Connection

In Finland, the grid operators have, under the Finnish Electricity Market Act, a responsibility to develop the grid and an obligation to connect, upon request and for a reasonable fee, electricity consumption sites, power plants, including offshore wind farms, and energy storage facilities meeting the technical requirements within their operating area. In practice, offshore wind farms located in the territorial waters can be connected only to the main grid operated by Fingrid, the Finnish transmission system operator, due to their size and certain legislative restrictions. There are ongoing discussions to amend the current electricity market legislation and the Ministry of Economic Affairs and Employment of Finland has published a draft government proposal to allow for additional alternatives, such as direct connections from electricity production facilities to end-user facilities on the mainland, the possibility for electricity producers under certain conditions to construct and operate joint networks connecting their electricity production to grid without a power network licence, the construction and operation of a regional or local 400 kV network by distribution system operators, and extending Fingrid's obligation to connect also to offshore wind farms located in the EEZ. The legislative initiative is planned to progress during the spring 2025.

Currently, there is no grid in the maritime area and thus, as elsewhere in the world, offshore wind developers would need to construct the power lines connecting their offshore wind projects to the grid themselves at designated connection points on the mainland. In addition, the west coast of Finland, which is where the majority of offshore wind projects would be located, requires significant reinforcement of the transmission lines, however seven preliminary areas have been identified by Fingrid where large offshore wind farms could be connected to the main grid in the future. The next step in the process would be for Fingrid to consider the costs of these reinforcement needs, or part of them, as part of its next investment programme, which will be updated in connection with the publishment of the main grid development plan in 2025.

Innovations and Links to Other Sectors; Overview of Offtake Market

Power Purchase Agreements

The power purchase agreement ("**PPA**") market in Finland has been growing in the recent years, driven by corporate demand, for both virtual and physical long-term renewable energy power supply contracts. Companies across various sectors—particularly manufacturing and energy-intensive industries—or companies with high targets to reduce their carbon footprint have increasingly sought PPAs to meet sustainability goals, stabilise energy costs, and enhance their ESG performance. Finland's appeal has been further strengthened by the growth of the data centre industry, which is expected to continue in the future.

While an offshore wind PPA market has yet to emerge in Finland, growing interest from data centre operators and large corporations indicates that demand for offshore PPAs is likely to develop. Long-term PPAs are expected to become an important factor in securing the bankability of offshore wind projects. Given the significant energy output of offshore wind, potential offtakers for physical PPAs are speculated to include manufacturing industries, the power-to-x sector, and data centres with energy-intensive operations.

Hydrogen Economy

Finland is aiming for Europe's leading position in the hydrogen economy throughout the entire value chain. According to the current Finnish Government programme, Finland aims to account for 10% of EU's emissions-free hydrogen production and for at least the same percentage of hydrogen use. The wind power capacity, in addition to a reliable and predictable operating environment, makes Finland an attractive investment environment for hydrogen operators. Furthermore, due to the forest industry and use of bioenergy, Finland has a competitive advantage when it comes to the capture and utilisation of bio-based carbon dioxide.

The hydrogen-related regulatory framework is finally mostly in place at the EU level, and thus, the focus is shifting to the national implementation of the respective requirements. The amended Finnish Act on the Promotion of the Use of Renewable Fuels in Transport, including more ambitious targets for renewable hydrogen-based fuels than required by the respective EU Renewable Energy Directive, entered into force on 1 January 2025. Moreover, the national Hydrogen Market Act is expected to be adopted in 2026, in addition to which several other amendments to various legislative instruments are expected to be made.

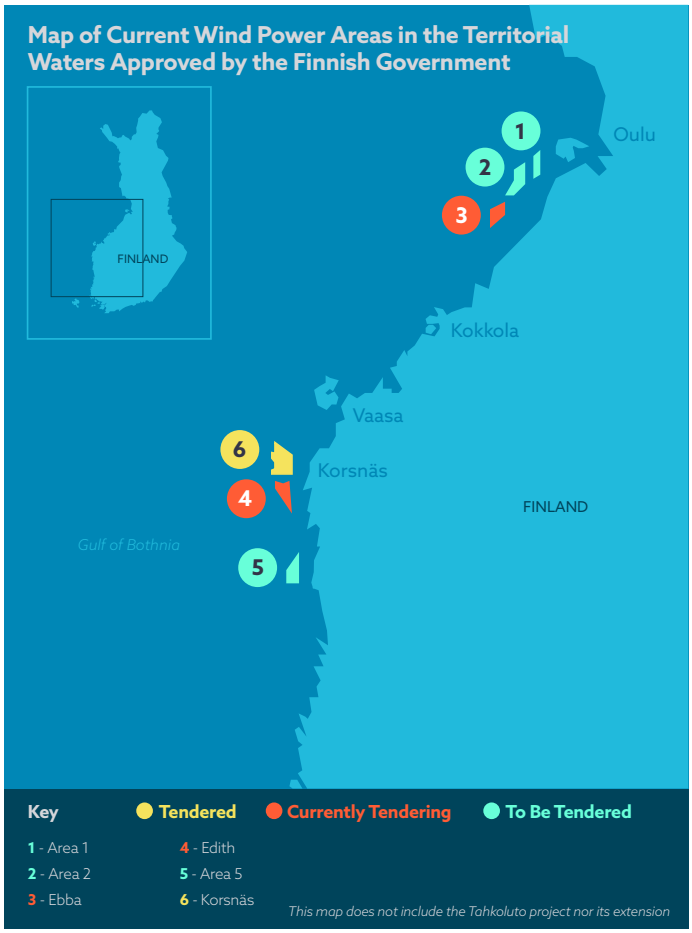
Numerous hydrogen development projects have been announced with an aggregate investment value of several billion euros. Furthermore, the Finnish Government has mandated Gasgrid Finland Oy, a Finnish state-owned enterprise and the Finnish natural gas transmission system operator, to promote the development of the national and regional hydrogen infrastructure. Three cross-border hydrogen pipeline projects under planning by Gasgrid Finland Oy and its partners have been included on the Projects of Common Interest list by the European Commission. The potential for co-location of power-to-x projects with offshore wind projects in Finland is therefore great.

Data Centres

Finland is emerging as a key player in the growing global data centre market, driven by increasing demand for cloud services, artificial intelligence, and data processing. Data centre projects are currently increasing at a record pace in Finland where the strategic location, renewable energy resources, and advanced infrastructure make the country an attractive investment destination for global operators. There are already several large-scale data centre investments in Finland by major international companies, including Google and Microsoft.

Finland's cold climate offers a natural advantage for energy-efficient cooling solutions in data centres, significantly reducing operational costs and contributing to sustainability goals. Furthermore, Finland's advanced district heating network creates excellent conditions for cost-effectively transferring waste heat generated in the data centres to the district heating network. As mentioned above, there is therefore abundant opportunity for offshore wind developers to explore the sale of their power to such data centres.

MAP 4: CURRENT WIND POWER AREAS IN THE TERRITORIAL WATERS APPROVED BY THE FINNISH GOVERNMENT



Conclusions

Despite the challenges posed by global economic pressures impacting the financial viability of green transition projects, including offshore wind projects, Finland's commitment to become a leader in clean energy remains steadfast. Upcoming legislation and subsidies to green transition projects, including measures to clarify the legal framework in the EEZ, the streamlining of the Finnish permitting process, and the RRF energy investment aid are some of the measures that highlight the Governmental efforts at advancing offshore wind in Finland.

Collaborative efforts of the Finnish Government, municipalities, developers, and other stakeholders will be crucial in realising the full potential of offshore wind energy in Finland. However, expanding sectors and innovations, including data centres as the global demand for data centre capacity increases and the industrial sectors that are expected to require significant volumes of green energy in order for them to achieve carbon neutrality targets, and hydrogen technologies, pose great offtake opportunities and thus underline further possibilities for offshore wind development in Finland.

FRANCE

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The French offshore wind market has a growing pipeline of projects stemming from ambitious objectives set by the French government.

These new projects will not only benefit from the experiences during the development of France's first generation of offshore wind projects but also from government reforms aimed at simplifying, clarifying and speeding up the competitive bidding process.

French Offshore Wind Sector – A Top National Priority

The multiannual energy programming (*Programmation pluriannuelle de l'énergie*) ("**PPE**") for the period 2019–2028 published by Decree No. 2020 456 of 21 April 2020 set ambitious objectives for additional offshore wind capacity of 2.4 GW by 2023 and 5.6 GW to 6.2 GW by 2028. In the draft French strategy for energy and climate dated November 2024, the French government published a draft of the third multiannual energy programming (2025-2030, 2031-2035), which aims at achieving at least 18 GW of offshore wind capacity by 2035, 26 GW by 2040, and 45 GW by 2050[1].

The projects launched or to be launched are both fixed-bottom and floating offshore wind farms.

France is reported to have the second-largest offshore wind resource in Europe, and it has been made clear that the ambition of the French government is to develop a strong offshore wind sector.

The French President, Emmanuel Macron, indicated that the objective is to implement 50 offshore wind farms by 2050.

To reach these objectives, the draft third PPE mentions the organisation of "one or more multi-GW tenders, while creating the conditions for the continuation of ambitious development in the following years."

The development of the French offshore wind sector will thus continue with the implementation of fixed-bottom offshore wind farms but will also gain momentum with the development of several floating offshore wind farms in the coming years.

A. The continuation of the development of fixed-bottom offshore wind farms

As of today, the development of additional fixed-bottom offshore wind farms is expected to continue with at least two new projects tendered (see below).

B. The development of commercial offshore floating wind farms

Floating wind turbines can generate power in deep water where the wind may be stronger and more consistent. Furthermore, the installation of floating wind turbines does not require the developer to build heavy foundations integrated into the seabed or use special construction vessels needed for fixed-bottom offshore wind turbines. The French Environment and Energy Management Agency has already launched several calls for pilot floating offshore projects. These projects benefitted from grants authorised by the European Commission.

Given the promising nature of floating wind technology, the French government showed its support for this technology by including floating offshore wind turbines in the PPE for the period 2019–2028.

As detailed below, three calls for tenders have now been launched for offshore floating wind farms: (i) a first call for tenders was launched in April 2021 for a 250 MW floating offshore wind project in Brittany; and (ii) a second call for tenders was launched in March 2022 for two floating offshore wind farms in the Mediterranean Sea with a capacity of 250 MW each; and (iii) a third call for tenders was launched in July 2024 for three, maybe four (depending on the technology chosen for the fourth wind farm), floating offshore wind farms: one floating offshore wind farm located in Southern Brittany with a capacity between 400 MW and 550 MW (Sud-Bretagne 2), two floating offshore wind farms located in the Mediterranean Sea with a capacity between 400 and 550 MW each (Méditerranée 2), and potentially one floating offshore wind farm located in the Southern Atlantic Coast, with a capacity between 1GW and 1.2GW (Oléron 2).

Retrospective and Overview of the Existing French Offshore Wind Farms Pipeline

The French offshore wind project pipeline is busy with six new tenders being launched in the last four years.

A. Tender rounds 1 and 2 and the FIT – a challenging start

Offshore wind projects have been developed in France since 2011, when the French government launched its first call for tenders up to a maximum capacity of 3 GW spread over five zones: (i) Dieppe-Le Tréport (500 MW); (ii) Fécamp (500 MW); (iii) Courseulles-sur-Mer (450 MW); (iv) Saint-Brieuc (500 MW); and (v) Saint-Nazaire (480 MW).

1. French strategy for the energy and the climate (in French, Stratégie française pour l'énergie et le climat), November 2024, p. 85, available (in French) at the following address: https://concertation-strategie-energie-climat.gouv.fr/sites/default/files/2024-11/241104_Projet%20de%20Programmation%20pluriannuelle%20de%20l%27%C3%A9nergie%203%20VFF.pdf. Please note that this document remains a draft and was submitted for public consultation between 4 November 2024 and 16 December 2024.

A second call for tenders was launched in March 2013 and targeted two zones: Le Tréport (500 MW) and a zone between the islands of Yeu and Noirmoutier (500 MW) for a total installed capacity of 1 GW.

These projects were awarded Feed-in Tariffs ("**FiTs**") as opposed to a Contract for Difference ("**CfD**") (see below).

The procedures for these tenders experienced various issues, including challenges before the French administrative courts. These disputes led to significant delays in the construction of the projects to which they related. For instance, the final authorisations for the Fécamp and Courseulles-sur-Mer projects, the Saint-Nazaire project and the Saint-Brieuc project and the Dieppe-Le Tréport project were only determined by the French highest Administrative Court, the Council of State (in French, the *Conseil d'État*), on 24 July 2019, 7 June 2019 and 3 December 2020 and 28 December 2022, respectively.

In this context, the FiTs resulting from these tenders were high when compared to the decreasing construction costs of offshore wind farms (the FiTs awarded ranged between €180 and €230/MWh at the time). This discrepancy led the French government to reconsider carrying on with these projects. However, the abandonment of the projects was avoided thanks to a renegotiation of the FiTs between the French government and the developers (leading to setting FiTs in the range of €131/MWh and €155/MWh). The newly agreed FiTs were validated by the European Commission on 26 July 2019, and the continued development of these projects was able to begin.

The Saint-Nazaire project reached financial close in September 2019, the Fécamp project at the end of May 2020, the Courseulles-sur-Mer project in February 2021 and the Dieppe-Le Tréport as well as Yeu-Noirmoutier project in April 2023.

The Saint-Nazaire project was the first French offshore wind farm commissioned, in November 2022. The Fécamp and Saint-Brieuc projects have been commissioned in May 2024. The (i) Courseulles-sur-Mer, (ii) Yeu-Noirmoutier and (iii) Dieppe-Le Tréport projects are still under construction and are expected to be commissioned at the end of 2025 for the first two and in 2026 for the third.

B. Tender round 3 – a move to competitive dialogue procedure and transition to CfDs

The third call for tenders was launched on 15 December 2016 for the 600 MW Dunkerque offshore wind project, which was awarded on 14 June 2019 to a consortium comprising EDF, Innogy and Enbridge.

This call for tenders was the first one to be carried out through a competitive dialogue (dialogue concurrentiel), meaning that the French government and the bidders discussed certain terms and conditions of the project before the French government issued the final version of the specifications (cahier des charges) of the project. Since round 3, the competitive dialogue procedure has been the procedure chosen by the French government to award projects (see below).

Round 3 is also a cornerstone for the subsequent rounds as it provided, for the first time, for the conclusion of a CfD rather than awarding a FiT (see as a comparison with tender rounds 1 and 2). A CfD grants the project a "premium" based on the spot electricity price, a reference electricity tariff (proposed by the winning developer during the competitive process) and the reference market price. In respect of the Dunkerque project (Round 3), the CfD reference electricity tariff is €44/MWh.

C. Tender rounds 4, 5 and 6 – confirmation of France's offshore wind momentum

An additional fixed-bottom offshore project was called to tender on 15 January 2021 in the French exclusive economic zone ("**EEZ**") near the coast of Normandy for a total installed capacity of 1 GW (round 4 or "Centre Manche 1" project)[2].

Round 4 has been awarded on 27 March 2023 to "Eoliennes en Mer Manche Normandie," a company owned by EDF Renewables and Maple Power. The CfD reference electricity tariff is set at €44.9/MWh.

Additionally, for the first time, a commercial floating wind farm project with a total installed capacity of 250 MW near the coast of Brittany was launched on April 2021 (Round 5 or "Sud-Bretagne 1")[3]. Round 5 has been awarded on 24 May 2024 to "Pennavel SAS", a company owned by Elicio France SAS and BayWa r.e. France SAS. The CfD reference electricity tariff is set at €86.45/MWh.

Round 6 was launched in March 2022 and aims, as indicated above, at awarding two offshore floating wind farms in the Mediterranean Sea.

One interesting aspect to note with respect to Round 6 is that a unique competitive procedure was launched for the award of both projects (each project being a separate lot), and the same candidate was not allowed to be awarded both projects – as allowed by French law (see below).

Round 6 projects have been awarded in December 2024. The offshore wind farm located in the Narbonne area was awarded to the consortium comprising Ocean Winds (a company owned by Engie and EDPR) and "Eolien en Mer Participations" (a company of the Banque des Territoires), with a CfD reference electricity tariff set at €92.70. The farm located in the Golfe de Fos area was awarded to "Eoliennes Méditerranée Grand Large", a company owned by EDF Renewables and Maple Power, with a CfD reference electricity tariff set at €85.90.

2. The public debate started on 15 November 2019, and, while it was intended to last four months, it did not complete until 19 August 2020 due to delays caused by the COVID-19 pandemic.
3. Although floating wind turbines have been installed in France since 2018, these projects were pilot projects and only concerned a limited number of turbines.

D. Tender rounds 7 and 8 – continuation of France's offshore wind momentum

Round 7 and round 8 were confirmed by the French government during summer 2022.

Round 7 (or "Oléron 1") relates to the implementation of a fixed-bottom offshore wind farm (for an installed capacity ranging between 500 MW and 1 GW) near the Island of Oléron.

The competitive dialogue procedure was launched by the Energy Regulatory Commission (the "Commission de Régulation de l'énergie" or "**CRE**") on 21 October 2022[4].

Interested developers had until 23 December 2022 to submit their applications. A total of nine developers met the pre-qualification requirements or criteria provided for by the pre-qualification document and were selected to participate in the competitive dialogue[5]. The competitive dialogue procedure has ended in November 2024 and interested developers have now to submit their bid (*offre*) at the latest on 2 April 2025.

The commissioning of this wind farm is expected in 2030.

Round 8 (or "Centre Manche 2") relates to the implementation of a fixed-bottom offshore wind farm (for an installed capacity of at least 1.5 GW) in Normandy, adjacent to the Centre Manche 1 project (Round 4).

The competitive dialogue procedure was launched by the CRE on 21 October 2022[6]. Interested developers had until 23 December 2022 to submit their applications. Seven developers were selected to participate in the competitive dialogue for this project[7]. The competitive dialogue procedure has ended in November 2024 and developers have now to submit their bid (*offre*) at the latest on 2 April 2025.

One interesting point to note is that the Round 8's project will benefit from two different interconnection points, and will share the offshore substation with the Centre Manche 1 project (round 4).

The commissioning of this farm is expected in 2031.

E. Next tenders – acceleration of France's offshore wind development

To accelerate the development of the energy transition and reach the objective to have 50 offshore wind farms for a total capacity of 45 GW by 2050, the French government recently announced the launch of bigger tendering rounds.

A new tendering round (Round 9), which is already bigger than the previous ones as it is grouping four projects adjacent to those of rounds 5, 6 and 7 for a total capacity of more than 2GW, was launched in July 2024. A total of 12 developers met the pre-qualification requirements or criteria provided for by the pre-qualification document and have been selected to participate in the competitive dialogue[8]. The competitive dialogue procedure is ongoing. Results of this tender are expected for the end of 2025.

Note that Round 9 projects should be subject to a diversification requirement, which means that a single candidate will not be allowed to be awarded more than a limited number of projects amongst those of Round 9.

These projects could also be the first French offshore wind projects implementing selection criteria based on the EU Net Zero Industry Act, and may also include reinforced criteria relating to the carbon content of offshore wind projects. In addition, they may also be the first French offshore wind projects which would benefit from a partial (*i.e.*, only for a part of the power produced by the offshore wind farms) CfD in France, the rest of the power being sold through the market or through corporate or utility PPAs – as recently allowed by French law (see below).

An 8 to 10 GW call for tenders (Round 10) including multiple projects is planned for the beginning of 2025, with the aim of being awarded before the end of 2026.

Brief Description of the French Competitive Process

The delays and difficulties experienced in the first calls for tenders led the French government to modify the regulatory framework in order to promote and simplify the development of future projects. The implementation of an offshore wind project in France still requires several authorisations, but many of them have been adapted to solve the difficulties experienced in the previous calls for tenders.

As noted above, the development of an offshore wind project in France requires the developer to win a call for tenders. The call for tenders is launched by the minister in charge of energy based on specifications drawn up with the CRE. This procedure may take the form of a competitive dialogue ("*dialogue concurrentiel*") or a bidding procedure ("*appel d'offres*"). Since Round 3, the competitive dialogue procedure has always been chosen by the French government for all tender rounds but the large number of planned projects and the maturity of the industry, in particular for fixed-bottom wind farms, could lead the French government to standardise procedures and switch to a lite version of this procedure or even a bidding procedure for some future projects.

4. https://www.cre.fr/Documents/Appels-d-offres/dialogue-concurrentiel-n-2-2022-portant-sur-une-installation-d-eoliennes-en-mer-posees-de-production-d-electricite-en-sud-atlantique-au-large-de-l (in French; no English translation available).
5. The selected developers are : (i) Eolien en Mer Oléron Atlantique (a SPV between EDF Renewables and Maple Power), (ii) a consortium between Corio Generation Limited and Qair Eolien Pose Oléron, (iii) OW Offshore, (iv) RWE, (v) Iberdrola, (vi) Océole (a joint venture between Equinor Wind Power and Q Energy), (vii) Eni Plenitude, (viii) Oléron Energies Marines, a consortium between TotalEnergies Eoliennes Marines Sud-Atlantique 1 and Jera Power, and (ix) a consortium between Skyborn Renewables Sud Atlantique and Cobra Servicios Comunicaciones y Energia.
6. https://www.cre.fr/documents/Appels-d-offres/dialogue-concurrentiel-n-3-2022-portant-sur-un-second-projet-d-installation-d-eoliennes-en-mer-posees-au-large-de-la-normandie-au-sein-de-la-zone (in French; no English translation available).
7. The selected developers are: (i) a consortium between Vattenfall, Skyborn Renewables and Eolien en Mer Participations (Banque des Territoires), (ii) Eoliennes en Mer du Suroit (a SPV between EDF Renewables and Maple Power), (iii) OW Offshore, (iv) a consortium between Corio Generation Limited and Qair Eolien Posé Manche, (v) a consortium between TotalEnergies Eoliennes Marines Centre Manche and RWE, (vi) Iberdrola and (vii) Eni Plenitude.
8. The selected developers are: (i) BayWa r.e., (ii) a consortium between Elicio, Q ENERGY and Kansai Electric, (iii) EnBW Valeco Offshore, (iv) Les Eoliennes du Grand Large, a company owned byEDF Renewables and Maple Power), (v) Iberdrola, (vi) a consortium between Ocean Winds and Banque des Territoires, (vii) a consortium between Oxan Energy and Ingka Investments, (viii) a consortium between Plenitude and Qair, (ix) Parkwind, (x) RWE Eolien en Mer France, (xi) a consortium between Skyborn and Octopus, et (xii) TotalEnergies

Permitting

A. Developer's Permits

When the project is built within the public maritime domain[9], winning a call for tenders allows the developer to be issued an operating permit ("*autorisation d'exploiter*") as well as the right to conclude a CfD (as explained above). It should, however, be highlighted that an operating permit is not required when the installed capacity of an offshore wind project is less than or equal to 1 GW and, in any case, that such authorisation is deemed granted with the award decision of the tender.

In addition to the operating permit, the operator must obtain two main authorisations when the project is located within the public maritime domain: (i) an environmental authorisation and (ii) an authorisation to occupy the public domain, it being specified that the duration of such authorisation was initially set at 40 years maximum, but has been increased up to 50 years by the Decree No. 2023-1419 of 29 December 2023.

A single authorisation is instead required when the project is built within the French exclusive economic zone ("**EEZ**") pursuant to the provisions of Ordinance No. 2016-1687 of 8 December 2016 and Decree No. 2013-611 of 10 July 2013[10]. The maximum duration of such authorisation was initially set at 40 years, but Decree No. 2023-1419 of 29 December 2023 has also extended this maximum duration up to 50 years.

One significant aspect to bear in mind is that, save for the operating permit, these authorisations are obtained through application to the relevant authority (and not through a competitive process) after being awarded the project.

B. Grid Connection Permits

The grid connection permits are the responsibility of the French operator of the public power transmission system, *Réseau de Transport d'Electricité* ("**RTE**").

Furthermore, the expenses related to the grid connection are borne by RTE since 2017 (see below).

Reforms

On the basis of the experiences derived from the previous call for tenders, several amendments to the regulatory regime are worth noting.

A. Grid Connection

As highlighted above, the French government decided to reform the regulations relating to the grid connection of electricity production facilities. Pursuant to Law No. 2017-1839 of 30 December 2017, RTE carries out, at its own expense, the grid connection of offshore wind projects pursuant to a strict timetable set out in the specifications of the call for tenders of each project. The costs of the grid connection are thus no longer borne by the developers, which has led to a significant decrease in the reference electricity tariff proposed by the developers since the Dunkerque project (Round 3).

B. Insurance

Offshore wind projects have been added to the "major risks" identified in Article L. 111-6 of the French Insurance Code to promote their insurability. This means that offshore wind projects are exempted from a mandatory requirement to insure for terrorism and natural disasters. The exclusion of both requirements does not mean that these risks cannot be insured, but rather that the project and insurers are now free to insure these risks on their own terms (rather than being required to do so).

C. "Envelope Permit"

To enable the developer to benefit from the latest technological developments and construction techniques, Law No. 2018-727 of 10 August 2018 created the "envelope permit." The "envelope permit" allows the developer to obtain an authorisation for a project with variable characteristics. Accordingly, the developer may modify certain characteristics of the project within the limits of the "envelope permit" to benefit from the latest technological developments, without modifying the authorisations granted. Without this legislative flexibility, an offshore wind developer would need to seek consent from the relevant authorities each time there was a change to the characteristics or technologies adopted by an offshore wind project during its development and construction, which would lead to delays in the completion of the relevant project.

D. Simplifying the Procedure and Improving Project Planning

In order to accelerate the development of offshore wind farms, measures have been adopted by the so-called Law No. 2020-1525 of 7 December 2020 for speeding up and simplifying public procedures.

These measures have been completed recently by others enacted by the Law No. 2023-175 of 10 March 2023 for the acceleration of renewable power generation (said "**APER Law**").

With respect to the public debate, which is required to be held for determining the viability of the project and the area within which it is to be erected, Article L. 121-8-1 of the French Environmental Code was first modified in 2015 in order to (i) allow the minister in charge of energy to launch the call for tenders before the end of the public debate, which was not previously possible (although we note that the competitive dialogue cannot start before the results of the public debate are published), and (ii) launch a unique public debate for determining several areas for offshore wind projects in the same seafront ("*façade maritime*").

Article L. 121-8-1 of the French Environmental Code was modified again in 2023, to allow the organisation of a unique public debate for both (i) adopting the seafront strategic documents ("*documents stratégiques de façade*"), which are planning documents identifying at a broad scale the potential offshore wind areas on a seafront, and (ii) determining the specific areas of offshore wind projects which call for tenders is about to be launched.

9. The public maritime domain ("**DPM**") corresponds essentially to the territorial sea. It is made up of land historically covered by the sea but from which it has retreated, as well as land still under water between the seashore and the limit of territorial waters. The DPM is subject to a special regulatory regime under French law.
10. As defined by the so-called Montego Bay Convention, the exclusive economic zone is "*an area beyond and adjacent to the territorial sea, subject to the specific legal regime established in this part, under which the rights and jurisdiction of the coastal State and the rights and freedoms of other States are governed by the relevant provision of this Convention.*" (art. 55). French law provisions with respect to the use and occupation of the French exclusive economic zone are set forth in the abovementioned Ordinance no. 2016-1687.

As the implementation and duration of a public debate can be lengthy, the possibility to launch a one-off debate to determine several areas for the implementation of future projects and to adopt the seafront strategic documents is expected to accelerate the number of projects to be launched in the coming years, as well as to improve the offshore wind projects planning[11].

In order to speed up the award of administrative authorisations, Article 58 of the APER Law created a new article in the French Energy Code now allowing the French State to start technical and environmental studies required for carrying out the design of the project and its environment impact assessment in advance of the future launch of one or more tenders. This provision is meant to provide sufficient and precise information to candidates participating in tender rounds as well as to the preferred bidder[12].

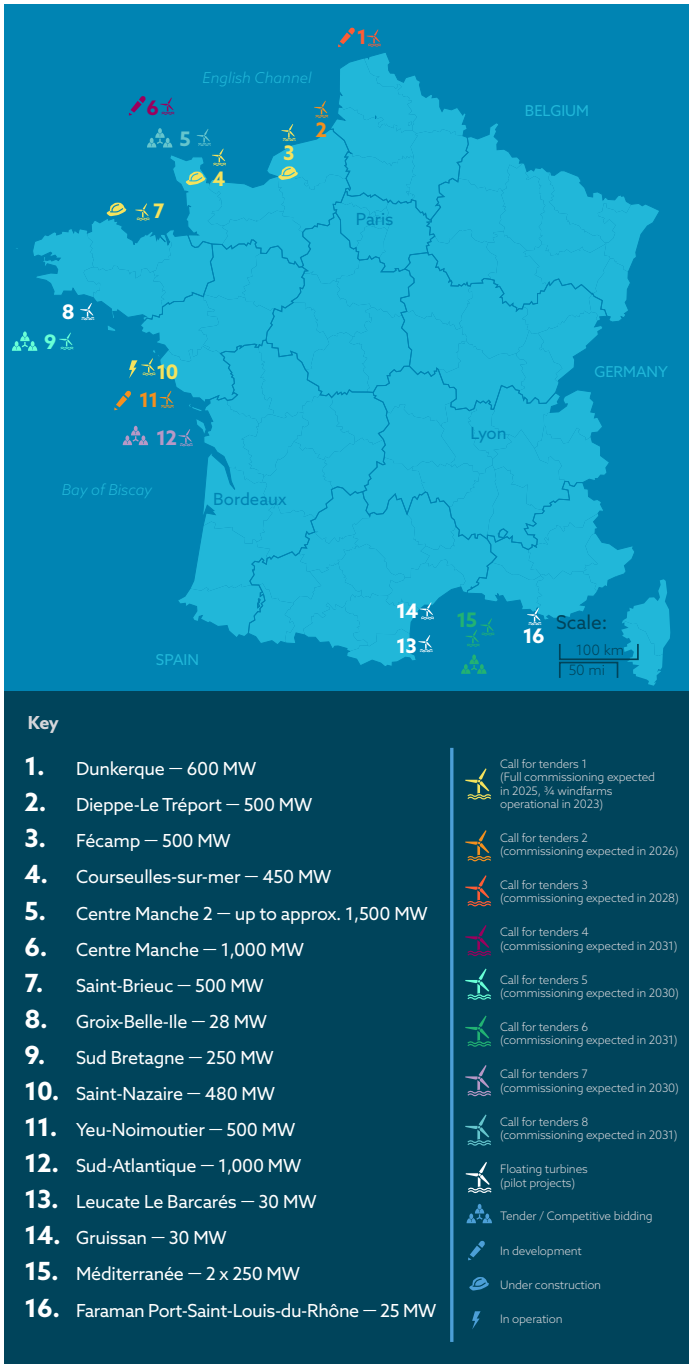
Furthermore, the APER Law also (i) created a single authorisation regime for the grid connection facilities of offshore wind farms located in the EEZ, even though those go through the territorial sea and EEZ (and would have therefore required obtaining an environmental authorisation for the territorial sea and a single authorisation for the EEZ), and (ii) included in the scope of the environmental authorisation the decision approving the authorisation to occupy the public domain.

With respect to challenges brought against a project's authorisations, France's highest Administrative Court (the "*Conseil d'État*") is now in charge of examining "*challenges against decisions relating to offshore renewable energy installations and their related works (...).*" By reserving jurisdiction to the highest Administrative Court (which will make a final judgment on any legal challenge relating to a project's authorisations), the French government aims at reducing the challenges targeted against developers and therefore allow projects to be more quickly developed (cf. Art. L 311-13 and R. 311-1-1 of the French Administrative Justice Code).

In addition, the APER Law extended the powers of administrative courts when a challenge is introduced against an authorisation granted to an offshore wind farm in the territorial sea or the EEZ. In case any illegal action is found, instead of just cancelling the authorisation, courts would now be able to (i) partially cancel the authorisation so as to allow the administration to resume the instruction of the authorisation at the stage or on the part which was vitiated by the irregularity or (ii) allow a regularisation of the situation.

Eventually, it can be also highlighted that the APER Law clarified that offshore wind farms located partly in the territorial sea and partly in the EEZ shall be subject only to rules applicable to the territorial sea.

MAP 5: FRANCE'S OFFSHORE WIND PROJECTS



11. For instance, the Ministerial decision of 17 October 2024, which followed the public debate about the revision of the seafront strategic documents, established a map to plan the geographical areas (with priority areas), as well as the allocation between fixed-bottom and floating projects of offshore wind farms for the next tenders, and to pre-identify areas for long-term tenders (2040-2050). This decision will allow the French government to launch multi-projects tenders on several seafronts, including Round 10. This decision is available at the following address (in French, no English version available): https://www.legifrance.gouv.fr/jorf/id/JORFTEXT000050362918.
12. The practical details of this article were specified by Article 7 of Decree No. 2023-1419 of 29 December 2023, which introduced Article R. 311-25-4 of the French Energy Code. The minister in charge of energy can publish this data between the publication of the invitation to tender and one month before the submission deadline, allow candidates to ask questions, and organize meetings to present the published information and answers.

E. Adjusting the legal regime applicable to the French Exclusive Economic Zone

Given that several projects will be implemented in the French EEZ[13], the applicable legal regime has been modified in order to take into account the specifics of such.

Ordinance No. 2016-1687 of 8 December 2016 was modified by Law No. 2021-1900 of 30 December 2021 and the APER Law.

Modifications of Ordinance No. 2016-1687 made in 2021 relate to (i) the fee ("*redevance*") that could be requested from the developer by the French authorities for the occupation of the EEZ and which now can be "*set at zero*" (Art. 27 of Ordinance No. 2016-1687)[14], and (ii) the tax regime applicable to offshore wind turbines, which has been specified (Art. 36 of Ordinance No. 2016-1687).

In addition, the APER Law has clarified that floating offshore wind turbines are not subject to the rules applicable to ships and created a specific status for them.

With respect to Decree No. 2013-611 of 10 July 2013 which was modified by Decree No. 2021-1942 of 31 December 2021, the following modifications can be highlighted:

- the regime applicable to the obtention of a temporary authorisation to carry out, for instance, studies has been amended (Art. 3 of Decree No. 2021-1942);
- while Article 11 of the Decree sets out a validity period of 48 months between issuance of the authorisation and beginning of the works for the single authorisation, such period can be set otherwise if it is specified in the tender specifications ("*cahier des charges*") of the call for tenders; and
- the conditions under which a single authorisation can be repealed have been further specified and notably (i) include the events in which such repeal may be triggered and (ii) allow payment of a compensation under the conditions provided by the tender specifications (in particular in the event of repeal on grounds of public interest).

The objective of these amendments is to adapt the EEZ legal regime to offshore wind projects in order to encourage investment and the financing of projects while ensuring the protection of the State's interests as well as the conservation of the area.

F. Diversification of Selected Bidders

Given the planned acceleration of the French offshore wind projects, measures have been adopted to explicitly allow the French government to limit the number of projects a single candidate could be awarded in a call for tender in order to ensure the proper construction of all projects awarded.

Decree No. 2023-1419 of 29 December 2023 amended Article R. 311-13 of the French Energy Code to that extent. In case of allotment of a tender, this provision requires that the tender specifications specify the number, size and characteristics of the lot, as well as the maximum number of lots or the maximum cumulative capacity that may be awarded to a single candidate.

If a limitation to the number of lots or capacity that can be awarded to a single candidate is provided, the tender specifications must also specify the selection conditions applicable if the selection criteria would lead to choose such candidate for more lots or capacity than the authorized limit.

The selection conditions may notably rely on a selection order determined by the French minister in charge of energy, or the choice of the candidate. Other types of selections conditions could also provided for.

G. Additional modifications in the legal framework applicable to offshore wind farms

The abovementioned legal framework may evolve again in the future.

The French Government had announced in May 2024 the adoption of a few reforms aiming at accelerating the development of offshore wind projects[15].

A decree was in preparation to simplify the prequalification step of the tendering procedures awarding offshore wind projects, and reduce the time given to the CRE to examine the bids submitted. This measure aimed at reducing the duration of the tendering procedures awarding offshore wind projects to around 12 months (instead of more than two years today).

Article 16 of the bill on business simplification (as adopted by the French Senate on 22 October 2024) aimed at allowing RTE to waive any allotment requirement applicable under French public procurement rules. The purpose of this measure is to simplify the regime applicable to the tendering procedures which must be implemented by RTE to carry out the grid connection works of the offshore wind projects[16]. The fate of these contemplated reforms, however, remains uncertain to date given the notable government evolutions which have occurred in 2024.

Outlook

As the latest publication of public tenders show, the development of offshore wind projects in France is to be accelerated in order to increase the number of wind farms commissioned within the next 10 years.

If offshore wind constitutes a major priority for France, this priority gained significance since 2021 with not only the spectacular increase of energy prices but also the consequences of the conflict in Ukraine, leading the French government to reflect on the development of nonfossil energy resources.

The French government is now making further efforts towards accelerating the development of offshore wind projects by launching bigger tenders.

13. Articles 56 and 57 of the Law No. 2023-175 of 10 March 2023 for the acceleration of renewable power generation have modified provisions in the French Energy Code and the French Environmental Code to specify that offshore wind tenders shall target in priority sites in the economic Exclusive zone.
14. An order dated 8 March 2022 has since set forth the principles applicable to the fee to be paid for offshore wind farms.
15. See: https://presse.economie.gouv.fr/bruno-le-maire-et-roland-lescure-annoncent-de-nouvelles-mesures-de-soutien-au-developpement-de-leolien-en-mer-et-de-son-industrie/.
16. RTE is a contracting entity pursuant to the EU public procurement rules. It is subject, as such, to the obligation to organize competitive tenders to satisfy its needs for work, services or supplies related to its transmission mission.

GERMANY

Authored by Dr. Werner Brickwedde (Orrick) and Alexander Dartsch (Orrick) – refer to page 121 for contact details.

Status Quo and Growth Path

The German offshore wind sector kept its momentum in 2024 with an additional 730 MW of capacity having been commissioned. This increases the aggregate installed capacity in German waters to 9.2 GW as of the end of 2024 with 2.6 GW more under construction.

In addition, four key projects have achieved major milestones in 2024:

- RWE has taken the final investment decision for the Nordseecluster, comprising four projects in close proximity with a combined expected capacity of 1.6 GW.
- All 64 foundations for the 960 MW project He Dreiht have been installed, ensuring that Germany's largest offshore wind project remains on schedule.
- The first turbines have been installed in the Borkum Riffgrund 3 project, which will be one of the largest German offshore wind farms with a capacity of 913 MW.
- The permitting process has been successfully completed for the 945 MW Gennaker project, scheduled to be the largest offshore wind project in the German Baltic Sea once operational.

In total, the pipeline of projects under development amounts to almost 20 GW of additional capacity, so that the installed offshore wind capacity in Germany is expected to exceed 30 GW in 2030. An increase to 40 GW installed capacity by 2035 and to 70 GW installed capacity by 2045 is targeted. Therefore, offshore wind energy will remain a cornerstone for Germany's transition to greenhouse gas neutrality by 2045.

The graphic below illustrates the current development status of offshore wind projects in Germany's territorial waters in the North Sea and the Baltic Sea.

Legislative Amendments

After the amended Offshore Wind Energy Act (*Windenergie auf See Gesetz*, "**WindSeeG**") had substantially revised the legal framework for offshore wind energy in Germany with effect as of 1 January 2023, there have been only selective changes in 2024.

Additional tenders

The amended WindSeeG had introduced an additional annual tender process to increase the frequency for awarding new project rights. For the first time in 2023, the Federal Network Agency (*Bundesnetzagentur*, "**BNetzA**") had launched two separate tender processes in the same calendar year. This pace has been maintained in 2024 as well.

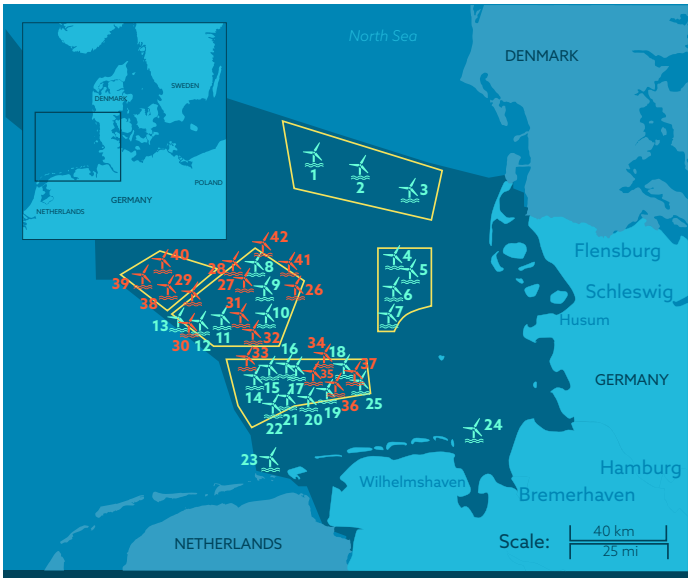
A substantial share of the total capacity available for tender in the relevant year is allocated to a tender process for project rights in areas that have been pre-investigated by the Federal Maritime and Hydrographic Agency (*Bundesamt für Seeschifffahrt und Hydrographie*, "**BSH**") with regard to the area's general suitability and the preliminary compatibility of the project with public interests.

The remaining share of the total capacity is allocated to a tender process for project rights in areas that have not been pre-investigated by BSH. These areas have been preliminary identified as generally suitable for offshore projects in the area development plan (*Flächenentwicklungsplan*, "**FEP**") but will be subject to further examination with regard to potential conflicting public interests after the project rights are awarded.

New tender design

The previous legal framework for offshore wind energy in Germany had been based on the objective of increasing market competitiveness through financial support. Tenders for new projects were designed to determine a guaranteed minimum price for the generated electricity through market premium payments. Recently, tender processes for several projects had ended with more than one bidder offering a market premium of zero and, consequently, project rights had to be awarded by drawing lots.

MAP 6: GERMANY'S OFFSHORE WIND FARMS



Key – North Sea

In Operation | Under Development

1. **Sandbank** - 288 MW
2. **Dan Tysk** - 288 MW
3. **Butendiek** - 288 MW
4. **Amrumbank West** - 302.4 MW
5. **Kaskasi** - 342 MW
6. **Nordsee Ost** - 288 MW
7. **Meerwind Süd | Ost** - 288 MW
8. **EnBW Albatros** - 116.8 MW
9. **Global Tech I** - 400 MW
10. **EnBW Hohe See** - 500 MW
11. **BARD Offshore 1** - 400 MW
12. **Veja Mate** - 400 MW
13. **Deutsche Bucht** - 252 MW
14. **Trianel Windpark Borkum II** - 200 MW
15. **Trianel Windpark Borkum** - 200 MW
16. **Merkur Offshore** - 396 MW
17. **Alpha Ventus** - 60 MW
18. **Gode Wind 2** - 252 MW
19. **Gode Wind 1** - 332.1 MW
20. **Nordsee One** - 332.1 MW
21. **Borkum Riffgrund 1** - 312 MW
22. **Borkum Riffgrund 2** - 450 MW
23. **Riffgat** - 113.4 MW
24. **Nordergründe** - 110.7 MW
25. **Gode Wind 3** - 253 MW
26. **N-11.1** - 2000 MW
27. **N-12.1** - 2000 MW
28. **N-12.2** - 2000 MW
29. **N-6.7** - 270 MW
30. **N-6.6** - 630 MW
31. **EnBW He Dreiht** - 900 MW
32. **Nordlicht 1** - 980 MW
33. **Borkum Riffgrund 3** - 900 MW
34. **Nordseecluster 4** - 480 MW
35. **Nordseecluster 2** - 435 MW
36. **Nordseecluster 3** - 420 MW
37. **Nordseecluster 1** - 225 MW
38. **N-9.1** - 2000 MW
39. **N-9.2** - 2000 MW
40. **N-9.3** - 1500 MW
41. **N-11.2** - 1500 MW
42. **N-12.3** - 1000 MW

Designated Wind Farm Zones

Key – Baltic Sea

In Operation | Under Development

1. **EnBW Baltic 1** - 48.3 MW
2. **EnBW Baltic 2** - 288 MW
3. **Arcadis Ost 1** - 247 MW
4. **Baltic Eagle** - 476.25 MW
5. **Wikinger** - 350 MW
6. **Arkona** - 378 MW
7. **Gennaker** - 927 MW
8. **O-2.2** - 1000 MW
9. **Windanker** - 300 MW

This situation had been addressed in the amended WindSeeG and the reverse auction concept applied in previous tender processes was replaced by a mechanism that allows bidders to offer additional payments as part of their bids.

Earlier drafts of the amended WindSeeG had proposed the use of contracts-for-difference to guarantee the payment of a fixed price determined for each project through the bid prices offered in the tender process. Shortly before the amended WindSeeG was adopted, the contract-for-difference concept foreseen in the draft was abandoned in favor of an option for the introduction of a contracts-for-difference concept in the future.

The revised mechanism in the amended WindSeeG foresees different tender designs applicable to pre-investigated areas and non-pre-investigated areas, respectively.

Pre-investigated areas – beauty contest

Tenders for pre-investigated areas are designed as 'beauty contests' where bids are assessed on the basis of a specific scoring system and in accordance with pre-defined financial and non-financial criteria. The bid price, being a fixed amount that the bidder commits to pay if its bid is successful, accounts for 60% of the total achievable score, and each of the following criteria accounts for 10% of the total achievable score: (i) the share of renewable energy used in the production of the WTGs, (ii) the future electricity amounts for which the bidder has contracted preliminary PPAs with third parties, (iii) the amount of WTGs to be installed without the use of either impulse ramming or heavyweight foundations, and (iv) the bidder's contribution to securing skilled personnel by providing traineeships.

The project rights are awarded to the bidder with the highest overall score. If two or more bidders achieve the same overall score, the offer with the highest initial bid price wins. If the initial bid prices are also identical, the relevant bidders may increase their offers until one bidder has offered the single highest bid price.

In the inaugural beauty contest tenders in August 2023, a total of 1.8 GW of project right had been awarded for a total bid amount of EUR 784 million. These numbers have been surpassed in 2024 with three projects comprising 5.5 GW in capacity having been awarded. Two of these projects with 2 GW each have been won by a joint venture between RWE and TotalEnergies, continuing the growing pattern of major players in the energy sector joining forces for collaborative realization of offshore projects.

Non-pre-investigated areas – dynamic auction

Tenders for projects in non-pre-investigated areas are based solely on financial criteria and apply a modified version of the reverse auction concept. In the initial bid phase, bidders submit their offers for market premium claims. In case two or more zero-bids have been submitted in the initial phase, the second bid phase is designed as a 'dynamic auction' where bidders make payment offers in bidding rounds with

incrementally increasing bid amounts. The dynamic auction starts with a bid price of EUR 30,000 per MW that increases in steps of EUR 15,000 until only one bidder is left.

In the June 2023 tenders, BP was successful in the dynamic auction for two projects with an aggregate capacity of 4 GW, and TotalEnergies also secured two projects with an aggregate capacity of 3 GW. The auctions ended with final bid prices of up to EUR 2,070,000/MW, corresponding to a total of EUR 12.6 billion in payments offered by the successful bidders. In 2024, two projects were up for auction with TotalEnergies having won a 1.5 GW project for close to EUR 2 billion and EnBW having been successful with an EUR 1 billion offer for a 1 GW project. The amounts will be payable over the lifetime of the projects with an initial amount of 10% due within 12 months after the project rights have been awarded. The remaining 90% will be payable in 20 annual instalments after grid connection for the relevant project is completed.

In 2024, the utilization rules for the payments from the 2023 tenders have been changed retroactively so that a part of the revenues will flow into the federal budget to finance the costs of the energy transition.

Permits and grid connection

The amended WindSeeG was supported by several accompanying legislative measures to accelerate the processes for regulatory approvals and to streamline the simultaneous development and construction of offshore wind farms and their corresponding grid connections.

It has been statutorily determined that the construction and operation of renewable energy generation assets is in the overriding public interest and serves public safety. In consequence, renewable energies will generally have priority over diverging public interests.

