

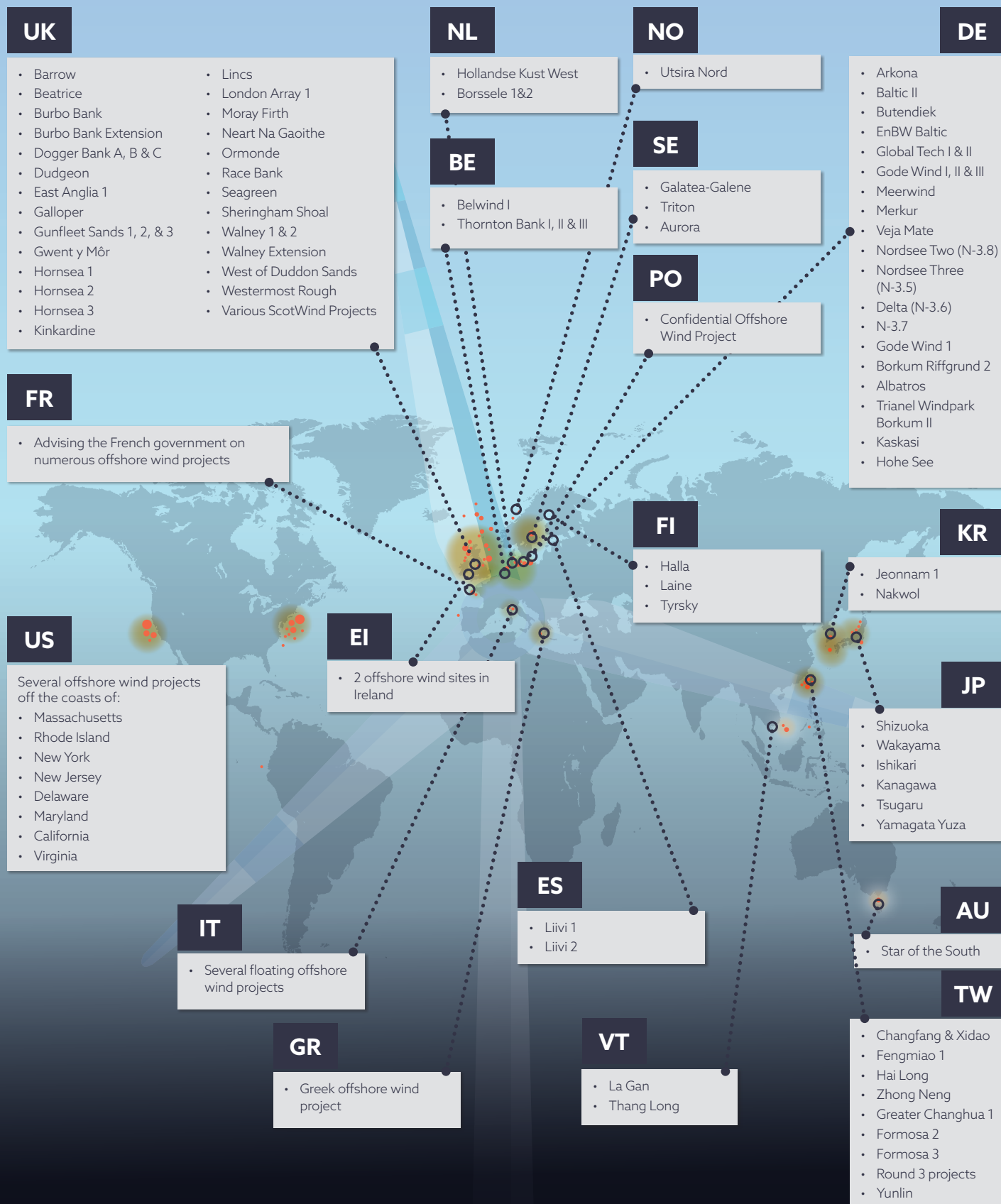


ORRICK GLOBAL OFFSHORE WIND REPORT

A JURISDICTION BY JURISDICTION
UPDATE AND OUTLOOK

2024

ORRICK'S OFFSHORE WIND TEAM RECENT EXPERIENCE



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, 2023



Legal Advisor of the Year
Wind Investment Awards, 2023



**Legal Advisor of the Year,
Europe**
IJInvestor Awards London, 2023



Top Ranked
UK: Renewables &
Alternative Energy, 2024



Top Ranked
France: Projects & Energy
(International), 2023



Top Ranked
Singapore: India Projects & Energy
(International Firms), 2024
Japan Projects & Energy:
International, 2024



**Practice Group of the Year
Project Finance**
Law360 (for the 8th time), 2022



Deal of the Year
Zhong Neng Offshore Wind Farm
2022



**Power Transmission
M&A Deal of the Year**
Diamond Transmission Partners
Hornsea One, 2022



Top 3 Renewables
Legal Advisor Globally, 2022
Top PPA
Legal Advisor Globally, 2022/2023 Q3



Band 1 (USA)
Energy Transition
PPP
Renewables & Alternative Energy
Power & Renewables: Transactional,
2023



Recommended
M&A and Energy Transactions
2022/2023



Top Ranked
39 U.S. individuals ranked for
Energy & Infrastructure, 2023

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INTRODUCTION

Orrick's 2024 Global Offshore Wind Report: Reasons for Optimism Despite Recent Challenges

There is no doubt that global offshore wind faced challenges in 2022-2023, but our review of the sector in more than 25 countries provides reasons for optimism in 2024 and beyond.