This overarching principle is expressed throughout the various amendments of relevant legal provisions. For example, environmental assessments of projects and the processes for public participation in permitting proceedings are much more focused and multiple considerations of the same aspects shall be avoided. Further, it will be possible in certain cases to commence construction before the required permit has been granted. In the case of pre-investigated areas, the lengthy and complex planning approval process has been replaced by a more expeditious procedure based on the results of the pre-investigation being binding for the subsequent approval process to a large extent.

TSOs shall commence the construction of an offshore grid connection immediately after the relevant project area has been included in the FEP. Previously, the process was foreseen to start only after the suitability of a project area has been confirmed by BSH after completing the pre-investigation. In particular in relation to grid connection of non-pre-investigated areas, this change will lead to substantially shortened timelines for the grid connection of those offshore wind projects that will be included in the upcoming tender processes.

In 2024, the regulations of the WindSeeG have been further amended to allow for a faster permitting process for projects in areas that have been identified as generally suitable for offshore wind energy generation. For this purpose, the majority of the sites included in the FEP have been designated as "acceleration areas" in accordance with the EU Renewable Energies Directive 2023/2413. Projects in acceleration areas benefit from a substantially faster permitting process and are exempted from the requirement for environmental impact assessments.

Repowering

For the first time, the amended WindSeeG regulates the repowering of existing offshore wind farms. For the replacement of WTGs at the site of an operating offshore wind farm only, a simplified planning process will be required to identify potential adverse effects as a direct consequence of the repowering.

Extended scope of FEP

The FEP specifies the final layout and capacity of project areas as well as the expected timing for commercial operation and inclusion in the tender processes. In addition, the BSH will decide in the FEP whether or not an area shall be pre-investigated and consequently, which tender design will apply.

Additional project areas

In September 2023, BSH has published a preliminary version of the updated FEP for consultation which identifies five additional project areas with an aggregate capacity of 10 GW, scheduled to be tendered between 2025 and 2028.

In the 2024 update to the FEP, new project areas have been identified as suitable for offshore wind energy utilization, increasing the expected aggregated capacity of all designated areas by 24 GW.

Green hydrogen

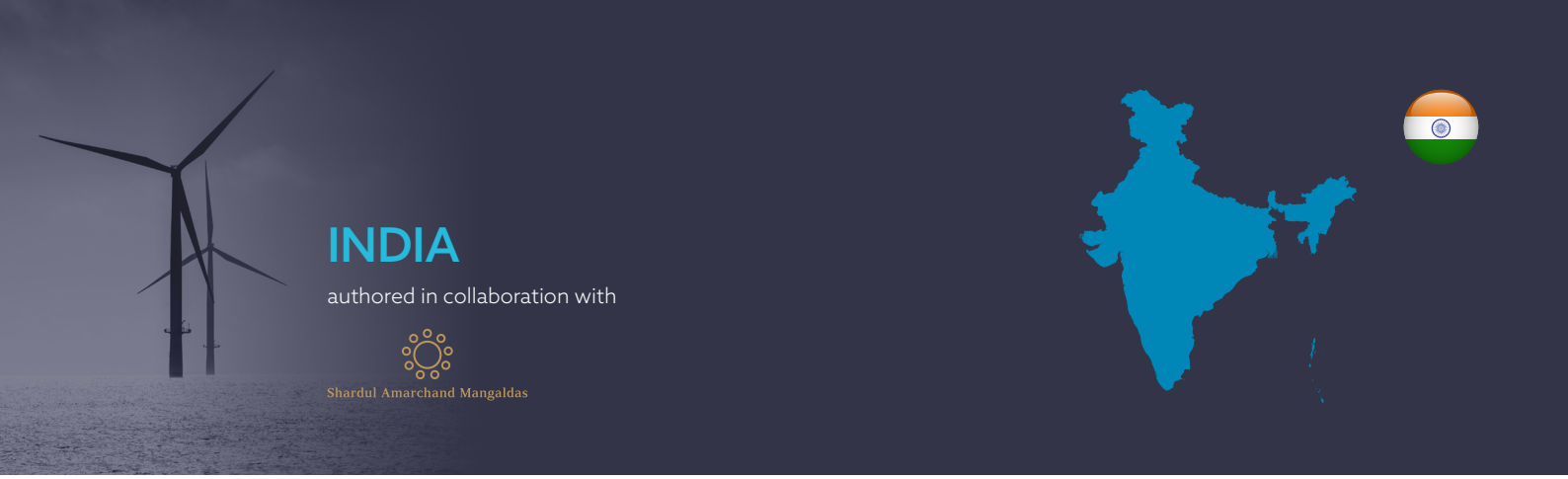
The WindSeeG empowers the Ministry for Economic Affairs and Climate Action to regulate the tender process and support mechanism for the construction and operation of offshore electrolysers. A suitable project area has already been identified and included in the FEP. The initial tender was originally scheduled for 2024 but had to be postponed due to ongoing discussions about the preferred connection concept for the necessary hydrogen pipelines.

Outlook for 2025 and 2026

The growth trend is expected to continue in the coming years:

He Dreiht and Borkum Riffgrund 3, two large-scale projects with a capacity of more than 900 MW each are scheduled to come into operation in 2025 and 2026, respectively.

In the 2025 tenders, three projects with a combined capacity of 4.5 GW will be awarded followed by three more projects with an additional 3.5 GW in the aggregate in the 2026 tenders.



INDIA

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India, with approximately 47.36 GW of installed onshore wind capacity, has attained the fourth position in global wind installed capacities and fourth position globally for overall installed renewable energy capacity, as announced by the Ministry of New and Renewable Energy, Government of India ("**MNRE**") in its year-end review in September 2024. Blessed with a coastline of about 7,600 km (approximately 4,700 miles) and surrounded by water on three sides, the

Indian government is actively pushing towards achieving 30 GW of installed offshore wind capacity by 2030.

Such ambitions are a product of India's large coastline and favourable wind speeds, especially off the coasts of the Indian states of Tamil Nadu and Gujarat, as well as recent reports suggesting that India has the potential for 140 GW of offshore wind by 2050. These excellent wind resources will need to be capitalised on by the Indian government to help alleviate power supply constraints in a country whose energy demand is set to double in the next 20 years, coupled with the fact that India is committed to meet such demand primarily from domestic renewable generation. In the last few years, India has been on the precipice of formally inviting bids for offshore wind projects, a feat finally achieved when the Solar Energy Corporation of India ("**SECI**"), the nodal government agency for offshore wind energy development issued two formal tenders; the first in February 2024, for the allocation of seabed lease rights for 4 GW of offshore wind projects in Tamil Nadu, followed by another tender in September 2024 for the establishment of 500 MW of offshore wind projects in Gujarat.

The Indian government has also announced an official way forward strategy towards achieving its offshore wind goals by 2030; this is, however, not without obstacles, more of which are discussed below.

Tamil Nadu and Gujarat – the First States and International Strategic Alliance

As noted above, the Indian states of Tamil Nadu and Gujarat hold the greatest potential for India's offshore wind industry, with estimates suggesting that these states combined could account for 71 GW of India's offshore wind potential, spread across eight separate designated zones, each. As such, these states are set to be the pioneers in India's nascent offshore wind industry.

An EU Delegation to India, in close cooperation with the MNRE has awarded a EUR 4 million grant to a Global Wind Energy Council-led consortium under the Indo-European Cooperation on Renewable Energy programme (the Facilitating Offshore Wind in India project or "**FOWIND**" project), whose goal is to develop a roadmap for offshore wind development in India, with a specific focus on the states of Gujarat and Tamil Nadu. Renew Power Ventures Private Limited (which is an independent power producer in India) joined the FOWIND project consortium as an industry partner.

The FOWIND project aims to identify zones for development of offshore wind projects through preliminary resources and feasibility assessments, as well as through techno-commercial analysis. To this end, FOWIND has issued various studies that present an outlook for the amount of new offshore wind capacity that can be reliably incorporated into the two state grids, including the regional transmission and distribution networks in a planned manner over the next 10-15 years, and has over this course, published detailed reports on supply chain, ports and logistics, and grid integration, forming the foundation for further development.

India and Denmark have established a joint knowledge hub, the Centre of Excellence for Offshore Wind and Renewable Energy ("**CoE**"), under a partnership between the MNRE and the Danish Energy Agency.

This joint knowledge hub focuses on four pertinent thematic areas: spatial planning and permitting processes, financial frameworks and auction design, grid and supply chain infrastructure, and technical standards to steer innovation. To drive India's transition, various studies and activities have been conducted by the CoE under the aforesaid themes towards strengthening India's capacity to harness its offshore wind potential effectively.

Together, these studies and initiatives under India's partnership and collaborative efforts underscore a comprehensive attempt to lay the groundwork for India's offshore wind energy potential, creating a robust knowledge base to drive India's transition to a sustainable and efficient development of the offshore wind energy ecosystem.

MNRE Strategy Paper

In a formal announcement of the tendering strategy leading up to 2030, the MNRE, on 26 September 2023 issued an official '*Strategy for Establishment of Offshore Wind Energy Projects*' (the "**MNRE Strategy Paper**"). The MNRE Strategy Paper sets out the roadmap for fast-tracking the achievement of 30 GW of offshore wind energy by 2030 with an auction trajectory for bidding out offshore wind energy blocks up to 37 GW. The MNRE Strategy Paper lays down three specific models of project development pursuant to which the Indian government aims to achieve these targets. Briefly, these models or approaches are as follows:

a. **Model A (1 GW):** This model applies to the immediate offshore wind zones for which the MNRE and NIWE have already carried out sufficient studies and surveys that will enable developers to bid and commence the development of offshore wind projects, *e.g.*, the NIWE has carried out investigations for a 365 sq.km seabed sufficient for a 1 GW project capacity on the Gulf of Khambhat, Gujarat. Under this model, for these initial projects, the Indian government will also provide financial assistance (in the form of Viability Gap Funding or "**VGF**"), in order to allow the projects to bridge the gap between the actual tariff determined through competitive bidding and the predetermined power tariffs. The bidding will entail a single bid two-stage process followed by an eReverse Auction ("**e-RA**"), where the e-RA will be based either on the tariff or the VGF amount required to make the project viable. MNRE or a designated agency will issue bids for 0.5 GW capacity each at designated sites off the coasts of Gujarat and Tamil Nadu, where Stage I clearances have already been granted. Successful bidders will enter into lease agreements for 30 years with MNRE's designated agency and a concession agreement, which will include an obligation on the developer to set up and commence operation of the offshore wind farm within four to five years.

b. **Model B (14 GW):** This model focuses on the development of offshore wind energy projects for power sale under open access, captive, or third-party sale arrangements, without VGF support from the Government of India. MNRE or its designated nodal agency will allocate identified offshore wind sites to offshore wind power developers through a competitive bidding process, followed by a single-stage, two-envelope system comprising technical and financial bids, with the financial bid determining lease rentals or site allocation fees starting at a minimum floor price of INR 1 lakh (USD 1,186 approx.) per sq. km per year.

   The successful bidders will be granted a provisional exclusive lease for five years to conduct studies, surveys, and project development, extendable by one year on a case-by-case basis. Pursuant to the study/survey period, the developers must submit a detailed project report and enter a concession agreement with NIWE for the project development and power sale. Upon commissioning, the lease will extend for the project's operational life, with lease fees continuing at the specified floor price. The developers may exit during the initial 5-year lease period if unable to commission the project, subject to relinquishing the lease, depositing acquired data and certain other conditions. As noted, this model targets 14 GW of potential offshore capacity, commencing with the first 4 GW auction in early 2024 and detailed in the sections below.

c. **Model C (22 GW):** Under this approach, developers would identify offshore wind sites within the exclusive economic zones under Model A and Model B, and carry out their studies and surveys. Developers who conduct site-specific studies may propose project development, with a first right of refusal granted during bidding. Proposed offshore wind sites demarcated within these zones would be allocated for a fixed period on an exclusive lease basis through a single-stage two-envelope bidding process, whereby the developer will carry out project development activities. The power generated from such projects will either be used for captive consumption or sold to any entity through a bilateral power purchase agreement ("**PPA**"), or sold through power exchanges. Similar benefits under Model B may also be available to the power developer.

Along with the MNRE Strategy Paper, various other concurrent steps undertaken by the Indian government are currently in motion. A few further examples of such steps are:

a. India's Ministry of External Affairs, in December 2023, notified Offshore Wind Energy Lease Rules, 2023, as amended, which intends to set out the regulatory framework for leasing and operating offshore wind sites within the exclusive economic zone, outlining lease terms, operating conditions, and financial requirements for ensuring efficient resource utilization, orderly development, and decommissioning standards;

b. the MNRE, in September 2024, released guidelines for the implementation of the VGF scheme for offshore wind energy projects, as detailed in the sections below;

c. SECI in 2024, issued Request for Selection ("**RfS**") under Model A and Model B for the development and setting up of the offshore wind power projects in Gujarat and Tamil Nadu, as detailed in the sections below;

d. NIWE is setting up an offshore wind energy test facility in Dhanushkodi, Tamil Nadu, first of its kind in the Asia-Pacific region, with the goal to kick start the national test center by installing the 20 MW wind farm, and two dedicated test pads to perform studies and collect data on the feasibility of large-scale projects.

These developments are welcomed by developers who, although they witness India's offshore wind potential, have so far held back from pursuing offshore wind projects in the country due to the lack of regulatory framework to provide clarity and promote the development of the country's offshore wind projects. Such progress will now push developers to declare their interests in the promising Indian offshore market, with developers now teaming up with local companies to develop offshore wind projects.

A recent example of growing collaboration in India's offshore wind sector came with RWE and Tata Power's joint venture to develop projects in Tamil Nadu and Gujarat. Oil and Natural Gas Corporation, signed on 7 February 2024, a memorandum of understanding with NTPC Green Energy Limited to explore renewable energy projects, including offshore wind, domestically and overseas. Additionally, on 21 May 2024, Venterra Group company, Gavin & Doherty Geosolutions partnered with ABAN Power to accelerate offshore wind development, introducing innovative engineering solutions and enhancing project deployment across India.

SECI's Offshore Wind Tenders

In alignment with the MNRE Strategy Paper, SECI has initiated the offshore wind tender process for the Gujarat and Tamil Nadu states, as specified below:

a. **Gujarat (Model A)[1]:** In September 2024, SECI issued a tender for the development of a 500 MW inter-state transmission system (ISTS)-connected offshore wind power project off the coast of Khambhat in Gujarat (tranche-I) on a build-own-operate basis. The project is eligible for up to INR 8.128 crore (USD 964,399 approx.) per MW in VGF, which will be disbursed in four phases based on project's progress. The developer will be responsible for setting up the project, identifying the land, undertaking surveys, including transmission up to the interconnection point, while Central Transmission Utility will handle the offshore substation infrastructure.

   The developer will be required to pay an annual floor lease fee of INR 1 lakh (USD 1,186 approx.) per sq km for the duration under the 35-year seabed lease, and a concession agreement will be executed for the construction and operation of the wind project. The developer must complete the project within 48 months from the effective date of the PPA. The PPA will have a fixed tariff of INR 4.50/kWh (USD 0.053/kWh approx.) and a 25-year term, with Gujarat Urja Vikas Nigam Limited procuring power on behalf of the state's distribution companies ("**DISCOMs**").

b. **Tamil Nadu (Model B)[2]:** In February 2024, SECI issued a tender for allocating seabed lease rights to develop and operate 4 GW of offshore wind capacity on a build-own-operate basis off the coast of Tamil Nadu in the Gulf of Mannar. The identified blocks will be granted to successful bidders, providing them with exclusive rights to conduct surveys and develop the project. Lease rentals of INR 1 lakh (USD 1,186 approx.) per sq km per year will be payable for seabed use. The developer will undertake activities including seabed surveys, financing, construction, commissioning, operation, maintenance, and decommissioning of the wind farms, and will be responsible for developing the transmission system up to the offshore substation, securing approvals etc.

   The power evacuation responsibilities will be shared, with the developer managing transmission from the offshore wind farm to the offshore substation, and the Central Transmission Utility constructing evacuation infrastructure from the offshore pooling substation to the onshore grid. The energy generated from the project can be used by the developer for captive purposes, sold through power exchanges, or via bilateral agreements. The developers will benefit from government provisions such as waived transmission charges, renewable energy credits, and carbon credits as applicable.

   The key agreements include the agreement to lease, under which MNRE outlines the seabed description, and required preconditions for granting the lease. Upon meeting these conditions, a seabed lease deed will be executed, allowing the developer to proceed with preparation of detailed project reports and subsequently for construction activities. Thereafter, a concession agreement for a 35-year term will be executed, setting out obligations of the developer to undertake design, finance, build, and operate the project within the timelines.

According to the study initialed by NTPC on offshore wind development in India, the Levelized Cost of Energy ("LCoE") for Tamil Nadu and Gujarat currently exceeds that of established global markets. Tamil Nadu's LCoE aligns closely with Taiwan, an emerging market characterized by high wind-speed sites, while Gujarat's LCoE is comparable to South Korea, another emerging market with predominantly low wind-speed sites. In the long term, Tamil Nadu's LCoE for high wind-speed sites holds the potential to converge with the lower LCoEs observed in European markets, which are benchmarks for mature offshore wind sectors.

Government Support

One of the key challenges holding back India's offshore wind industry is a lack of clear and focused governmental financial support for the sector. This stems from the fact that India has abundant space and favourable conditions for a thriving onshore solar and wind industry, which are both relatively much cheaper to develop (and therefore support) than their offshore counterpart. The flip side to this is that the Indian government is already well-versed in providing financial support mechanisms in support of the country's renewable power industry, so their implementation should be relatively straightforward. The Indian government over the last two years has been showcasing its commitment for ensuring a successful offshore wind sector, as can be seen with the announcement of VGF assistance, subsidy and exemptions for specified models under the MNRE Strategy Paper, amongst others.

MNRE, on 11 September 2024, unveiled comprehensive guidelines for implementing the VGF to boost offshore wind energy projects, allocating a substantial budget of INR 7,453 crore (USD 882,333,093 approx.). This allocation includes INR 6,853 crore (USD 811,301,635 approx.) for the development of 1 GW of offshore wind energy capacity (500 MW each off the coasts of Gujarat and Tamil Nadu) and INR 600 crore (USD 7,103,0673 approx.) for upgrading port logistics. The MNRE will oversee the scheme, with SECI being responsible for handling applications, awarding projects, disbursing funds, and tracking progress. Designed to support projects until 2031–32, the scheme mandates that bidders possess prior experience in offshore wind projects and meet the financial criteria. MNRE will also work closely with other government ministries to address interdependencies, with the Ministry of Ports, Shipping and Waterways tasked with ensuring port infrastructure readiness for offshore wind development. This initiative aims for India to transition to clean energy, significantly reducing the cost of offshore wind power and making it a viable option for the DISCOMs.

1. For further details regarding the RfS and tender documents, please refer the link: https://www.seci.co.in/whats-new-detail/2799.
2. For further details regarding the RfS and tender documents, please refer the link: https://www.seci.co.in/whats-new-detail/2606.

As the sector matures, private financing is expected to increase, aligning with global trends in offshore wind markets like Europe. Further, green bonds, sustainable finance mechanisms, and enhanced participation by foreign institutional investors and development banks will further accelerate this transition. To ensure availability of low-cost funds for renewable energy projects, in September 2024, the Reserve Bank of India announced its plans to issue INR 20,000 crores (USD 2,367,726,000 approx.) in sovereign green bonds in four equal tranches during the second half of fiscal year 2024-25, which will aim to support projects in sectors such as climate change, renewable energy and clean transportation.

Proponents of India's offshore wind industry argue that the Indian government should not be deterred by such relatively high initial support costs, as the cost to develop and construct the country's offshore wind projects should fall exponentially over time (together with the required level of support) as a result of using the country's strong existing manufacturing base for renewable technologies, such as the use of existing onshore turbine manufacturing plants to manufacture offshore turbines. According to the most recent data from MNRE, the wind energy technology in India has advanced rapidly, with state-of-the-art technologies and innovations now available for manufacturing wind turbines up to 5.2 MW with more than 12 companies offering over 30 different turbine models. MNRE has also put in place a procedure to enlist type- and quality-certified wind turbines. Additionally, the Indian government is also planning to introduce a production-linked incentive scheme to promote the domestic manufacturing of offshore wind turbines.

Last year, MNRE also announced that evacuation and transmission of power from the offshore substation to onshore transmission will be provided free of cost for all offshore wind projects that are built before 2030. This will be built by the state-owned Power Grid Corporation of India and the Indian government will build the export cable from the onshore substation to the offshore substation. The developers of these projects are also allowed to sell power to any company in India, along with other benefits that the Indian government may implement from time to time, such as carbon credits and renewable energy credits.

In view of providing tax benefits for developers, the Indian government has also proposed that concessional customs duty on the import of critical components for manufacturing wind turbines will be extended for the manufacturing of wind turbine generators, including raw materials for blades of wind turbines, until March 2025.

The Indian government's policy permitting foreign direct investment also acts as a significant advantage to investors, as this eliminates the need for any prior governmental approval, fostering ease of doing business and confidence in the market.

Permitting and Consents

A challenge developers in the past have generally faced is having to navigate India's cumbersome permitting and consent process. This has been anticipated under the NOWEP, where the NIWE has been identified as the body responsible for administering the key required consents and permits to develop an offshore wind farm. The MNRE through the MNRE Strategy Paper has provided a responsibility matrix identifying institutions responsible for various activities (including for clearances) in the project development phases, which is a welcomed step.

In respect to the tenders issued by SECI for wind projects to be developed in Gujarat and Tamil Nadu, the NIWE has already secured Stage I clearances from key central ministries and departments. Stage II clearances, however, are retained as the responsibility of the developer and will involve obtaining additional approvals from various authorities such as for environmental impact assessment and coastal regulation zone from the Ministry of Environment Forests & Climate Change, the development of the project within the maritime zones from the Ministry of External Affairs, the operations outside subsea communication cable zones from the Department of Telecommunications, amongst others. To assist developers, NIWE will play an active facilitation role in coordinating with the respective ministries and departments to streamline the process of obtaining these Stage II clearances. This proactive involvement by the government will reduce procedural challenges that otherwise would have caused the developers of the project to suffer, subsequently resulting in prolonged delays.

Although located offshore, and therefore not likely to receive objections based on first visual appearances, the states of Gujarat and Tamil Nadu, where the core of India's offshore wind farms are proposed to be located are also the country's key fishing grounds. Therefore, the deployment of wind power plants can be stymied by the fishing industry for reasons such as impact on changes in fish habitat, restricted fishing access, increased competition within a smaller sea area, etc. As seen in other countries where there is an interplay between the fishing and offshore wind industries, developers will be keen to engage with local stakeholders from an early stage, including fishing associations to obtain their engagement and buy-in, so as to avoid any protests and port blockades during the construction and operation of the project.

Grid Infrastructure

As has already been seen in respect of renewables projects located in certain Indian states, grid infrastructure and 'State Load Dispatch Centres' struggle to absorb increased intermittent loads received from renewable energy projects, with curtailment already an issue, which developers of onshore renewables projects face on an intermittent basis. Given the increased power potential of offshore wind farms, compared to their onshore cousins, this is a tangible risk that will need to be addressed.

The associated problem with this is that the DISCOMS that are responsible for building and upgrading the country's grid infrastructure are not profitable and so do not have the funds required to make such upgrades. Some of the reasons for the DISCOMS' underperformance are recurring issues of high billing and collection inefficiency, low tariffs, huge aggregate technical and commercial losses, poor maintenance and outdated networks. The Indian government has put in place several reform schemes to strengthen the DISCOMS such as a financial restructuring package to prevent the DISCOMS from becoming non-performing assets. These DISCOMS are responsible for buying and offtaking the power produced from the country's offshore wind farms, however, given that power generated from offshore wind projects may be relatively more expensive than onshore sources, such purchase of offtake would need to be subsidised by the Indian or local state governments, as there are no expectations for this incremental cost to be passed on to the end consumer. That said, the introduction of VGF by the Indian government is a positive step towards making offshore wind power financially viable for DISCOMs.

The developers will be mindful that, at present, there is no policy or statutory framework for the delivery and ownership of offshore transmission systems in India, nor any framework for the planning of offshore transmission infrastructure. However, under the India-Denmark strategic partnership, several studies and reports have been released, serving as foundational resources for stakeholders, providing benchmark methodologies for transmission system planning, including cost estimation, timelines, and requirements for power evacuation infrastructure for developing offshore wind farms off the coasts of Gujarat and Tamil Nadu.

Corporate Power Purchase Agreements

Additionally, India is an emerging market for corporate power purchase agreements ("**CPPAs**"). This appetite is largely driven as a result of rising electricity tariffs and commercial consumers' corporate sustainability goals. The growing demand for CPPAs offers a promising avenue for developers of offshore wind projects to diversify and strengthen their revenue streams. Leveraging CPPAs allows the developers and consumers to enter into commercially curated agreements which align financial objectives for all stakeholders while balancing actual power demand and supply, and simultaneously advancing renewable energy sustainability goals.

The appetite from the Indian government to provide direct financial support and develop the offshore wind market is steadily increasing, which is evident by its initiatives in the upcoming bids and potential VGF funding. This supportive stance, combined with the India's proven track record in successfully implementing public-private-partnership models across sectors like highways, airports, and solar energy, may also likely be seen to be explored in the offshore wind energy sector in the long-run.

Greener Goals

Given India's strong offshore wind ambitions, it is no surprise that the country has equally strong green hydrogen goals, with the Indian government recently announcing a target of producing five million tonnes of green hydrogen annually by 2030. Indeed, in January 2023, the Indian government announced that it intends to further collaborate with the International Renewable Energy Agency to spearhead the country's renewables and green hydrogen growth. The Indian government earlier this year announced the National Green Hydrogen Mission (the "**Mission**") with the overarching objective of making India the global hub for production, usage and export of green hydrogen and its derivatives. The initial outlay for the Mission will be INR 197.44 billion (USD 2,337,339,775 approx.). MNRE will formulate the scheme guidelines for the implementation of the respective components. The MNRE in its press release stated that the Mission will result in the following likely outcomes by 2030:

a. development of green hydrogen production capacity of at least 5 MMT (Million Metric Tonne) per annum with an associated renewable energy capacity addition of about 125 GW in the country;

b. over INR 8,000 billion (USD 94,705,840,000 approx.) in total investments;

c. cumulative reduction in fossil fuel imports over INR 1,000 billion (USD 11,838,228,200 approx.); and

d. abatement of nearly 50 MMT of annual greenhouse gas emissions.

Over the past year, India has made significant strides in the green hydrogen sector, highlighted by the launch of the Strategic Interventions for Green Hydrogen Transition (SIGHT) program, which includes a USD 2.1 billion financial incentive for green hydrogen production and electrolyser manufacturing. The sectoral scheme guidelines issued by MNRE outlining budgetary outlays supports the development of hydrogen testing facilities, hydrogen hubs, R&D, and pilot projects in the shipping and steel sectors. Further, MNRE has also introduced the draft Gas Cylinders (Amendment) Rules, 2024, and the draft Green Hydrogen Certification Program to standardize production and safety. The public sector players such as Bharat Petroleum Corporation and Indian Oil Corporation have also announced major joint ventures and tenders, further driving the sector's growth.

Conclusion

Evidently, India's offshore wind potential is immense, and the increasing participation being seen by various institutions is heartening. While initial steps, such as the tenders issued by SECI for offshore wind projects, demonstrate India's commitment to expanding its renewable energy capacity as part of its climate neutrality goal by 2070, the next decade remains crucial in addressing emerging challenges and adapting strategies. The Indian government's consistent support, as reflected in the steps discussed above, underscores its determination to unlock the sector's vast potential and position it for scalable growth in the years to come. Achieving the 2030 target of 30 GW, while ambitious, will be a key driver for accelerated action. The success however hinges on continued government support, steady stakeholder participation, and proactive monitoring to resolve challenges during this vital first decade. Once the first offshore wind projects are commissioned, they are expected to significantly bolster investor confidence, serving as a testament to the sector's viability and paving the way for greater private sector engagement. India's progress in this sector will not only help meet the growing power demands of the country but also create a robust ecosystem for renewable energy supply. With the right strategies, strong collaboration, and sustained focus, India can lay a strong foundation for offshore wind development, achieve its capacity targets, and firmly establish itself as a major player in the offshore wind energy market.

IRELAND

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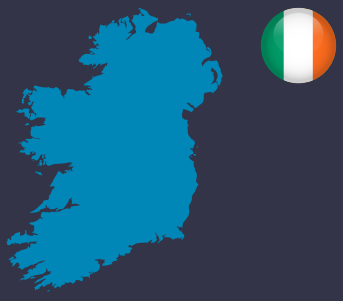

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From Big Potential to Reality

The Irish government has ambitious targets to install 5GW of offshore wind by 2030, an additional 2GW of offshore wind earmarked specifically for green hydrogen production and the goal of increasing offshore wind installed capacity to 37 GW by 2050.

2024 marked another important year for offshore wind development in Ireland. Building on the significant milestones achieved in 2023, with the granting of the first Maritime Area Consents ("**MAC**") and the announcement of 3.1GW of offshore wind projects being awarded long-term revenue contracts in the first Offshore Renewable Electricity Support Scheme auction ("**ORESS 1**"), 2024 brought the submission of the planning applications for a number of the Phase 1 Projects, an update to the applicable rules to allow two projects that were unsuccessful in ORESS 1 to obtain an alternative route to market via corporate power purchase agreements ("**CPPAs**"), further developments to Ireland's offshore wind regime as it moves to a plan-led model and the announcement of new offshore wind auctions due to take place in 2025.

Delivering on a Legislative Wave

Since the introduction of the Maritime Area Planning Act (the "**Act**") in December 2021, six projects (the so called "**Phase 1 Projects**") have received a MAC to allow for the occupation of a specified part of the maritime area. The MACs, issued on 23 December 2022, allow those projects to apply for a development permit from An Bord Pleanála (Ireland's national independent planning body). The award of a MAC also enabled the Phase 1 Projects to participate in ORESS 1 (see more details below).

The Irish Government has also formally established the Maritime Area Regulatory Authority ("**MARA**") on 17 July 2023. MARA is a new dedicated regulatory authority for the maritime area, established under the Act and is a significant step in establishing the enduring regulatory framework for the development of offshore wind projects in Ireland.

Phase 1 Projects

There are several offshore wind projects which initially commenced development under the previous legislative framework (which was established under the Foreshore Act 1933). Under the Act, these projects now benefit from a transitional protocol in the new marine planning process. These Phase 1 Projects, which have a combined capacity totalling approximately 3.5GW, have been afforded a 'fast-track' into the MAC procedure (discussed above) and were entitled to participate in ORESS 1 (see below). The Phase 1 Projects (as also detailed in Map xxx) are:

1. Oriel Wind Park;
2. Dublin Array;
3. Codling Wind Park - Codling I;
4. Codling Wind Park - Codling II;
5. Sceirde Rocks;
6. North Irish Sea Array; and
7. Arklow Bank Wind Park Phase 2.

In 2024, Oriel Wind Park, Arklow Bank Wind Park Phase 2, North Irish Sea Array and Codling Wind Park submitted planning applications to An Bord Pleanála. These applications are currently under consideration by An Bord Pleanála and decisions are expected in 2025

Route to Market: ORESS 1 Auction Results

History was made with the running of ORESS 1 in May 2023. ORESS 1 allowed developers to bid for a two-way, partially indexed, floating Feed-in Premium ("**FIP**"), with the lowest offer price being successful and subject to a ceiling price. ORESS 1 was structured as a 'pay-as-bid' auction and will operate similarly to the U.K.'s Contract-for-Difference regime, with the Public Service Obligation (a duty charged to all electricity customers in Ireland) making up any shortfall in the price of electricity from the strike price under the FIP and the generator paying any excess monies received above the strike price to the Public Service Obligation. ORESS 1 support will be granted for up to 20 years.

On 14 June 2023, EirGrid announced the final results of ORESS 1 and the following four projects were successful:

No.	Project	Offer Quantity
1.	North Irish Sea Array (NISA)	500 MW
2.	Dublin Array	824 MW
3.	Codling Wind Park	1,300 MW
4.	Sceirde Rocks Offshore Wind Farm	450 MW
	TOTAL	**3,074 MW**

With the auction having procured total capacity of more than 3GW, the average clearing price was just €86/MWh.

ORESS 1 was held before the Phase 1 Projects had secured development consent. Therefore, the Phase 1 Projects will now need to secure development consent before proceeding to construction.

Alternative Routes to Market

Phase 1 Projects that were not successful in the ORESS 1 still have an opportunity to be delivered through an alternative (*i.e.*, 'unsupported') route to market. In a decision on 6 December 2023, the Commission for Regulation of Utilities ("**CRU**") confirmed that those projects (which the CRU terms the "**Merchant Phase 1 Projects**") can retain their entitlement to grid connection access subject to securing an alternative route to market for the project within specified time periods. In line with that decision, the Merchant Phase 1 Projects submitted their declarations of route to market or intention to obtain a route to market in June 2024.

This is an encouraging development for the wider offshore industry as it gives the potential for future offshore wind projects to be delivered utilising an alternative route to market (such as CPPAs).

Building on the Wave – Phase 2

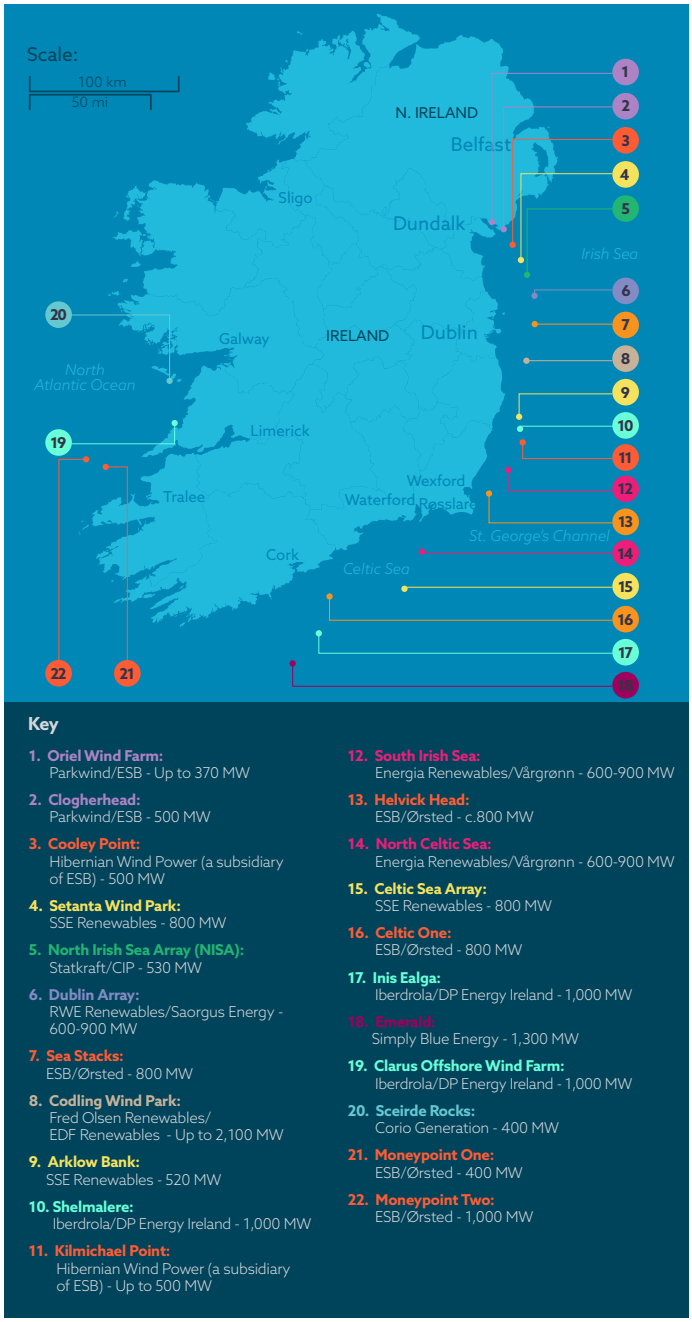
Having procured just over 3GW of capacity through ORESS 1, it is clear that additional offshore capacity will be needed to meet the Irish Government's 5GW target of installed capacity by 2030. The Irish Government, system operators and regulators have therefore turned their attention toward delivering the remaining capacity required to meet these targets during Phase 2.

The approach to Phase 2 projects marks an important change from the developer-led approach adopted for projects during Phase 1 as the Irish Government moves towards an enduring plan-led approach involving greater State involvement in the sustainable development of the offshore wind sector in Ireland. It also brings forward the next Offshore Renewable Electricity Support Scheme auction ("**ORESS 2**") to the first step in the process. Successful applicants in ORESS 2 will then make their MAC applications.

There were a number of important milestones achieved during 2024 which give greater clarity and certainty on the capacity, timing and terms and conditions for Phase 2:

- In October 2024, the South Coast Designated Maritime Area Plan ("**DMAP**") for Phase 2 was published. The DMAP is the first sub-national, forward maritime spatial plan for offshore wind in Ireland and underpins the move towards a plan-led approach to offshore wind development in Ireland for Phase 2 (as compared to the developer-led approach adopted for Phase 1).
- The terms and conditions for the first Phase 2 auction, which relates to the 900MW Tonn Nua project, have been published and the auction is set to take place in early 2025.
- The Irish government also announced a second auction under Phase 2, which relates to the Li Ban project, which has a capacity of between 1GW and 1.5GW and which is due to take place in the second half of 2025.

MAP 7: A SAMPLE OF IRELAND'S OFFSHORE WIND PROJECTS



Conclusion

2024 has seen significant progress in Ireland's offshore wind journey. With the Phase 1 Projects entering the planning system, there is a real sense that offshore wind is moving towards the delivery phase in Ireland.

With the emergence of the regulatory framework for Phase 2, and auctions for two new projects set to take place in 2025 (with a combined capacity of between 2GW and 2.4GW), Ireland is on the right track to deliver its goal of 5GW of offshore wind capacity by 2030.

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The Current Stage of Development of Offshore Wind in Italy

While at the global level the installed capacity produced by offshore wind plants is significantly and steadily growing, Italy is still struggling to advance its offshore wind production, with there currently only being 30 MW of installed offshore wind capacity in the country. However, Italy has large ambitions and in the Integrated National Energy and Climate Plan 2030 ("*Piano Nazionale Integrato per l'Energia e per il Clima 2030*" or "**PNIEC 2030**"), sent to the European Commission on 3 July 2024, Italy has set a goal of having 2.1 GW of installed offshore wind capacity by 2030.

Though the practical feasibility of large-scale offshore wind projects in Italy remains unclear due to the regulatory framework, the intentions and ambitions of the market operators seem to go in the same direction of the PNIEC, and actually beyond it: in fact, between 2020 and 2023, the amount of requests for a grid connection ("*Soluzione Tecnica Minima Generale*" or "**STMG**") to the Italian TSO Terna S.p.A. ("**Terna**"), in relation to offshore wind projects, have increased by 19 times, for a total of 139 requests and 90 GW[1].

2. Licensing

Italian legislation provides for a complex procedure in order to authorise an offshore wind project in Italian waters, involving several sub-procedures each dedicated to evaluating specific aspects of a proposed project: environmental impact, issues concerning maritime public property and matters directly related to energy production[2].

2.1. Environmental profiles

Offshore wind projects are required to undergo an Environmental Impact Assessment ("**EIA**") at state level[3], which shall be filed with the Ministry for the Environment and Energy Security ("*Ministero dell'Ambiente e della Sicurezza Energetica*" or "**MASE**").

In addition to the state EIA approval, national EIA approval will also be required, which is carried out by the Technical Committee for the PNRR-PNIEC[4]. However, such approvals can take some time. For example, the "7Seas Med" offshore project submitted its EIA application on 21 January 2022 but only obtained a positive EIA decree on 21 March 2024. Though the timings for the issuance of the EIA decision are uncertain and may turn out to be long, it is worth noting that more recently (following the procedure carried out by 7Seas Med S.r.l.), there seems to have been an improvement in the management of timelines by the relevant authorities.

It may also be necessary to obtain other environmental authorisations or ways of leave[5], which can be obtained, together with the EIA approval, in a single environmental procedure ("*Procedimento Unico in materia Ambientale*" or "**PUA**")[6,7]. This may be a more efficient route for developers looking to develop offshore wind projects in Italian waters.

2.2. Permitting profiles

While the EIA and the PUA procedures provide an assessment on the environmental aspects of an offshore wind project, they do not include an authorisation to the construction and operation of the offshore wind project. The construction and operation of offshore wind projects—and their interconnection works—are authorised by means of a single authorisation ("*Autorizzazione Unica*" or "**AU**")[8]. The intention of the AU is to obtain the issuance of all necessary permits, ways of leave, and opinions by the involved authorities in a single authorisation, which also includes the concession for water use ("*concessione demaniale marittima*"[9]).

Note that the above-mentioned concession for water use refers to the use of the territorial sea. For offshore wind projects located beyond territorial waters on the 'Continental Platform' ("*Piattaforma Continentale*"), such projects will need to obtain a public concession issued by the Maritime Administration ("*Amministrazione Marittima*")[10].

The authorization procedure can be concluded only once the environmental procedure (see above, section "2.1. Environmental profiles") has been positively concluded.

1. Report "*Finalmente offshore*" by Legambiente, dated 2024, and based on Terna's map (Econnextion) of requests for STMGs.
2. The Administrative Court of Molise Region made a thorough reconstruction of the different procedures (TAR Molise – Campobasso, I sec., no. 992/2011).
3. Pursuant to Article 23 and point *7-bis*) of Annex II of Part II, of Legislative Decree 152/2006.
4. In fact, offshore wind projects are included within the projects that are subject to the opinion of the Technical Committee for the PNRR-PNIEC pursuant to Article 8, paragraph 2-bis, of Legislative Decree 152/2006, since they are included in the list contained at Annex I-bis of Part II of Legislative Decree 152/2006.
5. For instance, the authorization to seabed disposal of material from excavation activities and to the installation of cables and pipelines at sea, regulated at Article 109 of Legislative Decree 152/2006, and referenced in lett. c) of Article 27, paragraph 2, as one of the additional environmental permits that can be obtained in the context of the PUA.
6. Pursuant to Article 27 of Legislative Decree 152/2006.
7. Listed at paragraph 2 of Article 27 of Legislative Decree 152/2006.
8. Pursuant to Article 12, paragraph 3, of Legislative Decree 387/2003.
9. Described at Article 36 of the so-called Navigation Code ("*Codice della Navigazione*," R.D. no. 327/1942).
10. As prescribed by Article 2, paragraph 5, of Law no. 613/1967 (exempted from being repealed by Article 1, paragraph 1 of Legislative Decree 179/2009), which refers to the Navigation Code, as applicable.

3. The Maritime Space Management Plans ("Piani di Gestione dello Spazio Marittimo")

Three 'Maritime Space Management Plans' have been provisionally developed and approved by the MIT for the use of sea area in (i) the Adriatic sea, (ii) the Tyrrhenian-West Mediterranean sea, (iii) the Ionian-Central Mediterranean sea. These plans divide the sea into specific parts and regulate the activities that can be carried out in each specific portion of that sea area. However, such plans are to be regarded as a general guideline, and do include a detailed identification of the suitable or unsuitable areas for the installation of offshore wind projects. It will be up to the MASE and the MIC to define these areas, as well as to implement detailed guidelines on the environmental and landscape impact of projects located in these areas.

4. Incentives: the FER 2 Decree

On 19 June 2024, the Italian government signed the so-called "FER 2" decree, aimed at supporting the production of renewable energy from innovative plants or plants with high generation costs, such as, *inter alia*, offshore wind projects (the "**FER 2 Decree**"). The FER 2 Decree came into effect on 13 August 2024 and provides for participation through auctions, which will be held between 2024 and 2028 (after which the FER 2 Decree will cease to apply).

We have summarised below the main relevant information and requirements related to access and participation to the FER 2 Decree auctions for offshore wind projects:

i. **Outline:** In order to apply to a FER 2 auction, the project should not have started any construction activity. Following the publication of the auction's results, the project shall enter into operation within 60 months: failure to comply with the deadline will result in the project not obtaining any incentive under the relevant auction (see below). The tariff will be awarded only when the project has successfully entered into operation within the prescribed timelines.

ii. **Total assigned capacity:** 3.8 GW, for all auctions to be held between 2024 and 2028. For offshore wind projects, at least three auctions will be carried out between 2024-2028. If the *Gestore dei Servizi Energetici* (or "**GSE**") verifies that the incentive mechanism is wholly or partially unnecessary or insufficient, the overall available capacity may be adjusted (it can be increased or decreased, as the case may be) upon occurrence of certain events. Please note that the application of such provision is not clear; in particular, it does not clarify, among others, the application criteria of an increase/decrease of the total assigned capacity and the relevant consequences.

iii. **Deadline for applying:** 60 days from the publication of the auction notice.

iv. **Requirements[11]:** in order to be eligible under the FER 2 Decree, an offshore wind project shall:

   a. have commenced construction works after the publication of the ranking list (the "*graduatoria,*" which lists all the projects that have ranked in a useful position for the obtainment of the incentives). NOTE: date of commencement of work ("*data di avvio lavori*") means the date of the first commitment ("*prima obbligazione*") making the investment irreversible, such as the "first order related to the purchase of the equipment's for carrying out the intervention." From the definition of first commitment, the expenses related to preliminary activities such as, by way of example, "those related to permits and feasibility studies"[12], shall be excluded;

   b. have obtained the AU or, alternatively, a positive EIA, if and when required;

   c. have obtained and accepted the connection solution from the competent grid operator; and

   d. if the offshore wind project is on fixed foundations, be located at a minimum distance of 12 nautical miles from the coast.

v. **Tariff:** Euro 185/MWh for the year 2024, subject to a yearly 3% reduction for the following years[13].

vi. **Tariff calculation methods:** for offshore wind projects with a capacity up to 300 kW[14], the GSE directly purchases the electricity and disburses an all-inclusive tariff ("*tariffa onnicomprensiva*"). For offshore wind projects with a capacity higher than 300 kW, or for those with a capacity up to 300 kW that apply for it, the electricity produced remains at the disposal of the generator, who can sell it on into the market, and the incentive is instead calculated based on a two-way contract for difference: the GSE calculates the difference between the tariff and the hourly zonal price, and:

   a. if this difference is positive, the incentive is granted with the addition of a premium tariff equal to the aforementioned difference on the net production fed into the grid;

   b. if this difference is negative, the amount is deducted from the tariff or requested to the generator.

11. In this regard, the FER 2 Decree provides for an accelerated assessment for projects with a capacity of more than 10 MW: upon request of the applicant, to be submitted along with the AU application, the GSE examines the project in parallel with the AU procedure. Within 30 days of the issuance of the AU decree, the GSE provides a qualification certifying the project's eligibility for incentives; projects deemed eligible and participating in the first available procedure are only required to submit their tariff reduction offer. To streamline operations, the GSE may also execute agreements with the authorities responsible for the issuance of the AU in order to promote efficient document sharing and project analysis.
12. Considering that the same prescription is included also with respect to the tariff scheme for biomethane production, on 21 April 2023 the GSE published a FAQ clarifying that the execution of a supply contract related to the biomethane project does not constitute a first serious commitment provided that the "*validity of the contract is conditioned to admission in a useful position in a ranking published by the GSE pursuant to the Decree.*" We expect that such position will be followed also with respect to the Fer 2 Decree.

    Based on a clarification sent by the GSE to another supplier (through its personal GSE user account) always with respect to the biomethane decree, the latter pointed out that, even if the applicant executed a supply agreement whose validity is conditioned to the successful admission in the ranking, "*the payment of costs related to the authorized project constitutes a commencement of the construction works; therefore also down-payments occurred before the relevant admission in the ranking cause the forfeiture (decadenza) of the right to access to the incentives under the decree.*"
13. For plants with a capacity up to 300 kW, the 3% yearly reduction will start applying from 2026.
14. Starting from 1 January 2026, the threshold will be reduced to 200 kW.

vii. **Priority criteria:** the ranking list takes into account the percentage reduction on the reference tariff submitted by the applicants. If the number of applications exceeds the capacity allocated for the specific auction, the GSE applies the following additional priority criteria:

   a. plants to be located on suitable areas under Articles 20 and 23 of Legislative Decree no. 199/2021;

   b. the earlier completion date of the application submission.

viii. **Timings for the entry in operation[15]:** 60 months from the publication of the ranking list (net of any suspension of the construction works of the offshore wind project and connection works due to force majeure causes). Failure to comply with the above-mentioned deadline will result in a tariff reduction equal to 0.5% for each month of delay, up to a maximum of nine months. After nine months, the GSE declares the forfeiture from the ranking list. Consequently, since the projects receive the incentives from the date of commercial entry into operation, in the event that a project fails to comply with the deadline for the entry into operation, it does not obtain any incentive under the relevant auction. If the project subsequently reapplies into a separate auction, a tariff reduction equal to 20% will apply[16].

iii. **Duration of the incentives:** 25 years from the entry into operation of the project (*i.e.*, the project has recorded power export in Terna's GAUDI system), net of any suspensions (a) due to *force majeure* causes or (b) due to modernisation and upgrading works brought to the project.

Operational guidelines, setting out how a developer can benefit from the FER 2 Decree, detailing, *inter alia*, schedules for the tender procedures, obligations of the applicants, form of agreements, monitoring procedures and the costs for the applicants were published on 11 December 2024.

5. Authorised offshore wind projects in Italy and projects under authorisation

As of November 2024, 87 offshore wind projects are currently in the process of obtaining their necessary permits. However, only three offshore wind projects have positively concluded the EIA procedure, and therefore hold the necessary permit for the participation to the auctions of the FER 2 Decree. These are (i) the "7Seas Med" project, to be installed in Sicily Region, which has an envisaged capacity equal to 250 MW, (ii) the "Agnes" project, to be installed in Emilia-Romagna Region, with a capacity equal to 600 MW, and (iii) the "Energia Wind 2020" project, also in Emilia-Romagna Region, and with a capacity equal to 330 MW.

15. Entry in operation means date on which, upon completion of the construction of the works necessary for the operation of the plant, the plant is first operated in parallel with the electrical system, as recorded in the Unique Production Plant Registry (GAUDÌ) established by ARERA Resolution ARG/elt 124/10.
16. This can be avoided by notifying the GSE, within 12 months of the publication of the ranking list, of the decision to forgo the project.

JAPAN

Authored by Minako Wakabayashi (Orrick), Gohshun Kawamura (Orrick) and Naoyuki Fukuda (Orrick) – refer to page 123 for contact details.

Offshore Wind Promotion Act

Japan has installed approximately 6.1 GW of wind power as of 31 March 2024; however, approximately only 0.3 GW of that total relates to offshore wind. That said, developers and industry investors see great potential in Japanese offshore wind, as the era of offshore wind has just started in Japan, with the consortiums for the development of the first four promotion areas having been selected in 2021. The successful developers were chosen through the public bidding process pursuant to the Act for Promoting Utilisation of Sea Areas in Development of Power Generation Facilities Using Maritime Renewable Energy Resources (the "**Maritime Renewable Energy Act**"), which came into effect on 1 April 2019.

In Japan, for sponsors looking to develop potential offshore wind projects in the country's general sea areas (outer sea areas) located in its territorial waters, such projects are selected through a bidding process conducted by the national government pursuant to the Maritime Renewable Energy Act. Whereas, for those for potential projects to be located in port areas or fishery port areas, these are selected by the relevant local authority (the selection process can be a public bidding process conducted pursuant to laws other than the Maritime Renewable Energy Act). Development of projects in port areas precede that of larger projects in general sea areas. Although there have been some pilot projects, in December 2022 and January 2023, Japan saw the first commercial-scale offshore wind projects in the port areas of Akita Prefecture (54.6 MW in the Akita Port Area and 84 MW in the Noshiro Port Area) begin operating. Several other projects are also underway in port areas.

As noted, the larger and more commercial opportunity for sponsors is to develop offshore wind projects in the general sea areas. The Maritime Renewable Energy Act enables projects to exclusively utilise a designated general sea area for up to 30 years (or more if extended). Under the Maritime Renewable Energy Act sites for the development of offshore wind projects are divided into three types of areas: (1) promotion areas, (2) prospective areas, and (3) preliminary areas. "Promotion areas" are designated annually by the Japanese government. Developers are able to bid, through a public-bidding process set by the government, to develop such areas. The bidding guidelines set by the government are updated each bidding round. Selection is based on the evaluation of both the price competitiveness and the feasibility of a developer's project plan, with successful bidders obtaining an exclusive right to use the awarded promotion area for 30 years to develop and operate an offshore wind farm and benefit from a FiT or a FiP (see below). In addition to the designated promotion areas, so that the market and developers can see the pipeline for potential future projects, the government also, from time to time, announces "prospective areas" that are expected to be designated as "promotion areas" in the future after coordination with the local stakeholders, as well as "preliminary areas" that are expected to be elevated to "prospective areas" in the future. So far, Japan has designated 10 promotion areas, for which bidders competed in the first three rounds of the public bidding under the Maritime Renewable Energy Act (please see the adjacent map for an overview of Japan's promotion/prospective/preliminary areas).

The results of the public bidding for the first promotion area (floating wind) were announced in June 2021, and the following three promotion areas (bottom-fixed projects, 1.7 GW in total) in December 2021 (**"Round 1"**). The latter three promotion areas were won by a single consortium at prices far lower than expected, which caught developers by surprise and triggered a debate on evaluation criteria.

Faced with a changing landscape in the energy market and after a wide-ranging discussion, the Japanese government consequently revised the evaluation criteria for the four promotion areas of combined total capacity of 1.8 GW in the second round ("**Round 2**") in 2023, and two promotion areas of combined total capacity of 1.1 GW in the subsequent round ("**Round 3**") in 2024.

FiT or FiP?

Japan has been promoting renewable energy under its feed-in tariff ("**FiT**") since July 2012 (indeed, the Orrick team advised the Japanese government on the structuring of the FiT). In addition to the FiT, the Japanese government has also introduced a Feed-in-Premium ("**FiP**") support regime, effective as of April 2022. Large solar and wind projects are now expected to sell their energy on a merchant basis through PPAs, but FiP-approved projects are entitled to continue to receive premium in addition to their merchant revenue. The Japanese government expects the FiP support regime will encourage renewable projects to gradually walk away from the public support and bridging them to the era of complete merchant PPAs.

The successful developers for the four Round 1 promotion areas were granted a FiT certificate, however going forward, the FiT will not be available for fixed-bottom offshore wind projects in Japan. Consistent with this, the Round 2 and 3 projects, which are all fixed-bottom, are only expected to benefit from the FiP support scheme. The Japanese government suggests that floating wind projects be eligible for both the FiT and FiP support regimes for the time being.

New Evaluation Criteria to Be Revised Again

Several new concepts were introduced to the new evaluation criteria for Round 2 and Round 3. Among them were assessment on promptness leading up to commencement of operation under the feasibility category, as well as the "zero-premium level" in the price competitiveness category. The "zero-premium level" is the price level at which almost no premium is expected to be granted to the project through the FiP support regime, considering the historical market prices in the wholesale market, and the highest score (120 points) for the price competitiveness category will be granted to those who bid at the zero premium level under the revised evaluation criteria. The Japanese government set such zero-premium level at 3 yen/kWh.

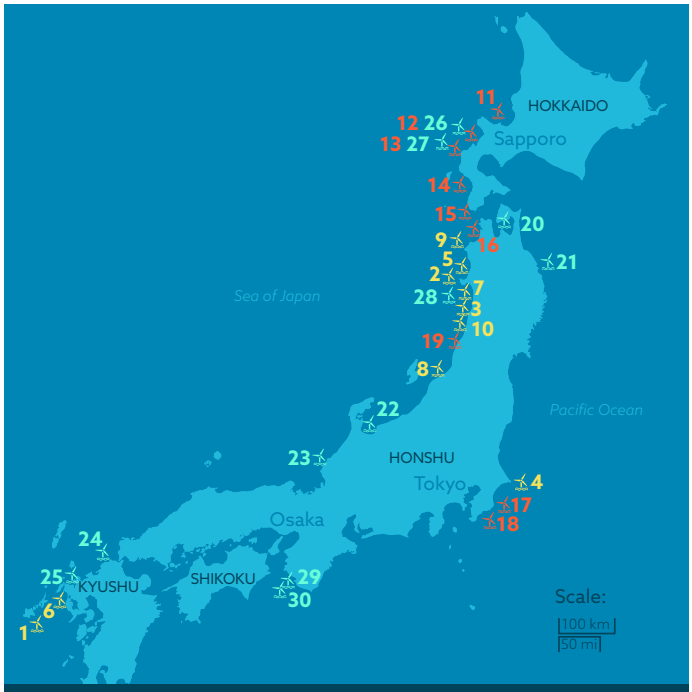
In Round 2, the results of which were announced in December 2023 (for three promotion areas other than Happo/Noshiro) and March 2024 (Happo/Noshiro), many developers turned out to have bid at the zero-premium level. In Round 3, the results of which were announced in December 2024, it turned out that all bidders bid at the zero-premium level. Faced by criticisms from the market that the revised evaluation criteria are effectively forcing bidders to reject necessary public support and thus interfering with the healthy growth of the industry, and the global circumstances where several wind projects have been suspended in other parts of the world due to increasing costs in construction, the Japanese government is again planning to revise the evaluation criteria for Round 4 and subsequent rounds so as to ensure success of offshore wind projects in Japan. Regarding the assessment of bid prices, the Japanese government is now planning to set a new benchmark of 14 yen/kWh (104 points to be granted) in addition to existing zero-premium level as well as to adjust several other factors in the criteria. In addition, the Japanese government also plans to introduce a "price adjustment scheme" where the granted FiP price will be adjusted in accordance with the inflation rate.

Getting to Net Zero

In October 2020, the prime minister declared that Japan will achieve carbon neutrality by 2050. To achieve this ambitious goal, the Japanese government recognises that offshore wind will need to provide a significant percentage of Japan's energy mix. As such, in December 2020 the government announced at the Public-Private Council on Enhancement of Industrial Competitiveness for Offshore Wind Power Generation that Japan should award 10 GW of offshore wind by 2030 and 30 to 45 GW by 2040. Expecting potential ripple effects on the local economy, the Japanese government has been keen to promote offshore wind and related technologies and industries.

The Japanese government is currently discussing the formulation of the 7th Strategic Energy Plan. The Strategic Energy Plan sets out the direction of Japan's mid- to long-term energy supply and demand policies and is revised every three years, with the next revision expected to be made within FY2024. The revised plan is expected to set power supply composition targets for FY2040.

MAP 8: JAPAN'S OFFSHORE WIND PROJECTS



Key

Status in FY2023

Promotion Areas

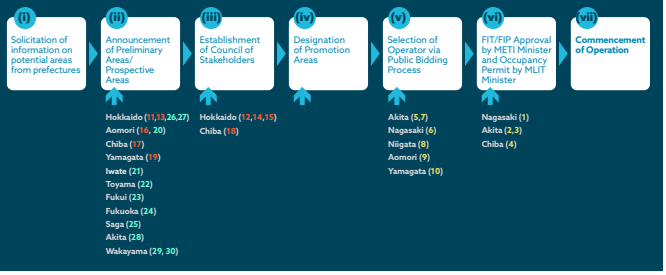
1 - Offshore Goto (Nagasaki Pref.) *Floating*	PROMOTION
2 - Offshore Noshiro/Mitane/Oga (Akita Pref.) *Bottom Fixed*	PROMOTION
3 - Offshore Yurihonjo (North/South) (Akita Pref) *Bottom Fixed*	PROMOTION
4 - Offshore Choshi (Chiba Pref.) *Bottom Fixed*	PROMOTION
5 - Offshore Happo/Noshiro (Akita Pref.) *Bottom Fixed*	PROMOTION
6 - Offshore Enoshima, Saikai (Nagasaki Pref.) *Bottom Fixed*	PROMOTION
7 - Offshore Oga/Katagami/Akita (Akita Pref.) *Bottom Fixed*	PROMOTION
8 - Offshore Murakami/Tainai (Niigata Pref.) *Bottom Fixed*	PROMOTION
9 - Japan Sea Offshore Aomori (South) (Aomori Pref.) *Bottom Fixed*	PROSPECTIVE
10 - Offshore Yuza (Yamagata Pref.) *Bottom Fixed*	PROSPECTIVE

Prospective Areas

11 - Offshore Ishikari (Hokkaido) *Bottom Fixed*	PRELIMINARY
12 - Offshore Gan'u/Minami-Shiribeshi (Hokkaido) *Bottom Fixed*	PRELIMINARY
13 - Offshore Shimamaki (Hokkaido) *Bottom Fixed*	PRELIMINARY
14 - Offshore Hiyama (Hokkaido) *Bottom Fixed*	PRELIMINARY
15 - Offshore Matsumae (Hokkaido) *Bottom Fixed*	PRELIMINARY
16 - Japan Sea Offshore Aomori (North) (Aomori Pref.) *Bottom Fixed*	PROSPECTIVE
17 - Offshore Kujukuri (Chiba Pref.) *Bottom Fixed*	PROSPECTIVE
18 - Offshore Isumi (Chiba Pref.) *Bottom Fixed*	PROSPECTIVE
19 - Offshore Sakata (Yamagata Pref.) *Bottom Fixed*	ADDED IN 2023

Preliminary Areas

20 - Mutsu Bay (Aomori Pref.) *Bottom Fixed*	
21 - Offshore Kuji (Iwate Pref.) *Floating*	
22 - Offshore East Toyama (Toyama Pref.) *Floating*	
23 - Offshore Awara (Fukui Pref.) *Bottom Fixed*	
24 - Offshore Hibikinada (Fukuoka Pref.) *Bottom Fixed*	
25 - Offshore Karatsu (Saga Pref.) *Bottom Fixed*	
26 - Offshore Gan'u/Minami-Shiribeshi (Hokkaido) *Floating*	ADDED IN 2023
27 - Offshore Shimamaki (Hokkaido) *Floating*	ADDED IN 2023
28 - Offshore Akita (Akita Pref.) *Bottom Fixed*	NEWLY ADDED IN 2024
29 - Offshore Wakayama (East) *Bottom Fixed*	NEWLY ADDED IN 2024
30 - Offshore Wakayama (West) *Floating*	NEWLY ADDED IN 2024



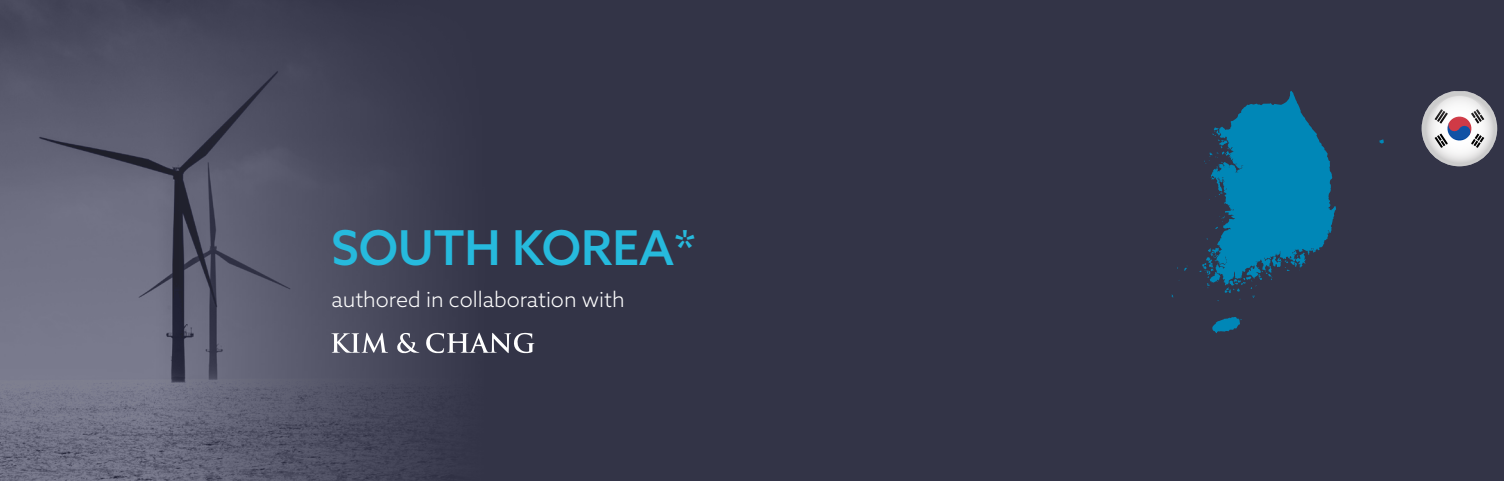
Opportunities, Floating and Hydrogen

Since the offshore market in Japan has no established players, opportunities for new investors abound, especially considering that numerous foreign companies have recently installed onshore renewable energy projects under Japan's FiT program. European and American companies recognise this potential; some are opening offices in Japan to focus on the offshore wind market in Japan and Asia more broadly, and to form joint ventures with other investors (both international and local partners).

Notably, given the deep water around the Japanese coastline, Japan is expected to be a core market for floating turbines with the first project under the Maritime Renewable Energy Act featuring a plan for floating foundations. The Japanese government has been supporting studies in development of cost-effective technologies for floating wind suitable for Asian climate conditions and is conducting pilot projects utilising the result of such studies. Given that Japan has the world's sixth largest Exclusive Economic Zone ("**EEZ**") by area, Japan is also exploring the potential for floating offshore wind projects in its EEZ and a draft bill has been submitted to the Japanese Diet for consideration to enable this. Although the bill was initially discarded due to the election of the House of Representatives (shūgiin), under the new administration, the Japanese government is planning to submit the bill again in 2025, which is expected to be passed. Further, given Japan's long-held aspirations for hydrogen, there is also a potential for the production of green hydrogen alongside its offshore wind industry.

Keeping Up-to-Date

Amid the massive transition to the carbon-free world and the changing landscape of the energy market, Japan has seen multiple amendments to the FiT/FiP system, the laws related to development permits, and the evaluation criteria under the Maritime Renewable Energy Act from time to time, and further amendments of related laws and regulations are expected to take place in the years ahead. Developers and investors will need to be aware of potential amendments to these laws and regulations. Orrick lawyers in Tokyo produce periodic updates on Japanese laws and regulations relating to renewables. To subscribe, please email: TokyoRenewableAlert@orrick.com.



SOUTH KOREA*

authored in collaboration with

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South Korea's Ambitions for Offshore Wind

Although South Korea currently has only around 146 MW of installed offshore wind capacity, it has bold ambitions to become one of the world's leading offshore wind power producers, with plans for 14.3 GW of new capacity to be installed by 2030.

South Korea's offshore wind ambitions have their roots in 2017, when the then-President's election campaign included a promise to place a moratorium on new coal-fired and nuclear power plants, and switch to renewable energy sources.

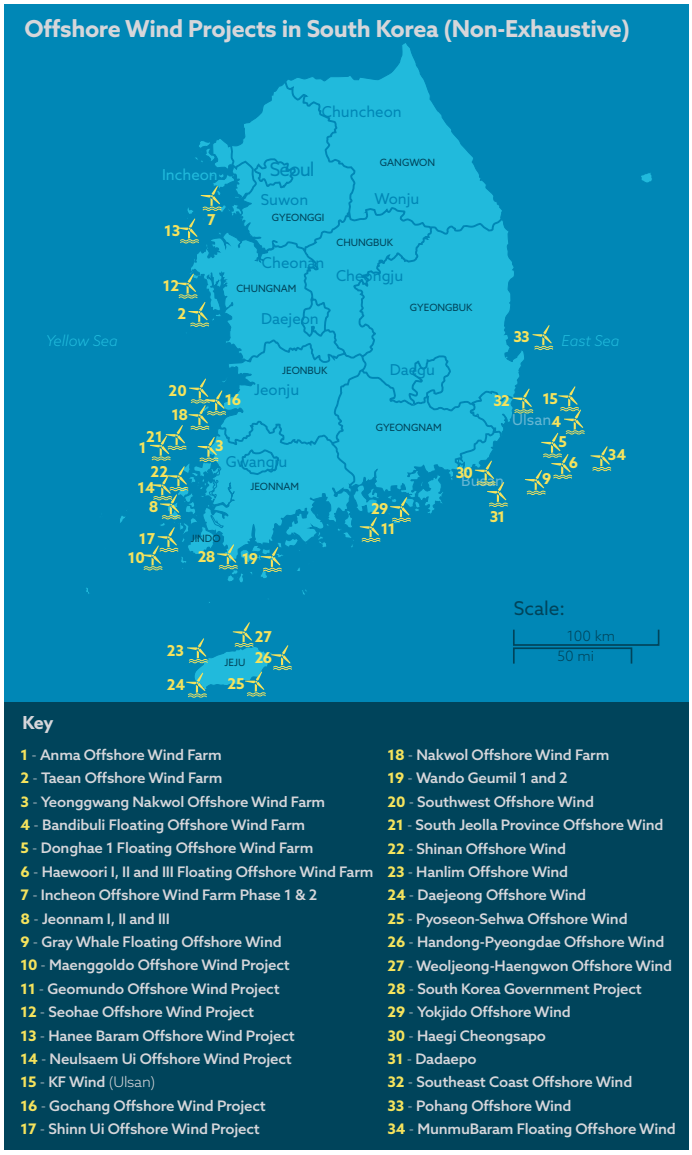
This commitment to decarbonisation was affirmed in July 2020 when the South Korean government announced its "Green New Deal," which promised over US$7 billion of government investment in wind, solar, hydrogen and other renewables sectors by 2025 with aims to set South Korea on a path to net-zero by 2050.

As a result, the installed capacity of renewable energy and its proportion in South Korea's energy mix increased since the commencement of the government's "Renewable Energy Plan 3020" back in 2017. However, this has not been without its challenges such as grid stability and disputes and conflicts between stakeholders (discussed further below).

For offshore wind in particular, South Korea now has up to six offshore wind projects totalling 1,530 MW in capacity, which have been selected as the successful bidders in the 2022 and 2023 long-term fixed-price contract auctions held by the New and Renewable Energy Center (the "**NREC**") (discussed further below).

South Korea's offshore wind capacity is expected to be predominantly located in the South Jeolla Province, with additional major offshore wind projects planned for the North Jeolla Province, off the coast of Ulsan City in South Korea's southeast shores, near Jeju Island in the south, and near Incheon to the northwest (see Map 9).

MAP 9: OFFSHORE WIND PROJECTS IN SOUTH KOREA (NON-EXHAUSTIVE)



* We note that the One-stop Shop Act (as defined below) was approved by the National Assembly after the date of this update. Our insights on this very important development will be provided separately in due course.

When the new administration led by President Yoon Suk-yeol came to power in 2022, it reinstated nuclear energy as an important part of South Korea's energy mix. The government also revised down the target for renewable energy supply from 30.2% by 2030 to 21.5% as being more reasonable and feasible in the 10th Basic Plan for Electricity Supply and Demand, which was announced in January 2023.

Such revision to South Korea's renewable energy targets has meant a slight re-setting of the ambitious goals under the previous government to a more realistic level, but the overall direction and drive to decarbonise the Korean economy by expanding the supply of new and renewable energy continues unchanged and unabated under the new government. For wind power (including offshore wind), its share in South Korea's energy mix is expected to increase significantly amongst the different types of renewable energy sources. The working draft of the 11th Basic Plan for Electricity Supply and Demand also anticipates that the installed capacity of wind power (including offshore wind) is expected to increase the most amongst the various generation sources[1].

Potential Challenges

Currently, South Korea has a complicated and fragmented permitting process for the development of offshore wind projects, with developers required to obtain multiple permits from various government departments at both national and local levels, which are not always perfectly aligned in terms of process and requirements. In addition, a developer must prove that it has the consent of nearby residents before it can obtain certain permits; this consent is difficult to prove, and many projects face local opposition. These issues can be the cause for significant delays in the development of offshore wind projects in South Korea. Recognizing that this is an issue which needs to be resolved in order to promote greater interest and investment in the country's offshore wind industry, the government is planning legislative and regulatory changes to create a more transparent and streamlined permitting and development process. As a result, the Special Act on the Promotion of Wind Power Development and Distribution (often referred to as the "**One-stop Shop Act**") was first proposed in May 2021 which envisages a central administrative agency to be responsible for issuing licenses and permits for all wind power projects in South Korea. Currently, there are a series of bills for the One-stop Shop Act which have been presented which remain under review.

In addition, as one would expect given its 2,413 km coastline, South Korea's fishing industry is a major employer and generator of GDP, particularly in regions where major offshore wind power developments are being considered. As such, the development of offshore wind projects in South Korea's coastal areas poses the possibility of tension with the fishing industry. As has been seen in other developing offshore wind markets where this is also a concern, such as Taiwan, developers will be expected to provide a level of compensation to relevant parties, such as local fishermen, for losses suffered resulting from the development of an offshore wind project. Such compensation arrangements often involve lengthy and protracted negotiations, which any financiers will ideally want to see addressed before a project reaches financial close. As such, developers are encouraged to start engagement with the relevant parties at an early stage of a project's development.

1. As of 2022, the installed capacity of wind power in Korea is 1.9 GW, which is expected to reach 18.3 GW by 2030, and 40.7 GW by 2038.

Developers of offshore wind projects in South Korea also face the prospect of having competing interests with national security organisations, given that the majority of South Korea's naval bases are situated in the provinces identified for offshore wind project development. Such competing interests are not impossible to overcome as seen in other key offshore wind jurisdictions, including the United Kingdom, with any such issues being addressed contractually (for example, via radar mitigation agreements). In our experience, early diligence on this issue, and confirmation that an agreement can be reached with the relevant authority, is essential to avoid later permitting problems.

Another uncertainty relates to what the South Korean government expects with regards to the use of domestic Korean contractors. There appears to be a degree of expectation from government organizations regarding the use of domestic contractors in order for a project to obtain a REC Offtake Agreement (defined below) with the power generation subsidiaries of the majority state-owned Korea Electric Power Corporation ("**KEPCO**"). To this end, an incentive scheme was initially introduced by the Korea Energy Agency (the **"KEA"**) to grant a more favourable renewable energy certificate ("**REC**") multiplier for projects which source more than 50% of their major wind farm components from contractors which manufacture/produce such components in Korea; however, amendments were made in 2023 which disapplied this incentive in the case of competitive bids held by the NREC for long-term fixed-price contracts for wind power projects (see "Renewable Energy Certificates" below). In any case, the bidder's proposed contribution to the domestic economy (including the domestic industrial ecosystem and supply chains etc.) is one of the evaluation criteria in the NREC's auction for long-term fixed-price contracts for wind power projects, and this was given greater emphasis as part of the revised evaluation criteria in the latest 2024 auction.

Renewable Energy Certificates

Currently, unless a power generator enters into a corporate power purchase agreement (see "Power Purchase Agreements" below), power generators must generally sell any power that they produce into the single cost-pool wholesale power market, the Korea Power Exchange (the "**KPX**"), at a spot rate determined by the system marginal price. In principle, only KEPCO can purchase electricity from the KPX for resale to domestic electricity consumers. The inherent price uncertainty of the KPX spot rate renders it difficult to support project financing on the scale required to fully develop any large-scale offshore wind project. However, this is mitigated through the issuance of RECs, which may be bought and sold on the KPX-managed REC spot market or through long-term fixed-price contracts for terms of up to 20 years (the "**REC Offtake Agreement**").

This supply of RECs to the market is coupled with an enforced demand created by the South Korean government's renewable portfolio standard policy (the "**RPS**"). Currently, pursuant to the RPS, six wholly-owned power generation subsidiaries of KEPCO (the "**GenCos**"), two public institutions and 19 other large generation companies (together, the "**Mandatory Generators**") must ensure that 13.5% or more of the electricity they supply is derived from new and renewable energy resources (which is set to increase to 25% by 2030). If any of these Mandatory Generators fails to meet this requirement through self-generated sources, then they must make up the shortfall through either: (i) purchasing RECs on the KPX-managed REC spot market; or (ii) entering into REC Offtake Agreements to purchase RECs from third party renewable energy generators through long-term fixed-price arrangements. Such long-term fixed-price arrangements include participating in private contracts or the NREC's competitive bidding for fixed-price contracts held once or twice a year (in the case of wind power projects) or twice a year (in the case of solar power projects)[2]. Naturally, for offshore wind projects seeking debt finance, the preferred option would be to enter into REC Offtake Agreements with these Mandatory Generators in order to mitigate revenue uncertainty.

Domestic developers and financiers seem fairly comfortable with this long-term fixed-price contractual scheme. Some non-Korean market newcomers, however, have expressed concern that this process may be too unfamiliar, complex, or uncertain.

An offshore wind power generator is awarded RECs based on the power it produces multiplied by a weighted value set by the government (the "**REC Multiplier**"). These RECs have economic value (for the reasons explained above) and provide an additional revenue stream which, through long-term fixed-price contracts (*i.e.*, REC Offtake Agreement), can be projected with long-term certainty to support project financing.

When an offshore wind project sells its power to the KPX, it will also receive a quantity of RECs equal to 1 REC per MWh of power generated multiplied by the REC Multiplier in accordance with the Government Notification of Renewable Portfolio Standard and Renewable Fuel Standard. The REC Multiplier is dependent on several factors, including: (i) the distance between the closest coastline with a KEPCO owned substation and the centre point of that project's wind turbine closest to such coastline; and (ii) water depth. For offshore windfarms, this base case REC Multiplier is currently no less than 2.0 for near shore waters and 2.5 for others.

The economic feasibility of offshore wind in South Korea is also being tested through wider macro-economic factors, as the market price for RECs has been somewhat unstable. The market price for RECs started to increase since late 2021, and has been relatively stable in 2024, however, it can be subject to material fluctuations.

The uncertainty around the number of RECs a project may receive, together with the macro-economic market prices, made it difficult for developers to prepare financial models and banking cases demonstrating with certainty that the project will have sufficient RECs to generate enough net revenue to service and repay project debt and provide an adequate return on investment for its sponsors. Acknowledging this, in October 2021 the South Korean government introduced a process that will notify offshore wind project developers of their projected REC allotments well in advance of commissioning (although, this projection was not a cast-iron guarantee as the actual REC Multiplier that a project would be entitled to was only fixed at the commissioning stage, and so some residual uncertainty remained). To provide greater certainty for project developers, from the 2024 wind auction, it was stipulated that the REC Multiplier that is applicable at the time of the auction announcement will be fixed for the bidding wind projects which are successful in the auction. The 2024 auction also extended deadlines for the completion of projects and provided that the deadlines can be extended without penalty (which are in the form of a reduction to the price in the REC Offtake Agreement) if project delays are due to causes not attributable to the developer.

There are also signs that MOTIE intends to the gradually reform the current RPS system by shifting to a government-led competitive bidding system for renewables in order to expand supply but in a more cost-efficient manner. Public debate and discussions with stakeholders are currently being undertaken in this regard. For the 2024 auction the KEA will open a market to mediate the entry into power purchase agreements between onshore wind projects (with capacity at least 1 MW) which have agreed in advance to participate and electricity users through a competitive bidding process, and the Korean government is considering to gradually roll out this scheme to offshore wind projects in the future.

2. The NREC first introduced the competitive bidding system for fixed-price contracts with respect to solar power in 2017 with the aim of fostering the renewable energy industry by offering stable revenue streams for the relevant businesses under long-term contracts. From September 2022, the competitive bidding scheme expanded to cover wind power producers also. The bidding not only evaluates the pricing but also local resident acceptance, contribution to the domestic economy, maritime/hinterland infrastructure, maintenance, grid acceptability and stage of development. The 2023 auction divided the bidding for onshore wind and offshore wind projects. In the 2024 auction, offshore wind was further divided to have separate bids for fixed-bottom projects and floating projects, with allocated bidding capacity of around 1,000 MW and 500 MW, respectively. Five (5) offshore wind projects representing aggregate capacity of 1,886 MW (i.e., four fixed bottom projects (Anma (224 MW), Anma 2 (308 MW), Yawol (104 MW) and Tae-an (500 MW)) and one (1) floating project (Bandibuli (750 MW)) were selected as a result of the 2024 auction.

Power Purchase Agreements

Although long-term fixed-price contracts have historically been the only available means to achieve revenue certainty, recently passed legislation now enables renewable power developers to enter into either: (i) power purchase agreements ("**PPAs**") directly with electricity consumers; or (ii) indirect PPAs with KEPCO, with KEPCO then entering into a back-to-back PPA with an electricity consumer to sleeve the renewable power supplied from the renewable energy generator.

On 20 April 2021, an amendment to the Electric Utility Act was promulgated into law, signalling the end of KEPCO's monopoly on the resale of electricity by allowing renewable power producers to enter into PPAs directly with third party offtakers, rather than selling generated power on the KPX. In September 2022, the government issued the Notification on Direct Power Purchase Transactions by Renewable Energy Power Suppliers, setting out various requirements for entering into such corporate PPAs. Since then, the market has seen a total of 23 direct PPAs with a capacity of 1,083 MW being signed as of July 2024.

Previously, it was the case that only electricity users exceeding 1,000kW were able to enter into indirect PPAs, which was not a condition that applied to direct PPAs. Responding to views raised by the industry pointing out this inconsistency, the government amended the notification on indirect PPAs in August 2023 to ease the standard by allowing electricity users exceeding 300kW to enter into indirect PPAs, thereby applying the same standards and conditions as direct PPAs for indirect PPAs. As of July 2024, we understand that 5 indirect PPAs had been signed, totalling 17.5 MW of capacity.

Although power sold directly under a PPA will not be eligible to receive RECs, the same agency that issues RECs (*i.e.*, the KEA) will issue "renewable energy use certificates" to the relevant offtaker with respect to such power. These renewable energy use certificates will include the information currently included in RECs to enable easy tracking of the corresponding environmental attributes and to prevent double counting by a corporate offtaker for the purposes of its compliance with corporate sustainability goals such as the RE100 initiative.

Strong Local Contractors

One of the main attractions to South Korea for offshore wind developers is the country's strong local supply chain, forged from its respected history in manufacturing, construction, and shipbuilding. Indeed, the strong industrial capabilities of South Korea's contractors, such as SK Oceanplant, Hyundai, CS Wind, SeAh, LS Cable and others, are already seen on offshore wind projects in the region, such as in Taiwan and Vietnam, which boosts the confidence of developers that a strong local supply chain could be easily established in South Korea. Domestic turbine suppliers, such as Doosan Enerbility and Unison, are also hoping to grow with the domestic offshore wind market, although substantial R&D is needed to upscale domestically-produced turbines to the capacity and size manufactured by European players.

Crucially, utilising the strong local supply chain would help foreign developers demonstrate to the South Korean government that they are promoting local industry and supporting job creation, which is a key area of focus for the government. Although the government is not expected to impose formal localisation requirements as seen in Taiwan, as noted above, the government is encouraging developers to use the local supply chain through favourable evaluation for bidders who do so in the auction bids for long-term fixed-price contracts. Therefore, the ability to draw on a strong local supply chain will be an important factor for foreign developers to consider in pursuing offshore wind projects in Korea.

Floating Technologies and Power-to-X

While established fixed-bottom technologies will likely be featured in initial projects, as expected from Ørsted's development of a 1.4 GW offshore wind project in the shallow waters off the coast of Incheon City, given the deep and mountainous nature of much of South Korea's seafloors, the expectation is that floating offshore wind projects will eventually become the dominant form. Indeed, in November 2021, RWE and Ulsan Metropolitan City announced a memorandum of understanding to develop up to 1.5 GW of floating offshore wind projects located off the coast of Ulsan City, in the southeast of Korea. Moreover, in November 2024, Ulsan City also signed letters of intent with the following developers/projects: Equinor (Bandibuli; 750 MW), Copenhagen Infrastructure Partners (Haewoori 1, 2 and 3; 1.5 GW), Ocean Winds/Mainstream Renewable Power/Kumyang Electric (Korea Floating Wind; 1.2 GW) and Corio Generation/TotalEnergies/SK ecoplant (Gray Whale; 1.5 GW) who are respectively pursuing floating offshore wind projects off the coast of Ulsan.

Given the natural synergies, a number of offshore wind developers with potential projects in South Korea are also looking to co-locate electrolysers with their offshore wind projects, with a view to producing green hydrogen. Such projects, however, remain at an early stage.

Expected Market Developments

We expect to see continued evolution and liberalisation of the Korean power market into 2025, including as follows:

i. more direct PPAs being entered into between renewable energy generators and electricity consumers;

ii. permitting the purchase and trading of RECs by RE100 companies through (x) a separate online REC trading platform designed for RE100 companies and (y) direct trading between renewable power generators and RE100 companies;

iii. the continued use of renewable energy use certificates that will enable consumers who self-generate or purchase renewable power (or corresponding RECs) to obtain credit for such usage; and

iv. the proposed introduction of a renewable power bidding system for mandatory participation by renewable energy generators above a certain size (3 MW), which is aimed at promoting system stability and encouraging competition amongst renewable energy producers. The government introduced it on a trial basis in Jeju Island in June 2024, with further plans for a nationwide roll-out in due course.

These developments, especially alternative offtake arrangements, will be welcome news for developers. Other expected regulatory changes, including the introduction of an One-stop Shop Act for the permitting of wind projects should further facilitate the project development process. More generally, these developments show that the winds of change are blowing in the right direction for South Korea to meet its ambition to become one of the world's leading participants in the global offshore wind sector.

LITHUANIA

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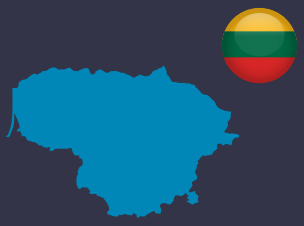

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Introduction

Lithuania has ambitious plans to become a net exporter of electricity by the year 2030. As a signatory to the European Wind Charter (by which Member States officially commit to deliver on the actions set out in the EU Wind Power Package) offshore wind is a key pillar of Lithuania's energy independence goals.

Although there are currently no operational offshore wind projects in Lithuania, two 700MW offshore wind parks are currently in development in the Lithuanian Exclusive Economic Zone. The rights to develop the first project, Curonian Nord, were secured in a competitive auction in 2023 by a consortium of Ignitis Renewables and Ocean Winds. The second project is the subject of an ongoing auction, the results of which are expected to be announced in May 2025.

The two projects, once operational, are expected to generate up to 6TWh of electricity per year, which is approximately half of Lithuania's current electricity demand. The National Energy Independence Strategy also establishes the possibility to announce further tenders, with the aim of increasing the installed capacity of offshore wind farms to at least 2.8GW by 2040 and 4.5GW by 2050.

Lithuania's First Offshore Wind Tender

Lithuania's first offshore wind tender ("**First Tender**") commenced on 30 March 2023 and was concluded on 12 October 2023, with the Ignitis Renewables and Ocean Winds consortium being announced as the winner.

The First Tender was a subsidy-free tender and participants were required to meet a variety of criteria to be eligible to participate in the First Tender (for example, participants were required to demonstrate financial capability and offshore wind development experience requirements and their commitment to invest in environmental protection and local community support schemes and to fostering the involvement of small and medium enterprises in the project's implementation).

A special purpose vehicle collectively owned by Ignitis Renewables and Ocean Winds was issued with a permit for development and operation of the project, which is valid for 41 years. According to the requirements of the First Tender, the winner will have to obtain a construction permit within three years and a permit for electricity generation within six years following the award of the permit for development and operation.

Lithuania's Second Offshore Wind Tender

Lithuania's second offshore wind tender ("**Second Tender**") for the first time commenced on 15 January 2024 and was declared void on 22 April 2024 due to lack of participants.

The rules and requirements of the Second Tender were similar to the ones of the First Tender, with a few notable exceptions.

- First, in the Second Tender participants had a possibility to request state support in the form of a variable premium under a two-way Contract for Difference ("**CfD**") for a duration of 15 years.
- Second, deadlines for the project implementation were longer. According to the rules for the Second Tender, the winner of the Second Tender had to obtain a construction permit within four years (instead of three years provided in the First Tender) and a permit for electricity generation within eight years (instead of six years provided in the First Tender) after obtaining the permit for development and operation.

However, despite the fact that the rules for the Second Tender could have been considered more favorable to the potential developers (available state support, longer terms to implement the project), it did not help to attract the required number of participants.

Preparation for the Re-launch of Lithuania's Second Offshore Wind Tender

Following the unsuccessful initial launch of the Second Tender, certain legal requirements were amended to make the Second Tender more attractive for potential participants.

- First, the deadline for registration and submission of the documents was extended. The registration of the participants will last 120 calendar days (instead of 90), giving potential participants more time to enter the Second Tender.
- Second, the requirement to have at least two participants has been waived. The new rules permit the Second Tender to continue even if only one participant registers.
- Third, indexation of the CfD strike price was introduced. If the winning participants opts for state support via the CfD scheme, the CfD strike price will be recalculated annually, by taking into account the annual inflation. The annual inflation rate would be applied to the difference between the strike price and the market price, providing stability and price-certainty for the project.
- Fourth, indexation of the development fee was introduced. Similar to the transaction price, the development fee, payable over five years (if proposed by the participant), will also be indexed annually to maintain its value against inflation.
- Fifth, a requirement for a minimum development fee was introduced. A minimum development fee of at least EUR 5 million is now required for projects where no state support is requested.

Re-launch of the Lithuania's Second Offshore Wind Tender

On 18 November 2024 the Second Tender was re-launched.

According to the Second Tender rules, the winner of the Second Tender would have to develop a wind farm with the maximum permitted generating capacity of 700MW and minimum installed capacity of 700MW. In the re-launched Second Tender, as in the initial Second Tender, state support will be available in the form of a variable premium under a two-way contract for difference for a duration of 15 years. The highest CfD strike price approved by the National Energy Regulatory Council for the Second Tender is 125,74 Eur/MWh, while the lowest CfD strike price is 75,45 Eur/MWh.

The process for submission of tender documents and registration of the participants will run until 4 March 2025. Once the registration of the tender documents is complete, the National Energy Regulatory Council will have no longer than 90 calendar days to announce the winner of the Second Tender. This time period does not include time necessary to conduct the verification process of the potential winner of the Second Tender in order to determine whether the winner does not pose a threat to the national security.

Otherwise, the same criteria that were required to satisfied by participants in the First Tender and the initial Second Tender (as set out above) remain applicable for the participants of the re-launched Second Tender. Additionally, as in case of the First Tender, the winner of the Second Tender will be issued a permit for development and operation which will be valid for 41 years.

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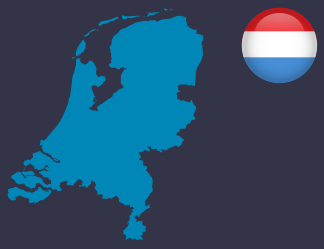

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Introduction

In 2013, a national Energy Covenant was entered into by over 40 Dutch organisations, including central, regional and local government authorities, employers and unions, energy companies, environmental organisations and financial institutions. The Energy Covenant focused on making the energy supply more sustainable by boosting renewable energy sources, energy conservation and job creation and set out certain renewable energy targets to be met by 2023, including 4.5 GW of offshore wind energy by 2023.

This Energy Covenant has been followed up by the Dutch Climate Agreement of June 2019. Part of the objective of the Dutch Climate Agreement is that a minimum of 70% of all energy used in the Netherlands will come from renewable sources by 2030.

To further this ambition, the Dutch government published the Offshore Wind Energy Road Map 2030 ("**OSW Road Map**"), which set a target to add 7 GW of capacity between 2024 and 2030 to the 4.5 GW that had already been planned under the 2013 Energy Covenant. In March 2022, the government adopted the North Sea Programme 2022 – 2027 which significantly increased the Netherlands' offshore wind target from the 11.5 GW target in the OSW Road Map to 21 GW of operating offshore wind capacity by 2032.

More recently, in June 2024, the government has drawn up the North Sea Energy Infrastructure Plan (*Energie Infrastructuur Plan Noordzee*). This plan aims to further support reaching the Netherlands' climate targets, with a further increased maximum offshore wind energy capacity of 35 GW by 2035, 50 GW by 2040 and 70 GW by 2050.

Furthermore, the Dutch government aims to achieve large-scale hydrogen production from offshore wind energy in the long term. Two hydrogen demonstration projects are being planned. These projects will involve the construction of offshore electrolysers (hydrogen production installations). In November 2024, the Dutch government shared an update on its OSW Road Map and the subsidy process for the "*Offshore Hydrogen Production Demonstration Project 1*".

A core characteristic of Dutch offshore wind policy is that the planning is adaptive. Offshore wind capacity targets and zone designations may therefore be continuously updated on the basis of *inter alia* policy changes, progressive understanding, and technological changes. As a result, capacity targets have often been increased in practice over the past few years.

Overall the Dutch government has a clear and determined plan for the promotion of offshore wind projects in the coming years. This is discussed further below.

The Offshore Wind Energy Roadmap 2030 and Beyond

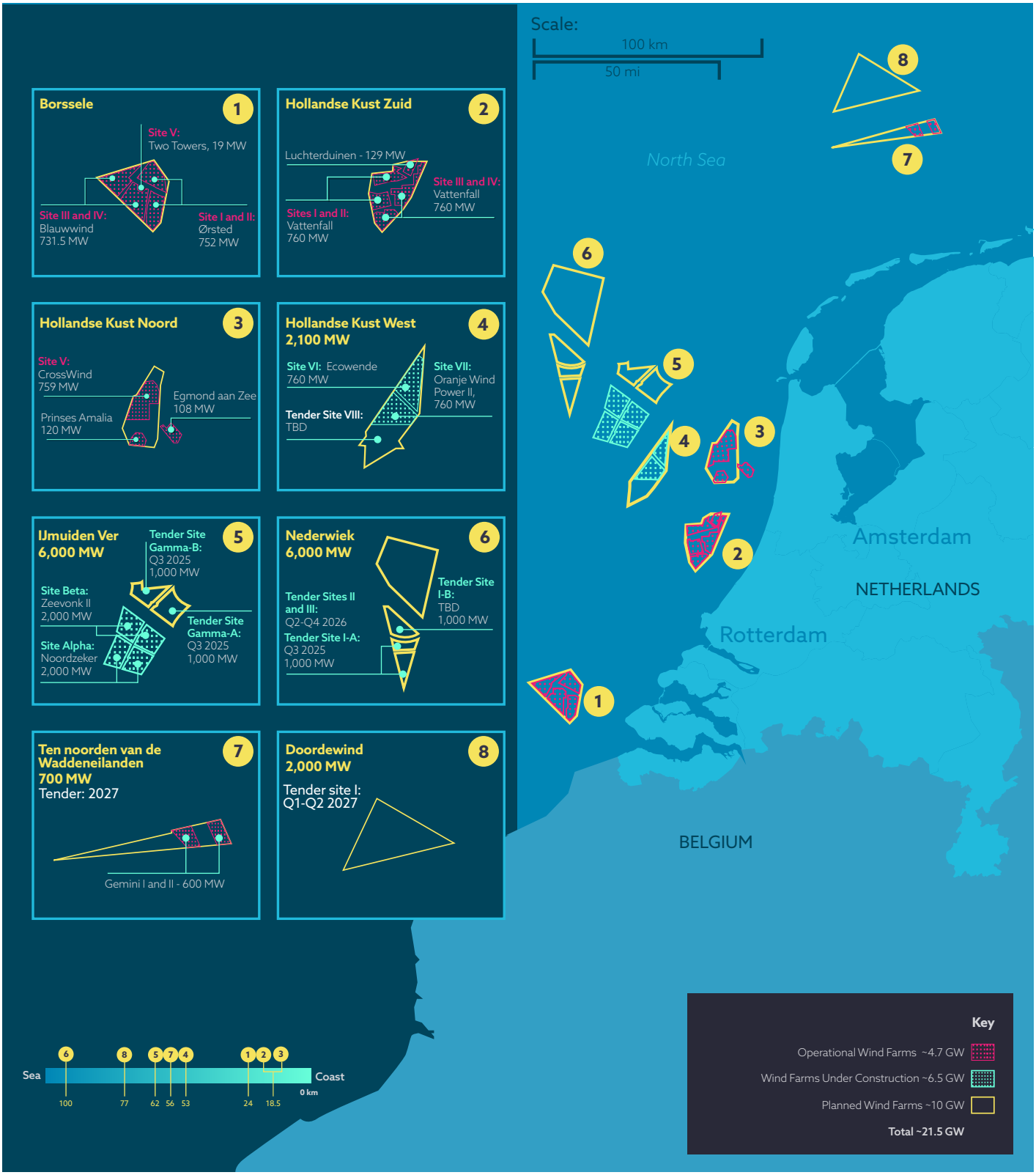
The Dutch offshore wind program currently outlines six development zones (wind areas), each consisting of multiple sites. Three of these development zones were part of the 2023 Road Map (Borssele, Hollandse Kust (Zuid) and Hollandse Kust (Noord)), and tenders for the sites for these zones were held between 2017 and 2020.