Our 2024 Global Offshore Wind Report shows strong momentum driven by the twin imperatives of energy transition and energy independence. In fact, 2024 is set to be the busiest year ever for offshore wind, with over 20 offshore auction processes expected, including 15 in Europe, six in Asia-Pacific, two in Latin America and several in the United States.

Offshore Wind in 2023: Progress in Spite of Challenges

Inflation was a significant issue in 2023, as anticipated in our [2022/2023 Global Offshore Wind Report](#). Rising commodity prices had a major impact on the cost of procurement.

Some developers suspended or even cancelled projects in light of inflation or other macro-economic challenges, including higher interest rates and financing costs and insufficient government fiscal support. Nonetheless, the sector made progress in 2023:

- Global investment reached nearly US\$60 billion in new projects estimated to hold approximately 20 GW of capacity.
- Over 6 GW of projects went into operation, raising total global operational capacity to nearly 65 GW.

- 15 auctions (lease and offtake) took place worldwide.
- Governments appeared to listen to – and act on – developer's concerns:
 - The UK significantly increased the prices available for offshore wind in 2024's Contracts for Difference auction round after no developers had submitted bids in the 2023 auction round – developers said the cap on the maximum strike price was too low for projects to be economically viable.
 - In Taiwan, the government is developing a guarantee scheme to backstop non-payment by corporate offtakers, a measure sparked by Taiwan's transition to what is effectively a zero subsidy model.
- Countries that are relatively new to offshore wind, such as Poland, Estonia, South Korea and Japan, made progress on creating regulatory frameworks, holding successful auctions and, in some cases, seeing projects reach financial close and begin construction. Other newcomers, such as Colombia, India and the Philippines, laid out clearer pathways to develop projects.

What to Expect in 2024

Leaders worldwide have set ambitious renewable energy growth targets that will increase interest in offshore wind. In many countries, new laws and roadmaps will take effect in 2024 that will fuel growth. Here is our current thinking on some key issues:

- **Inflation:** Prices have risen fast across the supply chain, fed by a commodity super-cycle and the effects of COVID-19. This has squeezed suppliers and investors, tempering appetite for the sector (at least for some) and calling into question the deliverability of projects. We sense that developers are starting to get a grip on this, but what can be delivered will in part depend on whether financing costs decrease and government support is improved.
- **Government Support:** Due to the stalled demand seen in auctions in the UK and Asia, as well as the cancellation by developers of state solicited PPAs in the U.S., various governments have accepted that the cost increases are real and that they need to recalibrate their assumptions as to what are fair costs, or provide support for corporate PPAs (as anticipated in Taiwan). We expect to see a large increase in viable projects securing revenue contracts in 2024 and a sharp increase in FIDs in 2025.
- **Skills/availability gap:** Demand for offshore wind specialists across the supply chain is high, but supply is not keeping up. The International Renewable Energy Agency has warned that skills shortages will increase globally without more proactive steps. In addition, key assets like vessels are sometimes unavailable due to high demand, or are made redundant by ever increasing turbine sizes (which are too heavy for existing vessels to carry). This can lead to delays and exacerbate inflation.
- **Competitive auctions:** Competition remains high to participate in greenfield auction processes. Option fees run into the hundreds of millions of dollars, putting increased pressure on the investment case.
- **Chinese Turbines:** There is growing serious consideration being given to Chinese turbines in Asia as well as in Europe. There are still hurdles on bankability and certification but progress is being made.
- **Floating Wind:** Expected FID for larger projects is likely to be pushed out, due to the nascency of the technology being deployed and need to finance at scale.

- **Transmission infrastructure:** Some countries with bold offshore wind targets lack the necessary transmission infrastructure once the power comes onshore. This grid infrastructure will need to be upgraded to efficiently distribute the power generated offshore, onshore.

Offshore Wind Enjoys Strong Prospects for Long-Term Growth

- **Widening geographies:** Although the expansion of offshore wind in Europe is accelerating, the rise of offshore wind in Asia and United States (despite current challenges) is remarkable.
- **Emerging technologies:** The momentum behind floating offshore wind continues to build, with major developers announcing a number of projects in the past year, including in Asia and the West Coast of the United States, where deeper sea waters make some fixed bottom projects impractical and local industry is well-placed to provide floating platforms. We expect to see a much faster progression than we saw in the fixed bottom evolution from demonstration size to commercial size (300MW+) floating projects.

In addition, the combination of offshore wind and electrolysis to produce green hydrogen has caught the imagination of the industry and a number of pilot projects are in progress. There is real hope that power-to-X based on offshore wind will displace more carbon intensive fossil fuels and provide a reliable supply of renewable energy not subject to intermittency.

We explore these trends in our 2024 Global Offshore Wind Report. We also address various legal/regulatory points and provide market updates, building on our 2023 report and drawing on our experiences over the past year. If you have any questions, please get in touch with us or the authors of the respective country reports.

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. We are proud participants in the offshore wind sector and look forward to working with our clients and others in the years to come.



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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 reliant on the carbon-heavy resource for a large percentage of its gross domestic product. It will move towards its net zero target by decommissioning a number of its coal-fired power stations and using technologies, such as renewable power (including offshore wind), hydrogen energy and carbon capture and storage, to offset its fossil fuel production.

Offshore wind is an obvious choice for Australia, with the potential being significant as the country has vast wind resources, similar to the UK's North Sea, and an estimated 2,000 GW of capacity for offshore wind projects within 100km of the Australian shoreline.

However, this potential will not be realised overnight. Until recently, Australia did not have the legislative framework in place to enable this offshore wind potential to be realised. The new legislative framework which was introduced in November 2021 has sparked significant interest in the offshore wind sector.