The 2030 Road Map initially set out the location and timing of three additional development zones (Hollandse Kust (West), Ten Noorden van de Waddeneilanden and IJmuiden Ver), with five sites in total for offshore wind energy with a total capacity of 7 GW. In March 2022, the government revised the North Sea Programme 2022 – 2027, which significantly increased the Netherlands' offshore wind target from 11.5 GW to 22 GW of operating offshore wind capacity by 2030. In April 2024, the Dutch government announced an updated timeline for the OSW Road Map, with the goal of achieving 21 GW of offshore wind capacity now planned for late 2032, a year later than previously scheduled. This provides developers and companies with more time to establish the wind farms and grid connections.

The Netherlands is also busy laying the foundations for its offshore wind development roadmap post-2030. The Dutch North Sea Energy Infrastructure Plan aims to support the achievement of the Netherlands' climate targets, with a maximum offshore wind energy capacity of approximately 35 GW by 2035, 50 GW by 2040 and 70 GW by 2050.

Map [XX] shows an overview of existing and new locations of offshore wind farm zones in the Netherlands.

MAP 10: NETHERLAND'S OFFSHORE WIND PROJECTS



Subsidy vs. Subsidy-Free

The Netherlands Enterprise Agency (Dutch acronym: RVO) conducts the offshore wind energy permit tenders on behalf of the Ministry of Economic Affairs and Climate Policy. The offshore wind permit tender process was originally split into (i) tenders with subsidy; and (ii) tenders without subsidy with a comparative assessment. In November, an amendment to the Offshore Wind Energy Act ("**OWEA**") came into force to support the offshore wind energy assignment. While the amendment leaves the core intentions of the OWEA intact, important changes have been introduced, including:

- energy carriers other than electricity have been brought within the scope of the OWEA, recognising the Netherlands' Power-to-X potential (see below) (the definition of "wind farm" has been changed as a result and new definitions added for "wind energy" and "connection point");
- two new tender methods have been introduced. The first combines a comparative assessment with a financial and the second introduces an auction process in which the wind permit is awarded solely on the basis of the bid price, with the bid price consisting of a fixed amount independent of other factors (e.g. electricity production); and
- the maximum term of a wind permit has been extended from 30 to 40 years (note, existing permit holders can apply to extend their permits from 30 to 40 years).

The amendment to the OWEA has introduced the option to conduct several procedures simultaneously, including the combination of a subsidised and subsidy-free procedure, enabling the government to establish via a single tender whether the wind farm can be developed without a subsidy and, if that is not the case, to proceed directly to the granting of a subsidy and a wind permit (note, where applications for a wind permit can be submitted for multiple tender procedures, the amendment provides for the possibility to limit the number of applications that an applicant may submit to one application).

The two Borssele tenders were held in 2016 and 2017 with a subsidy, referred to as the Sustainable Energy Production ("**SDE+**"). SDE+ is a form of feed-in premium and operates by compensating electricity generation companies for the unprofitable component of renewable energy, compared to energy from fossil fuels. The compensation is equal to the difference between the cost price of renewable energy (which includes, for example, production costs), and the market price of renewable energy, and is fixed for a period of 15 years.

The two subsequent tenders for Hollandse Kust Zuid ("**HKZ**") were held using comparative assessment and were the first projects in the Netherlands without subsidy. The 759 MW Hollandse Kust Noord ("**HKN**") project tendered in 2020 was also subsidy-free and on the basis of a comparative assessment.[1]

The two tenders for Hollandse Kust West, HKW VI and HKW VII, were held using comparative assessment including a financial bid in the selection process. RWE was successful in obtaining the first 700 MW of capacity with a EUR 50 million bid, under the system integration tender. Ecowende, a joint venture between Eneco Chubu and Shell, won the 756 MW site HKW VII with a EUR 50 million bid, which tender had a special focus on reducing the ecological impact of the wind farm on the North Sea.

In February 2024, the Netherlands announced tenders for the IJmuiden Ver (Alpha and Beta) offshore wind zones, with a combined capacity of approximately 4 GW. The tender for the Alpha site was won by Noordzeker, a joint venture of SSE Renewables and Dutch pension funds ABP and APG. The Beta site was won by Zeevonk II, a joint venture of Vattenfall and Copenhagen Infrastructure Partners. The projects are anticipated to become operational between 2029 and 2030. In these tenders, again, priority was given to ecological innovations and grid integration.

The tenders for the IJmuiden Ver Gamma and Nederwiek offshore wind projects were amended in November 2024. The IJmuiden Ver Gamma site has been divided into two sections—Gamma-A and Gamma-B—each with a capacity of 1 GW. Similarly, Nederwiek I has been split into Nederwiek I-A and I-B, also at 1 GW each. Additionally, the Nederwiek II and III sites are planned.

The table below shows the timelines for the various offshore wind farms (parcel = site).

Installed Capacity	Offshore Wind Area, Parcel(s)	Permit Procedure	Estimated date of commissioning
0.76 GW	Hollandse Kust (west), Parcel VI	2022	2026-2027
0.76 GW	Hollandse Kust (west), Parcel VII	2022	2027
Approx. 2 GW	IJmuiden Ver, Parcel Alpha	Q1 2024	Q3 2029
Approx. 2 GW	IJmuiden Ver, Parcel Beta	Q1 2024	Q4 2029
Approx. 1 GW	IJmuiden Ver, Parcel Gamma-A	Q3 2025	Q2 2031
Approx. 1 GW	IJmuiden Ver, Parcel Gamma-B	Q3 2025	Q2 2031
Approx. 1 GW	Nederwiek, Parcel I-A	Q3 2025	Q4 2030
Approx. 1 GW	Nederwiek, Parcel I-B	TBD	TBD
Approx. 2 GW	Nederwiek, Parcel II	Q2-Q4 2026	Q2 2032
Approx. 2 GW	Nederwiek, Parcel III	Q2-Q4 2026	Q4 2031
Approx. 2 GW	Doordewind, Parcel I	Q1-Q2 2027	Q4 2032
Approx. 0.7 GW	North of the Wadden Islands, Parcel I	2027	2033
Approx. 0.7 GW	Hollandse Kust (west), Parcel VIII	TBD	TBD

The Dutch government is exploring the use of a feed-in tariff combined with a two-sided "contract for difference" ("**CfD**") to improve the financial viability of offshore wind farms. Under this system, large producers would contribute to grid costs, a departure from the usual model where only consumers pay transport tariffs. The CfD would allow the government to subsidize wind producers when energy prices are low and collect fees when prices are high, ensuring price stability over time. The interdepartmental policy research bureau (IBO) is examining alternative grid financing, including feed-in tariffs, with results expected in the first half of 2025. The government is also considering combining the SDE++ subsidy scheme (see below) with the CfD for offshore wind production.

1. HKZ is owned by Vattenfall and will be developed in an area subdivided into four parcels. It is expected to be commissioned by 2023. HKN was awarded to a consortium of Shell and Eneco and is expected to be commissioned by 2024.

The Tender Scheme

The key factor of the Dutch offshore wind scheme is the pivotal role for the Dutch State in the planning and zoning of wind projects. The State not only designates development zones (wind areas) but also the sites within these zones. In a site-specific Offshore Wind Site Decision, the State determines the requirements for the wind farm (capacity, rotor size, axis height, delineation, cable crossings, safety areas, etc.) and with that Decision includes all zoning and environmental permitting requirements (EIA, etc.). Therefore, the winning applicant for the license in the tender will receive a complete package and no further licence requirements exist for the project. Furthermore, under the Electricity Act 1998, the Dutch transmission system operator ("**TSO**"), TenneT, has been designated as the offshore TSO and has been charged with the construction of the OHVS and the exit cable to shore, resulting in a significant reduction of cost for the developer and significant efficiency gains for TenneT.

Tenders had to comply with the following requirements to be eligible for a wind permit: (i) the applicant's equity capital must be equal to at least 10 percent (for subsidy tenders) or 20 percent (for subsidy-free tenders) of the total planned investment of the project and if such equity capital is less than 20 percent for subsidy tenders, confirmation must be provided by financiers in relation to financing the remaining part of the 20 percent; (ii) the applicant must submit an income statement specifying planned costs associated with the project; (iii) the applicant must submit a time schedule with specified milestones, and construction must start within four years of the wind permit becoming irrevocable; (iv) there must be technical feasibility and assurance that the project will be operational on time; and (v) the permit must comply with the relevant Wind Farm Site Decision.[2]

The comparative assessment is made on the basis of several criteria. Obligatory in any comparative assessment are criteria with respect to (i) the certainty of the realisation and (ii) the contribution to the Dutch energy supply. In case the comparative assessment is accompanied by a financial bid, the height of the financial bid is also included in such assessment. Further criteria are determined on an individual tender basis, whereby up until now the additional criteria concerned either (iii) system integration or (iv) ecological impact. Additional criteria may be added in the future. For the assessment on system integration, applicants needed to demonstrate how the additional wind capacity is to be integrated in the Dutch onshore energy system. For the assessment of the ecological impact, the applicant needed to demonstrate technical measures that will not only limit the environmental impact of the construction and operation of the wind farm, but also positively contribute the (overall offshore) ecosystem. For the upcoming first two IJmuiden Ver tenders in 2024, new criteria regarding responsible business conduct and circularity have been added: (v) responsible business conduct and (vi) circularity. With respect to responsible business conduct, applicants are required to commit to UN guiding principles on business and human rights, as well as OECD guidelines. In practice, this is demonstrated by becoming party to the Dutch government-initiated International Responsible Business Conduct Agreement (dating back to March 2023) or a similar multi-stakeholder instrument. With respect to circularity criteria, applicants are required to construct, operate and decommission a wind farm in line with certain circularity guidelines. Applicable assessment criteria can, as such, vary to a certain extent from tender to tender.

The Minister of Economic Affairs typically decides on applications within 13 weeks of the tender period. A 13-week extension can be given once. In relation to subsidy tenders, the winning bidder must enter into (i) an implementation agreement within two weeks of the award and (ii) a bank guarantee in the amount of EUR 200 million, granted by a bank established within the EU, within four weeks of the award, the form of which is contained within the implementation agreement. Wind permits are currently granted for 40 years.

Assuming that all the requirements set out above are satisfied, wind permits for subsidy bids are awarded to the lowest bidder. In contrast, wind permits for bids without a subsidy are awarded to the highest ranking based on a graded assessment of all the requirements set out above.

SDE++ Subsidy

The SDE+ subsidy scheme has been extended by the Dutch government to encompass the Sustainable Energy Production and Climate Transition scheme (**"SDE++"**). SDE++ focuses on CO2 reduction, meaning that projects applying for the subsidy will compete on the basis of how much CO2 will be reduced, rather than the amount of renewable energy the project will generate. The new scheme is also broader in scope—it includes technologies that focus on reducing greenhouse gas emissions, such as carbon capture and storage ("**CCS**"), aqua thermal power and geothermal energy.

SDE++ opened to applications other than offshore wind at the end of 2020, with a total budget of EUR 5 billion available for 2021. On 8 June, the Ministry of Economic Affairs and Climate announced the results of the first round of SDE++ subsidies, with CCS projects as the big winner, being awarded over EUR 2.1 billion in subsidies.

If offshore wind is tendered with subsidy in the future, it is likely to be auctioned under a separate budget. As discussed above, no subsidies have been granted after the first two Borssele tenders but it is possible that market developments may dictate that subsidies, possibly in the form of a CfD, may return into view for future tenders for more remote (and therefore more costly) wind farms.

Power-to-X

The Netherlands does not only have an ambitious agenda regarding offshore wind, but also in respect of (on and offshore) green hydrogen production using *inter alia* wind energy. The Dutch government has set a target of 4 GW of electrolysis capacity by 2030, and even voiced an ambition for 8 GW of capacity by 2032. To that effect, significant progress has been made in enacting the necessary subsidy schemes and committing public funds to kickstart the hydrogen economy.

In December 2022, the Minister for Climate and Energy informed the Dutch parliament of its intention to appoint Gasunie as the developer and operator of the offshore hydrogen network, which is intended to ultimately connect all offshore wind farms in a ring-shaped backbone to the Dutch (onshore) hydrogen network.

2. Pursuant to the Offshore Wind Energy Act that entered into effect on 1 July 2015, wind farms may only be developed on designated locations.

In March 2023, the government announced that the 700 MW wind farm site Ten Noorden van de Waddeneilanden will be designated for use in offshore hydrogen production at a projected 500 MW offshore hydrogen plant. Hydrogen will be transported to shore by Gasunie using existing repurposed gas infrastructure. The wind farm site, which includes the offshore hydrogen plant, is tentatively scheduled to be tendered in 2026/2027.

In June 2023, Gasunie took a EUR 100 million investment decision to develop the first 30 km of the planned hydrogen backbone from the Rotterdam port area to the Rotterdam industrial cluster.

In June 2023, the government also enacted a new custom subsidy scheme for fully renewable green hydrogen production. Similar to the SDE++ scheme, the green hydrogen scheme uses a competitive auction whereby applicants can submit a request for a subsidy covering the unprofitable difference between grey and green hydrogen. What's new is that applicants can also apply for investment subsidy instead of just an exploitation subsidy. In the first auction in December of 2023, applicants applied for subsidies in amount over EUR 600 million in total, whereas the initial subsidy budget was capped at EUR 245.6 million. In Q1 of 2024, the NEA will inform the applicants of the subsidy awards, which should subsequently result in the concrete development of many additional Power-to-X projects.

In September 2023, the government also published a EUR 150 million draft subsidy scheme aimed at developing the hydrogen infrastructure for the road transport sector. In order to create simultaneous supply and demand, the draft scheme provides for subsidies for both hydrogen fuelling stations as well as for hydrogen-fuelled road vehicles.

In October 2023, the state-owned investment fund GroenvermogenNL announced a new EUR 10 million budget for feasibility studies of green hydrogen.

In December 2023, the government opened a public consultation for the plan to join the German-initiated subsidy instrument H2Global with a EUR 300 million commitment, which serves to kickstart the import of renewable hydrogen carriers to North-western Europe.

As of 2024, two hydrogen demonstration projects are being planned. These projects will involve the construction of electrolysers (hydrogen production installations) at sea:

- Project 1 involves an electrolyser with a capacity of approximately 30-50 megawatts.
- Project 2 involves an electrolyser with a capacity of approximately 500 megawatts.

The government has announced the preferred locations for the two hydrogen demonstration projects:

- The location for Project 1 is in or near the Hollandse Kust (North) wind farm, planned for around 2030.
- The preferred location for Project 2 is a yet-to-be-developed wind farm north of the Wadden Islands, site I, planned for around 2033.

In November 2024, the Dutch government shared an update on the OSW Road Map and the subsidy process for the "Offshore Hydrogen Production Demonstration Project 1".

The Dutch government plans to use part of the renewable energy from offshore wind farms for green hydrogen production to enhance grid flexibility. A consortium will be selected through a call for proposals to realize an offshore green hydrogen demonstration project (**"Demo 1"**). After selection, the government will submit a tailored subsidy for EU approval, and the consortium must apply for a permit.

Demo 1 involves building an electrolyser with a capacity of 20-50 MW, located near the TenneT platform at the Hollandse Kust (Noord) wind farm, connected via the first offshore customer connection. Gasunie will transport the hydrogen to the onshore network. The project has a budget of €380 million, covering infrastructure and connection to TenneT.

The government opened an online consultation on the proposal setup, with feedback accepted until 26 January 2025. A consortium is expected to be selected by September 2025.

Overall, the Netherlands is firmly committed to its green hydrogen targets and its financial incentives will see many Power-to-X projects come to fruition in the coming years.

Corporate Power Purchase Agreements

The developing Power-to-X market underlines the potential for offshore wind project developers to generate additional revenues by entering into corporate power purchase agreements (**"cPPAs"**).

Following a successful tender bid for the Hollandse Kust West site VI by Ecowende, a joint venture between Shell and Eneco, Eneco has entered into long term cPPAs with respect to the sale of its share in the production of the 756 MW wind farm. Last year, it entered into 15-year term cPPAs with telecom provider KPN as well as retailer Albert Heijn.

In April 2023, Google and Eneco announced a 10-year term cPPA regarding the supply of power to Google's offices and data centres in both Belgium and the Netherlands. The 115 MW capacity is sourced partially from the 328 MW nearshore wind farm Fryslân as well as the 80 MW onshore wind farm Kroningswind.

In October 2023, Vattenfall also signed a second 15-year cPPA with Air Liquide regarding the recently completed Hollandse Kust Zuid wind farm, pursuant to which Air Liquide has secured a second 115 MW share of the 1.5 GW total capacity of the HKZ wind farm. This follows a similar 115 MW cPPA that the parties entered into in 2022.

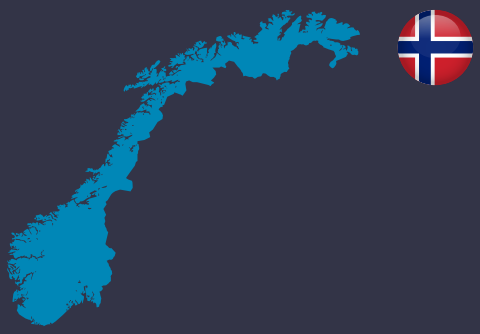
Conclusion

The Netherlands continues to focus on offshore wind as a key tool in tackling climate change. The country has expanded on the targets established in the Offshore Wind Energy Road Map 2030 through the North Sea Programme 2022 – 2027, amendments to the OWEA and the addition of new as well as the expansion of existing development zones to be developed before 2030 and beyond. Additionally, the possibility for developers to benefit from diversified revenue streams driven by not only corporate but also Power-to-X projects means there are clear opportunities in the Dutch offshore wind market.

NORWAY

authored in collaboration with

simonsen vogtwiig



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Steady Progress

Norway is a country already producing large amounts of renewable electricity but mostly from hydropower and onshore wind. For a country with 100,915 km of coastline and wind resources above the European average, Norway's offshore wind power potential is huge, although currently lagging behind its European counterparts. In addition to the fact that Norway has traditionally had access to large amounts of affordable electricity generated from hydropower, Norway's lack of offshore wind projects is also attributable to the fact that due to the deep-water depths there are few areas off the coast of Norway that are suitable for fixed-bottom wind turbines. On the other hand, Norway has a long tradition in oil and gas exploration and production in deep waters offshore, and hence has the potential and expertise to be at the forefront of floating wind development. This can be seen by the 88 MW Hywind Tampen project, which became operational in November 2022 and is currently the world's largest floating offshore wind farm.

To date, the Norwegian government has identified 20 areas for offshore wind development (see Map 11 for further details) and recently announced an ambitious plan to launch a large-scale investment plan to achieve 30 GW of offshore wind capacity by 2040. This goal will be achieved by opening around 1% of Norwegian sea area.

Areas Opened for Development

In 2020, the Norwegian government opened the first two areas for development: Sørlige Nordsjø II ("**SN II**") and Utsira Nord ("**UN**") (see below).

Sørlige Nordsjø II	Utsira Nord
Up to 3 GW capacity	Up to 1.5 GW across three sites
Average water depth around 60 metres	Average water depth of 267 metres
Suitable for fixed-bottom offshore wind	Exclusive floating offshore wind
Marked in red on figure on last page	Marked in purple on figure on last page

MAP 11: AREAS CONSIDERED FOR OFFSHORE WIND DEVELOPMENT IN NORWAY

Flagship Competitions for Development

On 29 March 2023, the Norwegian Ministry of Energy (the "**Ministry**") published two announcements setting out the details for the process for developers to apply to develop offshore wind projects in the SN II and UN areas. The application process for developers is detailed in the Offshore Energy Act and its accompanying regulations and for projects successful in this competition, the deadline for achieving commercial operations remains 2030, despite extensions and delays to the awarding process.

Sørlige Nordsjø II

On 20 March 2024, Ventyr SN II AS won the auction to develop an offshore wind project in the SN II area. Ventyr SN II AS is a joint venture between Parkwind and Ingka-group and will be the first company to develop an offshore wind project in the SN II area. Following being successful in the auction, Ventyr SN II AS entered into a two-way Contract for Difference ("**CfD**") with the Norwegian government. This CfD is a long-term agreement with the Norwegian government that provides power producers with a guaranteed price for electricity over a specified period during the operational phase, thereby mitigating the risk of uncertainty of revenue. Additionally, the two-sided CfD can benefit the state if the actual power prices exceed the agreed contract price of 115øre/kWh (known as the "strike price"). If market prices fall below the contract price, the Norwegian government compensates the producer for the difference. Conversely, if market prices rise above the contract price, the Norwegian government benefits by receiving the difference from the producer. The Norwegian Parliament has set the maximum limit for government support under this scheme at 23 billion Norwegian kroner.

Ventyr SN II has, as winner of the auction, been granted a right and an obligation to carry out a project-specific study program and apply for a licence to construct, own and operate an offshore wind project in the relevant area. Following the granting of this licence, the developer has two years to provide a detailed plan for the development and construction of the offshore wind project. Commercial operations must be reached within three years after approval of the detailed plan. If Ventyr SN II does not meet the deadline, an economic penalty will be incurred.

A cable will connect Ventyr SN II's project to the Norwegian mainland and it will not supply power to customers in other European countries, as was previously mooted.

Utsira Nord

The competition process for UN differs from that of SN II, as applications will be evaluated based on qualitative criteria. These criteria are more extensive than those for SN II and include "*Cost level*," "*Innovation and technological development*," "*Execution capability*," "*Sustainability*" and "*Positive local benefits*." As for the "Positive local benefits" criterion, the actual criterion, is, in spite of the headline, neutral, and refers to competence development, small and medium-sized enterprises (SMEs) initiatives and supply industry development in general terms without reference to a specific geographic location.

The three best applicants will be awarded a project area within the UN area, with 500 MW each, and the best developer will be awarded their preferred project area. After a period of further development of the projects, the developers will participate in a state aid competition. The rules of this competition are yet to be determined in detail; however, it was the initial intention that only two out of three projects will receive state aid by way of a two-way CfD with cap and reservation price (15-year tenors from Commercial Operations and guarantees required) which will be entered into between the Norwegian state and the developer. As the Norwegian government now has proposed a cap of 35 billion NOK in the support scheme, UN is *de facto* limited to one project being awarded a CfD.

The deadline for applications for pre-qualification had for some time been 1 November 2023, however, on 17 October 2023, the Ministry announced that the deadline would be extended to an unknown future date.

The reason for the delay is that the European Free Trade Association Surveillance Authority (ESA), an equivalent to the European Commission for the EEA-countries, has questions regarding the two-step model in relation to the awarding of the project area and then later a CfD auction, and the interrelationship of such processes with state aid rules.

The Ministry is currently in the process of notifying a common model for state aid for UN and the areas suitable for floating offshore wind in the award round of 2025, including Vestavind B and Vestavind F. As a result, the awarding process for these areas is currently on hold.

The Ministry sent a proposal of a model for state aid for public consultation on 28 June 2024, in accordance with the 'Guidelines on State Aid for Climate, Environmental Protection and Energy' (CEEG). The consultation deadline was 6 September 2024. No amendments have so far been notified with respect to the qualitative criteria. The Ministry will now set a new deadline to receive applications from developers for these areas. The winners will get an exclusive right to conduct an impact assessment and to submit a licence application to construct, own and operate an offshore wind project in the relevant area.

New Areas 2025

The Norwegian government has instructed the Norwegian Water Resources and Energy Directorate ("**NVE**") to start the strategic impact assessment of three areas for offshore wind development which potentially could be opened and announced in 2025.

NVE recommended Sørvest F and Vestavind F as two of the three new areas. In addition to this, the Norwegian government asked NVE to make an impact assessment of Vestavind B. Sørvest F, the larger area that includes SN II, is suitable for bottom-fixed production, whereas the new area Vestavind F, an extension of the UN area, and Vestavind B, further north along the coast, are both suitable for floating wind production.

Due to cost concern, the Norwegian government has now discontinued the plans for other fixed-bottom offshore wind projects, choosing instead to concentrate on floating wind projects in 2025. Consequently, Sørvest F is currently excluded from the plans for wind power production.

Initially, the 2025 national budget proposed by the Norwegian government included an allocation of 35 billion NOK for a support scheme dedicated to floating offshore wind projects in the Vestavind F area, which encompasses the UN area, and Vestavind B. However, it is expected that this support will only suffice or the development of one project, likely in the UN area, as the Norwegian government has already started planning the competition process for this area. Consequently, the allocated support will not be sufficient to also cover offshore floating wind projects in the broader Vestavind F area and the Vestavind B area.

Transmission Cables

There is an ongoing discussion in Norway with respect to offshore transmission cables, more precisely whether to lay hybrid cables that will allow for export directly from the offshore wind farms to other countries. The argument for hybrid cables is that they presumably will improve profitability in the projects, whereas counterarguments tend to be based on the desire to provide affordable electricity to the Norwegian onshore industry and consumers.

As of 10 February 2025, the Norwegian government decided to cancel plans for another fixed-bottom offshore wind project in the Sørvest F area due to cost concerns.

The decision was made following a study by Statnett (the system operator) evaluating the development of hybrid grid solutions for the Sørvest F area. Statnett concludes that offshore wind power production will be dependent on state aid, regardless of the transmission solution chosen. The Ministry of Energy will instead put full fucus on the development of floating offshore wind projects.

However, the government remains open to the potential viability of offshore wind projects with hybrid transmission cables, should future geopolitical circumstances and cost considerations evolve favourably.

Power-to-X

The concept of power-to-X is still in its infancy. The 'Deep Purple' demonstration project, led by Repsol, aims to design, build, and test a land-based pilot at TechnipFMC's Norwegian headquarters in Kongsberg, Norway. The aim of the project is to facilitate autonomous offshore operations whereby power from offshore wind farms is used to create green hydrogen via offshore electrolysers that can be stored under pressure in the seabed and converted back to electricity when required.

We also see new initiatives emerging, including the collaboration between Hy2gen Norge AS, as developer, builder and operator of renewable hydrogen and hydrogen-based e-fuels plants—and the offshore wind specialist, Deep Wind Offshore.

Additionally, there are other hydrogen production initiatives that have received public investment support, specifically from the ENOVA, owned by the Ministry of Climate and Environment. It is important to note, however, that Norway does not offer any public offtake schemes for these types of projects. As a result, these initiatives are highly dependent on EEA/EU-regulations.

Separately, Norway's Hywind Tampen is one of the first examples of the electrification of the oil and gas sector and consists of eleven wind turbines which have been upgraded from 8 to 8.6 MW. The electricity from Hywind Tampen is used by Equinor (partially Norwegian state-owned energy firm and the developer of Hywind Tampen) to directly power the oil and gas platforms of Snorre and Gullfaks fields and is estimated to meet about 35% or more of the annual electricity power demand of the platforms. This is a synergy that developers will be eyeing closely, given Norway's developed oil and gas industry.

Other projects worth mentioning include Norsk e-Fuel's sustainable aviation fuel project, Fuella's green hydrogen and ammonia initiatives, and Gen2Energy's green hydrogen production.

Outlook

Norway has a lot of potential for offshore wind, particularly to be a frontrunner in floating offshore wind. However, this could quickly turn into lost potential should Norway not prioritise this expansion and further development. The Norwegian government needs to tie down its regulation and financing and to accelerate current and future competitions for new development areas if it is to achieve its goal of 30 GW of installed offshore wind capacity by 2040.

PHILIPPINES

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Introduction

The Philippine Archipelago, with its vast coastline and abundant wind resources, holds significant potential for harnessing offshore wind ("**OSW**") resources. According to the World Bank Group and the Department of Energy ("**DOE**")'s Offshore Wind Roadmap for the Philippines ("**OSW Roadmap**") published in 2022, the Philippines has a potential of 178 gigawatt ("**GW**") of OSW resources available to be tapped into[1]. However, OSW as a renewable energy ("**RE**") source is still in its nascent stage in the Philippines, and the growth story for OSW in the Philippines is only just beginning. Like any emerging industry, there are both opportunities to be exploited and challenges to overcome.

Taking a Step Back – An Overview of the Philippine Energy Market/Regulatory Regime

The Philippines energy regulatory regime has evolved and now provides for a more competitive energy market, in particular the RE sector. RE is a current focus of the Philippine Government, and in the DOE's National Renewable Energy Program 2020–2040, the share of RE in the Philippines' power generation mix is targeted to increase to at least 35% by 2030 and 50% by 2040, from its current share of 22%[2]. However, there is currently no comprehensive regulatory framework specifically tailored to the OSW sector—this is one of the primary challenges facing OSW development in the Philippines.

A snapshot of some key notable developments in the RE sector in the Philippines is set out below:

a. 1987 Philippine Constitution

Historically, the 1987 Philippine Constitution recognized the State's ownership of natural resources within its territory and imposed nationality restrictions on the exploration, development and utilization of natural resources. This limited the extent of foreign ownership in, and investment into, the RE sector.

However, the recent Department of Justice Opinion No. 21, Series of 2022 ("**DOJ Opinion**") clarified that certain renewable energy sources, such as wind and solar, are not regarded as "*natural resources*," and hence their exploration, development and utilisation should not be subject to such constitutional restrictions.

The DOJ Opinion has prompted a shift in the regulatory regime of RE sources in the Philippines. Foreign developers are now permitted to exploit, develop and utilise such RE.

b. Electric Power Industry Reform Act ("EPIRA")

The EPIRA (enacted in 2001) primarily governs the electric power industry in the Philippines. It aims to promote a more competitive energy market to guarantee a steady supply of energy for national electrification. The EPIRA introduced the Retail Competition and Open Access ("**RCOA**") in 2011 which allows contestable customers to choose their source of power and enter into power purchase agreements with retailers of their choice.

c. Renewable Energy Act

The Renewable Energy Act ("**RE Act**") was enacted in 2008 to promote RE projects in the Philippines in pursuit of national electrification with a view on sustainability. It mandates the creation of Renewable Portfolio Standards ("**RPS**"), which require that a certain minimum percentage of the Philippines' total generation should be sourced from RE sources. Renewable Energy Certificates ("**RECs**"), each of which represent 1 MWh of power generated by eligible renewable energy power generation facilities, are instruments issued to facilitate mandated participants to comply with their RPS obligations. RECs can be traded on the Renewable Energy Market established by the Philippine Electricity Market Corporation, and the market price can be negotiated by participants, subject to a price cap as determined by the DOE and approved by the Energy Regulatory Commission ("**ERC**"). As of April 2024, the ERC approved and adopted an REC price cap of PhP 241.56/MWh. This cap will be reviewed every two years, or, if earlier, as and when significant events or information that are vital and relevant to the setting of such cap arise.

Furthermore, the RE Act classifies power generated from RE sources as either "**must dispatch**" or "**priority dispatch**" (i.e., power generated from RE sources will be dispatched first and have priority over power generated from non-RE sources).

1. World Bank Group, A Roadmap for Offshore Wind in the Philippines available at https://www.worldbank.org/en/news/infographic/2022/04/25/a-roadmap-for-offshore-wind-in-the-philippines.
2. Department of Energy, National Renewable Energy Program available at https://www.doe.gov.ph/sites/default/files/pdf/announcements/nrep_2020-2040.pdf?withshield=2 (last accessed November 28, 2023).

The RE Act incentivizes RE projects by providing fiscal incentives, such as, amongst others, income tax holidays, zero value-added tax ("**VAT**") (i.e., RE project developers are entitled to claim refunds for the VAT passed on to them in their inputs) and import tax exemptions on equipment and machineries. The RE Act also introduced initiatives such as the Feed-In Tariff ("**FIT**") Program, the Green Energy Option Program ("**GEOP**"), and the Green Energy Auction Program ("**GEAP**"), as well as net metering and distributed energy resources.

d. EVOSS

In 2024, the DOE launched the Energy Virtual One-Stop Shop ("**EVOSS**") System. EVOSS was first promulgated in June 2023 by the DOE via Department Circular No. DC2023-06-0020 ("**OSW Circular**"), with an aim to streamline all the permitting processes relevant to OSW plants. EVOSS is an online platform that provides a single decision-making portal for applications of permits necessary for, or related to, power generation, transmission, and distribution projects. The EVOSS website provides a list of awarded OSW service contracts, downloadable forms, fees, requirements, and process flows for various applications, which introduces a clearer permitting and regulatory framework for OSW projects.

e. OSW Circular

Pursuant to Executive Order No. 21, Series of 2023, in June 2023, the DOE promulgated Department Circular No. DC2023-06-0020 ("**OSW Circular**"), which, amongst other things, seeks to streamline permitting processes relevant to OSW plants (via EVOSS, as mentioned above), and to provide greater transparency and access to information relating to the Philippine OSW industry (via the Philippine OSW Databank). The Philippine OSW Databank contains all documents submitted in relation to, and information on, OSW projects, including permits, clearances, requirements, and fees to be paid to permitting agencies relating to the development of OSW projects. These permits include those issued by Department of Environment and Natural Resources, Bureau of Internal Revenue, ERC, National Grid Corporation of the Philippines, National Transmission Corporation and Power Sector Assets and Liabilities Management Corporation.

The OSW Circular also directed the DOE to issue guidelines on the award of OSW energy service contracts. Pursuant to this, the DOE issued Executive Order No. 21, Series of 2023 and Department Circular No. DC2024-06-0018, a revised set of omnibus guidelines governing the award and issuance by the DOE of OSW energy service contracts and the registration of renewable energy developers. These guidelines prescribe simplified processes and requirements, including the removal of nationality requirements for RE applicants, allowing developers to commence permit processing and feasibility activities before the official 25-year contract term begins, providing duty-free importation incentives and enhanced investment opportunities, and reducing the restrictions on assignments of the RE contracts.

Opportunities for RE (including OSW) Developers in the Philippines

The Philippines offers several opportunities for RE developers (including OSW developers) to be able to participate in the energy market.

a. Corporate Power Purchase Agreements

By virtue of the RCOA and the GEOP, the Philippines' energy regulatory regime allows end users to have the ability to choose their source of power. Having long-term power purchase agreements from stable offtakers is likely to play a key role in RE (including OSW) projects being able to attract favourable financing options for the development of such projects.

i. RCOA

The RCOA is a programme that allows "*contestable customers*" to enter into retail electricity supply agreements ("**RESAs**") directly with power suppliers (otherwise known as retail electricity suppliers ("**RES**")). In contrast, non-"contestable" or captive customers are required to source their power from the distribution utility ("**DU**") franchised to serve their respective areas.

An end user is a "**contestable customer**" if it has an average monthly peak demand of at least 500 kW in the past 12 months. The DU has an obligation to inform end users that they are qualified to be contestable customers and may enter into RESAs with power suppliers of their choice. If an end user is a newly connected entity, it must have a projected peak demand of at least 3 MW for the next 12 months, or a monthly peak demand of at least 500 kW for three consecutive months.

A group of contiguous or adjacent end-users or a group of end users occupying the same building, who cannot individually reach the threshold for contestability, may aggregate their monthly peak demands. If such aggregated demand meets the 500 kW threshold, they may enter into a RESA with a RES aggregator.

A RE generation company (including an OSW developer) may act as a RES and may directly negotiate RESAs with contestable customers, provided that it has the necessary license to act as a RES.

ii. GEOP

Under the GEOP, customers with an average monthly peak demand of at least 100 kW for the past 12 months may choose to require their energy to be sourced exclusively from RE plants. An end user with a new connection, whose estimated average monthly peak demand for the next 12 months is 300 kW or above, and a newly connected end-user whose estimated average monthly peak demand for 12 months is at least 100 kW but less than 300 kW for three consecutive months, may also participate in the GEOP. Like the RCOA, the GEOP creates opportunities for RE generation companies (including OSW developers) to sell RE to customers (though unlike the RCOA, there is no possibility of aggregation under the GEOP).

b. Feed-in Tariff Program and Green Energy Auction Program

The GEAP and the FiT Program guarantee RE generators (including OSW developers) will receive a certain fixed price (subject to local inflation and foreign currency adjustments for the FiT Program) offtake of RE generated by such generators for an agreed number of years.

i. FiT Program

Under the FiT Program, electric power industry participants were obliged to source electricity from RE generation at a guaranteed fixed price[3] (subject to adjustments for local inflation and foreign exchange) for a given period of time (at least 12 years), as determined by the ERC. This programme was adopted to accelerate the development of emerging RE resources (such as OSW).

The installation targets for each FiT-eligible resource were determined by the DOE in consideration of impact, distribution and grid security, and costs. Allocation of these installation targets was done on a first come, first served basis. Priority was given to RE developers who could demonstrate that their project was near completion and ready for commissioning. Once the installation targets were fully subscribed, the FiT Program no longer applied.

Currently, the FiT Program has been discontinued (and no new RE plants are being allowed to benefit from the FiT rate since the installation targets have been filled) in favor of the GEAP (see further below).

ii. GEAP

GEAP allows the entry of RE developers by providing an auction process whereby RE developers submit bids to supply RE capacity. In each GEA round, the RE sources and the technical specifications for the plants are detailed. The participants must comply with the RE source and the technical specification and their proposed green energy tariff ("**GET**") must not exceed the green energy auction reserve price. While there is currently no notice of any auction involving OSW, the DOE has been preparing for the fifth round of the GEAP auction for OSW which could reach 3,000 to 6,000 MW, to commence in the middle of 2025.

Participants that have been awarded under the GEA round are entitled to receive the GET for every kWh they produce. The GET is fixed throughout the contract period, which is typically for 20 years.

c. Power-to-X

The DOE, through its Department Circular No. DC2023-04-0008 ("**ESS Circular**"), treats an energy storage system ("**ESS**") integrated with RE plants as a RE source. Such ESSs thus enjoy the same benefits of RE plants, including fiscal incentives and preferential dispatch. Energy stored by an OSW plant to an integrated ESS will likewise be treated as RE.

Challenges Facing the Philippine OSW Sector

Despite the adoption of several regimes that would incentivize entry of RE developers and opportunities for RE developers to enter the Philippine RE market, there are still various challenges that prospective RE developers may encounter in seeking to develop RE projects (in particular, OSW projects) in the Philippines.

One such challenge is the nationality restriction on activities incidental to the exploitation, development, and utilization of RE. Although the DOJ Opinion and the recent implementing regulations of the RE Act now allow foreign developers to exploit, develop, and utilize certain RE sources (including OSW), certain incidental activities (such as use of forest land, foreshore and other public lands, and drawing of water from natural resources) are still not open to companies whose foreign ownership is more than 40% of its outstanding capital stock.

Furthermore, permits required in order to develop, construct, and operate OSW projects, and the regulatory regime in general for OSW projects, are not yet well-defined. These permits include, among others, permit to use the site, indigenous community consent or noncoverage, affected fishermen's consent and compensation and, if within the jurisdiction of a local government unit ("**LGU**"), the endorsement of the project by LGUs hosting or affected by the project, which are difficult to obtain.

Other challenges include technical challenges in integrating intermittent RE sources into the existing power grid, in particular infrastructure upgrades will be required to accommodate OSW projects (though as noted below, the Philippines has taken steps to tackle this issue, specifically in relation to port infrastructure). Enhancing grid stability, transmission capacity and interconnection capabilities are also matters that the Philippine Government and regulators would need to address.

3. Initially, the approved FIT rate for wind was set at PhP8.53/kW-hour (kWh) with a target allocation capacity of 200 MW. In October 2015, a wind FIT rate of PhP7.40/kWh was set for a new allocation target of 400 MW. In contrast, for solar power, the approved FIT rate was PhP9.68/kWh with an initial 50 MW of installed capacity, and in April 2015, a new rate of PhP8.69/kWh for an additional allocation target capacity of 450 MW was set.

Prospective Regulations/Deregulations and Other Possible Developments/Outlook

The DOE and the Philippine Ports Authority ("**PPA**") are working together to accelerate the development of OSW energy projects through improvements and modernization of port infrastructure. To this end, the PPA has committed to repurpose three ports—Port of Currimao in Ilocos Norte, Port of Batangas in Sta. Clara, Batangas City, and Port of Jose Panganiban in Camarines Norte—which the DOE has identified as critical to OSW development due to the said ports' proximity to high-potential OSW energy service contracts.

The DOE is also working with the Department of Environment and Natural Resources ("**DENR**") on assessing potential offshore sites and the possible environmental impact of the OSW energy projects. In October 2024, the DOE and DENR signed a memorandum of agreement ("**MOA**") aimed at accelerating the exploration and development of OSW projects, by granting rights to use offshore areas covered by offshore wind energy service contracts and auxiliary areas, subject to DENR requirements. Prior to this MOA, RE projects were required to secure and put in place various agreements with the DENR (such as foreshore leases, forest land use agreements, and miscellaneous lease agreements) before being able to proceed with exploration and development. This MOA allows identified OSW projects to bypass such steps and in turn, enables a faster progress and rollout of OSW projects.

These efforts demonstrate the country's commitment to pursuing OSW as a source of sustainable energy despite the challenges, and to achieve its target of delivering energy from OSW projects by 2028.

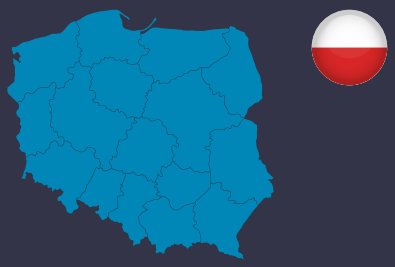
Conclusion

In conclusion, the outlook for OSW in the Philippines is promising. With its abundant wind resources and growing energy demand, offshore wind has the potential to play a significant role in the country's renewable energy transition. The Government's support can be seen through various measures and initiatives and indicates a positive trajectory for OSW projects in the Philippines. As technology continues to advance and costs decrease, we believe that OSW presents a valuable opportunity for sustainable energy generation and economic growth and stability in the Philippines.

POLAND

authored in collaboration with

RYMARZ ▪ ZDORT ◥ MARUTA



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Offshore wind ("**OSW**") farms have been recognised by the Polish government as the key to enabling Poland to transition its energy mix to less carbon-intensive forms of power generation. The main strategic document describing this transition is "Polish Energy Policy until 2040" ("**PEP2040**"), which envisages installing 5.9 GW of OSW capacity by 2030 and a further 12 GW by 2040. The potential of the Polish exclusive economic zone of the Baltic Sea in terms of OSW is estimated at as much as 33 GW, which provides room for raising the targets, as well as further development beyond 2040.

State of play in the Polish OSW sector

The contract-for-difference ("**CfD**") support scheme awards for Polish offshore wind farms have been divided into two phases. In the first phase, the Polish regulator awarded support to seven of the most advanced OSW projects under individual decisions covering an aggregate of 5.9 GW of installed capacity, which aligns with the total OSW capacities envisaged by PEP2040 to be installed and put into operation by 2030.

The CfD strike price under each direct CfD award of the first phase has been set at PLN 319.60/MWh (equivalent to EUR 71.82/MWh based on an exchange rate of EUR 1 = PLN 4.45). The strike price is subject to annual indexation by Polish CPI and can, depending on an developer's preference, be denominated in EUR instead of PLN (in accordance with the principles summarised further below).

So far, of these seven projects, only Baltic Power (1.2 GW), developed by a joint-venture company of Orlen Group and Northland Power, has started construction. This project represented the first project financing in the Polish OSW sector, totalling EUR 4.4 billion. Other phase one projects are likely to have their financial models finalised and final investment decisions taken soon, with Baltica 2 (1.5 GW) of PGE Group and Ørsted being the most likely candidate to reach this milestone in the coming months, followed by MFW Bałtyk II (720 MW) and MFW Bałtyk III (1.2 GW) owned by a consortium comprising Polenergia and Equinor, BC-Wind (400 MW) owned by Ocean Winds, Baltica 3 (1.05 GW) owned by PGE Group and Ørsted, and FEW Baltic II (350 MW) owned by RWE Renewables. Please refer to Map 12 for the locations of these projects.

The order in which the CfD support was granted in the first phase was determined by the order in which completed applications were submitted by the developers to the regulator (first come, first served basis). The second phase of the support system, on the other hand, will consist of competitive auctions to be held by the regulator. The first auction is scheduled for 2025, followed by additional auctions in 2027, 2029, 2031, and possibly 2032 if there is any excess capacity (at least 0.5 GW) not awarded in the 2031 auction. Overall, the CfD support is to be granted in the auctions for OSW projects with a total installed capacity of 12 GW.

The second round of licensing relating to the sites that have been earmarked for the second phase of CfD support resulted in seabed rights being awarded to Orlen (five sites) and PGE (two sites individually and another three sites granted to projects developed by PGE in partnership with Tauron, Enea and Ørsted, respectively). Please refer to Map 12 for the location of these sites. Some developers that competed against PGE and Orlen in the second licensing round for these seabed rights have challenged the results, questioning the bid evaluation rules that favoured domestic vertically integrated power companies with no track record in constructing and operating offshore wind farms.

The strike price relevant for the CfD support awarded through auctions will be equal to the price stated by the developer in the offer which was successful in the auction. However, the price developers can offer in the auction is capped at levels set by secondary legislation, which came into force on 15 January 2025 and applies to this year's auction. The strike price cap varies depending on the sea area where the project is located and is as follows:

- PLN 485.71/MWh for areas 14.E.1, 14.E.2, 14.E.3, 14.E.4, 45.E.1, 46.E.1;
- PLN 499.33/MWh for areas 43.E.1, 44.E.1; and
- PLN 512.32/MWh for areas 53.E.1, 60.E.1, 60.E.2, 60.E.3, 60.E.4.

Please refer to Map 13 for the locations of these areas in the Polish exclusive economic zone of the Baltic Sea.

The varying strike price caps were introduced based on the geophysical conditions of the sea areas and their distance from shore. According to the legislator, this differentiation is intended to account for the higher capital expenditures associated with constructing OSW projects located further offshore and requiring more extensive power export infrastructure. Among the sites licensed so far, the four located furthest from the shore are owned by PGE (three sites) and co-owned by Polenergia and Equinor (one site).

Basics of the Polish CfD Support Scheme

The Polish support scheme for OSW follows the same basic mechanics of a two-sided contract-for-difference available for certain offshore wind farms in the United Kingdom. However, unlike in the U.K., under Polish law, CfD support beneficiaries cannot enter into private contracts with the Polish government to regulate the terms of CfD support. Therefore, the CfD support scheme is based solely on the provisions of Polish law.

The mechanics are no different for the CfD support awarded to projects in the first phase and those projects that will be awarded support through auctions to be held in the second phase.

Accordingly, the CfD support is designed to provide a variable premium above the market price, payable to an electricity generator if the (base) market price of electricity is below the CfD strike price.

If the (base) market price of electricity is lower than the CfD strike price, this creates a "negative difference" which is subject to compensation on a monthly basis by the settlement operator, *i.e.* a joint-stock company wholly owned by the Polish state which is responsible for operating and settling the CfD support for OSW and other support schemes for onshore renewable installations deployed in Poland.

If the (base) market price of electricity is higher than the CfD strike price (a "positive difference"), the difference will be offset against any monthly negative difference or must be returned to the settlement operator by the electricity generator on an annual basis. The premium is paid to electricity generators irrespective of the actual revenues generated from selling electricity on the market or through bilateral offtake arrangements.

A beneficiary of CfD support is entitled to receive compensation for a negative difference relating to electricity generated by an OSW project (or a part thereof) for 25 years from the date on which the electricity is first generated and fed into the grid after the generation licence has been issued for the project. Other than in the U.K., the Polish scheme does not offer a project the ability to enter a CfD scheme in phases with separate 25-year CfD periods attached to each phase of the project.

The 25-year CfD support period does not include a wind farm's start-up period preceding the issuance of the generation licence to the project company.

The CfD support is available only for the volumes submitted to the settlement operator for settlement under monthly applications. The total volume of electricity, in MWh, for which the producer is able to apply for settlement of a negative difference is the product of 100,000 hours and the installed capacity of the project subject to CfD support. Accordingly, the developer will cease to be entitled to request compensation for the negative difference upon the earlier of: (i) the lapse of 25 years from the first generation and introduction of electricity to the grid; or (ii) the point in time at which the total volume of electricity generated by the project exceeds 100,000 MWh per each MW of its installed capacity covered by the CfD support.

Notably, the volume of electricity generated and introduced to the grid when the (base) market price is less than PLN 0 (negative price event) will be deemed to be 0 MWh. Accordingly, CfD support is not available for the volumes generated during such negative price periods and such volumes do not count towards the 100,000 MWh support cap.

The CfD strike price is subject to annual indexation based on the average annual consumer goods and services price index for the previous calendar year, as determined and published by the Polish Central Statistical Office, starting from 2022 for the CfD support awarded in the first phase, or the year following the year of the auction in which the CfD support was awarded in the second phase.

The CfD strike price must be reduced by the value of any investment support received by the developer for the development, construction or operation of the project.

The Polish CfD support scheme was approved as compatible with the internal market of the European Union under a decision of the European Commission dated 20 May 2021 (State Aid SA.55940 (2021/N) – Poland Offshore Wind Scheme). Accordingly, any future CfD support awarded through competitive auctions will automatically be considered compatible with the internal market. This does not apply to CfD support awarded through individual decisions of the regulator in the first phase as these were not granted through a competitive process and, therefore, require individual notification to, and clearance by, the European Commission. Such clearance has already been secured for the majority of the phase one projects, including Baltica 2 and 3, the Baltic Power, and MFW Bałtyk II and III.

CfD Support in EUR

The CfD support may be denominated in EUR instead of PLN, or partly in PLN and partly in EUR. The developer may indicate its preference in this respect to the settlement operator. For this purpose, the developer must declare to the settlement operator the percentage proportion of the CfD support to be calculated in PLN and in EUR. This declaration must be submitted before the submission of the first application to cover the negative difference. Within the first 15 years of feeding electricity from the project to the grid, the developer is entitled to amend the declaration once.

Although the developers are entitled to indicate its preferred split between PLN and EUR for the purpose of calculating the CfD support, the payment method cannot be changed. This means that the payment of compensation for the negative difference will always be made exclusively in PLN.

If the developer selects the CfD support, or a portion thereof, to be denominated in EUR, that portion will be calculated based on the exchange rate determined as the arithmetic average of the daily EUR exchange rates announced by the National Bank of Poland in the month preceding the developer's application for the settlement of the negative difference.

Curtailments and Redispatching

The Polish support scheme provides for compensation mechanisms in situations where the export of electricity from the project is curtailed due to: (i) delays by the grid operator in implementing the necessary grid investments required for connecting the project to the grid; or (ii) non-market-based redispatching of the project by the grid operator.

If the developer is unable to feed all or part of the electricity generated by the project into the grid due to delays by the grid operators in implementing the grid investments required for connecting the project to the grid, the developer is entitled to recover the negative difference in relation to the volume of electricity not fed into the grid as a result of this delay. This entitlement applies during the period starting from the thirtieth calendar day following the submission by the developer of a complete application for the EON (energisation operational notification) to the operator, but no earlier than the date of readiness to supply voltage as specified in the grid connection agreement, until the date the operator actually issues the EON.

The negative difference subject to compensation by the settlement operator to the Company is determined for each individual imbalance settlement period during which the project was unable to feed electricity into the grid due to the operator's delay. The value of this negative difference is calculated based on the volume of electricity that would have been exported to the grid if there had been no delay, using a (base) market price set at PLN 0 per MWh.

Accordingly, unlike the U.K. CfD scheme, where payments are based solely on metered outputs, generators under the Polish CfD scheme are eligible for payments for curtailed outputs, providing notable mitigation against curtailment risks.

Offtake Considerations

Under the Polish OSW scheme, the offtake of electricity generated by the project is not guaranteed to the generator. Accordingly, the generators are fully responsible for marketing the electricity generated by their projects and are free to sell such electricity on the market via the power exchange or under one or more bilateral offtake contracts.

In principle, the revenues of the projects subject to the support scheme will come from two sources: (i) revenues under the offtake contract covering the relevant volume of electricity and corresponding guarantees of origin; and (ii) revenues from the CfD support scheme.

As under the Polish OSW scheme, the generator does not have to sell electricity directly, various lifting arrangements can be implemented.

While the market of power purchase agreements for onshore wind farms and other large-scale renewable installations is well-established in Poland, the first corporate PPA for electricity to be generated in an offshore wind farm has yet to emerge.

Forthcoming CfD Auction

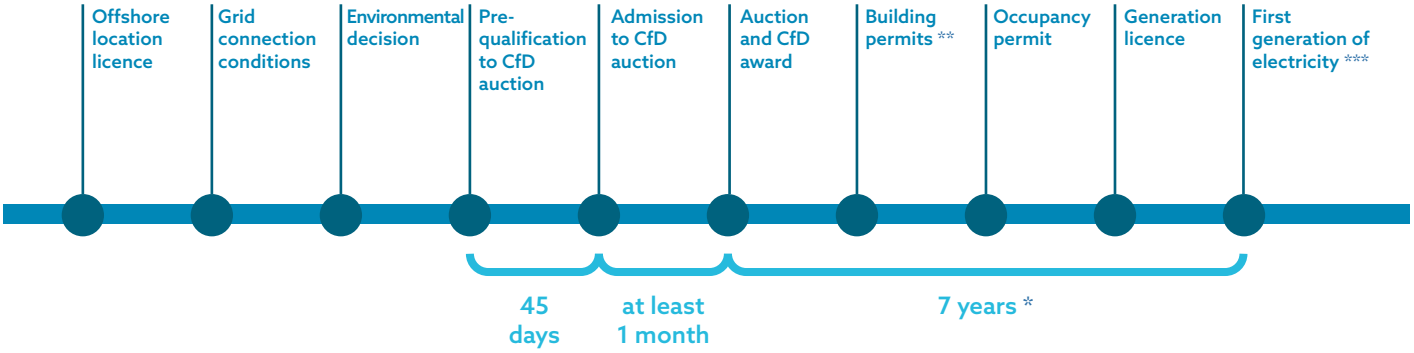
Only projects with secured offshore location licences, environmental decisions, and preliminary grid connection conditions obtained from a grid operator will be eligible to participate in the forthcoming auction.

According to the experience of most of the phase one projects that obtained their offshore location licenses in 2012 and 2013, the average duration of proceedings to obtain environmental decisions after completion of all the impact assessment works was more than one-and-a-half years, and more than six months to obtain any subsequent amendments to such environmental decisions. The specialised provisions of law introduced by the Offshore Wind Act in 2021 aimed at streamlining the permitting process, including shortening the mentioned periods, are yet to be tested in practice.

Please see the diagram below for an overview of the key development milestones leading to the investment decision for the phase two OSW project, as well as the subsequent timeline required for the project to enter the CfD support scheme.

A CfD auction can only be held if at least three projects are admitted, and such auction will be legally conclusive only if valid bids for at least three projects are submitted by developers during the auction session. Due to the insufficient number of advanced projects, it is uncertain whether the 2025 auction will proceed as scheduled. Regulatory changes aimed at addressing this concern, as described in the next paragraph, are currently under discussion at the government level.

KEY DEVELOPMENT MILESTONES

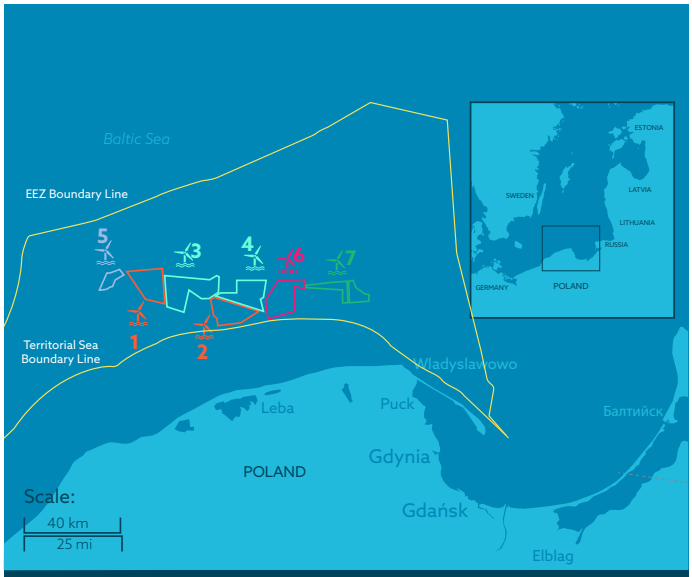


* Subject to extension if required due to: (i) the occurrence of a *force majeure* event; (ii) a breach by the transmission system operator of the implementation time schedule under the grid connection agreement; (iii) an event, action or omission of a third party resulting from circumstances for which the generator is not responsible.

** A winning auction bid may be updated by the generator to reduce the installed capacity of the project subject to CfD support within 24 months of the date of building permit (or the first building permit, if multiple) for the offshore wind farm becoming final.

*** The assets comprising the offshore wind farm must have been produced within the 72 months immediately preceding the date on which electricity was generated for the first time using these assets.

MAP 12: POLAND'S OFFSHORE WIND PROJECTS – PHASE 1



Key

1. **MFW Bałtyk II** - Polenergia/Equinor, 720 MW Capacity
2. **MFW Bałtyk III** - Polenergia/Equinor, 1,200 MW Capacity
3. **Baltica 2** - PGE/Ørsted, 1,498 MW Capacity
4. **Baltica 3** - PGE/Ørsted, 1,045 MW Capacity
5. **FEW Baltic II** - RWE Offshore Wind Poland, 350 MW Capacity
6. **Baltic Power** - PKN Orlen/Northland, 1,200 MW Capacity
7. **BC-Wind Polska** - Ocean Winds (EDPR/Engie), 400 MW Capacity

MAP 13: POLAND'S OFFSHORE WIND PROJECTS – PHASE 2 OFFSHORE WIND SEABED ZONES

Key

Name of Area	Developer(s)	Capacity (MW)
1. 14.E.1 - Ławica Odrzana	Orlen	900 MW
2.14.E.2 - Ławica Odrzana	Orlen	900 MW
3. 14.E.3 - Ławica Odrzana	Orlen	1200 MW
4. 14.E.4 - Ławica Odrzana	Orlen	1200 MW
5. 43.E.1 - Ławica Słupska	PGE/Tauron	990 MW
6. 44.E.1 - Ławica Słupska	PGE	975 MW
7. 45.E.1 - Ławica Słupska	PGE/Ørsted	210 MW
8. 46.E.1 - Ławica Słupska	Orlen	1000 MW
9. 53.E.1 - Ławica Słupska	Not resolved	
10. 60.E.3 - Ławica Środkowa	PGE	1185 MW
11. 60.E.4 - Ławica Środkowa	PGE/Enea	555 MW
12. 60.E.1 - Ławica Środkowa	Polenergia/Equinor	1,560 MW
13. 60.E.2 - Ławica Środkowa	PGE	896 MW

Expected Amendments to the OSW Scheme

Based on initial experiences with the first phase of the OSW project, several challenges have been identified and earmarked for mitigation through further regulatory changes.

A draft bill amending the Offshore Wind Act and certain other acts has recently been added to the list of the legislative work of the Council of Ministers. The exact wording and scope of the proposed amendments are not yet publicly available. However, the main changes outlined include:

- providing the possibility of rescheduling the 2025 CfD auction to the first half of 2026, if there are insufficient participants with auction entry certificates;
- allowing more than one offshore wind farm to share a single offshore substation and power export infrastructure, which could increase the number of projects eligible to place bids in the upcoming auction and help developers better manage the risk of unsuccessful bids. The proposal may also seek to establish specific legal mechanisms for individual metering or apportioning of the outputs of projects sharing power export infrastructure;
- confirming that minor adjustments to the locations of WTG foundations or offshore substations will no longer require changes to offshore location licenses, environmental decisions, or additional reviews or plans; and
- providing additional clarifications to regulations relevant to phased OSW project development.

Outlook for New Developers and Financers

The scale of capital requirements needed to implement all the existing OSW projects is so immense (capex estimates range between EUR 3 and 5 billion / GW) that Polish state-owned companies, and most of their joint-venture partners, lack the balance sheet capacity to build all the required generation capacities within the timeframes set by Polish legislation. This will become further exacerbated with the additional 9 GW of location permits that were awarded to Orlen and PGE (individually and in consortia with Enea, Tauron and Ørsted) in 2023 in the second round of licensing and set to be contracted out in upcoming CfD auctions.

Additionally, it is uncertain whether the lessons learned so far in developing the phase one OSW projects, with no such project scheduled to reach commercial operations phase before end of 2026, will be enough for Orlen and PGE (being the holders of the offshore location licenses awarded in the second licencing round) to proceed with the implementation of phase two OSW projects without partners more experienced in the OSW space.

All of this opens up opportunities for new foreign industry developers and infrastructure funds interested in entering the Polish offshore market, as well as those interested in increasing their existing foothold. Given the upcoming CfD auction, 2025 may prove critical for securing involvement in Polish OSW projects of the second phase.

Of the current 6 GW of phase one projects being developed in Polish waters, only Baltic Power (1.2 GW), jointly owned by Orlen Group and Northland Power, has reached financial close. For the remaining phase one projects that are less advanced in their project finance processes, it may become relevant that in 2024 the OSW Fund with a budget of nearly EUR 5 billion was created under the National Recovery Plan (KPO) supported by EU funds under the NextGeneration EU programme. The KPO funds for OSW projects in Poland are managed by the National Development Bank (BGK). The funds are available to developers in the form of loans for OSW projects with a capacity of at least 300 MW, with the Fund planning to finance at least two OSW projects of at least 3 GW. However, the pool of money available to developers under the KPO funds comes late in the process and with a tight deadline, as the loan agreements must be executed by 31 August 2026. Accordingly, unless the programme is revised to allow for its extension, it is unlikely that the KPO funds will be available to developers for financing the second phase projects.

Conclusion

The Polish OSW industry has grown exponentially over the last few years and there are promising signs that the country will meet its 5.9 GW target of OSW capacity by 2030. Overall, the phase one projects appear to be laying a robust foundation for the future of Poland's offshore wind sector. In addition, the results of the second seabed licencing round noted in this article will likely result in plenty of activity within the sector in 2025 given the need for the state-owned companies to develop their sites by a set deadline, and so there may be the potential for further M&A activity on the horizon in this respect.

PORTUGAL

authored in collaboration with

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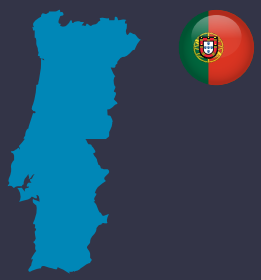


Authored by Adam Smith (Orrick), Oliver Sikora (Orrick), Ricardo Andrade Amaro (Morais Leitão), Joana Alves de Abreu (Morais Leitão) and Inês Vieira (Morais Leitão) – refer to page 124 for contact details.

Potential and Goals

Portugal has a vast coastal area and currently has one of the largest maritime exclusive economic zones in Europe, so it is only natural that the country is paying attention to the use of its maritime resources for electricity generation. Given Portugal's short continental shelf and naturally deep waters, the potential for installing offshore wind energy in Portugal is much more significant for floating turbines (estimated potential capacity of up to 40 GW) than for fixed turbines (estimated potential capacity of up to 3.5 GW). The Roadmap for an Industrial Strategy for Ocean Renewable Energies (the "**Roadmap**"), estimates that ocean renewable energies could potentially supply 25% of the total annual electricity consumed in Portugal. This would contribute not only to the reduction of Portuguese energy imports but also would prevent the emission of 8 million tons of carbon dioxide per year. The Roadmap further demonstrates the potential to create a new export sector of new energy technologies.

The Portuguese Government's current ambitions are that the development of the country's offshore wind sector takes place in an integrated manner using the strategy of developing 'Port Tech Clusters' at commercial and fishing ports, which the Portuguese Government sees as a platform to accelerate the development of technology for new maritime industries (instead of only focusing on their core, traditional activities). It is also envisaged that synergies will be created with Portugal's naval industry that will accelerate innovation in ocean renewable energies, which can be demonstrated in technological showrooms (near the ports), in a real operational environment. The result should be lower costs and shorter development cycles, which will boost the emergence of a dynamic, innovative and efficient offshore industry in Portugal.

To realise this potential, the Portuguese Government has implemented legislation: *Resolution of the Council of Ministers no. 174/2017, of 24 November 2017*, approved the Industrial Strategy for Ocean Renewable Energies ("**EI-ERO**"), and the Action Plan for Ocean Renewable Energies ("**EI-ERO Action Plan**"), the purposes of which are explained below.

EI-ERO

EI-ERO is based on two main goals: (i) stimulating exports and value-added investment; and (ii) empowering industry by reducing risks.

Portugal's domestic offshore wind manufacturing capabilities lie in producing turbines and platform segments for floating offshore wind power projects.

EI-ERO Action Plan

The EI-ERO Action Plan contains three major lines of action, as follows:

i. attracting R&D—attracting new ocean renewable energy development and testing projects for installation in Portugal;

ii. supporting the acceleration of ocean renewable energy technologies exports through the attraction of private investment, administrative simplification and promotion of innovative products and services; and

iii. implementing investor intelligence initiatives for ocean renewable energies.

National Energy and Climate Plan for 2030

The National Energy and Climate Plan for 2030, approved by Resolution of the Council of Ministers no. 53/2020, of 10 July 2020, further addresses Portugal's offshore wind potential while also acknowledging the investment made so far in the grid infrastructures of Viana do Castelo for the Windfloat Atlantic project, which should allow the development of 200 MW of newly installed offshore wind capacity.

The Portuguese Government has recently updated the National Energy and Climate Plan 2021-2030 ("**PNEC 2030**"), which is pending discussion in the Portuguese Parliament. The PNEC2030 reinforces the goal of investing in offshore wind energy, and sets an objective of creating conditions for the allocation and installation of 2 GW of offshore wind project through capacity auctions by 2024. As at the date of this report, these auctions have not yet taken place and, according to the Government's report on the State Budget Law for 2025, the expectation is that these will be delayed to 2025.

National Electricity System's framework

Decree-Law no. 15/2022, of 14 January 2022, containing the National Electricity System's framework, created a 'Free Zone for Technology' in Viana do Castelo specifically for offshore and nearshore pilot projects using renewable energy sources of ocean origin or location. Such free zones have certain benefits for developers, including: (i) simplified licensing procedures; (ii) grid connection responsibility that is transferred to the relevant network operator, while projects in these zones are exempt from grid access tariffs; (iii) the developer is not required to provide a performance bond; and (iv) no operational certificate is required before a project enters into operation.

Offshore Wind Energy in Portugal

Windfloat Atlantic is currently the only offshore wind farm operating in Portugal. The project's three semi-submersible floating turbines have a total installed capacity of 25 MW and are located 20 kilometres off the coast of Viana do Castelo, in the north of Portugal.

The project is operated by Windplus, a consortium, made up of Ocean Winds (the joint venture created by EDP Renewables and ENGIE, Repsol and Principle Power Inc.).

The project entered into operation in December 2019, although it only became fully operational in July 2020.

According to public information disclosed by EDP Renewables, Windfloat Atlantic has recorded a total cumulative production of 320 GWh by July 2024, exceeding the project's expectations. The energy produced, which is enough to supply 25,000 households each year, has prevented the emission of 33,000 tons of CO2 and fostered the direct and indirect employment of 1,500 people.

Licensing Procedure

Offshore wind projects in Portugal that have an installed capacity higher than 1 MW are subject to the attainment of a grid capacity reservation title, which can be obtained either: (i) through a request made to the Directorate General for Energy and Geology (the "**DGEG**"); (ii) by means of an agreement with the relevant system operator (when there is a grid shortage to connect the project); or (iii) through a public tender run as a competitive auction, such as the one that was first announced in 2023 by the Portuguese Government for offshore wind projects.

Once the grid capacity reservation title is issued, the developer must request the generation license from the DGEG, which authorises the construction of the offshore wind project and, prior to the entry into operation, the DGEG will perform an inspection of the project and issue an operation license.

Offshore wind projects must also obtain an authorisation from the Directorate General for Natural Resources, Safety and Maritime Services (except when located in the maritime areas adjacent to the Autonomous Regions of Madeira and Azores) to use the maritime space (*título de utilização privativa de espaço marítimo* ("**TUPEM**")) prior to requesting the generation license. The granting of such TUPEM may involve preparing a plan (*plano de afetação*), which may be initiated by public or private parties and may include a public tender.

According to Portuguese law, the competitive procedure for the allocation of grid capacity reservation titles for offshore wind projects shall replace the existing procedures established for the granting of the TUPEM.

Unless otherwise determined by the competitive auction procedure's documentation, the general rule is that new capacity does not benefit from a feed-in tariff. As such, offshore wind projects that obtain the grid capacity reservation pursuant to a request submitted to the DGEG will trade the electricity generated by the offshore wind project under organised markets or through power purchase agreements (see below), at a price freely determined by the parties.

Auctions

The Portuguese Government initially planned to launch the first competitive auction for offshore wind energy in Q4 2023. However, despite the initiation by the Portuguese Government of the expression of interest and the dialogue phases, the auction itself was delayed as a result of early legislative elections being called and the subsequent swearing-in of a new government. The updated version of the National Energy and Climate Plan for 2030 proposed that this auction would then be held within 2024, however that wasn't the case. The report on the State Budget Law for 2025 prepared by the Portuguese Government now states that the auction will take place in 2025, two years later than planned.

Ahead of the abovementioned auction, the Portuguese Government created an interministerial working group, as determined by Order no. 11404/2022, of 23 September 2022. The working group has been instructed to prepare a report with recommendations for specialised areas and the relevant interconnection points in the transmission system that may be awarded to offshore wind projects, including: (i) proposed timelines and grid capacity to be allocated to such specialised areas, considering the launch of the tender procedure to grant grid capacity reservation titles and the title to use the maritime space; and (ii) a proposed model for the attribution of such titles, based on an international benchmark. The report was disclosed in July 2023, and includes the following recommendations, which were prepared on the assumption that a total capacity of 10 GW would be awarded:

i. a capacity of up to 3.5 GW should be made available in Viana do Castelo (1 GW, divided into two lots), Leixões (1 lot of 0.5 GW) and Figueira do Foz (2 GW divided into four lots), subject to one or more competitive procedures. The remaining capacity should be allocated in subsequent phases, until 2030, totaling 10 GW Leixões;

ii. the development of the offshore wind market in Portugal should pursue a competitive model, regardless of its degree of centralisation and the associated remuneration model;

iii. the first competitive procedure, to be launched until the end of 2023, should start with a pre-qualification phase lasting at least three months; and

iv. the network architecture to be implemented should use very high voltage substations of the transmission system, supported by platforms fixed to the seabed, to aggregate the connection of power stations with a view to reducing the number of cables between the areas and land, with greater or lesser aggregation, allowing for topological solutions that will depend on the degree of resilience desired for the network as a whole. The adoption of standardised, non-customized solutions on a case-by-case basis, both for offshore substations and for submarine cables, could be a critical decision factor, given the scale effects.

The report will serve as the basis for the Portuguese Government to define the final details of the first offshore wind auction. The expectation is that the Portuguese Government will announce the principles of the auction in 2025. It is expected that a pre-qualification phase will then commence, which will be followed by the bidding process.

In parallel, the Portuguese Government ordered the Directorate General for Natural Resources, Safety and Maritime Services to proceed with the preparation of a plan for the exploitation, until 2050, of areas of the national maritime space for the commercial operation of renewable oceanic originated or located energy sources. A proposed plan was subject to public consultation between 27 October 2023 and 12 December 2023, identifying six potential areas for the installation of offshore wind farms, with a total area ranging from 3,176 km^2 to 3,393 km^2, located in Viana do Castelo North, Viana do Castelo South, Leixões, Figueira da Foz, Ericeira, and Sines. The plan is now pending approval but according to Portuguese authorities, the auction will likely be limited to the areas of northern Viana do Castelo, southern Viana do Castelo, Leixões and Figueira da Foz. The approval of the plan can allow the immediate award of the TUPEM.

Corporate Power Purchase Agreements

Considering that, as a rule, the energy generated by offshore wind projects shall not benefit from feed-in tariffs, generators may choose to enter into cPPAs with offtakers to provide a route to market for their power. The terms and conditions of cPPAs will be negotiated bilaterally between the parties.

Generators are also allowed to trade electricity under organised markets, such as the Iberian Electricity Market, MIBEL, and/or sell the electricity to an aggregator. This could provide projects with another alternative route to market.

Notwithstanding the above, the capacity auctions may establish a specific remuneration scheme applicable to offshore wind projects, which may include on obligation on developers to enter into contracts for differences (CfD) rather than cPPAs.

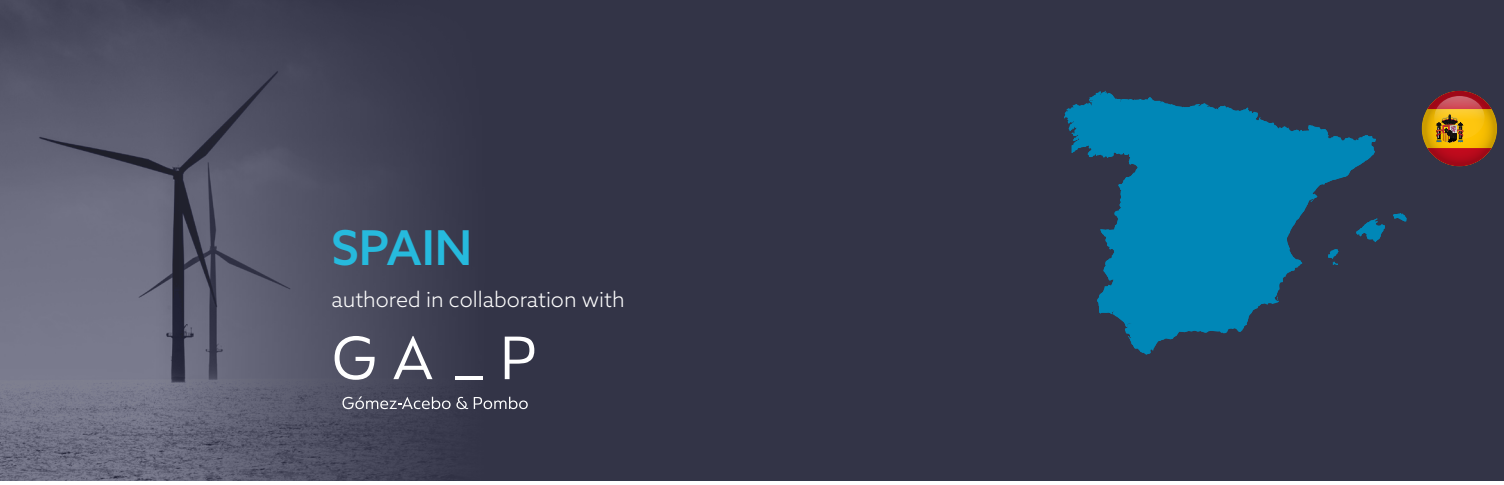
Power-to-X

Pursuant to the applicable legal framework, there are no obstacles to using the electricity generated by offshore wind farms to supply electricity for the production of green hydrogen. To provide assurances as to of the origin of green hydrogen, the European Commission approved Delegated Regulation (EU) 2023/1184, supplementing Directive (EU) 2018/2001 of the European Parliament and of the Council, by establishing a methodology setting out detailed rules for the production of renewable liquid and gaseous transport fuels of non-biological origin.

Conclusion

Along with solar and onshore wind energy, which are viewed as mature technologies, given the above, offshore wind energy is expected to help with Portugal's energy transition now that the cost of floating technology is starting to decrease.

The appetite amongst international offshore wind developers is clearly growing with the Portuguese Government having met with the key players in the sector that have expressed interest in investing in Portugal, such as Spain's Iberdrola and the Portuguese/French consortium EDP Renewables/ENGIE (Ocean Winds). However, in order to maintain this interest, the Portuguese Government needs to be conscious of any further delays to the launch of the capacity auctions to award grid capacity for offshore wind projects, as well as rights to use the maritime space for the generation of offshore wind electricity.



SPAIN

authored in collaboration with

G A _ P
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Renewable Ambition

Spain is a global leader in onshore wind energy, with more than 30 GW of installed capacity. This, combined with almost 8,000 kilometres of coastline, as well as a consolidated naval industry, a solid maritime-port sector and pioneering technological and engineering capabilities in the wind generation market, makes the country undoubtedly attractive for investing in offshore wind projects.

Despite its strong position in renewable energy and its unquestionable levers for the development of offshore wind energy, its take-off has faced challenges due to the depth of Spain's territorial waters, making fixed foundation projects a non-viable option. However, floating offshore wind technology is emerging as a promising solution, well-suited to the country's maritime conditions.

Spanish Roadmap for Offshore Wind and Marine Energies

In December 2021, the Spanish government published the "*Roadmap for Offshore Wind and Marine Energies*" which, in line with the "*EU Strategy on Offshore Renewable Energy,*" outlined the plans to solidify Spain's position as a leader in offshore wind and marine energy by 2030.

This document highlights four main goals:

- Establishing Spain as an European hub for technological development and R&D&I in marine energy, activating at least 200 million euros in public support for technological innovation (in addition to national and European funding programmes).
- Becoming an international benchmark in industrial capacities and in the sector's value chain as a whole, with a circular economy perspective.
- Boosting a sustainable development of offshore renewables, consistent with an environmental and social approach.
- Ensuring the orderly deployment of installations, targeting 1 to 3 GW of floating wind offshore energy and up to 60 MW of other marine energies (*i.e.*, waves, currents/streams, etc.) by 2030.

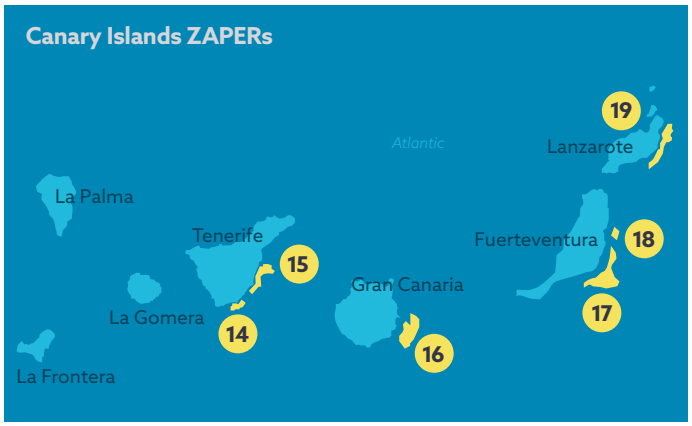
Under these goals, Spain aims to contribute significantly to the European Union's target of 7 GW of floating wind offshore by 2030, with a potential 40% contribution from Spain.

In order to achieve the goals set by the Spanish Roadmap for Offshore Wind and Marine Energies the Spanish government developed the approach and guidelines for the adaptation of the sector's regulatory framework, which has mainly led to the enactment of (i) the Royal Decree 150/2023, of 28 February, approving the maritime space planning plans of the five Spanish marine demarcations, and (ii) the Royal Decree 962/2024, of 24 September, regulating the production of electricity from renewable sources in offshore facilities. These changes are aimed at providing the necessary continuity and visibility to attract investment and to consolidate and boost industrial capacities, as well as foster the generation of infrastructures and R&D&I projects around both the offshore wind and marine energies activities generated.

The Spanish Maritime Spatial Planning; a Necessary Milestone for the Development of the Offshore Wind Energy Generation in Spain

After five years, following a complex process of inter-administrative coordination and dialogue with interested parties through comprehensive consultation and public participation processes, and using the best scientific evidence available, the Spanish government passed the Royal Decree 150/2023, of 28 February, approving the demarcation of five maritime areas for offshore wind development.

Within these five areas, the Spanish government have identified 19 areas which have a high-potential for the development of offshore wind energy projects (known as ZAPERs). Please see Map 14 below showing these ZAPERs.



Each of these 19 ZAPERs have been defined due to "*its high suitability for the possible deployment of infrastructures for the use of commercial offshore wind energy, without prejudice to the fact that such projects may contemplate hybridisations with other marine renewable technologies*" meeting, among others, the following technical criteria:

- The wind resource is suitable for commercial exploitation, reaching values of over 7.5 m/s of wind speed, at 100 m height for the four peninsular marine demarcations, including Balearic Islands, and at 140 m height in the Canary Islands marine demarcation.
- The depth does not exceed 1,000 m.
- They are located, where possible, close to an area on land with the appropriate electrical infrastructure for the evacuation of the generated energy.

Notwithstanding the above, the viability of developing offshore wind projects in these ZAPERs still need to be assessed by developers against certain criteria for coexistence with the environment in which they are located, mainly: (i) occupying the least possible marine space, (ii) ensuring the least possible impact on the communities of seabirds that occupy said space, (iii) generating the least possible acoustic impact, as well as visual impact from land, both from protected areas and from well-established tourist or residential areas, or from assets of cultural interest, (iv) minimizing the impact on fishing, aquaculture and navigation, etc.

The Long-awaited Regulation of the Production of Electricity from Renewable Sources in Offshore Facilities

Once the delimitation of the ZAPERs was performed, it was necessary to adequately regulate the production of energy from these areas. Thus, the Spanish Council of Ministers, on the proposal of the Ministry for Ecological Transition and the Demographic Challenge, recently approved the Royal Decree 962/2024, of 24 September, regulating the production of electricity from renewable sources in offshore facilities.

Said regulation, which is in force since 26 September 2024, covers offshore wind facilities and other marine renewable energy technologies, such as wave energy, and establishes a competitive bidding procedure for projects, ensuring their location within the ZAPERs identified in the maritime spatial planning. The key aspects of the competitive bidding procedure are as follows:

- The competitive bidding procedure will simultaneously grant the following rights to the awardees:
  - An economic support based on the existing "*Renewable energy support scheme*" (mainly configured as a contract for differences auction scheme);
  - Reserved access capacity at a specific node in the transmission grid; and
  - Priority in the granting of concessions for the occupation of publicly owned offshore/onshore property.
- The steps involved with the competitive bidding procedure will include:
  - The prior approval of a Ministerial Order setting the bid conditions, which may include, among others, the quota of power to be awarded; the ZAPER where the facilities will be located; the technologies, characteristics and requirements to be met by the facilities; the term of the publicly owned offshore-onshore property concession, the parameters specifying the applicable renewable energy support scheme, as well as minimum bidders conditions (*i.e.*, legal form, technical solvency, size or experience, etc.) and objective requirements to be met by the facilities (*i.e.*, related to the design of the facility, its environmental and socio-economic impact, its dismantling or its capacity to contribute to the security of electricity supply or to the appropriate conservation of the publicly-owned offshore and onshore property).
  - The initiation of a public dialogue where both interested parties affected by the offshore renewable energy facilities and subsequently the interested developers may send comments or proposals for improvement the abovementioned Ministerial Order with the bids conditions.
  - The approval of a Ministerial Order launching the competitive call for bids, including aspects such as the applicable timetable; the information and documents to be included in the application to participate; the reservation price (a maximum financial offer); if established, the risk price (a minimum financial offer) and the modification, where appropriate, of the aspects that are the subject matter of public dialogue under the conditions order.
  - The submission of the corresponding bids by the interested developers before the Spanish Directorate-General for Energy Policy and Mines within the time limits and in compliance with the referred ministerial orders (*i.e.*, minimum bidder requirements), and also accompanied by the receipt from the Government Security Depository certifying the deposit of the financial collateral required for pre-allocation registration in the renewable energy support scheme's register.

Applications will be assessed based on both economic and non-economic criteria, with successful bids being awarded to the highest scoring applications until reaching the quota of power to be awarded for each competitive bidding procedure is reached.

Once the results have been announced, the successful projects must (i) apply for the relevant access and connection permits, (ii) process the administrative authorisations that may be required for the approval, construction and operation of offshore wind project, and (iii) obtain the concession for the occupation of the publicly owned offshore and onshore property; in each case, in accordance with the corresponding sectoral regulations.

This Royal Decree 962/2024 marks the true starting point for the development and installation of offshore wind projects in Spain.

Beyond the Offshore Wind Power Generation: Spain is Positioned as a Global Benchmark in Technological Innovation and Research on Marine Infrastructures

It is undeniable that the implementation of renewable energy generation projects through offshore wind installations represents a clearly identified vector for energy development, and Spain is actively working towards this goal by providing all stakeholders with a clear and secure framework, adopting the appropriate regulations to ensure its consolidation.

However, it is particularly noteworthy that Spain has positioned itself as a clear leader across the entire value chain associated with the offshore wind energy sector, with a special emphasis on its potential in R&D&I. Specifically:

- Spain stands out as one of the countries where the largest number of innovative designs for floating offshore platforms are being developed. As a matter of fact, at the time of the publication of the "*Roadmap for Offshore Wind and Marine Energies,*" seven out of the 27 floating solutions identified as active worldwide were Spanish patents.
- Spain boasts internationally renowned infrastructure for the technological development of marine energies, particularly floating technologies. It is the European Union country with the most facilities dedicated to R&D&I in marine energies (including three open-sea testing centres) among which are found:
  - The Great Maritime Engineering Tank of Cantabria / Cantabria Coastal and Ocean Basin (GTIM-CCOB).
  - Integrated Coastal Infrastructures for Experimentation and Modelling (iCIEM).
  - Hydrodynamic Experiments Center of El Pardo (CEHIPAR).
  - Biscay Marine Energy Platform (BiMEP).
  - Oceanic Platform of the Canary Islands (PLOCAN).
  - Centre for Ports and Coasts Studies (CEDEX) facilities used for offshore wind experimentation.
  - Experimental area for the use of marine energies in Punta Langosteira, Galicia.

This underscores not only Spain's potential in implementing offshore wind projects but also its versatility in capitalising on the surrounding opportunities arising from this sector, especially in the technological research and industrial sectors.

Offshore Wind: The Ultimate Lever for the Development of Green Hydrogen in Spain?

In recent years, Spain has identified the green hydrogen production industry as a unique opportunity for the country and for the decarbonisation of its economy. Spain currently leads the international landscape in the development of green hydrogen production projects (and renewable derivative products such as green methanol or ammonia) by the establishment of large hydrogen corridors across its territory. This has been achieved by channelling significant economic and regulatory efforts into this sector and mobilizing all market players with a clear objective: to lead the adoption of this technology and become one of the major global producers of green hydrogen.

To conclude this section, it is important to emphasize that in developing policies related to green hydrogen generation, Spain has also been mindful of the synergies between these projects and offshore wind energy.

This is evidenced, for instance, by the fact that both public administrations and technology developers, as well as private investors, are currently proposing hybrid solutions that enable green hydrogen generation (both offshore and onshore) using energy derived from offshore wind. This is particularly feasible during periods of renewable energy surplus in cases of limited grid connection capacity, but can be also a solution for dedicated projects.

An example of this is the H2Heat Project which, in collaboration with the Canary Island Health Service and PLOCAN, aims to leverage offshore wind energy to produce green hydrogen as a sustainable fuel source and thus covering more than 50% of the heat requirements of the "*Complejo Hospitalario Universitario Insular Materno Infantil de Gran Canaria*" (Gran Canaria Maternal and Child Hospital Complex) using this green energy.

SWEDEN

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Introduction

Whilst Sweden boasts the EU's largest installed capacity of onshore wind, offshore wind has been slow to take off. Following a few pioneering projects in the 2010s, no new offshore wind farms have been constructed. Currently, there are three operational offshore wind farms in Sweden's territorial waters: Lillgrund (110 MW) located between Sweden and Denmark; Kårehamn (48 MW) located in the southern Baltic Sea near the island of Öland; and Bockstigen (3.3 MW) located in the southern Baltic Sea four kilometres off the coast of the island of Gotland. The total installed capacity of offshore wind in Sweden amounts to approximately only 161 MW.

Sweden's territorial waters, particularly along the west coast and in the southern Baltic Sea, offer excellent wind resources. However, development has been hampered by a complex permitting and licensing regime and the absence of a clear and fair auction model to allocate capacity. Unlike many other European countries, developers in Sweden gain exclusive rights to a site only late in the development process, which creates uncertainty and slows investment, given the allocation process contains an inherent risk that a developer may not be successful if obtaining exclusive development rights, notwithstanding it has invested significant development costs into the potential project.

The Swedish Government's climate action plan has identified that offshore wind power has the potential to deliver electricity in large volumes, but it is significantly more expensive than onshore wind power. Therefore, the Swedish Government has initiated an inquiry tasked with analysing how the regulatory framework for the use of Sweden's sea areas in offshore wind power development can be improved. The inquiry will also propose ways to make the permitting process for wind power in Sweden's exclusive economic zone ("**EEZ**") more efficient and transparent.

Sweden's Offshore Wind Legislative Framework, Permits and Licenses

The scope of permitting for offshore wind farms varies significantly in terms of requirements and complexity, depending on the type of facility and its location. The establishment of offshore wind farms is regulated by numerous laws and regulations with several permits and notifications required depending on the design, size and location of the wind farm. Each project must ultimately be assessed on a case-by-case basis and hence there is no "on size fits all" model to permitting offshore wind farms in Sweden, which ultimately slows down the allocation of required permits.

Rather than relying on leases, offshore wind power projects primarily depend on various permits from the Swedish Government and authorities to secure access to the sea and seabed to develop, construct and operate a wind farm.

In addition to permits granted under the Swedish Environmental Code for water activities and environmental hazardous activities, offshore wind power projects within the Swedish territorial waters or EEZ would normally require additional permits which grant access to and use of the sea and seabed. These would primarily be granted by the Swedish Government or its authorities, particularly the Legal, Financial and Administrative Services Agency (*Kammarkollegiet*).

Permitting differs depending on if a project is located in territorial waters or Sweden's EEZ. Both types of projects are dependent on several permits, but while the main operating permit in territorial waters is provided by the courts, the Swedish Government is the permitting body for projects in the EEZ.

Permitting often involves referral for review and comment from local and national authorities, such as the relevant regulator, the local municipality (for projects in territorial waters) and the Swedish Armed Forces, among others. Whilst these authorities are not responsible for permitting, they can still wield substantial influence. For instance, it is very rare that a permit is granted if the Swedish Armed Forces raised objections which have not been addressed. In addition, the municipalities have certain veto rights, which can potentially jeopardise the development of offshore wind projects.

Due to the legal situation relating to exclusivity and hierarchy of rights over offshore areas being unclear, a common issue has been overlapping projects, being developed by different developers.

Recent Developments

The Swedish Government has between 2022 and 2024 approved the offshore wind farm projects Galene, Kattegatt Syd and Poseidon all located off the Swedish west coast, and the offshore wind farm project Kriegers flak, located to the south, between Sweden and Denmark. The latter project has since been paused by owner Vattenfall, until further notice, due to "unviable investment prerequisites in Sweden."

On 4 November 2024, the Government decided to reject 13 permit applications for offshore wind farms, representing all permit applications under consultation with the Swedish Government Offices for offshore wind projects in Sweden's EEZ in the Baltic Sea (*i.e.*, from the Sound (*Öresund*) to the Bothnian Sea (*Bottenhavet*)). The decision was based on the Swedish Government's assertion that approving these offshore wind farms would conflict with the interests of the Swedish Armed Forces in the same area. As of November 2024, 10 applications for projects off Sweden's west coast and in the Gulf of Bothnia (*Bottniska viken*) are being considered by the Swedish Government. The table below outlines the current status of these.

Project	Application submitted	Status
Eystrasalt Offshore	2023-04-13	Final stages of consultation with the Swedish Government Offices
Fyrskeppet Offshore	2023-07-10	Under consultation with the Uppsala County Administrative Board
Gävle Öst Havsvindpark	2024-10-30	Application received, under consultation with the Swedish Government Offices
Mareld	2023-04-17	Final stages of consultation with the Swedish Government Offices
Najaderna	2023-12-22	Under consultation with the Uppsala County Administrative Board
Olof Skötkonung	2023-12-22	Under consultation with the Uppsala County Administrative Board
Polargrund Offshore	2024-06-03	Under consultation with the Norrbotten County Administrative Board
Sylen	2024-01-26	Under consultation with the Gävleborg County Administrative Board
Vidar	2024-06-24	Application received, under consultation with the Swedish Government Offices
Västvind	2023-07-12	Under consultation with the Västra Götaland County Administrative Board

The map opposite illustrates those offshore wind projects that are located in the EEZ and have applied for permits from the Swedish Government.

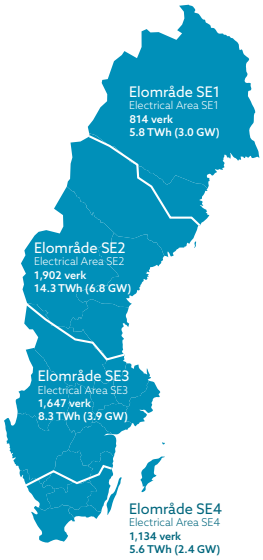
MAP 15: MAP OF SWEDEN'S CURRENT OFFSHORE WIND PROJECTS

**Map 1 Permit status for projects in Sweden's exclusive economic zone as of 4 November 2024*

The Swedish Armed Forces have indicated that the North of Sweden is an important region for national defence, and have had objections to onshore wind projects in the area. In view of this, many stakeholders assume that projects in the Gulf of Bothnia will meet the same end as projects in the Baltic Sea. There are also projects in territorial waters that are being assessed by the Swedish courts. The Swedish courts are generally assumed to follow in the Swedish Government's footsteps if and to the extent the Swedish Armed Forces object to the projects.

Potential for cPPAs

The Swedish electricity market is divided into four electricity price areas (SE1-SE4) with a surplus of electricity production in northern Sweden. Electricity prices vary between different areas with often higher prices in the southernmost price area, SE4. In 2023, wind power (onshore and offshore) contributed to around 21% of Sweden's electricity production. The total installed capacity at the end of 2023 of about 16.2 GW generated about a quarter of Sweden's total electricity consumption.



Hydropower and wind power make up a large proportion (circa 64.5 % in 2023) of Swedish electricity production.

Renewable energy developers who are active in Sweden include the Swedish state utility Vattenfall, the Danish offshore developer Ørsted, the Swedish renewables developer OX2, and smaller players such as the offshore-oriented Svea Vind Offshore and Freja Offshore which are developing floating offshore wind projects.

Several sizable onshore wind farms in Sweden trade or have traded their production under corporate power purchase agreements ("**cPPAs**") entered into with industrial offtakers. Historically, Sweden has been a popular market for cPPAs, particularly for onshore wind farms, with several large-scale projects securing their revenue streams this way. Virtual cPPAs are also possible in Sweden, and agreements have been entered into with mostly onshore wind as the underlying energy resource. The produced electricity is then sold on the Nord Pool spot market rather than to the PPA offtaker. Specialised energy traders and power trading departments of utilities also offer PPAs to renewable energy producers, which are secured by hedging arrangements with third parties and/or by reselling energy to customers within the company group.

However, baseload cPPAs have been less attractive in recent years. The increasing share of renewable energy combined with technical availability issues of wind farms under periods of increased volatility and markedly high spot prices and the obligation of purchasing power in high price (low wind) hours have presented liquidity risks to wind farm owners and their lenders.