Notably, two offshore wind zones on Australia's east coast have now been declared suitable for offshore wind development:

1. Bass Straight off Gippsland, Victoria, which was declared in December 2022; and
2. Pacific Ocean off Hunter, New South Wales, which was declared in July 2023; together with four other zones at various stages of the public consultation process.

The industry is moving quickly ahead as developers, buoyed by the Australian and Victorian governments' commitment to

developing a viable offshore wind industry, compete for a limited number of feasibility licences in the declared offshore wind zones. Accelerated closures of coal-fired power stations in both Victoria and New South Wales has heightened the need for offshore wind and other renewable development to replace this generation when it goes offline.

Legislation and Policy

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.

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 km².
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 of 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 "**OIR**"), and decided by the Minister based on merit criteria (discussed below). The OIR administers the licence application process and most importantly, provides additional guidance to prospective applicants.

The *Offshore Electricity Infrastructure Regulations 2022* (the "**OEI Regulations**") plugs into the OEI Act, providing granular detail regarding, amongst other things, the application process for a licence, the merit criteria applications are assessed against, conditions which attach to a licence and any applicable fees.

Feasibility licence merit criteria

As aforementioned, the OIR provides information regarding the application process for a feasibility licence. In short, once the Minister declares an area as suitable for offshore wind, invitations will be made to eligible persons to apply for feasibility licences. Applications for a feasibility licence are assessed against the following merit criteria:

1. Technical and financial capability: The Minister must be satisfied that the applicant is likely to have the technical and financial capability to carry out the proposed offshore infrastructure project.
2. Viability: The Minister must be satisfied that the proposed offshore infrastructure project is viable, having regard to the complexity, route-to-market and estimated commercial return of the project.
3. Suitability of the applicant: The Minister must be satisfied that the applicant is suitable to hold a feasibility licence which suitability is assessed against such factors as past performance in offshore infrastructure assets, past financial performance, and corporate governance arrangements.
4. National interest: The Minister must be satisfied that the proposed offshore infrastructure project is in the national interest.

Currently, the feasibility license applications for the Gippsland, Victoria, declared offshore wind area have closed and are under assessment. The next stage for Gippsland is for feasibility licenses to be granted. Six of the 37 total applications have progressed to this next stage so far.

Change in control and trailing liability

The OEI Act contains a number of key provisions, one of which prohibits a change in control of a licence holder without approval from the OIR. The threshold for control of a licence holder 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**”).

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 by an amendment on 2 March 2022. Under the OPGGSA, the National Offshore Petroleum Safety and Environmental Management Authority (“**NOPSEMA**”) (which also administers the functions of the Offshore Infrastructure Regulator) is empowered to issue remedial directions extending liability to former titleholders of offshore petroleum assets. Liability may also extend to: (1) any other person who 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; and (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.

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; if an action would have a significant impact on a listed migratory species; or
3. 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 cannot be taken without 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. Overall, the process of assessment under both the OEI Act and the EPBC Act take approximately two to three years.

State Regulation

Whilst a federal offshore wind regulatory framework is now firmly in place, a critical 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, a state-level regulatory framework will be essential to govern the construction and maintenance of both onshore and offshore transmission infrastructure, which to date has not been developed.

In the absence of developed legislation at the state level, the Victorian government announced in its Offshore Wind Energy Implementation Statement 2 that it would introduce a bill that will:

1. amend land legislation to allow offshore wind developers to obtain tenure of Crown land; and
2. amend electricity safety legislation to allow the installation of energy infrastructure on public land in onshore and offshore areas.

The Victorian government has expressed its hope that the draft legislation will provide offshore wind developers with certainty around land-tenure in offshore and onshore areas, and that the installation of offshore electricity infrastructure will be allowed in Victoria's legislative framework.

Current Declared Areas and Projects

With the OEI Regulations now in place, there is a clear path forward for Australia's burgeoning offshore wind industry as evidenced by the surge of project announcements which we explore in further detail below. Going forward, the government will need to introduce legislation to plug gaps such as decommissioning, financial security and details of management plans.

There are now six proposed zones for offshore wind development in Australia being:

1. the Gippsland area off the coast of Victoria was formally declared on 19 December 2022 following the prescribed 60-day consultation period;
2. the Hunter area in New South Wales being declared suitable for offshore wind infrastructure on 12 July 2023;
3. the Portland area in the Southern Ocean region off Victoria and South Australia which finished its 60-day public consultation period on 31 August 2023 and is now awaiting formal declaration;
4. the Illawarra area which finished its public consultation period on 15 November 2023 (its consultation period was extended an additional 30 days by the Minister) and is now awaiting formal declaration;
5. the Bass Strait off the northern coast of Tasmania which began its 60-day public consultation period on 24 October 2023 which will end on 31 January 2024; and
6. finally, the Bunbury area south-west of Western Australia which is expected to be announced by the Commonwealth government and opened for consultation in 2024.

Developer enthusiasm is palpable, with over 40 offshore wind projects, representing more than 40 GW of generation capacity announced across the Gippsland, Portland and Hunter regions. Indeed, Gippsland alone received some 36 applications for a feasibility licence. Map 1 provides details of some of the publicly announced projects and offshore wind zones announced to date.

MAP 1: AUSTRALIA'S OFFSHORE WIND PROJECTS



Victoria's Offshore Wind Targets

Victoria is 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. In November 2023, the Victorian government introduced a Bill legislating Victoria's offshore wind energy generation capacity targets through three staged targets:

1. 2 GW by 2032 (this will involve procuring an initial offshore wind tranche);
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. This third Offshore Wind Implementation Statement provides essential guidance regarding Victoria's renewable generation targets, revenue support, workforce development and transmission plans. It also touches on upgrades to the Port of Hastings, which is intended to be the Victorian Renewable Energy Terminal.

Targets

In addition to its ambitious generation targets outlined above, the Victorian government is increasing the state's renewable energy targets to 65% by 2030 and 95% by 2035. Furthermore, the state government is committing to reducing its emissions by 75% to 80% by 2035 and to net zero by 2045. Offshore wind will invariably play a large part in realising Victoria's ambitious goals.

Revenue support

The Victorian government has acknowledged the need for government financial support to ensure the bankability of early offshore wind projects. Offshore Wind Energy Victoria ("**OWEV**") is targeting the commencement of a formal competitive procurement process for the first tranche of at least 2 GW of offshore wind energy capacity by 2025. In addition, the Victorian government is developing a support package which includes a Contract for Difference ("**CfD**") plus availability-style payments. An auction process is being proposed, including an Expression of Interest (EOI) phase targeted for commencement in Q4 2024 and close in Q1 2025, Request for Proposal (RFP) phase targeted for commencement in Q3 2025 and close in Q1 2026, and contract negotiation and award expected to occur later in 2026.

Transmission

VicGrid, a department within the Victorian Department of Energy, Environment and Climate Action is leading the development of transmission infrastructure 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 first quarter of 2024 it is expected the preferred transmission project options will be announced and a competitive procurement process to begin, targeting delivery by 2030.

There is a notable lack of guidance regarding the procurement of offshore transmission infrastructure, and whilst VicGrid will coordinate the rollout of onshore and offshore transmission, developers are proceeding on the basis that they will be responsible for constructing offshore transmission infrastructure.

Port of Hastings

To support offshore wind construction, the Victorian government has confirmed that the Port of Hastings will receive upgrades so that it can facilitate offshore wind assembly for the first tranche of offshore wind development, subject to receiving the requisite approvals. The Victorian government plans to develop the Port of Hastings as the Victorian Renewable Energy Terminal capable of supporting offshore wind delivery of up to 1 GW per year and handling turbines of up to 18 MW with fixed foundations. Construction is slated for late 2025 and the commencement of operations for offshore wind assembly activities by the end of 2028 according to the government's indicative timeline.

NSW Renewable Energy Zones ("REZs")

With its long coastline and stable continental shelf, the state of New South Wales ("**NSW**") has strong potential for offshore wind. While the NSW government has not announced any regulation or targeted government support, it is hoping to attract offshore wind projects in its upcoming REZs. REZs combine renewable energy generation forms, including wind, solar, batteries and high-voltage poles and wires in the same location to deliver clean energy and capitalise on economies of scale.

In NSW, the Electricity Infrastructure Act 2020 and the Electricity Infrastructure Roadmap will help facilitate the development of renewable energy projects by delivering five REZs with a total intended network capacity of 12 GW. Notably, the first REZ in development is the Central-West Orana REZ which was formally declared in November 2021 which now has a preferred developer with a planned 3 GW network capacity by the mid-2020s.

While REZs are not targeted specifically at offshore wind, it is clear that offshore wind will feature strongly. The Energy Corporation of NSW (the statutory authority responsible for delivering the REZs) has already suggested that the Illawarra Offshore Wind Farm and the Wollongong Offshore Wind Project could both be connected to the REZ planned in the Illawarra region.



BELGIUM

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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 and all Belgian offshore wind farms together injected 8 TWh of electricity into the transmission grid, representing 10.2% of total electricity consumption in Belgium in 2023. There are currently nine operational wind farms in the Belgian North Sea, operated by eight different entities, with the upcoming “second offshore wind phase” aiming to add up to 3.15-3.5 GW of additional capacity.

The First Offshore Wind Phase

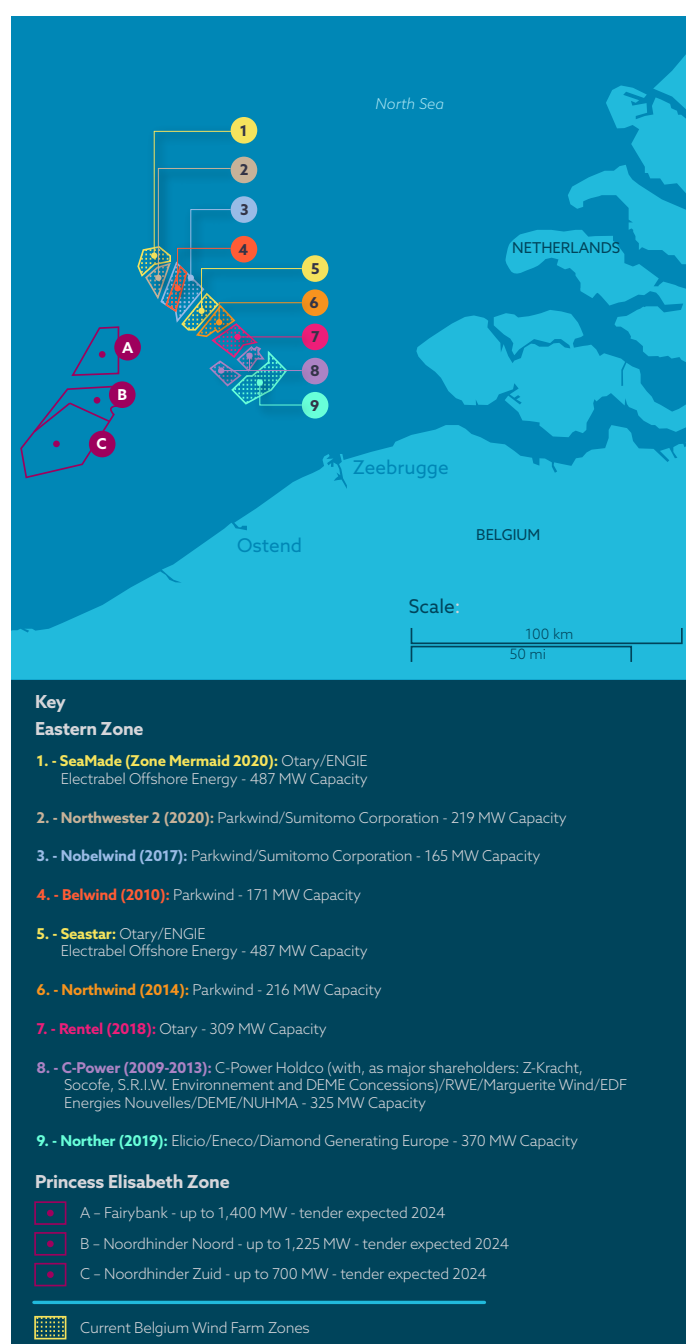
Belgium’s first offshore wind zone (the “**Eastern Zone**”) was completed by the end of 2020, with each wind farm in this zone currently in operation (please see Map 2).