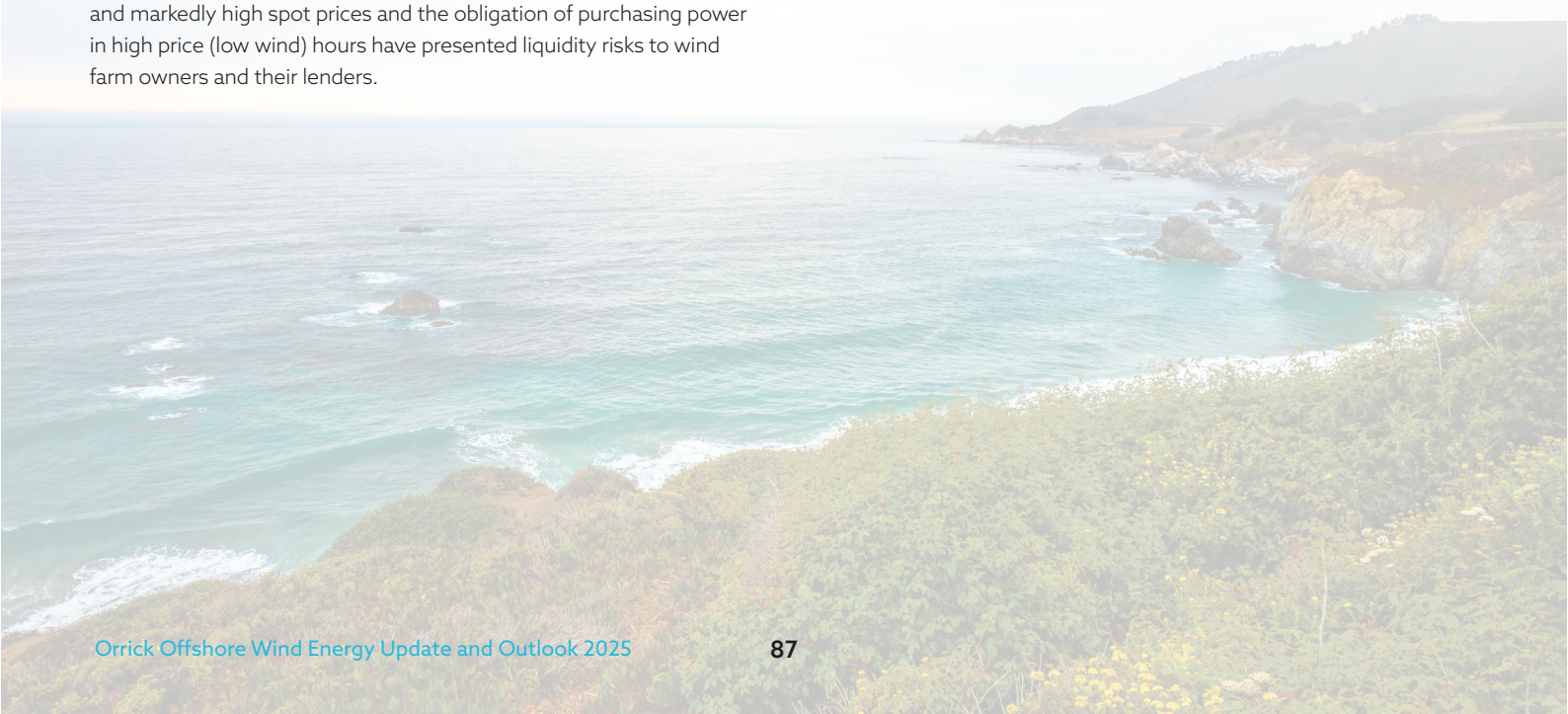
Conclusion

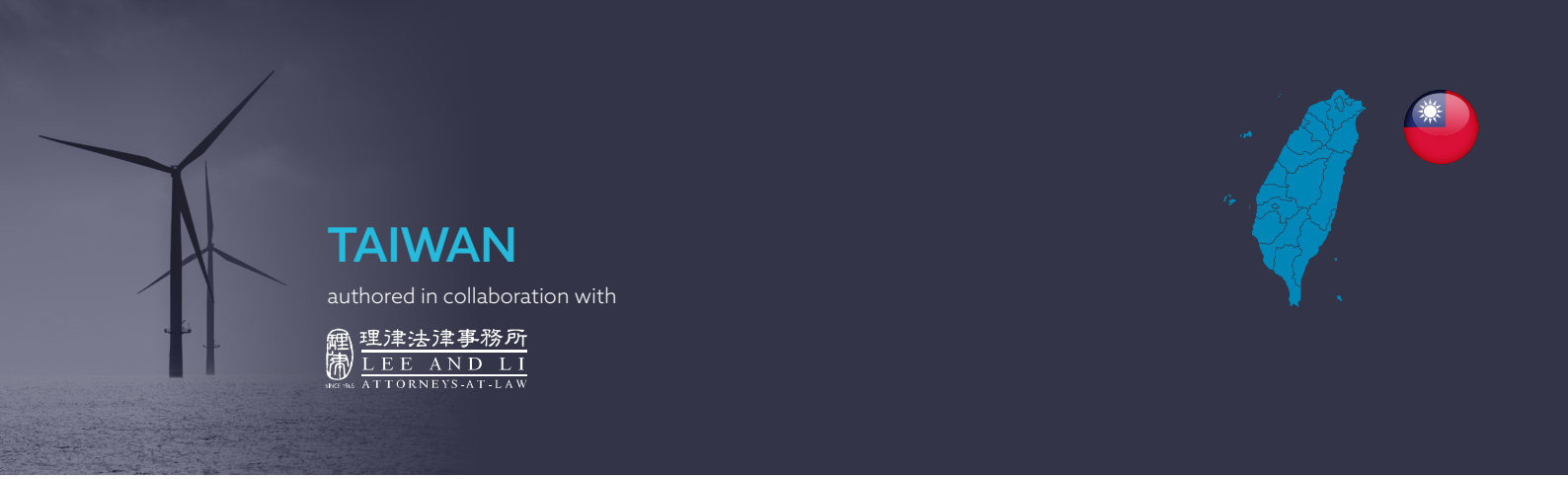
In summary, the Swedish offshore wind industry is seeing significant turbulence right now, and the future is still very unclear although, as hopefully shown by this article, the potential is huge. The hope is that if the Swedish Government can streamline and clearly regulate the permitting and capacity allocation processes that this will add more confidence to developers looking to develop offshore wind projects in Sweden.

The Swedish Government is amid an overview process aiming to streamline the permitting processes for offshore wind. On 13 December 2024, a Swedish governmental report was provided to the Swedish Minister for Climate and the Environment, suggesting that Sweden adopt an auction system, similar to most of Sweden's neighbours in Northern Europe. An auction system would allow the Swedish Government to designate suitable development areas, simplifying and accelerating the regulatory process. The winning bidder could receive exclusive rights in a specific area, reducing planning risks and ensuring the project is realised. Municipalities are proposed to not have veto rights over such projects.

The report outlines three possible approaches to handle existing permit applications. In all three scenarios, existing permit applications are retested pursuant to the current regime. In the first scenario, appropriate projects are permitted and can be realised if and when market conditions are favourable. In the second scenario, applications are retested in the same manner but only projects that are likely to be realised in the near future are permitted *i.e.*, permitting would also consider market conditions. In the third scenario, the Swedish Government would permit appropriate projects and provide guarantee prices or similar, to render the projects feasible in the current market. The proposal will now be processed by the Swedish Government offices.

Further, Svenska kraftnät, the Swedish TSO, initiated open, geographically delimited investigations to identify the potential for suitable connection points and available transmission capacity for connections to the onshore transmission grid for offshore wind power through stakeholder pools. All relevant and updated information, including connection points and stakeholder pool registration details, will be communicated through Svenska kraftnät's website.





TAIWAN

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Taiwan: Asia's Offshore Wind Leader

Taiwan continues to lead the Asia Pacific region in offshore wind. This has its roots in the Taiwan government's "*Thousand Wind Turbines Project*" to generate 5.7 GW of electricity from offshore wind by 2025 (equal to approximately 20% of Taiwan's total elec¬tricity generation) and 15 GW by 2035. To date, 24 (twenty-4) offshore wind projects have been awarded grid capacity and have entered/are entering into the grid allocation contracts (also known as the Administrative Contracts) with the government. Three of Taiwan's offshore windfarms, Formosa I, Changhua Phase I of Taipower ("**TPC**") and Formosa II, have entered into operation stage with the others all at some stage of development or advanced construction, or substantively in operation. Currently, each offshore windfarm which has been awarded the right to sign up for grid capacity is located on the west coast of Taiwan, in the Taiwan Strait, as shown in Map 16.

The Process to Date

The Taiwanese government has split the development of its offshore wind sector into three phases, comprising:

Round 1 (Demonstration), where three projects were awarded an aggregate capacity of approximately 360 MW;

Round 2 (Transition), which saw 5.5 GW of capacity awarded across various projects; and

Round 3 (Zonal Development), which aims to create 15 GW of offshore wind capacity between 2026–2035 in two stages, *i.e.*, the first stage for grid connection years between 2026–2031 for allocation of 9 GW of capacity, and the second stage for grid connection years between 2032 - 2035 for allocation of 6 GW of grid capacity. The first stage is further divided into three phases: Round 3.1 (for grid connection years 2026-2027 for 3 GW), Round 3.2 (for grid connection years 2028-2029 for 3 GW), and Round 3.3 (for grid connection years 2030-2031 for 3 GW). The phases of the second stage are yet to be determined by the Ministry of Economic Affairs ("**MOEA**")/Energy Administration ("**EA**"; formerly called Bureau of Energy).

The results of the Round 3.1 auction were announced by the MOEA/EA on 30 December 2022, which allocated 3 GW of capacity to developers across grid connection years 2026 and 2027 (0.9 GW for 2026 and 2.1 GW for 2027). On 25 April 2024, the MOEA granted a one-year extension to the grid connection dates for all Round 3.1 projects.

The results of the Round 3.2 auction were announced by the MOEA/EA on 5 August 2024, which allocated 2.7 GW of capacity to developers across grid connection years 2028 and 2029 (0.6 GW for 2028 and 2.1 GW for 2029).

The dates for the Round 3.3 auction are yet to be confirmed by the MOEA.

Round 2 Projects (Transition)

All Round 1 and 2 projects benefit from the right to a 20-year feed-in-tariff ("**FiT**") to be paid by TPC, the state-owned grid operator and power producer (although, note that a project may opt to switch between the FiT and a corporate power purchase agreement, as seen on Ørsted's Greater Changhua 2b and four projects—see Corporate PPAs below for more information). Once grid capacity and corresponding development rights were awarded through the allocation round, a FiT was secured.

Two separate allocation rounds were held for Round 2. In the first allocation round, developers were awarded grid capacity through an administrative selection process run by the Taiwanese government (the "**Selection Process**"). Under this process, a project had to satisfy prescribed criteria based on a range of technical and financial metrics, as provided for in the Guidelines for Grid Allocation published by the MOEA/EA on 18 January 2018. Applicants were then ranked by score (out of 100, and determined on the basis of construction capability, engineering design capability, operations and maintenance capacity and financial capability), with the highest scoring applicants awarded the grid capacity, development rights and FiT until the allocated capacity for that allocation round had been fulfilled. The FiT for these Round 2 allocation rounds was set by the government.

Applicants that were unsuccessful in obtaining development rights and a FiT, but still scored above 60/100 points in the Selection Process, were invited to participate in a competitive auction process for the remaining grid capacity, with the lowest bidders awarded a FiT based on the developer's auction bid price (rather than as set by the government). Notably, projects that were awarded a FiT in this auction process are not subject to any local content requirements (please see Localisation below for more information on the relevance of this).

Round 3 Projects (Zonal Development)

Round 3.1

In Round 3.1, developers chose to submit applications to develop either one of the government-designated zones of opportunity, if remaining undeveloped, or a self-identified developer proposed zone, as was the case for certain projects which were successful in Round 2[1]. Capacity awarded to each offshore windfarm in Round 3.1 was subject to a limitation of 500 MW, subject to an adjustment of up to an additional 100 MW after the MOEA/EA reviewed the developer's application for adjustment and grants approval, taking into account the integrity of the entire windfarm, development benefits and efficiency. Therefore, the maximum Round 3.1 project size was 600 MW.

The applicants in the Round 3.1 auctions were assessed in two parts. Firstly, projects applying for allocation needed to be awarded at least 70/100 points from the MOEA based on prescribed criteria covering a range of technical and financial metrics, as provided for in the Offshore Wind Power Zonal Development Site Capacity Allocation Guidelines published by the MOEA/EA on 19 August 2021 ("**Round 3.1 Allocation Guidelines**"). This technical and financial qualification review was a simple yes/no threshold review, with seemingly no benefit to those projects which exceeded the required 70 points.

In addition, the MOEA also assessed an applicant's localisation commitments. The localisation requirements for Round 3.1 were set out in the Offshore Wind Power Zonal Development Industry Relevancy Implementation Plan, which was published by the MOEA/Industrial Development Administration (formerly known as the Industrial Development Bureau; "**IDA**") on 6 December 2021 and amended on 26 August 2022 (the "**Round 3.1 Localisation Rules**"). Localisation requirements were split between 'mandatory' and 'bonus' localisation components with each component to be localised attributed a value of 1 to 6 depending on the difficulty of manufacturing that component in Taiwan. In order to be successful in the localisation review process, an applicant must localise each of the mandatory components (subject to the flexibility referred to in Localisation below) plus be awarded a minimum of 10 localisation 'bonus' points. The comprehensive list of 'bonus' components (> 50 components) was reflective of the MOEA's learnings to date, based on experiences from the Round 1 and Round 2 projects, with the 'bonus' components being those components which had been difficult to localise to date, or for which there was little or no supply chain in Taiwan.

After a developer passed this qualification and localisation review process it had to submit a bid in the tariff price auction for a FiT, with the lowest bids winning and being awarded grid capacity. The auction bid price for Round 3.1 was capped at NTD 2.49/kWh and had a floor of NTD 0/kWh.

In practice, given the relatively small amount of capacity which was available and the strong appetite for renewable power from private corporations in Taiwan, which allowed for developers to negotiate standalone private corporate power purchase agreements (see Corporate PPAs below), as expected and reported in the news, the Round 3.1 auction was hotly contested with many applicants bidding extremely low, or even NTD 0/kWh, in order to secure grid capacity and development rights. The same competition is expected for the following Round 3 auctions.

In the event of a tie (*e.g.*, two projects bid NTD 0/kWh) priority was given to the project which had the highest localisation 'bonus' points score (see Localisation below). If this still did not produce a clear winner, it was expected that a winner would have been drawn at random between such projects.

However, this low power price environment coupled with increasing development and construction costs resulted in some major developers *e.g.*, Ørsted, not entering the Round 3.1 2022 auction. Out of the 7 winning projects of the Round 3.1 auction, 2 projects did not apply with the MOEA for entering into the grid allocation contracts by the required deadline and lost their development rights.

Round 3.2

The Offshore Wind Power Zonal Development Site Capacity Allocation Guidelines as amended 23 November 2023 ("**Round 3.2 Allocation Guidelines**") has the following major features compared to the Round 3.1 Allocation Guidelines:

1. The capacity that was allocated in a previous phase/stage can be reserved for allocation in the next phase/stage.
2. Capacity awarded to each offshore wind farm in Round 3.2 is subject to a limitation of 900 MW for the first-ranked awardee, 700 MW for the second-ranked awardee and 500 MW for each of the remaining awardees, with an adjustment of up to an additional 100 MW after the MOEA/EA reviews the developer's application for adjustment and grants approval, taking into account the integrity of the entire wind farm, development benefits and efficiency as well as the plan for entering into cPPAs with at least two domestic enterprise groups.
3. The capacity that is not allocated, including that waived by the awardees in the previous phases/stages, can be used in later auctions.

As expected, the competition remained fierce. Five projects were finally awarded with a total of 2.7 GW of capacity as follows: Shinfox – Yo-Der (700 MW), SRE – Formosa 6 (800 MW), CIP – Feng Miao II (600 MW), Corio Generation/TotalEnergies – Formosa 3 (Haiding 1) (360 MW), and Enervest – Deshuai (240 MW). To the surprise of the industry, Ørsted was not awarded with any capacity in the Round 3.2 auction, although it had been listed as the sixth project in the bidding rankings announced by the MOEA on 9 July 2024.

On 11 November 2024, the MOEA announced that all the above five winning projects under the Round 3.2 auction applied with the MOEA for execution of the grid allocation contracts, which are expected to be finalised soon.

1. Yunlin Offshore Wind Project is located in an area which was identified by its developer, rather than through the government's designated zones of opportunity.

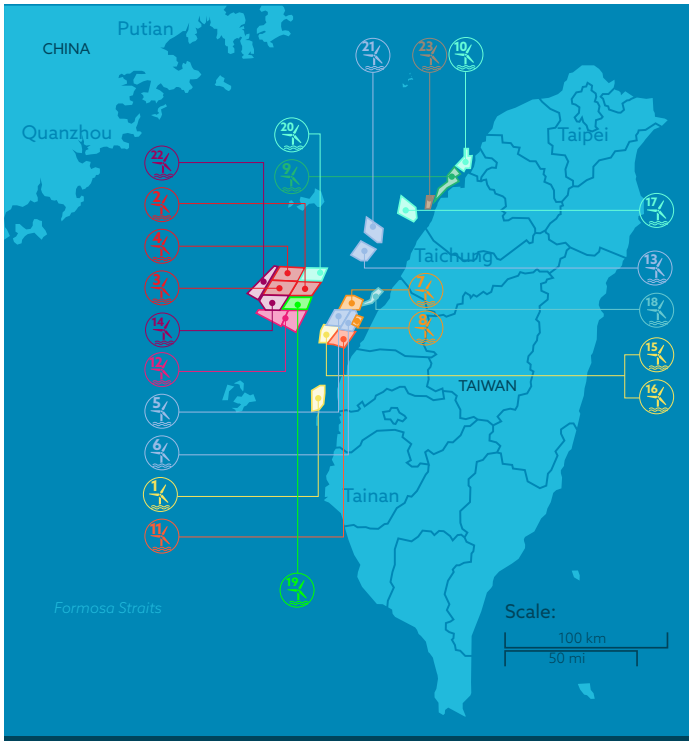
Localisation

As part of the Taiwanese government's push to develop the local supply chain, the MOEA developed a series of lists of components used in the construction and operation of an offshore wind farm, which a developer must seek to source from local manufacturers in Taiwan. For the Round 2 projects, these were prescribed by the MOEA in its "*Framework of Offshore Wind Power Industry Relevancy Implementation Programme*" (published in January 2018). For the Round 2 projects, the exact parameters of a project's localisation requirements were dependent on what year it was/is scheduled to connect to the grid. In general, there has been a trend of ever-increasing localisation for offshore wind projects in Taiwan, with the list of components which are to be localised increasing in each allocation round.

In this regard, although the mandatory localisation components set out in the Round 3.1 Localisation Rules are more comprehensive than the Round 2 localisation requirements, there are signs that the MOEA acknowledges that it is difficult or impractical to source certain components locally. This is shown by not only the differentiation between mandatory and bonus localisation requirements but also, unlike previous auctions, the mandatory localisation requirements that only apply in respect of 60% of the applied for capacity. Therefore, if a developer applies for a 500 MW project, only 300 MW of such project is required to be constructed using the mandatory localisation components. The remaining 200 MW could be constructed using international suppliers alone. The exception to this is the localisation requirements relating to vessels providing marine support, e.g., SOVs and engineering design services, such as design of an offshore substation. For the former, domestic work vessels are to be given priority. Accordingly, only when the domestic work vessels are determined to be ineligible/unavailable to undertake works for offshore wind farm projects in Taiwan (via a non-capacity confirmation) will the authorities consider issuing consent and approval for the use of foreign work vessels. For the engineering design services, the supplier must have at least 50% local participation.

There is no additional priority given by the MOEA/IDA to projects that comply with the mandatory localisation requirements for >60% of the applied-for capacity. However, the Round 3.1 localisation bonus points were used to decide a winning bidder in the reverse price auction if more than one developer submitted the winning bid, which, was the case in practice. Therefore, developers may wish to maximise these bonus localisation items. In the event of a further tie following a review of a projects' localisation bonus points, the winner would be selected at random through the drawing of lots.

MAP 16: TAIWAN'S CONSENTED OFFSHORE WIND PROJECTS



Key

1 - Skyborn Renewables/ TotalEnergies/ others, **Yunlin** - 640 MW Capacity
2 - Ørsted, **Greater Changhua SE** - 605.2 MW Capacity
3 - Ørsted/CDPQ, **Greater Changhua SW** - 361.9 MW Capacity
4 - Ørsted/Cathay Life Insurance, **Greater Changhua NW** - 582.9 MW Capacity
5 - CIP/ Taiwan Life/ TransGlobe/ GRSC/TGC, **Changfang** - 552 MW Capacity
6 - CIP/ Taiwan Life/ TransGlobe/ GRSC/TGC, **Xidao** - 48 MW Capacity
7 - Taipower, **Changhua Phase II** - 300 MW Capacity
8 - Taipower, **Changhua Phase I** - 110 MW Capacity
9 - SRE/ Ørsted/ Mitsui OSK Lines, Toho Gas, and Hokuriki Electric Power Company/ JERA, **Formosa I** - 128 MW Capacity
10 - SRE/ Corio Generation/ JERA, **Formosa II** - 378 MW Capacity
11 - CIP/China Steel, **Zhong Neng** - 300 MW Capacity
12 - Yushan/Northland, **Hailong** - 1,044 MW Capacity
13 - CIP, **Fengmiao** - 500 MW Capacity
14 - Corio Generation/TotalEnergies, **Formosa 3 (Haiding 2)** - 600 MW Capacity
15 - Skyborn Renewables/Lealea Group, **Hai Xia Phase 1** - 300 MW Capacity
16 - Skyborn Renewables/Lealea Group, **Hai Xia Phase 2** - 300 MW Capacity
17 - SRE, **Formosa 4** - 495 MW Capacity
18 - EDF Renewables/Taiya, **Wei Lan Hai Miaoli** - 440 MW Capacity
19 - Shinfox, **Yo-Der** - 700 MW Capacity
20 - SRE, **Formosa 6** - 800 MW Capacity
21 - CIP, **Fengmiao II** - 600 MW Capacity
22 - Corio Generation/TotalEnergies, **Formosa 3 (Haiding 1)** - 360 MW Capacity
23 - Enervest, **Deshuai** - 240 MW Capacity

The localisation requirements have previously caused some concern among developers that projects will be forced to use domestic suppliers who have not yet built up the capacity to deliver the relevant components on time and to the required specification and cost, leading to delay and added costs (and thereby reducing returns for developers). The flexibility shown by the MOEA in the Round 3.1 Localisation Rules appears to show an acknowledgement of this concern; however, in practice, given that the Round 3 auctions in general are expected to be hotly contested and determinative based on bonus localisation commitments, flexibility on the mandatory localisation components could be seen as moot. That being said, there is clearly a strong cooperative relationship developing between the Taiwan government and industry participants as, in a bid to try to facilitate discussions between the Taiwanese government and developers (to discuss matters such as localisation), the Taiwan Offshore Wind Industry Association has been established. The aim of this association is to create a forum for dialogue with the government on the development process for offshore wind projects in Taiwan.

The IDA announced the Offshore Wind Power Zonal Development Industry Relevancy Implementation Plan for Round 3.2 on 15 December 2023 (the "**Round 3.2 Localisation Rules**"). Under the Round 3.2 Localisation Rules, the localisation requirements are no longer split between 'mandatory' and 'bonus' localisation components. Instead, 24 categories of localisation components with a total score of 120 points are stipulated. The developers may select the items for reaching a minimum score of 70 points for the localisation plan.

The number of points available under each localisation category is capped and the components available be localised under such category also have sub-caps. For example, one of the localisation categories is major work vessels for providing marine support and services (total maximum score: 8 points), which comprise: (1) at least two kinds of major domestic work vessels (100% * 8 points); (2) a domestic turbine installation vessel or a domestic foundation installation vessel (100% * 7 points); or (3) a domestic cable laying vessel (100% * 5 points). So, if a project proposes using at least two kinds of major domestic work vessels for the localisation plan, it will score the highest number of available points in this category. No additional points will be given to the project even if the project commits to another localisation item under the same category.

Pursuant to the Administrative Contract templates for Round 3.1 ("**R3.1 AC**") and Round 3.2 ("**R3.2 AC**"), if a project company is unable to fulfil its localisation commitments due to any non-attributable or force majeure events, the project company may apply with the MOEA/IDA for the amendment to its localisation plan.

In October 2024, in response to the potential disputes raised by the European Union ("**EU**") at the World Trade Organization ("**WTO**") concerning the Taiwan government's localisation requirements for offshore wind projects, the MOEA issued guidelines for its review of the said non-attributable or force majeure events for R3.2 AC, which reflect the MOEA's supportive stance on relaxing the localisation requirements for Round 3.2 projects. In November 2024, the EU and Taiwan Government reached a settlement over the disputes. It was understood that the Taiwan Government committed to introducing greater flexibility in the way the winning projects from the latest auction (Round 3.2) are taken forward. While Round 3.1 projects were not covered under the MOEA's recent guidelines on flexible review for localisation commitments, whether the MOEA's review practice for Round 3.1 projects is influenced positively by such relaxation remained to be seen.

Corporate PPAs

Offshore windfarm developers in Taiwan are cognisant of the high demand for power from some of Taiwan's large corporations, particularly chip manufacturers in the semiconductor industry, some of which are obligated to source a prescribed volume of their power consumption from green power under Taiwan law. Developers plan to capture this appetite through entering into long term corporate power purchase agreements ("**cPPA**") for the supply of power generated from an offshore wind project. cPPAs are made possible in Taiwan through the rules and regulations allowing generators to sell power directly to corporate end users. The relevant rules provide that this supply arrangement can be implemented by either: (i) a generator entering into a wheeling agreement to use wheeling services provided by the grid operator (*i.e.*, TPC)—this is known as the "Indirect Supply" method; or (ii) a generator directly supplying an offtaker with its own transmission cables. Given the infrastructure and costs involved in supplying an offtaker directly, we understand that, to date, offshore wind projects have only utilised the Indirect Supply method.

Given the competitive nature expected of future auctions, it is anticipated that the FiT will be driven lower over time, with the expectation that some developers will bid in at NTD0/kWh in the Round 3 price auctions so as to secure grid allocation. The relevance of the FiT as a revenue stream would then be insignificant. For this reason, cPPAs are being pursued as an alternative to the FiT. This was seen in July 2020 when a cPPA was entered into for the entire output of Ørsted's Greater Changhua 2b & 4 offshore wind farms and more recently in December 2021 when Skyborn Renewables signed a cPPA for over 1 GW of renewable power, which is the largest green cPPA in Asia. Further, in July 2023 the majority Northland Power owned Hai Long 2B and 3 projects announced the signing of a cPPA for the offtake of the entire capacity of these projects. CIP on their Fengmiao 1 project have also announced that they have signed cPPAs with several high profile offtakers; a transaction on which both Orrick and Lee & Li are advising the ECAs and lenders.

Note that, even if a project secures a cPPA, it must still be successful in the Round 3 auctions in order to secure a right to develop an offshore wind farm. This means that projects with a cPPA will still have the right to the FiT awarded pursuant to the auction-based allocation process. This then creates the possibility of a project effectively using the FiT as a hedge against a failed cPPA, by switching from a cPPA to the FiT. This is provided for under the relevant laws and regulations. Although, it is questionable how beneficial this switching mechanism will be if zero-FiT bids are produced in the price auctions. Note that to promote and encourage green energy, Taiwan government announced in June 2023 the "*National Financing Guarantee Mechanism Promotion Plan*" (國家融資保證機制推動方案). Under such plan, a financial institutions authorised by the National Credit Guarantee Administration may guarantee an offtakers payment obligations under a cPPA. With an agreement with the lenders of the project in place, if the corporate offtaker fails to pay under a cPPA, the lenders may call on such guarantee pursuant to the rules stipulated by the authorised financial institutions. In order to apply for such a guarantee, the participants must meet certain qualifications and credit rating requirement(s). In addition, pursuant to Round 3.2 Allocation Guidelines, entering into at least 2 cPPAs is one of the requirements that the MOEA/EA will review for considering the allocation of additional 100 MW capacity.

The trend for cPPAs is set to continue. Advances in chip manufacturing processes mean that the chip manufacturers will need much more power than can currently be provided to them, with some analysts suggesting that they will consume more than 10% of Taiwan's power in the future and, at the same time, are subject to statutory obligations to ensure that a prescribed amount of their consumed power comes from green sources.

Sell-Downs

As in Europe, there has been notable M&A activity in the Taiwanese offshore wind market. For example, in September 2022, Global Renewable Synergy Company agreed to acquire a 25% stake in the 600 MW Changfang and Xidao Offshore Wind Projects from Copenhagen Infrastructure Partners. In addition, in 2022, Skyborn Renewables' offshore wind business, which owns projects in Taiwan was acquired by Skyborn Renewables, which is owned by Global Infrastructure Partners and Mubadala. It is expected that this M&A activity will continue as more projects reach financial close or get closer to commissioning, with other sell-down processes being reported in the industry press.

Prior to any foreign investors acquiring a stake in an existing offshore wind project, such investor must first obtain foreign investment approval from the MOEA. This is generally a formality unless the investor is from mainland China. In addition, sell-downs by existing sponsors typically require the consent of the MOEA. This is because the developers, during the initial Selection Process/ qualification review procedure, promise the MOEA that the promoters of the company developing the offshore wind farm (essentially the shareholders) will continue holding their shares in the project. It is the MOEA's usual position that, based on the promises made, any transfer by a shareholder of its shareholding in the project company (whether direct or indirect) will constitute a "material change," such that MOEA's consent to that change is required. This concept is also an important consideration for the enforcement of share pledges by a project's financiers (although there are mitigants on this point). Pursuant to the Round 3 site recordation rules, projects are required to submit, as part of their site recordation submission, an organigram showing the shareholding structure of the project company up to its ultimate corporate shareholder. Any changes to the corporate shareholding structure of the project company or to that set out in the organigram submitted as part of the site recordation submission will require prior approval from the MOEA. The R3.1 AC and R3.2 AC further stipulate the circumstances that constitute "a change in shareholding" of a project which will trigger the requirement for prior consent from the MOEA.

Conclusion

It is clear that Taiwan's offshore wind industry is burgeoning and has a strong pipeline of projects to facilitate Taiwan in meeting its renewable energy targets. As expected, the outcome of the Round 3.1 and 3.2 auctions has provided the insight into the next stage of Taiwan's rapid offshore wind growth.

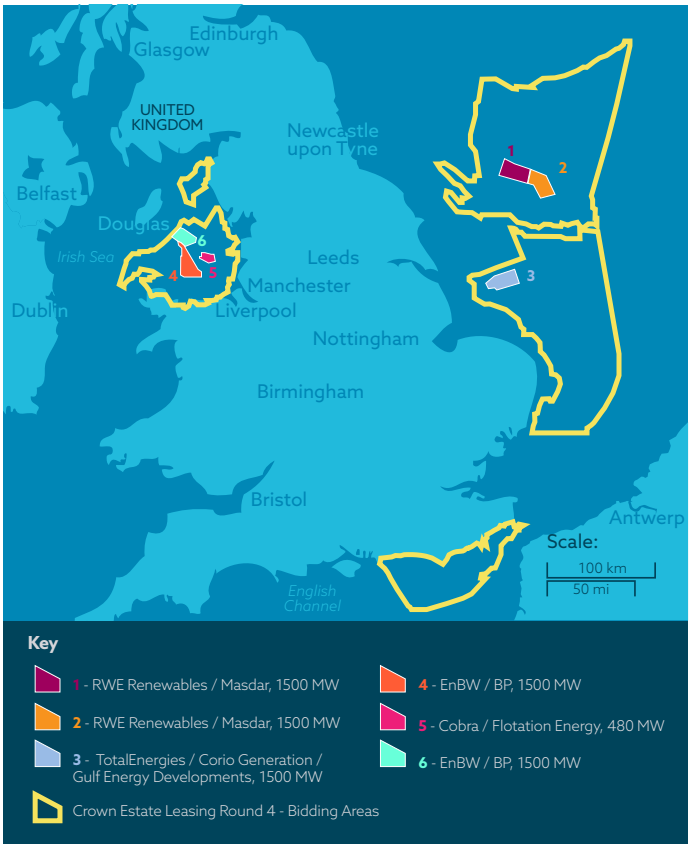
UNITED KINGDOM

Authored by Ravinder Sandhu (Orrick), Albert Yu (Orrick), Alfred Weightman (Orrick), Craig Bruce (Orrick), David O'Donovan (Orrick) and Adam Smith (Orrick) – refer to page 126 for contact details.

Throughout 2024, offshore wind projects in the U.K. continued to face challenges from high inflation and interest rates and supply chain challenges experienced in previous years, placing significant pressure on the economics of many in-progress projects.

In more positive news for the sector, the offshore wind portion of the U.K.'s contract-for-difference ("**CfD**") recalibrated. Following the disappointment of Allocation Round 5 (in which no offshore wind project submitted a bid), Allocation Round 6 saw CfDs awarded to some of the U.K.'s most crucial development-stage projects, some of which were projects that were struggling to proceed after being awarded CfDs in Allocation Round 4 due to the rising costs. Additionally, the round saw a CfD awarded to the 400MW Green Volt floating offshore wind project, which will be one of the very first utility-scale floating projects in the world, and if it is able to deliver power at the winning strike price, it could be key to paving the way to future GW-scale floating offshore wind projects.

MAP 17: CROWN ESTATE LEASING ROUND 4 – AWARDED PROJECTS



Since the general election in July 2024, the new U.K. government has also initiated various reforms intended to accelerate the expansion of offshore wind in the U.K., most noticeably through the creation of Great British Energy ("**GB Energy**"), the announcement of a partnership with The Crown Estate to accelerate the leasing of new offshore wind sites and the publication of its 'Clean Power 2030 Action Plan', in which it set out its plan for decarbonising the U.K.'s electricity system by 2030.

Crown Estate Leasing Round 4 (applies to England and Wales)

The Crown Estate's Leasing Round 4 ("**Leasing Round 4**") resulted in six new offshore projects succeeding at auction; see Map 14. The Crown Estate signed Agreements for Lease with the developers of the six projects in January 2023. The option fees payable under the Agreements for Lease contributed to The Crown Estate declaring a record £1.1 billion net revenue for the year 2023-2024. Table 1 shows the current status of each of these Round 4 projects.

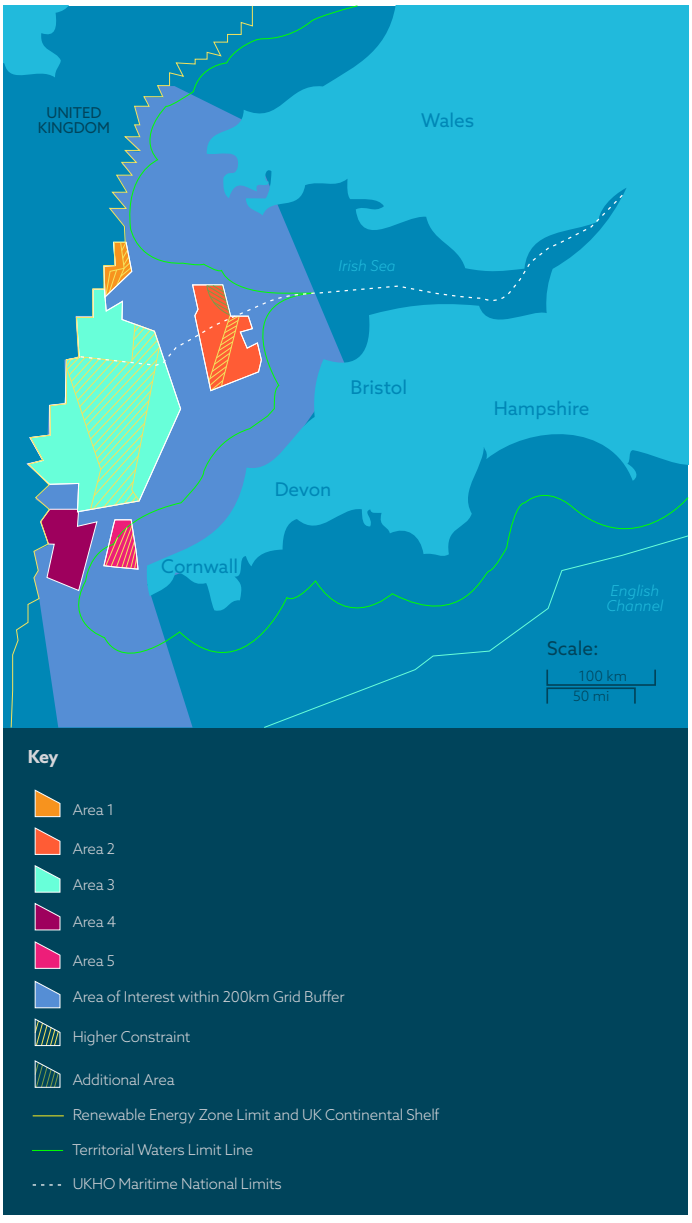
TABLE 1: LEASING ROUND 4 PROJECTS

Project	Capacity	Developer(s)	Status
Dogger Bank South (West) (1)	1,500 MW	RWE and Masdar	Pre-examination phase of Consenting process (DCO application accepted by Planning Inspectorate in July 2024)
Dogger Bank South (East) (2)	1,500 MW	RWE and Masdar	Pre-examination phase of Consenting process (DCO application accepted by Planning Inspectorate in July 2024)
Outer Dowsing (3)	1,500 MW	Total, Corio and Gulf Energy	Examination phase (DCO application accepted by Planning Inspectorate in April 2024)
Mona (4)	1,500 MW	EnBW and bp	Examination phase (DCO Application accepted by Secretary of State in March 2024)
Morecambe (5)	480 MW	Cobra and Flotation Energy	Examination phase (DCO application accepted by Planning Inspectorate in June 2024)
Morgan (6)	1,500 MW	EnBW and bp	Examination phase (DCO Application accepted by Secretary of State in May 2024)

Celtic Sea Floating Offshore Wind Leasing Round 5 (in England and Wales)

The Crown Estate announced in March 2021 that it would establish a leasing round solely for floating offshore wind projects in the Celtic Sea off the coast of South Wales and South West England ("**Leasing Round 5**"). Five "Areas of Search" were announced in July 2022, which were identified following technical analysis and extensive engagement between The Crown Estate, the U.K. and Welsh governments and key agencies, and specialist stakeholders (see Map 18).

MAP 18: CROWN ESTATE LEASING ROUND 5 – CELTIC SEA AREAS OF SEARCH



The Crown Estate published the information memorandum for Leasing Round 5 in December 2023, in which it set out the process and requirements for tendering three sites or "Project Development Areas", each with the capacity to comprise a 1.5 GW-scale project, which may be developed in a phased or 'stepping stone' approach (see Map 16). This is intended to provide further opportunities for investment in the supply chain and to facilitate the co-ordination of supporting infrastructure. Under the proposed tender process, bidders may not

MAP 19: CROWN ESTATE LEASING ROUND 5 – CELTIC SEA PROJECT DEVELOPMENT AREAS

win more than one Project Development Area. The Crown Estate has also introduced social and environmental value criteria to the bidding process for the first time in England and Wales (following supply chain objectives introduced by Crown Estate Scotland as part of the ScotWind tender round). Bidders in Leasing Round 5 will be required to set out specific commitments to ports (such as the use of integration ports) and give binding commitments to generate positive social impact by reference to the following four key areas:

- employment and training opportunities;
- dealing with inequality in employment and skills within the project workforce;
- environmental benefits linked to net zero; and
- delivering benefits to communities.

The announcements are consistent with the new Labour government's ambition for the U.K. to be a "world leader" in floating offshore wind and build on the previous award in August 2020 of seabed rights to the 96 MW Erebus floating wind project, which is under development in the Celtic Sea by Total and Simply Blue Energy. Additionally, Leasing Round 5 is an acknowledgment by The Crown Estate that floating offshore wind merits a separate application process in order to prevent relatively more expensive floating offshore wind projects being squeezed out of the fixed-bottom leasing rounds, which, as seen in The Crown Estate's Leasing Round 4, can attract extremely competitive bids.

The Leasing Round 5 process kicked off in January 2024 with a bidders' day, followed by the submission of pre-qualification questionnaires ("**PQQ**") by bidders during spring 2024. The invitation to tender ("**ITT**") stage 1 phase commenced in August 2024. The final stage of the auction, ITT stage 2, is expected to commence in Q1 2025, with the winners due to be announced during Q2 2025 and wind farm agreements for lease entered into thereafter.

Extension Projects

In addition to The Crown Estate's Leasing Round 5, following its announcement in 2017 to allow existing offshore wind projects to apply for project extensions, The Crown Estate announced in September 2020 that certain existing projects would be permitted to extend (the "**Extension Projects**"). These projects, and the status of each, are shown in Table 2.

Following requests from the developers of these Extension Projects and the developers of the Dogger Bank D project, the Crown Estate announced in November 2023 that it was launching a formal process to assess capacity increases for these Extension Projects and Dogger Bank D of up to an additional 4GW as part of a 'Capacity Improvement Programme'. As part of the announcement, the Crown Estate stated that "in considering the requests, The Crown Estate will balance the economic and clean energy potential of these projects with its commitments to nature and biodiversity and duty to make the most effective and efficient use of a valuable, but increasingly busy, seabed" and that "any decision taken will be subject to a 'Plan-Level Habitats Regulations Assessment' to understand the collective environmental impact of the additional capacity across all seven projects" and related consultations.

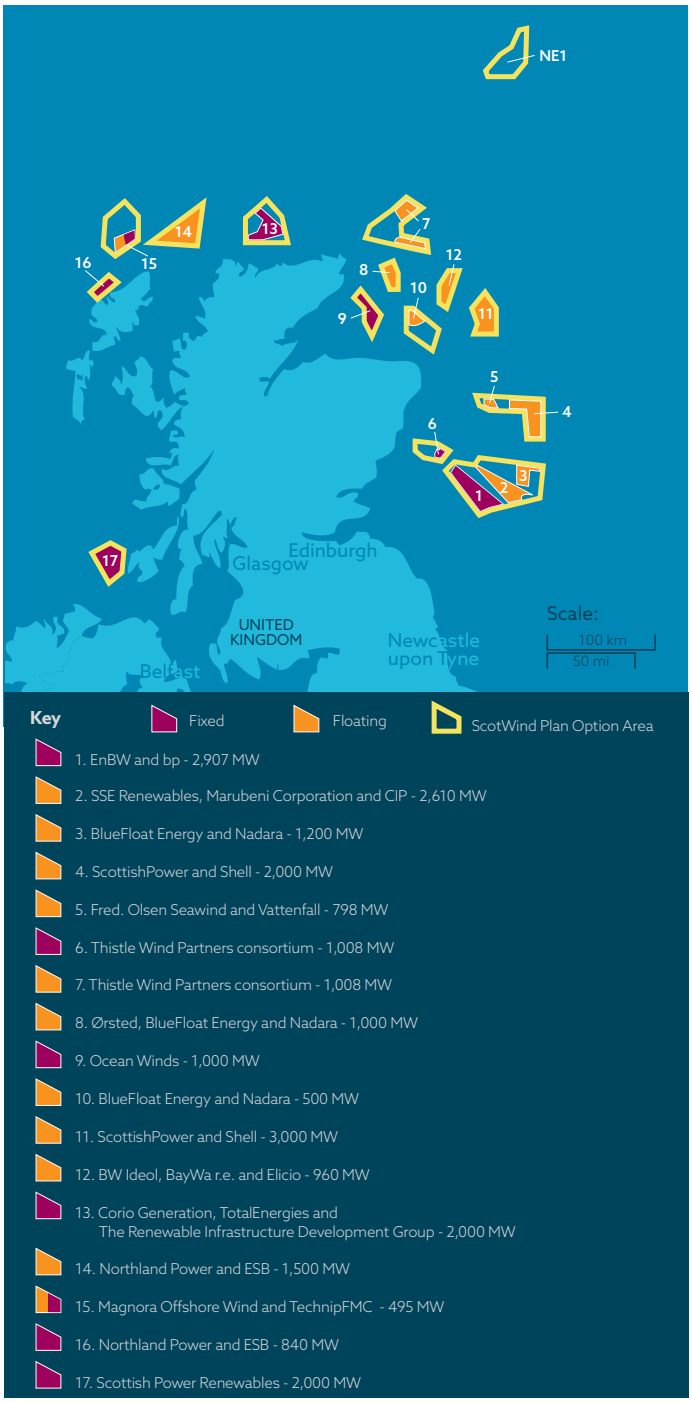
In July 2024, SSE and Equinor (co-developers of the proposed Dogger Bank D fourth phase of Dogger Bank Wind Farm) announced that they had established commercial terms with The Crown Estate around an amendment to the existing Dogger Bank C seabed lease in order to progress the proposed Dogger Bank D.

TABLE 2: EXTENSION PROJECTS

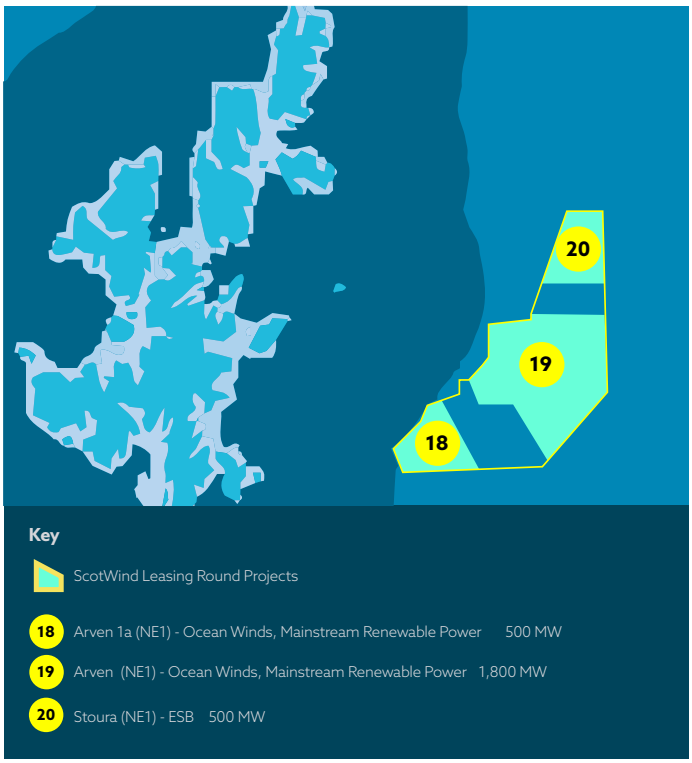
Original Project	Extension Name	Extension Capacity	Operator
Sheringham Shoal	—	up to 317 MW	Equinor, Masdar and China Resources Power[1]
	Status: permitting in progress. The U.K. Government granted a development consent order on 17 April 2024. A non-material change application to increase renewable energy generation was submitted in July 2024.		
Dudgeon	—	up to 402 MW	Equinor[2]
	Status: permitting in progress. The U.K. Government granted a development consent order on 17 April 2024. A non-material change application to increase renewable energy generation was submitted in July 2024.		
Greater Gabbard	North Falls	up to 504 MW	RWE, SSE Renewables
	Status: permitting in progress. In August 2024, the development consent order application for North Falls was accepted for examination. A decision on the application is expected the second half of 2025.		
Galloper	Five Estuaries	up to 353 MW	RWE, Macquarie-led consortium, ESB and Sumitomo
	Status: permitting in progress. In April 2024, the development consent order application for Five Estuaries was accepted for examination. A decision on the application is expected by September 2025.		
Rampion	Rampion 2	up to 1,200 MW	RWE, Enbridge and Macquarie-led consortium
	Status: permitting in progress. On 7 September 2023, the development consent order application for Rampion 2 was accepted for examination. A decision on the application is expected by 4 April 2025.[3]		
Gwynt y Mor	Awel y Mor	up to 576 MW	RWE, Stadtwerke München, Siemens Financial Services
	Status: consented. Development consent order was granted by the U.K. Government on 19 September 2023.		