Whilst C-Power, Belwind, Northwind, Nobelwind and Norther are connected directly to the transmission grid onshore (either with their own cable or with a jointly used export cable), Northwester 2, Rentel and the two SeaMade wind farms (Seastar and Mermaid) are connected with the Belgian Transmission System Operator’s Modular Offshore Grid (hereinafter “**MOG I**”). This is an offshore platform that connects these 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.

The Second Offshore Wind Phase

The Belgian government’s maritime spatial plan for the period of 2020-2026 establishes an additional offshore wind zone called the “Princess Elisabeth Zone” (“**PEZ**”) which promises an additional capacity of up to 3.5 GW. The PEZ will be divided into three sites, i.e., one site for the development of a 700 MW offshore wind project and two sites for the development of a 1,225 to 1,400 MW offshore wind project each. For each site, a domain concession as well as the required key permits and authorisations will be granted to develop, construct and operate the offshore wind project at that site. These concessions will have a maximum term of 30 years (which must include the construction phase, operational phase and decommissioning phase), and will be awarded to the winning bidder following a competitive tender round.

MAP 2: BELGIUM’S OFFSHORE WIND ZONES



The publication of the tender for the first site in the PEZ is scheduled for 2024, so as to commission the first new offshore installations for the production of electricity from 2029 onwards. To this end, the preliminary studies are presently being carried out and should be completed in 2024. At the same time, it is intended to promulgate and to publish the Royal Decree on the procedure and criteria of the tender in the Belgian law gazette before the end of 2024. The organisation of the tenders for sites 2 and 3 is planned for the period 2026-2028 so that these offshore wind projects can be commissioned by 2030.

When determining the PEZ tender criteria, the Belgian federal government has been 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.

Admissibility criteria

All three tender procedures for the PEZ will be based on the same principles. To participate in a tender, a prospective bidder must meet eight different admissibility criteria. These include (i) possession of technical capabilities, to be demonstrated by an already-installed capacity of at least 300 MW of offshore wind energy. This experience 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 and the submission of a bid bond at the time of participation in the tender procedure (EUR70 million for the first site and EUR140 million for sites 2 and 3); (iii) compliance with technical requirements for the grid connection; (iv) a maximum strike price to be included in the bids, i.e., bids with a strike price exceeding the maximum strike price set by the authorities will be automatically rejected; (v) a minimum capacity to be installed, per site, which will be determined by ministerial decree and must be demonstrated by the prospective bidder; (vi) a minimum of 1% of the CapEx of the wind project should be opened up for citizen participation; (vii) compliance with cybersecurity rules under the upcoming NIS2 directive; and (viii) evidence that the prospective bidder cannot be considered an enterprise in financial distress nor is it subject to an outstanding recovery order under state aid, and evidence that the bidder has fulfilled all its obligations regarding the payment of tax debts and social security contributions have been met.

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 criteria 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:

- a. up to three points for citizen participation regardless of whether it is indirect citizen participation or direct citizen participation;

- b. up to three additional points for direct citizen participation;
- c. up to three points for efforts on citizen participation, sensitisation and active involvement to be included in the citizen participation plan; and
- d. one additional point if the bidder has at least 1% direct citizen participation.

The Belgian state will then grant the domain concession as well as the required key permits and authorisations to the winning bidder so that the offshore wind project can be realised in time.

In addition, the Belgian Transmission System Operator, 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 congestion.

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

The onshore grid will be reinforced by the realisation of two new high-voltage lines, Ventilus (permit expected by Q1 2025) and Boucle-du-Hainaut (regional permits expected at its earliest by 2026, not taking into account potential appeal procedures) which are necessary to avoid congestion of the grid. These permits are to be obtained from the regional authorities, not the federal authority granting the offshore wind zone tender.

Support Schemes

Existing offshore wind projects

For the existing wind farms, the 'old' 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 are granted by the federal regulator at a rate of one certificate per MWh, and can be sold at a guaranteed price to Elia (which recovers the cost through a surcharge on its network tariffs). Note that there is currently no market for such certificates, and Elia acts de facto as 'purchaser of last resort'.
- Revenue from the sale of guarantees of origin; and
- Potential 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 wind projects, the certificate price is set on the basis of a formula which approximates the logic of a one-sided Contract for Difference (hereinafter “CfD”).