1. The Sponsors of the original Sheringham Shoal offshore wind project (Macquarie GIG, Equitix and The Renewables Infrastructure Group) have reserved the right to enter the extension during the construction stage.
2. To be developed in parallel with Sheringham Shoal Extension, given the proximity of the two projects. The other sponsors are Masdar and China Resources (Holdings). In December 2024, Equinor announced that Sheringham Shoal Extension and Dudgeon Extension will be developed by the same legal entity (subject to regulatory approvals).
3. In February 2025, the UK government extended the decision deadline for the Rampion 2 Offshore Wind Farm Extension Project to 4 April 2025, citing the need for further information

MAP 20: SCOTWIND – INITIAL PROJECTS



MAP 21: SCOTWIND – SHETLAND PROJECTS



ScotWind Leasing Round (Applies to Scotland)

There are 20 offshore wind projects in development following Crown Estate Scotland's tender of lease option rights for just under 25 GW of offshore wind capacity across 14 "Plan Option Areas" ("**ScotWind Leasing Round**") in 2021. The first 17 successful projects were announced in April 2022 followed by rights granted through the clearing process of three further projects (see Map 20), representing the initial ScotWind awarded projects, developers and capacity/technologies, (Map 21, representing the Shetland NE1 projects awarded through the ScotWind clearing process and Table 3 below for further details, including updates of current developers, projected project capacity and technologies).

A number of developers have increased the potential overall capacity of their ScotWind lease sites following geophysical and benthic surveys, with Ossian and Caledonia projects each looking to add a further 1 GW, and the 400 MW being added to Broadshore project. This has increased the total potential capacity of the ScotWind projects (subject to approvals) to 30 GW.

Supply chain commitments were required from developers as part of the bid process. This approach—the first of its kind and now followed, in part, by The Crown Estate for its Leasing Round 5—will ensure a focus from the earliest stage on supply chain capacity to develop and deliver the projects. It is of particular note that 13 of the 20 projects (approximately 15 GW) are for floating rather than fixed turbines, and will lead to the development of some of the first commercial-scale floating wind projects in the world. This will give Scotland (and the U.K. as a whole) the potential to be a world leader in the floating wind industry. The ScotWind projects will complement The Crown Estate's floating offshore wind projects that are anticipated in the Celtic Sea with Leasing Round 5 (see above) as well as further floating projects anticipated by Crown Estate, Scotland via its INTOG Leasing Round (see below).

TABLE 3: SCOTWIND LEASING ROUND PROJECTS

Project (Map 4 ref.)	Capacity	Developer(s)	Fixed/Floating
Arven (NE1 19 (Map 5))	1,800 MW	Mainstream Renewable Power, Ocean Winds	Floating
	Status: pre-planning		
Arven 1a (NE1 18 (Map 5))	500 MW	Ocean Winds, Mainstream Renewable Power	Floating
	Status: pre-planning		
Ayre (7)	1,008 MW	Thistle Wind Partners consortium	Floating
	Status: pre-planning		
Bellrock (3)	1,200 MW	BlueFloat Energy and Nadara	Floating
	Status: pre-planning		
Bowdun (6)	1,008 MW	Thistle Wind Partners consortium	Fixed
	Status: pre-planning		
Broadshore (10)	900 MW (500 MW*)	BlueFloat Energy and Nadara	Floating
	Status: pre-planning		
Buchan (12)	960 MW	BW Ideol, BayWa r.e. and Elicio	Floating
	Status: pre-planning		
Caledonia (9)	1,000 MW (2,000 MW*)	Ocean Winds	Fixed
	Status: in planning - application submitted in November 2024 for consent under s36 Electricity Act 1989 and for marine licences		
CampionWind (4)	2,000 MW	ScottishPower and Shell	Floating
	Status: pre-planning		
Havbredey (14)	1,500 MW	Northland Power and ESB	Floating
	Status: pre-planning		
MachairWind (17)	2,000 MW	ScottishPower Renewables	Fixed
	Status: pre-planning		
MarramWind (11)	3,000 MW	ScottishPower and Shell	Floating
	Status: pre-planning		
Morven (1)	2,907 MW	EnBW and bp	Fixed
	Status: pre-planning		
Muir Mhòr (5)	798 MW	Fred. Olsen Seawind and Vattenfall	Floating
	Status: in planning – application submitted onshore and offshore consent applications under s36 Electricity Act 1989 on 10 December 2024		
Ossian (2)	3,610 MW (2,610 MW*)	SSE Renewables, Marubeni Corporation and CIP	Floating
	Status: in planning – environmental impact assessment submitted to Scottish Marine Directorate in June 2024 with the submission for consent under s36 Electricity Act 1989 and for marine licences expected in 2026		
Stoura (NE1 20 (Map 5))	500 MW	ESB	Floating
	Status: pre-planning		
Spiorad na Mara (16)	840 MW	Northland Power and ESB	Fixed
	Status: pre-planning		
Stromar (8)	1,000 MW	Ørsted, BlueFloat Energy and Nadara	Floating
	Status: pre-planning		
Talisk (15)	495 MW	Magnora Offshore Wind and TechnipFMC	Floating
	Status: pre-planning		
West of Orkney (13)	2,000 MW	Corio Generation, TotalEnergies and The Renewable Infrastructure Development Group	Fixed
	Status: in planning – application submitted on 26 September 2023 for consent under s36 Electricity Act 1989 and for marine licences with a request for further information by the Scottish government in early 2024s		

** Original projected project capacity*

Innovation and Targeted Oil and Gas ("INTOG") Leasing Round (Applies to Scotland)

2022 saw Crown Estate Scotland tender lease option rights under a new leasing round for Innovation and Targeted Oil and Gas projects located in the seabed areas set out in the 'Initial Plan Framework' (with a target of 4 GW generating capacity capped at 5.7 GW) (the "**INTOG Leasing Round**"). The process was divided into two pots. One pot was open to developers of small-scale innovative offshore wind projects of less than 100 MW (the innovation element, "**IN**"), and the other pot was open to larger-scale projects connected to oil and gas infrastructure to electrify and reduce carbon emissions associated with those sites (the targeted oil and gas element, "**TOG**"). The split was intended to account for the difference in nature and scale of the innovation and targeted oil and gas elements of the scheme. Similar to the 2021 ScotWind Leasing Round, the INTOG Leasing Round had comparable local supply chain requirements, and the two processes combined suggest considerable opportunity for those participating in the local supply chain.

Applications for this round closed in November 2022, and in March 2023, it was announced that 13 projects had been offered exclusivity agreements (see Table 4 below). In May 2023, it was confirmed that all five IN projects selected had signed exclusivity agreements. In November 2023, it was confirmed that seven TOG projects (of eight selected) had signed exclusivity agreements. No further updates have been provided as at the date of this Report.

Proposed projects which are in the final INTOG Sectoral Marine Plan will be offered an option agreement to enable further development work during an option period of seven (7) years (the "**Option Period**"). Following the Option Period and subject to all conditions being satisfied (including consents and financing being in place), these projects will be offered a seabed lease of 50 years (for TOG projects) or 25 years (for IN projects).

TABLE 4: PROJECTS OFFERED EXCLUSIVITY AGREEMENTS IN THE INTOG LEASING ROUND

Lead applicant	Option Fees	IN/TOG	Total capacity (MW)
Bluefloat Energy/Nadara Partnership	£5,401,360	IN	99.45
Bluefloat Energy/Nadara Partnership	£7,107,900	IN	99.45
Simply Blue Energy	£9,972,000	IN	100
BP Alternative Energy Investments	£1,670,917	IN	50
ESB Asset Development U.K.	£3,137,000	IN	100
Flotation Energy	£54,893,102	TOG	560
Flotation Energy	£40,987,979	TOG	1350
Cerulean Winds	£67,200,066	TOG	1008
Cerulean Winds	£35,200,098	TOG	1008
Cerulean Winds	£35,200,098	TOG	1008
TotalEnergies	£200,000	TOG	3
Harbour Energy	£405,000	TOG	15
Harbour Energy	£405,000	TOG	15

OFTO Tender Rounds 10, 11 and 12

Pursuant to the unbundling regime, an entity cannot hold a licence to both generate and transmit power from an offshore wind farm. Governments of states with offshore wind farms have adopted different models for how to deal with the transmission assets relating to offshore wind farms, and in the U.K., the preferred model is the "build and dispose" model, whereby the developer is responsible for the construction of both the transmission and generation assets and is then required to divest of the transmission assets within 18 months of first power[4]. Ofgem (the regulator) runs a competitive tender process to select and license entities to acquire and operate these transmission assets. Such entities are known as "offshore transmission operators" (or simply "**OFTOs**"), and the expected licence period is currently just short of 25 years.

Tender Round 10 relates to three U.K. offshore wind farms: the 1.2 GW Dogger Bank A, in respect of which EKITD Consortium (a consortium consisting of Equitix Investment Management Limited, Kyuden International Corporation and, Kyuden T&D Global CO., INC) has been appointed preferred bidder; and the 882 MW Moray West and 448 MW Neart na Gaoithe offshore wind farms, which are at the enhanced pre-qualification stage.

Tender Round 11 was launched on 14 February 2024 and relates only to the Dogger Bank B offshore wind farm. In July 2024, four bidders were short-listed to participate in the Invitation to Tender Stage of the tender round:

- Diamond Transmission U.K. Limited;
- EKITD Consortium (comprising Equitix Investment Management Limited, Kyuden International Corporation and Kyuden T&D Global CO, INC.);
- GRPN is formed of Gravis Capital Management Limited and U.K. Power Networks Services;
- (Commercial) Limited; and
- TCP is a consortium formed of International Public Partnerships Limited and Transmission Capital Partners Limited Partnership.

Tender round 12 is expected to launch in Q1 2025.

A fundamental consideration to generators and OFTOs alike is understanding the proposed approach to OFTO assets approaching the end of their original design life and the end of the tender revenue stream ("**EoTRS**"). Following a consultation, Ofgem published a decision on 24 January 2024. Ofgem proposed a number of additional objectives for its EoTRS policy, including: maximising the operational life of transmission and generation assets where it is economic and efficient to do so; securing balanced Transmission Network Use of System charges (which are levied in order to recover the costs associated with installing and maintaining transmission systems) for wind farms and consumers; ensuring good asset stewardship and conduct; and establishing a proportionate system of EoTRS regulation. In respect of extension periods, Ofgem is of the view that incumbent OFTOs will be well positioned to continue to operate transmission assets, and so direct negotiation with the incumbent OFTO will be its preferred approach in the first instance. However, if Ofgem deems the incumbent's extension offer to be insufficiently competitive, Ofgem may initiate a competitive tender process. Ofgem also consulted on the asset valuation process for the extension period, but has not yet come to a decision on this matter. Ofgem is minded to retain the existing availability target and penalty/ bonus incentive

4. Technically this is the date of the Completion Notice issued following ION Part See s.10F, Electricity Act (1989).

framework (where the OFTO has an obligation to repair and maintain the transmission assets, but also has an incentive to maintain asset availability) but notes that these are likely to differ in the EoTRS context, where the asset's condition and revenue streams will necessarily be different. At the time of publication of its decision in January 2024, Ofgem said that it will keep this matter under review as more evidence on the health and performance of transmission assets becomes available; however, see below regarding the latest consultation launched in December 2024 which concerns (amongst other things) the policy framework for extension to OFTO revenue streams.

Ofgem has also been developing an OFTO build delivery model for non-radial offshore transmission assets (*i.e.*, those in either the Holistic Network Design or Holistic Network Design Follow-Up Exercise). In December 2024, following analysis of responses to a consultation conducted in April 2024, Ofgem published a policy update stating that it would move from a 'late' to an 'early' OFTO build model and will now seek to refine the model, engage with stakeholders and identify suitable pilot projects by Q2 2025.

In November 2023, the U.K. government launched a call for evidence in relation to the OFTO regime, with the stated aim of ensuring that the OFTO regime "remains fit for purpose in the long-term and to ensure the continued delivery of offshore wind to meet the U.K.'s net zero target", and which included a number of questions of which industry participants were invited to share their views (including, for example, questions concerning issues or challenges experienced in relation to the OFTO regime, incentive arrangements, the suitability of the regime for future offshore wind project requirements and the impact of the OFTO regime on supply chains). The closing date for the call for evidence was extended to 9 February 2024. No further updates have been provided as at the date of this Report.

We note that Ofgem launched a separate consultation in relation to the OFTO regime in December 2024, which will run to 28 February 2025 and in which Ofgem is seeking views from industry participants on: (i) the policy framework for extension to OFTO revenue streams; (ii) the most appropriate licence term duration relevant to the technical life of OFTO assets; and (iii) potential options for improving the efficiency of tender process were the generator commissioning clause to be extended. Ofgem's decision is expected in Q2 2025.

Challenges and Support Initiatives

Participants in the offshore wind market in the U.K. (and globally) have faced several challenges in 2024, with increasing pressures on the supply chain availability and overall costs. From a procurement perspective, there continues to be congestion in the market requiring developers to seek early engagement to ensure that there is vessel and factory slot availability locked in to allow the project to meet its target construction dates. Market conditions continue to have a significant impact on internal costs, with material costs, insurance and interest rates remaining high. In our experience, such market conditions are resulting in contractors seeking to discuss the contractual risk profiles historically seen in the wider market.

In addition to the above, the planning and consenting process and delays in obtaining grid connection continue to be a significant bottleneck in the development pipeline for offshore wind projects in the U.K. (as is the case in a number of other jurisdictions), although the grid connection process is currently undergoing a significant update to seek to streamline the connection queue and remove projects that are significantly delayed and/or unlikely to ever achieve connection (see the Policy and Regulatory Updates section below).

Notwithstanding the challenges, the U.K. remains one of the most attractive markets in the world for offshore wind due to the government support mechanism available. There are also a number of policy and regulatory reform initiatives that are being progressed, which are designed overall to help more offshore wind farms to be built in the U.K.. These are discussed further below.

Contracts for Difference Regime

Developers of offshore wind farms in the U.K. can apply for revenue support through a 15-year indexed CfD. CfDs are awarded (in respect of various technologies; not just offshore wind) pursuant to a competitive reverse auction process.

In the CfD auction process, developers must submit their CfD auction bids per megawatt hour to the National Grid ESO, with the bids being ranked lowest to highest. The lowest bids are all accepted until the budget for that technology pot has been exhausted. Beginning with Allocation Round 4, the CfD auction process now includes a capacity cap. Therefore, notwithstanding that a project may be successful on the price element, there would have to be sufficient capacity remaining within the capacity cap for such project to be successful in winning a contract. Successful bidders are awarded a CfD with a strike price, which is equal to the auction clearing price. This effectively sets a guaranteed price that the project will receive for the electricity generated by the project. Once operational, if the project earns revenue in excess of the strike price, then the project must return the difference between the strike price and the revenue earned to the CfD provider, whereas if the wind farm earns revenue below the strike price, then the CfD provider must pay the project the difference between the price earned and the strike price.

The results of the previous round were announced in September 2023 ("**Allocation Round 5**"). Allocation Round 5 did not include a specific pot of the CfD budget assigned to offshore wind farms only, as had been the case in Allocation Round 4, instead assigning a specified portion of Pot 2 for tidal stream projects. Given the low level of maximum strike prices (£44/MWh, and £116/MWh for floating offshore wind), no offshore wind developers opted to participate in Allocation

Round 5, despite a number of them being eligible. In which was a disappointing but unsurprising result by industry participants and a blow to the U.K.'s offshore wind plans.

In line with the U.K. Government's announcement in February 2022 that the frequency of auctions for funding through the CfD scheme would change to every year rather than every two years, the next round ("**Allocation Round 6**") commenced in March 2024. In response to the disappointing results from Allocation Round 5, the U.K. government increased the budget and strike prices for Allocation Round 6 – in March 2024, a budget of £1,025 million for Allocation Round 6 was announced, with £800m allocated for offshore wind, marking a significant increase to the budget from Allocation Round 5, which had totalled £205m. In July 2024, the budget for Allocation Round 6 was increased further by the new U.K. government, with offshore wind now being allocated £1.1 billion. In light of this, Allocation Round 6 successfully awarded a total of 5.34GW capacity across fixed-bottom and floating offshore wind projects.

The successful projects included new fixed-bottom projects and also re-bid projects (*i.e.*, projects that were awarded with CfDs in Allocation Round 4 but were permitted to reduce the capacity covered by Allocation Round 4 CfDs to re-bid the remaining capacity in Allocation Round 6). A particular highlight was the award of a CfD to the 400MW Green Volt floating offshore wind project, which will be one of the very first utility-scale floating projects in the world, and if it is able to deliver power at the winning strike price, could be key to paving the way to future GW-scale floating offshore wind projects.

TABLE 5: CFD AR6 RESULTS (OFFSHORE WIND ONLY)

Project Name	Region	Developer(s)	Technology Type	Size (MW)	Strike Price (£/MWh)	Delivery Year
Green Volt Offshore	Scotland	Flotation Energy and Vårgrønn	Floating Offshore	400	139.93	2028/29
Inch Cape A	Scotland	Red Rock Renewables and ESB	Offshore Wind (*Permitted Reduction*)	177.41	54.23	2027/28
Inch Cape B	Scotland	Red Rock Renewables and ESB	Offshore Wind (*Permitted Reduction*)	88.7	54.23	2027/28
Moray Offshore Windfarm (West) String 9	Scotland	Ocean Winds and Ignitis	Offshore Wind (*Permitted Reduction*)	73.5	54.23	2027/28
East Anglia Three (EA3B)	England	ScottishPower Renewables	Offshore Wind (*Permitted Reduction*)	158.9	54.23	2027/28
Hornsea Project Three Offshore Wind Farm AR6 A	England	Ørsted	Offshore Wind (*Permitted Reduction*)	360	54.23	2027/28
Hornsea Project Three Offshore Wind Farm AR6 C	England	Ørsted	Offshore Wind (*Permitted Reduction*)	360	54.23	2027/28
Hornsea Project Three Offshore Wind Farm AR6 B	England	Ørsted	Offshore Wind (*Permitted Reduction*)	360	54.23	2027/28
Hornsea Project Four Offshore Wind Farm	England	Ørsted	Offshore Wind	2400	58.87	2028/29
East Anglia Two, Phase 1	England	ScottishPower Renewables	Offshore Wind	963.07	58.87	2028/29

In January 2024, the U.K. government launched a public consultation on proposed amendments to the CfD scheme for the next allocation round ("**Allocation Round 7**") and future rounds. As part of the consultation, the government proposed extending the CfD phasing policy, which currently allows fixed-bottom offshore wind projects to be built in multiple stages, to floating offshore wind projects. In October 2024, the government published the results of the consultation and confirmed that it would extend the phasing policy to floating offshore wind projects for the next allocation round onwards, initially by applying the current rules in place for fixed-bottom offshore wind.

The 2030 Plan (see below) recognises the important role of offshore wind in achieving the U.K.'s clean power ambitions by 2030. To this end, the 2030 Plan notes that rules/ requirements for Allocation Round 7 will be relaxed to enable greater delivery of fixed-bottom offshore wind projects. The government also intends to update the CfD auction schedule, budget and reference price parameters, and will consult on the proposed changes before the commencement of Allocation Round 7.

Other Key Support Initiatives

In addition to the support available to developers via the CfD scheme:

- the government has, in November 2024, introduced a clean industry bonus (the "**CIB**"), which is linked to the core CfD scheme and allows both fixed and floating offshore wind applicants to obtain extra CfD revenue support if they choose to invest in more sustainable supply chains (further criteria is set out in the CIB documentation), the proposal submissions deadline for which was recently extended to 14 April 2025;
- older projects may be able to receive support under the renewables obligation certificates (or "**ROC**") regime, which concerns electronic certificates issued by Ofgem to accredited power stations that generate electricity from eligible renewable sources (the scheme is closed to new applicants); and/or
- projects may be able to avail themselves of capital allowances claims (although a detailed capital allowances analysis of all expenditures on the project should be undertaken to identify the full extent of available allowances).

Various initiatives have also been established by industry bodies to support the growth of the U.K. offshore wind sector. Key initiatives include:

- **Industrial Growth Plan.** Developed by RenewableUK, the Offshore Wind Industry Council, The Crown Estate and Crown Estate Scotland, the Industrial Growth Plan "aims to grow the offshore wind supply chain to accelerate and de-risk delivery, as well as grow market share and technology leadership for the U.K.".
- **Crown Estate Marine Delivery Routemap.** The Marine Delivery Routemap is a collaborative initiative with our partners and stakeholders to develop a long-term strategy for the marine space and "help coordinate action across sectors to deliver on net zero and nature policies, build a thriving marine economy, and capture onshore benefits".
- **FOW Industry Routemap 2040.** The Floating Offshore Wind Taskforce, comprising RenewableUK, Offshore Renewable Energy Catapult, the governments of England, Wales and Scotland and Northern Ireland, has produced an 'Industry Roadmap 2040', which is intended to provide guidance on the port capacity and capabilities, supply chain development options and must-have investments required for the U.K. to reach its floating offshore wind ambitions.
- **Supply Chain Accelerator.** The Crown Estate has established a £50 million fund to help catalyse U.K. supply chain capacity and capability for offshore wind in the U.K..

Corporate PPAs

For projects which either miss out on a CfD or which wish to diversify their revenue stream (particularly in a high market price environment), corporate PPAs with investment-grade offtakers can be an attractive option. Amazon, in particular, has been active in the U.K. market in 2024, increasing its offtake from the Moray West project to 473 MW and signing up to 159 MW from East Anglia 3. Offshore wind is particularly attractive to big-tech offtakers given the large capacity factors and ability to purchase large volumes of electricity under a single PPA, particularly as the power demands on their data centres grow exponentially due to the continuing shift to cloud services and the surge in use of power-hungry AI applications.

Policy and Regulatory Updates

Following its sweeping victory in a general election in July 2024, the new U.K. government has initiated various reforms intended to accelerate the expansion of offshore wind in the U.K..

In a sign of what industry participants are hoping is the new government's commitment to offshore wind, it topped-up the Allocation Round 6 budget within one month of the general election result (see above).

The government has announced plans to establish a new publicly owned company, GB Energy, which will (amongst other things) invest £8.3 billion over the next five years in renewable energy projects and the grid, with the intent to invest alongside private capital in an effort to de-risk projects and also as part of its partnership with The Crown Estate (see below). The government has also announced plans to establish a 'National Wealth Fund', which will invest £1.8 billion on upgrading ports across the U.K. with a view to enable floating development and £2.5 billion in the green steel industry, in each case to be invested alongside private capital.

In July 2024, the government announced a partnership between GB Energy and The Crown Estate to support the development of offshore wind and other clean technology projects. Details are relatively sparse at this stage; however, our understanding is that the partnership will operate similar to the Dutch model where the Netherlands Enterprise Agency undertakes consenting and certain early-stage development activities before the site is opened up to private developers by way of competitive auction. The Crown Estate estimates the partnership will lead to up to 20-30GW of new offshore wind developments being leased by 2030.

Most recently, in December 2024, the government published its 'Clean Power 2030 Action Plan' (the "**2030 Plan**"), in which it set out its plan for decarbonising the U.K.'s electricity system by 2030. Key takeaways for participants in the U.K. offshore wind sector include:

- **2030 Installed Capacity Target.** The government is aiming to achieve between 43GW to 50GW of installed offshore wind capacity by 2030.
- **Networks and Connections.** The 2030 Plan acknowledges that double the amount of new transmission network infrastructure must be built by 2030 as has been built over the past decade in order to achieve the targets set out in the 2030 Plan. To achieve this, the government plans to (amongst other things) work with NESO and Ofgem to create a framework to prioritise connection projects that are key to achieving clean power by 2030, rather than operating on a "first come, first served" basis.
- **Project Delivery.** The 2030 Plan acknowledges that specific reforms must be made to ensure accelerated delivery of technologies such as renewable energy. In particular, the 2030 Plan proposes that the CfD scheme be reviewed to ensure that the government's renewable technology capacity targets are met. The Action Plan highlights that the government's publicly owned clean energy company, GB Energy, will play an essential role in supporting community clean energy projects through the implementation of a 'Local Power Plan' and its potential involvement in new generation projects.
- **Electricity Market Reform.** The 2030 Plan highlights that reform of the electricity market in the U.K. will be essential to developing a clean power system. In parallel with the publication of the 2030 Plan, the government published an update on the ongoing review of energy market arrangements in the U.K. ("**REMA**") and a summary of responses to its most recent consultation. The update was intended to remove uncertainty in relation to projects targeting commercial operations by 2030. The government also confirmed that it will publish a decision on REMA by mid-2025, in time for Allocation Round 7, and that it is still considering zonal pricing or a reformed national pricing as part of REMA.
- **Supply Chains and Workforce.** The 2030 Plan states that a "Clean Energy Skills Challenge" will be implemented to support workers in the oil and gas industry to transfer to positions within the renewable energy sector, with further measures to bolster the domestic supply chain expected.
- **Planning and Consenting.** The 2030 Plan acknowledges that the current planning regime in the U.K. does not allow for quick deployment of projects. To mitigate this, amongst other measures, the 2030 Plan seeks to further build on the Offshore Wind Environmental Improvement Package (introduced in the Energy Act 2023 in an effort to reduce significant delays to the consent of offshore wind developments) by introducing a marine recovery fund (into which "applicants can pay to discharge their compensation obligations, underpinned by libraries of approved strategic compensation measures") which the government believes, as a whole, will accelerate and de-risk the consent of offshore wind projects whilst continuing to protect the marine environment.

In addition to the above, the Finance Act 2024 received Royal Assent in February 2024 and was passed into law. The legislation sets out the 'new investment exemption' to the Electricity Generator Levy ("**EGL**") which was introduced in the U.K. with effect from 1 January 2023. The exemption means that generation projects, in respect of which the "substantive decision to proceed" is made on or after 22 November 2023, will be exempt from the EGL.

Finally, we note future reforms to the U.K. electricity market (in general) and offshore transmission (including the current OFTO model, in particular) following the publication: (i) in October 2022 by Ofgem of its 'Decision on Anticipatory Investment and Implementation of Policy Changes' (intended to encourage early-stage projects to collaborate by facilitating the making of anticipatory investment); and (ii) in July 2023 by the government of its future framework recommendations flowing from the Offshore Transmission Network Review (which acknowledge that a more strategic and joined-up approach to offshore wind development in the U.K. is needed), are awaited. Ofgem continues to develop a regulatory framework for new "offshore hybrid assets" which will allow offshore wind projects to connect to the national grid using interconnectors rather than radial point-to-point connections. The pilot scheme for projects wishing to utilise these new connections is progressing with LionLink (connecting Dutch offshore wind farms to the grid) and Nautilus (now designated by the European Commission as a Project of Mutual Interest, connecting Belgian offshore wind farms to the grid) and is continuing to move ahead with development. Additionally, three new interconnectors have been greenlit which may provide future capacity for additional offshore wind farms to provide power to the U.K..

M&A Activity

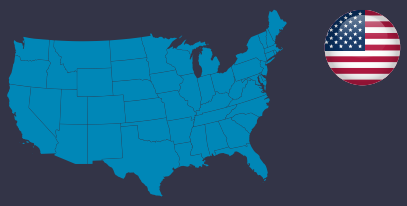
In 2024, the U.K. offshore wind sector was marked by a steady increase in M&A activity, reflecting the industry's growth and strategic realignments. Ørsted sold a 12.5% stake in its Hornsea 1, Hornsea 2, Walney Extension, and Burbo Bank Extension wind farms to Brookfield for GBP 1.75 billion. This deal not only marked Brookfield's entry into the U.K. offshore wind market but also aligned with Ørsted's broader strategy to divest assets and raise DKK 70-80 billion by 2026. In addition to the Brookfield transaction, it has been reported that Ørsted launched the sale of a 50% interest in the Hornsea 3 offshore wind project in October 2024.

In another major M&A development in 2024, Macquarie announced that it is considering the sale of all or part of its interest in its global offshore wind development platform, Corio Generation, which has a substantial 30 GW development pipeline.

Other M&A highlights in the U.K. offshore wind sector during 2024 include the following transactions:

- In March 2024, Vattenfall and RWE reached completion on the sale by Vattenfall of its cluster of development-stage offshore wind projects in Norfolk (Norfolk Boreas, Norfolk Vanguard West and Norfolk Vanguard East) with a combined capacity of 4.2 GW to RWE for an enterprise value of GBP 963m.
- In May 2024, Equitix also increased its stake in Moray East, Scotland's largest operational offshore wind farm, by 10%, following a previous acquisition of a 16.6% stake from Ocean Winds.
- In June 2024, Norges Bank Investment Management acquired a 37.5% stake in the Race Bank offshore wind farm for GBP 330 million.
- In July 2024, Macquarie announced that it would acquire BlackRock's interest in the Lynn and Inner Dowsing offshore wind farms, giving it full ownership of the projects, which are both operational and have a combined installed capacity of 194MW.
- In December 2024, TotalEnergies announced plans to dispose of part of its 50% interest in the 1.5GW Outer Dowsing offshore wind project.
- It has been reported that the proposed joint disposals by ESB and Red Rock Power of interests in the Inch Cape offshore wind farm, initially reported in September 2023, are continuing as part of a competitive process.

UNITED STATES OF AMERICA



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Current Status and Outlook for Offshore Wind in the United States

The United States offshore wind sector has made considerable progress during a long ramp-up period which began in the early 2000s. Today, the United States finally has operating utility scale offshore wind in addition to the Block Island Wind Farm's five turbines that have been in operation since 2016. 2024 witnessed the achievement of a number of significant milestones and significant progress throughout the industry. Notably, New York's South Fork Wind project (132 MW) became the nation's first utility-scale operating project, and a number of projects, including Revolution Wind (704 MW, New England), Sunrise Wind (924 MW, east of Long Island), and Coastal Virginia Offshore Wind (2,587 MW, Virginia) are in varying stages of onshore and offshore construction, with the Coastal Virginia Offshore Wind project expected to reach completion by the end of 2026.[1] However, 2024 also saw significant project delays and re-negotiations of power purchase arrangements. Also, certain project sponsors announced intentions to pause or delay development of projects due to economic and regulatory uncertainty.

A number of states continued to advance offshore wind. On January 24, 2024, the New Jersey Board of Public Utilities announced that the Leading Light and Attentive Energy 2 projects won the state's third solicitation for Offshore Wind Renewable Energy Certificates ("**ORECs**").[2] Through the first multi-state cooperative offshore wind solicitation, on September 6, 2024, Massachusetts and Rhode Island selected three projects (a total of 2,878 MW) for its joint procurement with Connecticut.[3] Rhode Island and Massachusetts selected 200 MW and 1,087 MW from the SouthCoast Wind project, respectively, and Massachusetts also selected 791 MW of the New England Wind 1 project and up to 800 MW of the Vineyard Wind 2 project. However, the Vineyard Wind 2 developers withdrew the project from the procurement for economic reasons after Connecticut declined to procure the remaining 400 MW.[4] In December 2024, New York issued a Request for Information to solicit industry feedback to inform New York's sixth OREC solicitation,[5] and New York is expected to complete its fifth competitive offshore wind OREC solicitation in 2025.[6]

Despite significant progress in 2024, offshore wind in the United States faces significant challenges as a result of the change in policy of the new Presidential Administration in the United States. On January 21, 2025, the Trump Administration issued a Presidential Memorandum entitled "Temporary Withdrawal of All Areas on the Outer Continental Shelf from Offshore Wind Leasing and Review of the Federal Government's Leasing and Permitting Practices for Wind Projects" (the "**Executive Memorandum**").[7] The Executive Memorandum pauses the leasing of new areas on the Outer Continental Shelf ("**OCS**") for offshore wind with effect until the Executive Memorandum is revoked.

The Executive Memorandum also pauses all federal permitting, approvals and federal loans for offshore wind projects. While it remains unclear whether this Executive Memorandum will withstand potential legal challenges, federal permitting for offshore wind projects that lack a federal lease and all federal permits and approvals will be paused while the Secretary of the Interior, the Secretary of Agriculture, the Secretary of Energy, the Administrator of the Environmental Protection Agency, and the heads of all other relevant agencies complete a comprehensive assessment and review of Federal wind leasing and permitting practices. The Executive Memorandum does not provide any timeframe to conclude this comprehensive assessment and review. Finally, although the Executive Memorandum notes that it does not affect rights under existing leases in the withdrawn areas, the Executive Memorandum directs the Secretary of the Interior, in consultation with the Attorney General as needed, to conduct a comprehensive review of the ecological, economic, and environmental necessity of terminating or amending any existing wind energy leases, identifying any legal bases for such removal, and to submit a report with recommendations to the President, through the Assistant to the President for Economic Policy. Again, the Executive Memorandum does not provide any anticipated timeframe to accomplish this review.

1. https://www.nrel.gov/docs/fy24osti/90897.pdf at page 7.
2. See https://www.nj.gov/bpu/newsroom/2023/approved/20240124.html.
3. See https://www.mass.gov/news/massachusetts-and-rhode-island-announce-largest-offshore-wind-selection-in-new-england-history. Connecticut was part of the tri-state solicitation but has not selected any projects for contract negotiations. https://insideclimatenews.org/news/13112024/new-england-offshore-wind-pact-weakened-after-connecticut-sits-out/.
4. See https://www.vineyardoffshore.com/press-releases/statement-from-vineyard-offshore-on-connecticuts-decision-regarding-the-vineyard-wind-2-bid and https://portal.ct.gov/deep/news-releases/news-releases---2024/connecticut-announces-clean-energy-selections.
5. See https://www.nyserda.ny.gov/All-Programs/Offshore-Wind/Focus-Areas/Offshore-Wind-Solicitations/NY6-Solicitation.
6. See https://www.nyserda.ny.gov/All-Programs/Offshore-Wind/Focus-Areas/Offshore-Wind-Solicitations/2024-Solicitation.
7. See https://www.whitehouse.gov/presidential-actions/2025/01/temporary-withdrawal-of-all-areas-on-the-outer-continental-shelf-from-offshore-wind-leasing-and-review-of-the-federal-governments-leasing-and-permitting-practices-for-wind-projects/.

Financing Outlook for Offshore Wind in the United States

New York City's first planned interconnected project, Equinor's 810 MW Empire Wind 1 project, closed a $3 billion project financing package in December 2024.[8] This financing follows in the footsteps of the $1.2 billion tax equity financing in October 2023 for the 800 MW Vineyard Wind project.[9] Despite these very important completed financings, some other US offshore project financing activity has been hindered by economic considerations and other uncertainty affecting advanced development-stage projects, and the regulatory uncertainty caused by the Executive Memorandum and changing federal policy on US offshore wind.

Taking a longer perspective, the financing markets for United States renewable energy projects remain keenly interested in offshore wind. More than 50 major lenders and tax equity providers have expressed interest in financing United States offshore wind projects. This includes numerous European-based banks and financial institutions with offshore wind financing experience who will likely be a driving force for offshore wind financing in the United States.

Offshore wind financing will not be limited to European-based banks and financial institutions. United States onshore wind projects with strong economics and sponsor backing have traditionally benefitted from widely available debt and tax equity. It is expected that many of these United States onshore wind financing providers will also participate in upcoming offshore wind project financings (including corporate participants). Domestic lenders and tax equity investors value these projects in part because many of the planned United States offshore wind projects feature large project sizes, strong sponsors, and good long-term revenue contracts or OREC awards.

The Inflation Reduction Act ("**IRA**"), which was enacted into law in August 2022,[10] significantly expanded the United States federal income tax regime for renewables projects, including offshore wind. Traditionally, two federal income tax credits were available for offshore wind projects: the investment tax credit under Section 48 of the Internal Revenue Code ("**Section 48 ITC**") and the production tax credit under Section 45 of the Internal Revenue Code ("**Section 45 PTC**"), which are available for projects that began construction before January 1, 2025. The IRA also created two new tax credits to replace the Section 48 ITC and Section 45 PTC: the clean electricity production credit under Section 45Y of the Internal Revenue Code ("**Section 45Y PTC**") and the clean electricity investment credit under Section 48E of the Internal Revenue Code ("**Section 48E ITC**" and together with the Section 45Y PTC, the "Tech-Neutral Credits"). The Tech-Neutral Credits are generally available for any electricity-generating facility that has a greenhouse gas ("**GHG**") emission level no greater than zero and that is placed in service after December 31, 2024. The Tech-Neutral Credits begin to phase out in the later of (i) 2032 or (ii) the year in which the IRS determines that the annual GHG emissions from US electricity production are 25% or less of 2022 levels.

The Section 48 ITC and Section 48E ITC are calculated as a percentage of the cost of the electric generating equipment in a project, with a base rate of 6% and an increased rate of 30% if the project satisfies prevailing wage and apprenticeship requirements, or if construction began before January 29, 2023. Since the issuance of initial prevailing wage and apprenticeship guidance in late 2022, IRS guidance on the IRA was steadily released throughout 2023 and 2024 with a strong push to release guidance in the final weeks of the Biden Administration. This guidance has related to notices for domestic content and energy communities as well as final Treasury Regulations on the Section 48 ITC, prevailing wage and apprenticeship requirements, Tech-Neutral Credits, and transferability under Section 6418.

The Section 45 PTC and Section 45Y PTC, which are calculated annually based on the quantity of energy produced and sold to an unrelated party over a 10-year period, are worth a base rate of 0.3 cents/kWh and an increased rate of 1.5 cents/kWh, each of which are adjusted annually for inflation.[11] The IRS publishes the annual inflation-adjusted rates in the Federal Register, which was most recently updated in July 2024.[12] Projects qualify for the maximum PTC rates if they meet the prevailing wage and apprenticeship requirements or if construction began before January 29, 2023.

Each of the credits can be increased further through bonus credits. If the project includes a minimum percentage of US-sourced "domestic content," the project is eligible for an additional 10% credit.[13] If the project is located in an "energy community," it is eligible for a separate additional 10% credit.

The extended tax credit runway introduced by the IRA and potential added value for projects meeting the domestic content and energy community rules should translate to substantially more tax equity investment for project sponsors. The IRA also provided new opportunities to monetize the tax credits in the form of tax credit transfers which will further add to the economic potential of new offshore wind projects.[14] In 2024 and early 2025, the US renewable energy sector saw a large volume of transactions transferring tax credits to third party purchasers outside of traditional tax equity investments. This market development is expected to continue. The potential for offshore wind projects to monetize their substantial tax credits in this manner significantly increases the financing sources available for US offshore wind projects.

Carefully structured tax credit qualification strategies are very important for US offshore wind projects given the cost of the offshore wind projects and the expectation that multiple tax equity, tax credit purchasers and debt providers could participate in the financing of these projects and reap significant federal income tax benefits. Despite these various challenges, it is expected that a number of upcoming United States offshore wind projects will be able to monetize the tax credits at the full rates and obtain tax equity financing. Since construction costs for offshore wind are significant, initially market participants expected most of these projects would elect to use the

8. https://www.equinor.com/news/20250102-securing-financial-close-empire-wind-1.
9. See https://vineyardwind.com/press-releases/2023/10/26/copenhagen-infrastructure-partners-and-avangrid-announce-largest-single-asset-tax-equity-financing-and-first-large-scale-offshore-transaction-in-the-us.
10. See https://www.congress.gov/117/plaws/publ169/PLAW-117publ169.pdf.
11. The Section 45Y PTC does not require electricity to be sold to an unrelated party if the taxpayer (i) owns the facility, (ii) equips the facility with a metering device that is owned and operated by an unrelated person and (iii) sells, consumes or stores the electricity.
12. https://www.govinfo.gov/content/pkg/FR-2024-07-11/pdf/2024-15226.pdf
13. For the Section 48 ITC and Section 48E ITC, the domestic content bonus credit is 2% if the project only qualifies for the base credit rate because it did not comply with the prevailing wage and apprenticeship requirements.
14. See I.R.C. Section 6418.

Section 48 ITC or Section 48E ITC over the Section 45 PTC or Section 45Y PTC. However, some projects are now also considering directly selling the tax credits or hybrid financings that include tax equity and transferability, which could include either type of credit.

Project Permitting and Environmental Considerations

The Bureau of Ocean Energy Management ("**BOEM**") oversees the development of wind projects on the OCS. With the exception of Texas and the Gulf Coast of Florida that extend out to nine nautical miles, the start of the OCS for other states is three nautical miles from the coastline.

BOEM issues leases under either a competitive or noncompetitive process. Under the noncompetitive process, project developers submit a request for interest in a particular area to BOEM. After BOEM receives such a request, it seeks comments to understand if competitive interest exists in that particular area. If there is no competitive interest, BOEM can proceed and issue a lease noncompetitively. If there is a competitive interest, BOEM follows its competitive leasing process. The competitive process starts with the publication of a Call for Information and Nominations ("**Call**"), which requests comments about areas of the OCS that parties believe should be evaluated for potential development of offshore wind energy. Prior to and during this time, BOEM also meets with various stakeholders, including established Intergovernmental Renewable Energy Task Forces in states that have expressed interest in developing offshore wind.

BOEM uses information gathered during this process for Area Identification. During this step of the development process, BOEM identifies areas for environmental analysis and consideration for leasing. BOEM considers competing uses and concerns during this determination to help identify offshore locations that are suitable for leasing. After the Area Identification is made, BOEM performs an environmental review to comply with its obligations under the National Environmental Policy Act ("**NEPA**") to assess potential environmental impacts associated with lease issuance.[15] NEPA requires consultation with appropriate Federal agencies, state and local governments, affected Indian Tribes, and other interested parties.

Following the issuance of proposed and final sale notices, an auction is held and parties bid competitively on lease areas. Winning bidders may then enter into a lease with BOEM. It is important to understand that a BOEM lease is not an approval of a particular project. A BOEM lease gives the lessee the right to seek the necessary approvals to construct and operate a specific project in that lease area. Importantly, it also gives the lessee the right to one or more project easements without further competition for the purpose of installing gathering, transmission, and distribution cables as necessary for the lease.

BOEM leases have a preliminary period of up to five years during which time projects prepare a construction and operations plan ("**COP**") for BOEM's approval.[16] A COP contains information describing facilities that will be constructed and used for the project, along with all proposed activities including proposed construction activities, commercial operations and conceptual decommissioning plans for all planned facilities, including onshore and support facilities. Review of the COP requires BOEM to assess the potential environmental impacts of the specific project under NEPA, along with its cumulative impacts. After the final environmental report is prepared, BOEM will issue a record of decision and decide whether to approve the COP and what mitigation measures to impose. Once the COP is approved, projects enter the design and construction period during which time BOEM reviews and approves Facility Design and Fabrication and Installation Reports for the project. Upon completion of construction and submission of all other required documentation, a project then enters into the operation period of the lease. The operation period typically has a term of 35-years unless otherwise stated in the lease and may be renewed.

Offshore projects will also need to obtain other permits from various federal agencies (*e.g.*, United States Army Corps of Engineers, NOAA Fisheries, United States Coast Guard and the United States Environmental Protection Agency) and will likely require certain state and local permits, particularly associated with the landfall of any electric transmission line and construction of any associated infrastructure. As a result, the permitting and development process for upcoming projects remains complex and highly project-specific. As noted above, the Executive Memorandum pauses the leasing of new areas on the OCS for offshore wind and pauses all federal permitting, approvals and federal loans for offshore wind projects.

15. See 30 C.F.R. § 585.214.
16. The Renewable Energy Modernization Rule, which became effective on July 15, 2024, removed the previous regulations requiring site assessment plans and BOEM permitting for meteorological buoys. Those structures, if used during project development, still would require USACE approval if they are deployed in United States navigable waters and marking and lighting in accordance with United States Coast Guard requirements. See https://www.govinfo.gov/content/pkg/FR-2024-05-15/pdf/2024-08791.pdf at p. 42604.

Structure of Energy Purchase Transactions (PPAs and OREC Transactions)

Two different transaction structures have been used for the purchase and sale of offshore wind energy and related products in the United States. Starting with the early power purchase agreements ("**PPAs**") for the cancelled Cape Wind project off the shore of Massachusetts and the Bluewater Wind project off the shore of Delaware, and the completed Block Island project off the shore of Rhode Island, numerous offshore wind energy transactions have been agreed upon using traditional bilateral PPAs with local utilities. These PPAs have been similar to utility PPAs for United States onshore wind and solar projects, but with customized and highly negotiated transaction terms related to offshore wind and project-specific considerations, including for pricing, project timeline, transmission, permitting and variations in project size and technology. Utility PPAs have been used for offshore power purchase transactions in Massachusetts, Connecticut, Rhode Island, Delaware and New York (for South Fork Wind).

The second transaction structure is for the purchase and sale of ORECs, representing the environmental attributes associated with the electricity generated from offshore wind resources and consumed by retail customers. The OREC transaction structure has been utilized for significant procurements of offshore wind energy in Maryland, New Jersey and New York.

Both PPAs and OREC transaction structures are expected to be utilized in upcoming procurements of United States offshore wind.

Despite being prevalent in United States onshore wind project structuring, corporate or C&I (commercial and industrial PPAs) and hedging transactions have not yet been utilized as the primary revenue contract for any of the offshore wind farms under development or construction in the United States.

Project Interconnection and Transmission

When connecting an offshore wind project to the United States transmission grid, a developer must follow interconnection procedures and pro forma interconnection agreements developed and implemented by the interconnecting utility or regional transmission organization ("**RTO**"), as set forth in its open access transmission tariff accepted by the Federal Energy Regulatory Commission ("**FERC**"). These interconnection procedures and agreements were designed for onshore projects and generally require that the developer pay the costs of engineering, designing and constructing generation tie lines (gen-ties), related interconnection facilities, and transmission network upgrades necessary to connect its project to the transmission grid. For offshore projects, the costs associated with these facilities and upgrades can be prohibitively expensive. Although developers can leverage economies of scale and share costs by developing shared gen-ties, FERC is evaluating other ways to facilitate offshore wind interconnections.

On October 27, 2020, FERC convened a technical conference to consider whether RTO interconnection and transmission planning rules require revision to accommodate the anticipated growth of offshore wind generation in the United States. Testimony submitted on behalf of trade groups, offshore wind developers and state utility commissions highlighted challenges associated with interconnecting each prospective wind project individually. Multiple entities suggested that integration of offshore wind would benefit from consolidated transmission planning, which could mitigate the time and expense of constructing offshore projects. Separately, on June 17, 2021, FERC announced the creation of a joint federal-state task force to, among other things, identify barriers that inhibit the planning and development of necessary transmission to achieve federal and state policy goals, as well as potential solutions to those barriers.

FERC has been evaluating ways to encourage more effective and longer-term regional transmission planning, which would help address the need for additional transmission to alleviate constraints and transmit electric energy from offshore wind projects to load. On May 13, 2024, FERC issued Order No. 1920, which reformed its pro forma Open Access Transmission Tariff to improve regional transmission planning and cost allocation for certain types of transmission facilities. The order requires transmission providers to conduct regional transmission planning on a long-term, forward-looking basis to satisfy transmission needs driven by changes in generation resource mix and demand. In developing their transmission plans, transmission providers must consider federal, state, local and federally recognized Tribal laws and regulations addressing the generation resource mix, demand, decarbonization and electrification. In addition, transmission providers must consider state-approved integrated resource plans, generator retirements and interconnection requests, along with trends in the cost, performance and availability of generation, electric storage resource, and building and transportation electrification technologies.

In an effort to streamline the generator interconnection process, FERC issued a long-awaited final rule on July 28, 2023, Order No. 2023, in which it directed transmission providers, including RTOs, to revise their standard large generator interconnection procedures and pro forma interconnection agreement to address the growing backlog of projects requesting interconnection with the transmission grid. Among the reforms adopted, FERC directed revisions of the large generator interconnection procedures to implement a "first ready, first-served" cluster interconnection study process, meaning that projects demonstrating commercial readiness will move ahead first in the study process. To satisfy the commercial readiness requirements, developers must provide a commercial readiness deposit at the beginning of each study in the cluster study process. In addition, FERC established increased study deposit and site control requirements while implementing penalties for withdrawing a request from an interconnection queue. These reforms are intended to discourage speculative interconnection requests, which can clog up the interconnection queue. Offshore wind projects with sufficient funding for study costs and network upgrades should benefit from FERC's reforms by being able to progress through interconnection queues faster.

While FERC was working on Order No. 2023, the largest RTO in the United States—PJM—chose to proceed with reforms of its interconnection process to address a backlog of interconnection requests. Consistent with the FERC initiative, PJM moved from a prior "first-come, first-served" approach to a "first-ready, first-served" approach. Accordingly, developers of projects that plan to interconnect to the PJM grid, including offshore projects in Maryland, Virginia and New Jersey, must pay increased interconnection study deposits and "readiness" deposits at three decision points throughout the interconnection process.