For Rentel and Norther, the price formula is calculated on the basis of a levelised cost of energy (hereinafter “LCOE”) minus a corrected electricity reference price. 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 but which the Commission for Electricity and Gas Regulation must periodically adapt for each concession, in principle in the 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 19 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 €25 million, spread over five years, was provided for the connection installation between the wind project and the onshore substation. 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.

PEZ offshore wind projects

The subsidy mechanism that will apply to the PEZ offshore wind projects differs from the LCOE-based subsidy mechanism applicable to the most recent wind projects (the above discussed one-sided CfD). Whereas a one-sided CfD only works in one direction, with the concession holder receiving additional compensation from the Belgian state if the market price is below the LCOE, the new subsidy mechanism, a two-sided CfD, will work in two directions. Under this mechanism, in addition to the right to compensation when energy prices are low, a payment obligation is introduced for the concession holder in case of extreme high energy prices. All revenues exceeding a certain level 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 authorities to the concession holder and a negative compensation amount in a payment from the concession holder to the authorities.

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 at the time of the 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 wind park based on the consumption price index. In addition, the amount of support that the government will pay will be subject to a maximum cap over the entire term of the subsidy mechanism. The calculation thereof is at the time of this publication not public. The mechanism has a 20-year term valid from the commissioning date of the wind farm.

In addition, a carveout 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 two-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, and 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 in the two-sided CfD can be applied in the event such PPA is terminated before the end of the subsidy scheme.

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 phase promises continued levels of power generation and adapted to the new reality of tender processes. Publication of the first tender documents are expected by Q4 2024 and commissioning of the first PEZ wind project by early 2029. The organisation of the tenders for sites 2 and 3 is planned for the period 2026-2028 so that these offshore wind projects can be commissioned by 2030.

The timely realisation of the PEZ wind projects are however highly dependent upon the necessary reinforcements of the onshore grid. Obtaining the regional permits for both Ventilus and Boucle-du-Hainaut on time will be crucial to ensuring that the 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 taking the progressing the establishment of a clear regulatory framework with the publication of various legislation, including as to regulating the granting of 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 build 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 programmes 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, the Federal Decree No. 10.946/2022 (the “**Federal Decree**”)—known as the Legal Framework for Offshore Energy. This long-awaited legal 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 took effect on 15 June 2022. On 20 October 2022, the Ministry of Mines and Energy (the “**MME**”) published two ordinances: (i) The Ordinance No. 52/GN/MME (Ordinance No. 52); and (ii) The Ordinance No. 3/MME/MMA (Ordinance No. 3). Both ordinances observe article No. 28 of the Federal Decree that provides for the MME to act as regulator. While Ordinance No. 52 prescribes the terms, conditions and procedures for leasing offshore areas, Ordinance No. 3 prescribes that all procedures will be conducted through a digital platform called PUG-Offshore. These ordinances do not complete the entire legal framework, and further complementary regulations will still be necessary. The Federal Decree creates 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 MME will be responsible for defining the areas of seabed that will be available for potential offshore wind power generation, which do not compete with other offshore industries. MME will also conduct auctions to assign the right to use seabed areas (known as “prisms”), as well as onshore areas required for the

development, construction and operation of the proposed offshore wind farm. It is worth mentioning that, for auction purposes, the Brazilian government will also consider prisms identified by developers interested in developing offshore wind projects (in addition to the prisms already defined by the MME).

Initial Market Reaction

The Federal Decree 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 June 2023, the list of offshore wind power projects undergoing environmental licensing includes almost 80 projects, totalling roughly 189 GW of capacity. A developer is required to hold its basic environmental licences before it participates in an auction for the offtake of power from the wind farm. However, such environmental licences are not required to participate in the auction for the seabed rights. The appetite to develop offshore wind projects is clearly strong, as shown by the recent announcement from Corio that it plans to develop five offshore wind projects in Brazil, totalling more than 5 GW in capacity.

Federal Decree points that are worth noting

- Establishes a public auction process for the granting of seabed rights (in areas under the federal government domain).
- The winners of such auctions will enter into a Seabed Rights Assignment Agreement with the Brazilian government. The Decree does not regulate the issuance of a generation licence, which must be subsequently requested by the winner before the regulator (i.e., Agência Nacional de Energia Elétrica).
- The Seabed Rights Assignment Agreement will cover both the maritime area and onshore areas required for development, construction and operation of an offshore wind project.
- There are two types of seabed rights assignment procedures: (i) planned assignment – the prisms are identified and defined by the government; or (ii) independent assignment – the prisms are identified by a developer and submitted to the government for its approval. In both cases, the prisms identified and defined or approved by the government are auctioned to bidders.
- The assignment of seabed rights shall always be: (i) preceded by the issuance of a noninterference statement (with other facilities or activities), known as "DIP"; (ii) accompanied by technical studies, commissioned and paid for by the developer, which are compliant with statutory rules and duly approved by the regulator; and (iii) executed through a public bidding process (i.e., auctions).

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 their cost, which currently results in the power that is generated from the offshore wind project being 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.

On the bright side, however, the current regulation 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.

Bill of Law No. 11,247/2018 ("PL 11,247")

In 2021, the former senator Jean Paul Prates (PT) introduced Bill of Law No. 576/2021 with the purpose of regulating exploration and development of energy generation from offshore energy sources.

Throughout 2022, as PL 576 navigated the lengthy legislative process, regulation for offshore wind power regulation advanced through sublegal instruments (such as the Federal Decree and the Ordinances No. 52 and No. 03).