To prepare for offshore wind development in California, the California Independent System Operator ("**CAISO**") adopted a 2023 transmission plan which assumes the addition of at least 2 GW of offshore wind to the CAISO system (with a sensitivity to study 5 GW). These transmission plan assumptions will allow CAISO to work alongside other state agencies to study the cost and technical impact of interconnecting these offshore wind resources to the grid. If the associated transmission impacts are approved as part of state's integrated resource planning process, the costs of these upgrades could be spread among all state utilities and community choice aggregators.

Jones Act

Section 27 of the Merchant Marine Act, commonly referred to as the Jones Act, requires that the transportation of merchandise between two points in the United States be performed by qualified United States flagged vessels owned and operated by United States citizens.[17] Briefly, under the Outer Continental Shelf Lands Act, a "point" is anything permanently or temporarily attached to the seabed "erected thereon for the purpose of exploring for, developing or producing resources."[18]

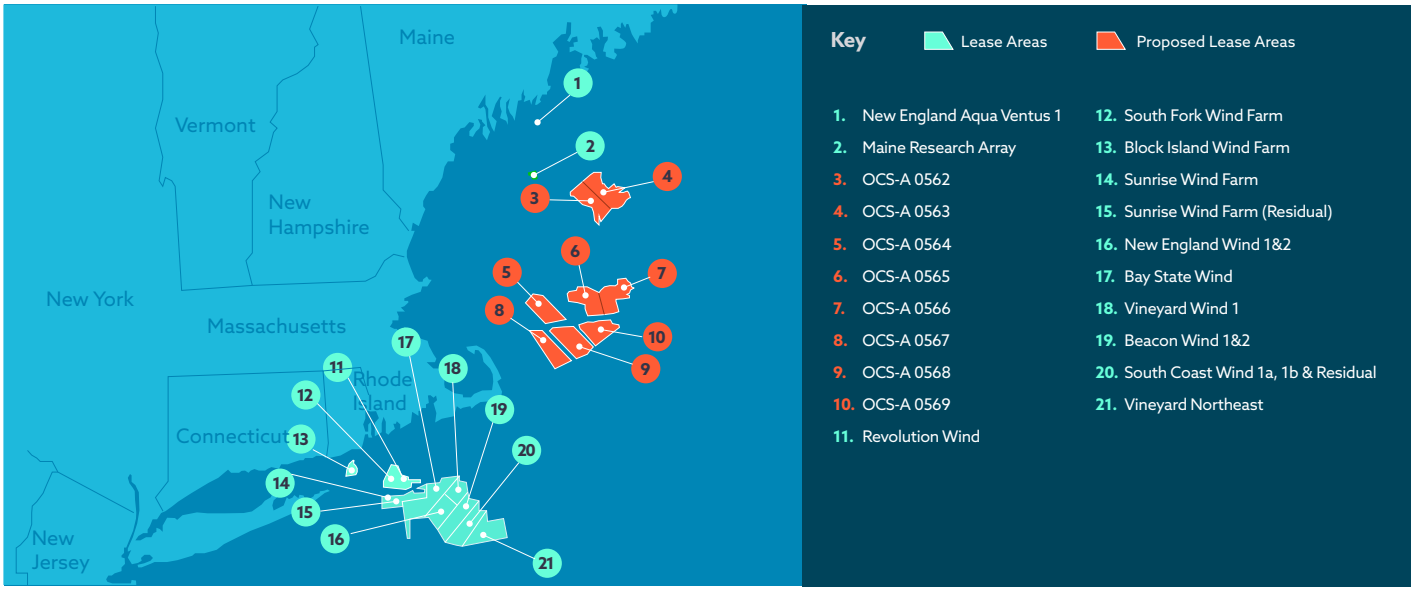
The practical effects of the Jones Act are very important for United States offshore wind development. Currently, there are no operating United States-flagged jack up vessels (vessels designed to install offshore wind turbine structures). As a result, while efforts to build United States-flagged vessels progress,[19] one Jones Act compliance strategy employed by developers is the use of United States-flagged feeder vessels to transport turbine components from United States ports for installation by a foreign-flagged jack up vessel. Other approaches suggested are to use a foreign-flagged vessel able to jack up United States-flagged barges or the use of a combination of United States-flagged vessels to install turbine foundations and the turbines themselves.

North Atlantic

On August 19, 2024, BOEM announced the execution of the first floating offshore wind energy research lease in the United States.[20] The lease area covers approximately 15,000 acres located 28 nautical miles off the shore of Maine and could allow for deployment of up to 12 floating offshore wind turbines capable of generating up to 144 megawatts of renewable energy. Separately, the University of Maine was selected to receive $12.5 million from DOE—via the ARPA-E ATLANTIS program—to advance the research and development of its VolturnUS[21] and floating offshore wind turbine technology.[22]

On October 29, 2024, BOEM announced the results of an offshore wind energy lease sale in the Gulf of Maine. The auction resulted in two provisional winners on four lease areas and over $21.9 million in winning bids. Avangrid Renewables, LLC won two leases for a combined 223,462 acres at $11,173,100, with both leases' areas approximately 29.5 nautical miles from Massachusetts. Invenergy NE Offshore Wind, LLC won two leases for a combined 215,634 acres at $10,781,700, with both leases' areas approximately 21.6 nautical miles from Massachusetts. Together, the leased areas have the potential to power more than 2.3 million homes with clean energy.[23]

MAP 22: UNITED STATES OFFSHORE WIND ACTIVITY IN NORTH ATLANTIC



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17. We note that the industry must also be aware of the Passenger Ship Act of 1886 that applies to the transportation of passengers in United States waters and the Dredge Act that applies to vessels engaging in coastwise trade and dredging. Customs and Border Protection has issued multiple rulings interpreting the Jones Act and these other laws in the context of offshore wind projects.
18. The United States Congress added an amendment to the National Defense Authorization Act to make it clear that the Jones Act applied to offshore energy development on the OCS.
19. In April 2024, the first Jones Act compliance wind turbine installation vessel (the Charybdis) was launched to water for sea trials. See https://www.nrel.gov/docs/fy24osti/90897.pdf at p. 21.
20. See https://www.boem.gov/renewable-energy/state-activities/state-maine-research-lease and https://www.boem.gov/newsroom/press-releases/boem-issues-offshore-wind-research-lease-state-maine.
21. See https://www.verterraenergy.com/technology.
22. See https://composites.umaine.edu/2024/07/08/umaine-wins-12-5-million-in-national-competition-to-advance-volturnus-floating-offshore-wind-technology/.
23. See https://www.boem.gov/renewable-energy/state-activities/maine/gulf-maine.

Following the issuance of the final Environmental Impact Statement ("**FEIS**"), the Notice of Availability of the Record of Decision ("**ROD**") for the Expected Wind Energy Development in the New York Bight was published in the Federal Register on December 6, 2024.[24] There are currently six leases in the New York Bight.[25] The ROD identified 58 possible avoidance, minimization and monitoring efforts ("**AMMMs**") to avoid or minimize such impacts. AMMMs that would apply to the six New York Bight leases as well as eight additional AMMMs that would be considered based on site-specific analyses of the lease areas.[26] Additional environmental review will be required as a part of the COP process for each lease area, but the FEIS will serve as a basis from which additional NEPA review for the specific COPs will be tiered.

The Icebreaker Wind project would have been the first offshore wind farm built in the Great Lakes, consisting of 6 turbines in Lake Erie offshore from Cleveland, Ohio. However, the project was indefinitely suspended on December 8, 2023, after the Department of Energy revoked $37 million of its $50 million previously-awarded funding[27] and the project's private development partner pulled its financial support.[28] There are currently no pending offshore wind projects in the Great Lakes region.[29]

General information about various projects in the North Atlantic is provided in Table 1

TABLE 1: STATUS OF OFFSHORE WIND DEVELOPMENT IN THE NORTH ATLANTIC AND GREAT LAKES

No.	State	Project	Developer	Lease
1	ME	New England Aqua Ventus I	Univ. of Maine/ Diamond Offshore/RWE	State Lease
2	ME	Maine Research Array	Pine Tree Offshore Wind, LLC	OCS-A 0553
3	ME	Gulf of Maine Call Area	Avangrid Renewables, LLC	OCS-A 0564
4	ME	Gulf of Maine Call Area	Avangrid Renewables, LLC	OCS-A 0568
5	ME	Gulf of Maine Call Area	Invenergy NE Offshore Wind, LLC	OCS-A 0562
6	ME	Gulf of Maine Call Area	Invenergy NE Offshore Wind, LLC	OCS-A 0567
7	MA/RI	Revolution Wind	Ørsted and Eversource	OCS-A 0486
8	MA/RI	South Fork Wind Farm	Ørsted and Eversource	OCS-A 0517
9	MA/RI	Sunrise Wind 1	Ørsted and Eversource	OCS-A 0487
10	MA/RI	Sunrise Residual	Ørsted and Eversource	OCS-A 0487
11	MA	Bay State Wind	Ørsted and Eversource	OCS-A 0500
12	MA	Vineyard Wind 1[30]	Avangrid and CIP	OCS-A 0501
13	MA	New England Wind 1	Avangrid	OCS-A 0534
14	MA	New England Wind 2	Avangrid	OCS-A 0534
15	MA	Beacon Wind 1	Equinor and BP	OCS-A 0520
16	MA	Beacon Wind 2	Equinor and BP	OCS-A 0520
17	MA	SouthCoast Wind 1a	Shell, EDPR, and Engie	OCS-A 0521
18	MA	SouthCoast Wind 1b	Shell, EDPR, and Engie	OCS-A 0521
19	MA	SouthCoast Wind Residual	Shell, EDPR, and Engie	OCS-A 0521
20	MA	Floating Demonstration	Shell/ Kent Houston Offshore Engineering/Ocergy	TBD
21	MA	Vineyard Northeast	Avangrid	OCS-A 0522
22	RI	Block Island Wind Farm	Ørsted and Eversource	State Lease
23	OH	Icebreaker[31]	LEEDCo	State Lease

Adapted from United States Department of Energy, Office of Energy Efficiency & Renewable Energy Offshore Wind Market Report: 2024 Edition.

24. See https://www.govinfo.gov/content/pkg/FR-2024-12-06/pdf/2024-28553.pdf.
25. Those leases are OCS-A 0537 (Bluepoint Wind, LLC), OCS-A 0538 (Attentive Energy LLC), OCS-A 0539 (Community Offshore Wind, LLC), OCS-A 0541 (Atlantic Shores Offshore Wind Bight, LLC), OCS-A 0542 (Invenergy Wind Offshore LLC) and OCS-A 0544 (Vineyard Mid-Atlantic LLC). See https://www.boem.gov/sites/default/files/images/nyb_all_leases_0.jpg.
26. This is the first time that BOEM has conducted such an analysis. BOEM decided to take this approach in part to be in a position to more efficiently process requests for construction plan review for the projects in these six lease areas that are in close proximity to each other.
See https://www.boem.gov/newsroom/press-releases/boem-announces-draft-environmental-review-future-development-wind-lease
27. See https://insideclimatenews.org/news/08122023/icebreaker-offshore-wind-halted-ohio/.
28. See https://www.ideastream.org/environment-energy/2023-12-11/clevelands-icebreaker-wind-project-on-hold-due-to-rising-costs-pushback.
29. See https://www.toledoblade.com/local/environment/2024/12/14/1-year-later-offshore-wind-power-in-the-great-lakes-remains-just-an-aspiration/stories/20241210110.
30. Construction of this project continues and energy from one of the project's first turbines delivered about 5 MW into the grid during commissioning activities on January 2, 2024.
See https://www.vineyardwind.com/press-releases/2024/1/3/cip-avangrid-announce-first-power-from-nation-leading-vineyard-wind-1-project.
31. On December 8, 2024, LEEDCo announced that it would indefinitely suspend development of the Icebreaker project.
See https://us.orsted.com/news-archive/2023/10/orsted-ceases-development-of-ocean-wind-1-and-ocean-wind-2.

Mid and South Atlantic

MAP 23: UNITED STATES OFFSHORE WIND ACTIVITY IN THE MID AND SOUTH ATLANTIC

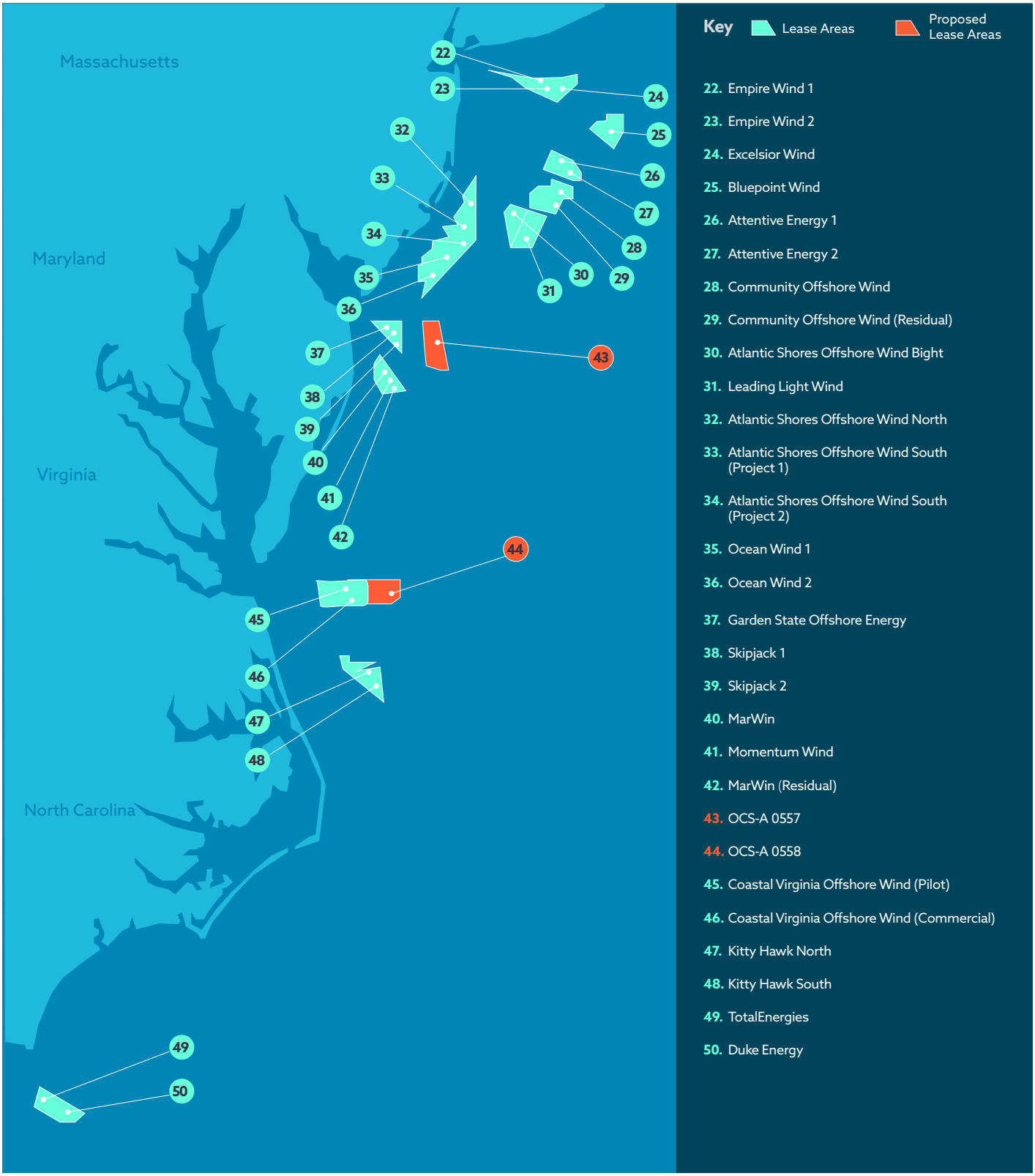

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TABLE 2: STATUS OF OFFSHORE WIND DEVELOPMENT IN THE MID AND SOUTH NORTH ATLANTIC

No.	State	Project	Developer	Lease
24	NY	Empire Wind 1	Equinor and BP	OCS-A 0512
25	NY	Empire Wind 2	Equinor and BP	OCS-A 0512
26	NY/NJ	Vineyard Mid-Atlantic	Avangrid	OCS-A 0544
27	NY/NJ	Bluepoint Wind	EDPR and Engie	OCS-A 0537
28	NY/NJ	Attentive Energy	TotalEnergies	OCS-A 0538
29	NY/NJ	Community Offshore Wind	RWE and National Grid	OCS-A 0539
30	NY/NJ	Atlantic Shores Offshore Wind Bight	Shell and EDF	OCS-A 0541
31	NY/NJ	Leading Light Wind	Invenergy	OCS-A 0542
32	NJ	Atlantic Shores Offshore Wind North	Shell and EDF	OCS-A 0549
33	NJ	Atlantic Shores Offshore Wind South (Project 1)	Shell and EDF	OCS-A 0499
34	NJ	Atlantic Shores Offshore Wind South (Project 2)	Shell and EDF	OCS-A 0499
35	NJ	Ocean Wind 1[32]	Ørsted and PSEG	OCS-A 0498
36	NJ	Ocean Wind 2[33]	Ørsted and PSEG	OCS-A 0532
37	DE	Garden State Offshore Energy	Ørsted	OCS-A 0482
38	DE	Skipjack 1	Ørsted	OCS-A 0519
39	DE	Skipjack 2	Ørsted	OCS-A 0519
40	MD	MarWin	US Wind	OCS-A 0490
41	MD	Momentum Wind	US Wind	OCS-A 0490
42	MD	MarWin Residual	US Wind	OCS-A 0490
43	VA	Coastal Virginia Offshore Wind Pilot	Dominion Energy	OCS-A 0497
44	VA	Coastal Virginia Offshore Wind	Dominion Energy	OCS-A 0483
45	NC	Kitty Hawk North	Avangrid	OCS-A 0508
46	NC	Kitty Hawk South	Avangrid	OCS-A 0508
47	NC	TotalEnergies	TotalEnergies	OCS-A 0545
48	NC	Duke Energy	Duke Energy	OCS-A 0546
49	DE, MD	N/A	Equinor	OCS-A 0557
50	VA	N/A	Dominion	OCS-A 0558
51	DE, MD, VA, NC	Central Atlantic Call Areas	N/A	N/A

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On August 14, 2024, BOEM held an offshore wind energy lease sale for two areas on the OCS off the Central Atlantic. The auction netted a total of $92,651,501.[34]

Equinor Wind US LLC provisionally won Lease OCS-A 0557, which consists of 101,443 acres and is approximately 26 nautical miles from the Delaware Bay. Virginia Electric and Power Co provisionally won Lease OCS-A 0558, which consists of 176,505 acres and is approximately 35 nautical miles from the entrance of the Chesapeake Bay. Six companies took part in the auction.[35]

BOEM published a second Call in the Central Atlantic on August 22, 2024.[36] The Call Area contains more than 13 million acres located off the coasts of New Jersey, Delaware, Maryland, Virginia and North Carolina.[37] In response, BOEM received nominations of interest from Avangrid Renewables LLC and Corio USA Projectco LLC. BOEM

32. On October 31, 2023, Ørsted announced that it would cease development of the Ocean Wind 1 project. See *id*.
33. On October 31, 2023, Ørsted announced that it would cease development of the Ocean Wind 2 project. See *id*.
34. See https://www.boem.gov/renewable-energy/state-activities/central-atlantic.
35. *Id*.
36. See https://www.boem.gov/renewable-energy/state-activities/central-atlantic.
37. See https://www.boem.gov/renewable-energy/state-activities/central-atlantic-2-public-meetings.

is currently reviewing and analyzing the nominations and public comments submitted in response to the Call.[38] BOEM will also continue to evaluate the appropriateness of the Call Area for offshore wind energy development and identify draft Wind Energy Areas and conduct environmental reviews of the Wind Energy Areas in consultation with the appropriate federal agencies and stakeholders.[39] After completing its environmental reviews and consultations, BOEM may propose a competitive lease sale for areas within the Wind Energy Areas.[40] However, any such sale must be reconciled with the current moratorium under the Executive Memorandum.

Gulf Coast

On March 21, 2024, BOEM issued a Proposed Sale Notice for its second offshore wind energy auction in the waters off the coast of Texas and Louisiana.[41] The proposed lease sale included Wind Energy Areas off the coasts of Louisiana and Texas, totaling 410,060 acres.[42] Only one company was deemed qualified to bid, so BOEM cancelled the sale due to a lack of competitive interest.[43]

BOEM also received an unsolicited request from Hecate Energy Gulf Wind LLC expressing interest in acquiring a commercial wind energy lease for Wind Energy Areas options C and D.[44] Hecate Energy Gulf Wind LLC proposes to develop its 2 GW Gulf Wind 2 project in these Wind Energy Areas to serve markets in both Louisiana and Texas.[45] On July 29, 2024, BOEM published a Request for Competitive Interest in the Federal Register seeking feedback on Hecate Energy Gulf Wind LLC's unsolicited lease request.[46] Invenergy GOM Offshore Wind LLC expressed interest in developing a 2.5 GW project in Wind Energy Areas options C and D.[47] BOEM deemed both the Hecate and Invenergy entities to be legally, technically, and financially qualified to hold the leases.[48] On December 12, 2024, BOEM announced that it will move forward with a competitive lease issuance process including holding the next competitive lease sale in the region as soon as 2026.[49] However, as noted above, any such leasing process must be reconciled with the current moratorium under the Executive Memorandum.

MAP 24: UNITED STATES OFFSHORE WIND ACTIVITY IN THE GULF COAST

United States Department of Energy, Office of Energy Efficiency & Renewable Energy Offshore Wind Market Report: 2024 Edition.

38. See https://www.boem.gov/renewable-energy/state-activities/central-atlantic.
39. See https://www.boem.gov/newsroom/press-releases/boem-begins-process-second-central-atlantic-offshore-wind-sale.
40. *Id.*
41. See https://www.boem.gov/renewable-energy/state-activities/gulf-mexico-wind-auction-2.
42. See https://www.doi.gov/pressreleases/interior-department-proposes-second-offshore-wind-sale-gulf-mexico.
43. See https://www.boem.gov/renewable-energy/state-activities/gulf-mexico-wind-auction-2.
44. See https://www.boem.gov/renewable-energy/state-activities/gulf-mexico-activities.
45. See https://www.boem.gov/sites/default/files/documents/renewable-energy/state-activities/Hecate%20Energy_Gulf%20Wind%20Lease%20Application%20WEAs%20C%20and%20D_0.pdf.
46. See https://www.boem.gov/newsroom/press-releases/boem-announces-next-steps-competitive-leasing-process-offshore-wind-energy.
47. See https://www.boem.gov/sites/default/files/documents/renewable-energy/state-activities/GOMW-EOI-Invenergy-GOM-Offshore-Wind-LLC.pdf.
48. See https://www.boem.gov/renewable-energy/state-activities/gulf-mexico-activities.
49. See https://www.boem.gov/newsroom/press-releases/boem-announces-next-steps-competitive-leasing-process-offshore-wind-energy.

Pacific

BOEM continued its investment in pacific coast offshore wind development since the first lease auction in December 2022, which resulted in bids from five lease awardees totaling $757.1 million, with the collective potential to produce over 4.6 GW of offshore wind energy off the coast of California.[50] On April 24, 2024,[51] BOEM announced a five-year offshore wind leasing schedule to demonstrate its commitment to growth of the sector and facilitate planning at the federal, state and local levels to achieve national goals of 30 GW of offshore wind energy by 2030, and 15 GW of floating offshore wind by 2035.[52] The five-year leasing schedule includes up to 12 potential offshore wind energy lease sales through 2028, including California and Hawaii in 2028.[53] To inform and create efficiencies for future offshore wind project environmental reviews, on November 14, 2024, BOEM released a draft regional analysis of potential environmental impacts of floating offshore wind energy with respect to the five existing California lease areas for public comment, including comment on mitigation measures that could lessen those impacts and which may be required as a condition for approval of construction and operations plans.[54] This public comment period ended on February 12, 2025.[55]

In parallel, the State of California achieved a significant milestone in July 2024 by approving a strategic plan of the state's priorities for offshore wind development, which include investments in developing statewide port capacity, new electric transmission, an efficient permitting process, building a supply chain and workforce, engaging key stakeholders and communities, and identifying sea space for development that minimizes the impact to the state's coast and natural resources.[56] This builds on the state's previous efforts to create a sustainable path to market for offshore wind with adoption of Assembly Bill 1373 in October 2023 which created a central procurement mechanism at the Department of Water Resources for large-scale, long-lead time clean energy sources, including offshore wind. The California Public Utilities Commission subsequently released a decision in August 2024 to procure up to 7.6 GW of offshore wind energy, with a recommendation for solicitations for offshore wind to begin in 2027 for delivery no later than 2037.[57] California continues to work toward its goal to deploy 25 GW of offshore wind by 2045.

In December 2024, the California State Lands Commission, the Port of Long Beach and the Port of Humboldt Bay created a communication and collaboration framework to facilitate the development of vital port infrastructure for staging and integration of sites crucial for assembling offshore wind turbines, which sets forth the foundational elements necessary to advance offshore wind energy development off the California coast—the environment, tribal consultation, equity, public engagement and the economy.

BOEM continues to assess the viability of offshore wind leasing off the coast of Oregon. BOEM previously identified two draft Wind Energy Areas[58] within the Coos Bay and Brookings Call Areas, which could collectively tap up to 2.6 GW of Oregon's offshore wind potential; however, following the release of a Final Sale Notice on August 29, 2024 announcing an October 15, 2024 lease auction date, BOEM subsequently announced on September 27, 2024 that the auction would be delayed due to insufficient bidder interest, with only one of five qualified bidders expressing interest in participating in the auction.[59]

MAP 25: UNITED STATES OFFSHORE WIND ACTIVITY IN THE PACIFIC

United States Department of Energy, Office of Energy Efficiency & Renewable Energy Offshore Wind Market Report: 2024 Edition.

50. See https://www.doi.gov/pressreleases/biden-harris-administration-announces-winners-california-offshore-wind-energy-auction.
51. See https://www.doi.gov/pressreleases/secretary-haaland-announces-new-five-year-offshore-wind-leasing-schedule.
52. See https://www.doi.gov/pressreleases/secretary-haaland-outlines-ambitious-offshore-wind-leasing-strategy.
53. See https://www.doi.gov/pressreleases/secretary-haaland-announces-new-five-year-offshore-wind-leasing-schedule.
54. See https://www.boem.gov/newsroom/press-releases/boem-announces-draft-environmental-review-potential-mitigation-future.
55. See https://www.boem.gov/newsroom/press-releases/boem-announces-draft-environmental-review-potential-mitigation-future.
56. See https://www.energy.ca.gov/data-reports/reports/ab-525-reports-offshore-renewable-energy.
57. See https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M538/K489/538489791.PDF.
58. See https://www.boem.gov/renewable-energy/state-activities/Oregon.
59. See https://www.boem.gov/newsroom/press-releases/boem-postpones-oregon-offshore-wind-energy-auction.

VIETNAM

authored in collaboration with

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The Power Development Master Plan VIII

Vietnam's Power Development Master Plan VIII (the "**Master Plan VIII**") was adopted on 15 May 2023, pursuant to which Vietnam targets are to transition transition the country away from its reliance on conventional power sources, such as coal, towards renewable energy to reduce emissions and greenhouse gas in order to reach net zero emissions by 2050.[1] Offshore wind is one of the natural candidates for Vietnam to achieve this, given the country's 3,260 km of coastline, shallow water and consistent high winds, making the country widely viewed as one of the most promising new offshore wind markets. Following Master Plan VIII, by 2030, the capacity of offshore wind power is projected to reach 6 GW, accounting for 4% of the total national electricity capacity, and it is projected to increase up to 91.5 GW, accounting for 16% of the total national electricity capacity by 2050.[2]

To start Vietnam's journey in achieving these goals, the Prime Minister ("**PM**") has approved an action plan for Master Plan VIII, which applies up to 2030 and allocates the development of offshore wind power projects by region as follows:

1.	Northern Region	2.5 GW
2.	North Central Region	0 GW
3.	Central Region	0.5 GW
4.	South Central Region	2 GW
5.	Central Highlands	0 GW
6.	Southern Region	1 GW

1. Master Plan VIII, Section IV.2.
2. Master Plan VIII, Section III.1(c).

The Vietnamese government has assigned PetroVietnam ("**PVN**") to lead the pilot investment into the country's offshore wind projects. In this capacity, PVN is preparing the necessary procedures to report to the PM with regards to conducting the various site surveys.

On 11 November 2024, the National Assembly of Vietnam officially adopted the new law on electricity ("**2024 Electricity Law**"). The 2024 Electricity Law will take effect from 1 February 2025 and provides the basis for the fundamental rules on the development of offshore wind projects in Vietnam, whilst more detailed guiding regulations will be further considered and promulgated by the Vietnamese government at a later stage.

PPA Bankability Issues

One of the key hurdles to offshore wind development in Vietnam to date relates to the form of the Vietnamese law power purchase agreement ("**PPA**") into which developers of offshore wind projects have previously been required to enter with the state-owned power company, EVN. At present, this PPA is not widely seen as being bankable, which is an essential requirement to attract the syndicates of financiers required to finance the development of Vietnam's offshore wind farms.

The PPA omits a number of protections that international financiers would be expected to require for the PPA to be bankable, including the inclusion of:

1. lender step-in rights;
2. settlement of disputes in neutral jurisdictions;
3. credit support for EVN—the PPA is not proposed to be backed by a state guarantee nor other credit support (notwithstanding that the credit rating of the offtaker is below the level which many international financiers would ideally like to see);
4. payment protection for political *force majeure*;
5. change in law protection;
6. curtailment protection; and
7. termination payment provisions.

However, as noted below, corporate power purchase agreements are now possible, and this may open up the market for a more bankable form of offtake structure.

Support Regime

Another key area of focus for developers and financiers is whether an offshore wind project in Vietnam will be entitled to benefit from a financial support regime. The Feed-in-Tariff ("**FiT**"), which would provide developers with a guaranteed revenue stream for their renewable energy project, was discontinued in November 2021.

International developers therefore want surety on what the FiT is going to be replaced with and at what level this financial support is going to be set so that figures can be modelled for the purposes of raising debt to finance development and construction. Based on the latest legislative developments, it is unlikely that any new FiT will be approved. The 2024 Law on Electricity stipulates that the Vietnamese government will regulate, among others, the incentives for offshore wind projects and their duration, as well as the conditions for foreign investor participation,

which will change from time to time based on factors such as the socioeconomic development status of the country and the level of competition in the electricity market, taking into account electricity supply security at that point in time[3].

Extensive Permitting Procedures

Offshore wind farms are multiyear development projects, typically requiring multiple permits and licences for a sponsor to carry out various activities at an offshore site. In more established offshore wind markets, governments have recognised the benefits of having only a few or a single point organisation(s) which issues such permits and licences. This adds transparency to the application process and inevitably ensures a streamlined, consistent approach to permitting, which developers can take confidence in. At present, this is not the case in Vietnam. In total, nearly 20 different permits and licences are required to develop an offshore wind farm in Vietnam. However, these need to be obtained from multiple different authorities and stakeholders at varying governmental levels, which naturally makes the permitting process slow, costly, inconsistent and bureaucratic.

It is expected, however, that guiding regulations under the 2024 Law on Electricity will provide more clarity on the licensing process for developing offshore wind power projects.

Grid Connection Issues

The quality of Vietnam's grid varies by province, and with potential offshore wind sites located down the breadth of Vietnam's coastline, grid improvement works will be required in certain areas to transmit the power generated from offshore wind farms to load centres, including from the South-Central region where the grid is already congested due to it being a hotspot for renewable power generation. These grid upgrade costs are unlikely to be able to be completed in parallel to the development and construction of offshore wind farms in grid-constrained regions, such that there will be a bottleneck of development in these areas.

Grid improvement works that are necessary to supply the increased capacity flowing to Northern Vietnam (where there is a significant lack of grid connectivity) would be costly at a time when EVN is under pressure to keep electricity prices low to counter inflation. However, since March 2022, it is now possible for grid connections to be privately financed, which should ease the burden on EVN and promote development.[4] However, how such new regulations are implemented by the MOIT remains to be seen.

Lack of Regulatory Framework

Vietnam lacks the robust regulations needed to develop large offshore wind farms. The existing regulations do not supply the level of detail required to provide the industry with the information and clarification it needs to develop offshore wind farms in Vietnam. As offshore wind power is a relatively nascent industry in Vietnam, both business and local authorities alike are attempting to scale the learning curve. However, further regulations are expected to expand on the framework established through the 2024 Electricity Law, which will provide more clarity on the licensing process for developing offshore wind power projects.

The Ministry of Natural Resources ("**MONRE**") made a proposal to the PM for a temporary halt in appraisal and approval for the surveying of offshore wind power projects until a comprehensive legal framework can be established, *e.g.*, wind measurement, geological and topographic survey, and environmental impact assessment at sea. Recent progress in this respect has been made, as the national maritime spatial plan was enacted on 28 June 2024.[5] According to the MONRE, this will serve as the basis for the amendment decree to Decree No. 11/2021/ND-CP, which regulates the allocation of specific marine areas to organisations and individuals for the exploration and utilisation of marine resources. This amendment is expected to address obstacles related to the allocation of marine areas for investigation, measurement and survey.

Notably, the 2024 Law on Electricity stipulates that enterprises in which the Vietnamese state holds 100% of the shares will be eligible for conducting site surveys, for example PVN. It also indicates that the PM will provide further guidance on whether other entities may be permitted to conduct such surveying, potentially opening the door for additional investors to participate in the early stage of site development.

Corporate PPAs

Vietnam has embraced corporate power purchase agreements ("**CPPA**") for offshore wind electricity, marking a significant step forward for offshore wind energy development in the country. Decree 80[6] provides two options for private offtakers ("**Consumers**"), defined as those consuming at least 200 MWh per month, to purchase electricity from participating power plants ("**GENCOs**"):

1. Physical DPPA: Consumers purchase electricity directly from GENCOs via private transmission lines.
2. Financial DPPA: Consumers purchase electricity from GENCOs through the national grid.

   For financial DPPAs:

   - **GENCOs** must have a minimum installed capacity of 10 MW connected to the national grid and participate in the Vietnam Wholesale Electricity Market.
   - **Consumers** must use the electricity for production purposes with a connection voltage of 22 kV or higher and a monthly consumption of at least 200,000 kWh.
   - **Authorised electricity retailers** are required. These retailers are authorised by Consumers in industrial parks/clusters to purchase electricity from the Electricity Corporation (operated by EVN) and enter into forward contracts with GENCOs.

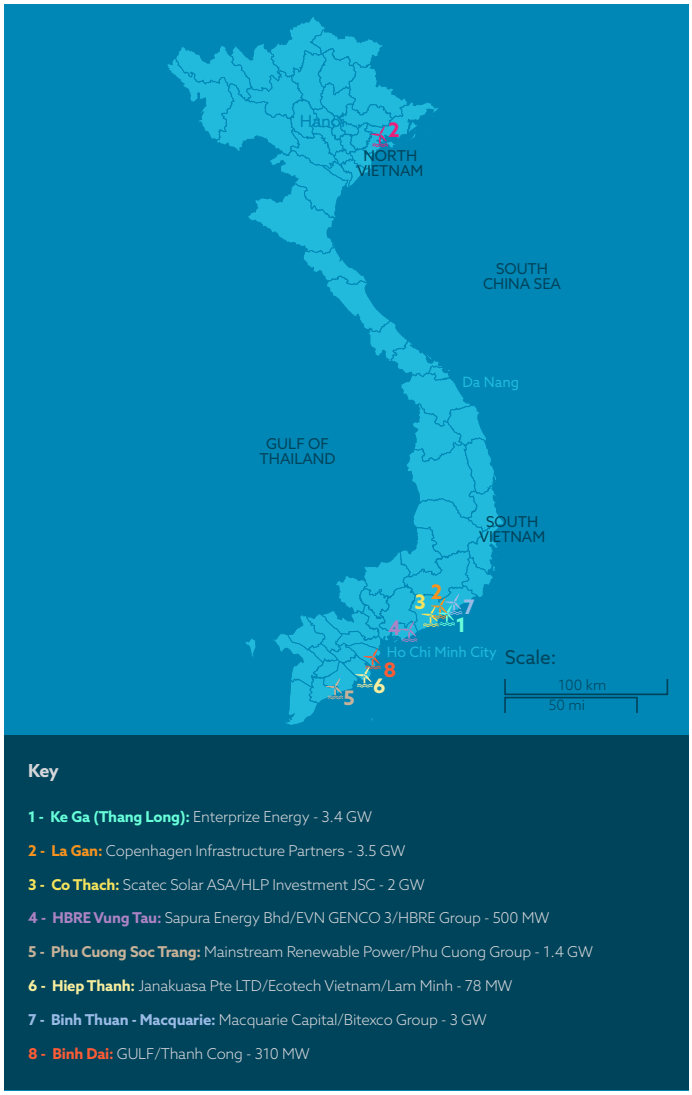
3. 2024 Electricity Law, Articles 26.3(a) and 26.5.
4. Law No. 03/2022/QH15 ((National Assembly, 11 January 2022) amending several laws, including, among others, Law on Electricity No. 28/2004/QH 11 (as amended), Article 6; 2024 Electricity Law, Article 5.4.
5. Resolution No. 139/2024/QH15 (National Assembly, 28 June 2024) on national maritime spatial planning for the period of 2021-2030 with a vision towards 2050.
6. Decree No. 80/2024/ND-CP on the mechanism for direct power purchase agreements ("**Decree 80**").

There is currently no standard model CPPA for private energy transactions between GENCOs and Consumers. However, certain mandatory key terms must be included, such as the purpose of use, standards and quality of service, electricity pricing, payment methods and payment terms, etc. GENCOs and EVN possess a degree of flexibility to negotiate the terms and conditions of the CPPA with the key provisions set out in Decree 80. Additionally, Decree 80 includes key provisions for (i) the CPPA between the Consumers (or an authorised electricity retailer in industrial parks or clusters) and the relevant power corporation (a subsidiary of EVN) and (ii) the forward contract between GENCOs and Consumers.

Outlook

Vietnam has made significant efforts to establish a framework for developing offshore wind farms, aiming to create opportunities for private entities to collaborate with government authorities in bringing these projects to fruition. In this context, foreign stakeholders, equipped with valuable experience, advanced technology, capital and established supply chains are encouraged to engage with the Vietnamese government, thereby enhancing the value and viability of offshore wind energy initiatives in the near future. Several foreign players are eager and fully committed to the promising future of the offshore wind sector in Vietnam. One notable recent proposal comes from PNE, a German corporation with 25 years of experience in developing both onshore and offshore wind projects. PNE is pursuing a project in Binh Dinh (located in the South Central Region) with a proposed capacity of 2,000 MW, structured in three phases, and a total investment of approximately 4.6 billion USD, with each phase estimated at over 1.5 billion USD.[7]

MAP 27: VIETNAM'S MORE PROGRESSED OFFSHORE WIND PROJECTS[8]



7. See: https://vnexpress.net/tap-doan-duc-se-lam-trang-trai-dien-gio-4-6-ty-usd-o-hon-trau-4810230.html, in Vietnamese.
8. This map highlights eight offshore wind projects in Vietnam (*e.g.*, surveyed, under survey, approved for survey or with unclear survey status) whose survey permits (if any) were granted before the 2024 Electricity Law was issued, introducing requirements on investment and limitations on survey permits for such projects. To our knowledge, none of these projects have received investment licenses yet.

OTHER KEY JURISDICTIONS

Authored by Adam Smith (Orrick), Oliver Sikora (Orrick) and David O'Donovan (Orrick) – refer to page 119 for contact details.

China

China's offshore wind market is growing at a pace faster than any other jurisdiction in the world and now operates nearly half the capacity of the world's offshore wind farms. Last year, China alone made up over half of the total installed global offshore wind capacity.

In total, 52 GW of offshore wind capacity is expected to be connected to the Chinese grid by 2030 according to the Global Wind Energy Council report. China now has 31+ GW of offshore wind capacity installed and is on track to hit their wind (and solar) targets five years early (*i.e.*, by 2025).

While the Chinese offshore wind market continues to soar, foreign participation continues to be limited, as access to the market presents legal, language, information, and other barriers. China's "big five" state-owned independent power plant operator groups tend to dominate the industry. Overall, inward investment into the sector remains limited.

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Greece

Although Greece currently has no offshore wind capacity, it has a target to install at least 2 GW of offshore wind capacity by 2030 and has a draft plan that includes 23 eligible development areas covering a total area of 2,712 square km in the Aegean, Ionian, and Mediterranean seas. With its deep seas, Greece is ideally suited for floating offshore wind projects and it is expected that the next few years should see the ramp-up of Greece's offshore wind journey.

Following the approval in 2022 by the Greek government of a new legislative framework for the development of the country's offshore wind farms and approval of a strategic environmental assessment, it is expected that Greece will hold its first auction for the first 6 identified zones for development of offshore wind as early as 2027. Greece is powering ahead with plans for its first offshore wind farm and has made its 2030 target a national priority. Although Greece's authorised support mechanism is yet to be outlined by the European Commission, it is expected that the government will adopt a sliding feed-in-premium scheme to support offshore wind development. Interest from international developers is high, with some entrants forming joint ventures with local Greek renewable energy companies, such as the JV between Ocean Winds and Terna Energy, who are monitoring the strong fundamentals of the Greek offshore market and its potential to become one of the most important in the Mediterranean.

Authored by Adam Smith (Orrick) and David O'Donovan (Orrick) – refer to page 121 for contact details.

Latvia

Energy security continues to be a major priority for Latvia (as well as the other Baltic states) as it seeks to cut its reliance on energy imports from Russia.

Although there are no operational offshore wind farm projects in Latvia, the country's National Energy and Climate Plan aims to increase its target wind capacity from approximately 70MW to 800MW by 2030. Additionally, although the country does not yet have a dedicated offshore wind regulatory framework for offshore wind, (i) in September 2020, the Latvian Energy Minister, together with those of other countries around the Baltic Sea, signed a declaration committing to closer cooperation on offshore wind; (ii) in August 2022, Latvia and other countries around the Baltic Sea agreed on improving their cooperation to strengthen the region's energy security and increase the current wind energy capacity of the Baltic Sea sevenfold by 2030; and (iii) in April 2024, those same countries signed a joint declaration on closer collaborating to secure critical offshore energy infrastructure in the region against the threat of Russian sabotage.

Latvia's only current offshore wind project is the ELWIND project, a 1GW joint Estonian-Latvian state-run cross-border offshore wind project, which is due to be tendered in 2026 (with the tender rules to be published in due course) and in respect of which early-stage development work and legislative planning is underway. The ELWIND project will also seek to improve interstate electricity connectivity as between Latvia and Estonia, underpinning interconnection as a key feature of Latvia's offshore wind plans. To this end, Latvia, together with seven other countries around the Baltic Sea, is a member of the Baltic Energy Market Interconnection Plan, which will support the energy transition of the Baltic Sea region and aims to achieve an open and integrated energy market amongst in the EU countries of the Baltic region. Latvia's interconnection plans extend beyond the transfer of electricity – in September 2024, the gas transmission system operators of Finland, Estonia, Latvia, Lithuania, Poland and Germany completed a pre-feasibility study on the Nordic-Baltic Hydrogen Corridor, which is expected to transport up to 2.7 million tons of renewable hydrogen annually between the countries by 2040 and which will also be key to unlocking the region's power-to-X potential.

Momentum is continuing to build, with a number of global players announcing joint ventures with the stated aim of exploring opportunities for offshore wind in the Baltic region, including Latvia. Notable examples include Ørsted and Enefit (a subsidiary of Eesti Energia), CIP and Ignitis Renewables, RWE and Latvenergo, Vattenfall and Synthos, PNE and Eolus and European Energy and Vargronn.

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New Zealand

The New Zealand government has a target of 100% renewable electricity generation by 2030 and, given that New Zealand has one of the best wind resources of any country in the world, the New Zealand government intends to capitalise on this through the build-out of offshore wind. The New Zealand government recently passed the first reading of their Offshore Renewable Energy Bill to create a new regulatory regime that will enable developers to construct offshore wind farms off the coast of New Zealand. Appetite from international developers is growing, as evidenced through the Copenhagen Infrastructure Partners and NZ Super Fund joint venture to explore the potential for up to 1 GW of offshore wind projects in New Zealand's South Taranaki Bight, as well as the recent entry into a MoU between Parkwind and New Zealand power generation company Meridian Energy to explore the joint development of offshore wind projects off the Taranaki coast.

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Romania

Romania's location along the Black Sea makes it a prime candidate for offshore wind energy development. Although there are no operational offshore wind farm projects in Romania, a recent study has demonstrated how the country could develop up to 7GW of offshore wind capacity in the Black Sea from the early 2030s, and Romania is already busy laying the groundwork to achieve its offshore wind ambitions.

In September 2024, the Romanian government, in collaboration with the European Commission and the World Bank Group, published the "Offshore Wind Roadmap for Romania," a comprehensive roadmap for the use of the vast potential of offshore wind energy in the Black Sea. The Offshore Wind Roadmap for Romania states that offshore wind would be based on the Romania's "well-equipped port facilities, steel-based supply chain and other local workers," and that "a sufficiently vigorous offshore wind resource ... could produce more energy that Romania will ever need," and presents two development scenarios, aiming to establish up to 7GW of offshore wind capacity by 2035. In the low-growth scenario, 3GW of offshore wind power could provide 16% of Romania's electricity demand, contributing approximately €1.4 billion to the local economy. The high-growth scenario envisions 7GW of capacity, capable of supplying 37% of the country's electricity needs and generating an estimated €5.3 billion in economic value.

To realise these ambitious targets, the Offshore Wind Roadmap for Romania highlights several key priorities, such as setting clear energy targets for offshore wind development, establishing dedicated development zones, implementing a robust regulatory framework and enhancing and upgrading the transmission infrastructure.

In April 2024, Law No. 121/2024 on Offshore Wind Energy (the **"Offshore Wind Law"**), was enacted (with an effective date of 7 July 2024), which marks a decisive step toward unlocking the offshore wind potential in Romania. The Offshore Wind Law seeks to provide a comprehensive legal framework for offshore wind energy projects, aiming to promote fair competition, sustainability and environmental protection while fostering investment in Romania's offshore wind sector. Its key objectives are to establish a transparent and competitive process for awarding offshore wind concessions, to safeguard marine ecosystems and ensure sustainable development, while supporting Romania's energy transition and reducing reliance on imported fuels.

In terms of market activity, in January 2022, wpd offshore (now Skyborn Renewables) announced that it had submitted applications to the Romanian government for two offshore wind farms in the Black Sea. Hidroelectrica (an incumbent national power producer) entered into a joint venture with Masdar in 2023, which primarily concerns other renewables technologies, but which also includes a commitment to exploring offshore wind projects in Romania. Additionally, Black Sea Oil & Gas (Romania's independent energy company) announced in May 2024 that it had completed an offshore wind feasibility study of potential areas in the Romanian sector of the Black Sea.

The Offshore Wind Law represents a bold step toward a sustainable energy future for Romania. As it seeks to build on and implement the recommendations set out in the Offshore Wind Roadmap for Romania, Romania has the opportunity to capitalise on its offshore wind potential and turn it into a key element of its renewable energy plan.

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Orrick is a global law firm with a strategic focus on Energy and Infrastructure, Finance, and Technology and Innovation. For more than 40 years, Orrick has been one of the most active firms globally in renewable energy, regularly advising on innovative and high-profile matters worldwide. We are proud to be one of only three law firms ranked at the highest level for U.S. renewable energy work by both *Chambers* and *The Legal 500*.

Over the years, we have gained deep experience advising a range of industry participants in multiple jurisdictions on virtually every type of energy or infrastructure transaction. This experience enables us to provide clients with valuable industry insights and solutions that anticipate and mitigate risks, maximise flexibilities and seek to ensure the most fulsome protections in uncertain markets and environments. We offer an integrated and diverse team of renewable energy lawyers ranging from senior partners to junior and career associates located in key energy and financial centres worldwide.

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