In Q4 2023, recognizing the limitations of a federal decree compared to enacted legislation, the current administration prompted renewed discussions in the Brazilian Congress regarding offshore projects. Consequently, PL 576 was appended to PL 11,247, along with 178 legislative proposals. This consolidated bill obtained approval in the House of Representatives in November 2023.

PL 11,247 points that are worth noting

- Though PL 11,247 maintained most provisions of PL 576, it also surpassed its initial scope. It included a set of measures to extend subsidies granted to renewable energy sources and proposed changes to the contracting of thermal power plants outlined in the Eletrobras privatization law.
- Akin to PL 576, PL 11,247 also provides for two types of Seabed Rights Assignment Procedures:
 - a. The permanent offer: the granting authority designates energy prisms for exploitation 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 predefined energy prisms for exploitation 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).

What's Next?

After PL 11,247 was approved by the House of Representatives in November 2023, it has been submitted to the Senate for further review and approval.

MME is currently working with the National Congress to approve a legal framework for offshore projects by means of PL 11,247—and, thus, mitigate unnecessary legal vulnerability for higher-quality investors.

As the country aims to speed up its energy transition, it is expected that the current administration intends to approve a legal framework for offshore wind energy and green hydrogen still in 2024.

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 billion in revenue by 2040, with the majority (USD 10-12 billion) of such green hydrogen being used to serve the domestic market, especially trucking, steel production and other energy-intensive industries. Another USD 4-6 billion 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.

The Brazilian government has already taken important steps towards the development of its hydrogen market and industry: (i) in 2022, the Brazilian Hydrogen Program (the "PNH2") was created to develop studies, produce technical reports and provide relevant strategic insights to the consolidation of a competitive hydrogen market in the country; (ii) in November 2024, Bill of Law No. 2,308/23 (PL 2,308) was approved by the House of Representatives.

PL 2,308 seeks to establish a legal framework for low carbon Hydrogen, regulating the National Policy of Low Carbon Hydrogen ("**PNH2**"), its principles, objectives, concepts, governance and instruments. Currently, it has been submitted to the Senate for further review and approval.

It is worth noting that the discussion of PL 2,308 is taking place in a very favourable global environment to the promotion of green hydrogen as an important source of energy. Along with other sustainability related proposals, PL 2,308 was included in the Green Agenda of the current Administration

PL 2,308 points that are worth noting

- Establishes a definition of the concept of low-carbon hydrogen as having a life cycle emission intensity equal to or less than 44 kgCO₂eq/kgH₂.
- Provides for a voluntary certification system for low-carbon hydrogen, establishing the Brazilian Hydrogen Certification System ("**SBCH2**") to attest to greenhouse gas emission intensity in hydrogen production.
- PNH2 is incorporated into the proposal, ensuring alignment with the National Low-Carbon Hydrogen Policy and introducing adjustments to the management committee composition.
- Activities related to low-carbon hydrogen production will require authorization from the National Agency of Petroleum, Natural Gas, and Biofuels ("**ANP**").
- PL 2,308 creates the Special Regime of Incentives for the Production of Low-Carbon Hydrogen ("**Rehidro**"), allowing companies to utilize tax incentives for up to five years. Companies engaged in low-carbon hydrogen production may benefit from tax incentives, including the suspension of PIS, Cofins, PIS-Importation, and Cofins-Importation for the purchase or import of equipment and materials. Also;
- PL 2,308 provides for the creation of a Low-Carbon Hydrogen Development Program ("**PHBC**") to fund the energy transition through low-carbon hydrogen usage, utilizing resources such as budget allocations, donations, loans, and surplus profits from development finance agencies.

Conclusion

Throughout 2023, the Brazilian government took significant strides to advance its offshore energy and hydrogen markets. As we enter 2024, Brazil is now intensifying its commitment to develop and consolidate its legal and regulatory framework.

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, transitioning from nonlegal instruments to an approved legal framework will be crucial to provide the industry with the legal certainty, clarity and guidance needed to attract stakeholders and investors.

In parallel, developing a low-carbon hydrogen framework will require a collaborative effort—from both the private and public sectors, vital for establishing and consolidating a competitive hydrogen market in the country.

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 low-carbon hydrogen technologies but also contribute significantly to a cleaner and greener future.





COLOMBIA

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Introduction

The Colombian government has pledged to be net zero by 2050 and 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 resources by announcing its inaugural offshore wind auction due to occur in 2024.

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 approaching 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 December 2024, illustrates that Colombia is taking positive steps to realising its potential.

Legislation

In 2022, the Colombian Government with 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 and DIMAR will grant the permits and licences to successful bidders.

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 an area 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 the obligation to comply with the Curve S (a graphical representation of the accumulated progress of the activities of

the construction stage during the maritime concession as a function of time, which allows comparing the actual progress with the progress planned in the schedule, with the purpose of establishing project deviations and taking timely corrective actions) and timeline set out in the conditions to the concession.

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. The deadline for bid submissions is 24 August 2024 with successful bidders being announced in December 2024. Successful bidders will acquire an exclusive right over the selected area for eight years to conduct feasibility studies for their project. The 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 needs 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.

Pursuant to Law 1955 of 2019 and Ministry of Mines Resolution 40600 of 2021, energy traders must source no less than 10% of their energy needs from nonconventional renewable energy sources through long-term PPAs assigned pursuant to certain market mechanisms (such as auction rounds) to encourage transparent and efficient price formation and allow for efficient costs to be passed through to regulated end-users.

As a result, the Colombian Government has organised two long-term renewable energy PPA auctions 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 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 they would be able to provide to the system in the event there is a scarcity in supply of energy.

Constraints Facing the Development of Colombia's Offshore Wind Industry

In addition to the issues noted above with regards to permits and uncertainty on auction timelines, 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 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 establishes 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 nonconventional renewable energy projects. It is critically important when structuring an offshore wind project to optimize 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.

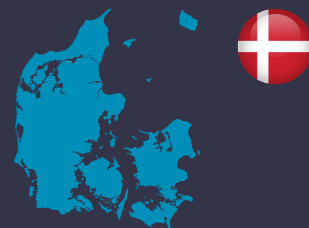
Conclusion

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 Latin and South 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. We have also seen severable notable investors enter the market and a number of these have lodged inquiries regarding the upcoming auction round. This includes Copenhagen Infrastructure Partners and BlueFloat.

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



Authored by Adam Smith (Orrick), Oliver Sikora (Orrick) and David O'Donovan (Orrick) – refer to page 88 for contact details.

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. Together, the islands would be expected to host an aggregate electrical capacity equal to 5 GW, with the potential to increase this to 12 GW in the future. However, due to the high costs associated with the construction of the North Sea Energy Island, the Danish government announced in June 2023 that it would be delaying the commencement of the tender process.

Whilst these two projects may be progressing slowly, Denmark's reputation as a pioneer is evident as interest in energy islands appears likely to grow through 2024 and beyond. In January 2024, Copenhagen Infrastructure Partners announced that it was launching a new company focused exclusively on the development of energy islands globally, with partners including PensionDanmark, PFA, SEB, and Andel

The past year has also seen: (i) Denmark indicate upcoming opportunities to tender for 9 GW of offshore wind; (ii) numerous projects being progressed to varying degrees; and (iii) 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. 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 until late 2023, to allow time for the project to be more closely examined, given the high projected costs of the scheme. As at the date of this report, no further details have been published. 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.

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.

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.

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 3 GW of offshore wind at Bornholm Energy Island is expected to be announced in Q2 2024. The minimum capacity for this project will be 3 GW, with up to 800 MW of over-planting permitted. The winning bidder will be selected on the basis of either: (i) the lowest fixed settlement price per kWh, or (ii) the largest payment to the state in the form of an annual concession fee (to be paid for a period of 30 years). The successful bidder will be able to withdraw from the subsidy model (which is subject to final approval by the European Commission) but will not be able to withdraw from the concession fee scheme.

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, 9 GW of additional offshore wind is to be tendered for construction by the end of 2030.

As well as the 3 GW of offshore wind planned for Bornholm Energy Island, the 9 GW target includes 6 GW which is expected to go to tender in 2024, including 3 GW at site "North Sea I" (spread across three projects of roughly equal size), 1 GW at site "Kattegat", 1 GW at site "Kriegers Flak II", and 0.8–1.2 GW at site "Hesselø". The deadline for tender submissions in respect of the North Sea I projects is expected to be in December 2024, whilst submissions in respect of the other tenders are expected to be due in February 2025. The invitations to tender for these projects will 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 for the right to use the site for a period of 30 years in a "pay-to-play" model. In addition, 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).

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 expected to commence in 2024. The tendering process had previously begun and was suspended in June 2021 to afford the Danish Energy Agency (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, with the DEA acknowledging that with these delays, the Hesselø project is now expected to begin to supply power from 2028 and to be fully completed by 2029.

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 Nisum 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.

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 (see below).

In addition to the projects discussed above, other projects are also moving forward. November 2023 saw first power from Vattenfall's 168 MW Vesterhav Syd project, with subsequent connection to the Danish grid in January 2024. The associated 176 MW Vesterhav Nord was also expected to complete by the end of 2023, but as at the date of publication, no announcement has been made.

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 and that the three applications awaiting determination (Viking Bank, Kadet Bank 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.

As such, 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.

TABLE 1 – POWER-TO-X TENDER ROUND 2023

Support per GJ	Company/project	Location	Total amount	Plant capacity
DKK 40.0000/GJ	European Energy/ Wind test center Mode K/S	Esbjerg	DKK 43,994,973	9 MW
DKK 46.0000/GJ	European Energy/ Padborg PtX ApS	Padborg	DKK 910,800,000	150 MW
DKK 59.9998/GJ	Electrochaea/Biocat Roslev	Rybjerg	DKK 71,279,762	10 MW
DKK 67.0000/GJ	European Energy/ Kassø PtX Expansion ApS	Red inn	DKK 81,879,549	10 MW
DKK 67.4998/GJ	HyproDenmark/Everfuel	Fredericia	Offered remaining amount	

Power-to-X

The Danish government launched its strategy for the development of Power-to-X technology and capacity in December 2021 and announced a DKK 1.25 billion (EUR 161 million) subsidy scheme to support Power-to-X projects with a view to achieving between 4 GW and 6 GW of electrolysis capacity by 2030, largely underpinned by green electricity generated by Denmark's present and future offshore wind farms (including the offshore wind farms connected to the abovementioned Energy Islands). The tender process was launched in April 2023, with bids due by 1 September 2023. The tender was closed in October 2023, with six winning projects receiving offers (one of these projects had to be withdrawn as it was unable to secure a required bank guarantee, and so five contracts are expected to be entered into). The surplus amount of the total budget was awarded to HyproDenmark/Everfuel, the marginal bidder.

Winning bidders will be required to build their projects to full capacity and begin green hydrogen production within four years of signing the contract with the DEA. Numerous Power-to-X projects have already been announced or are underway, for example: the 'Green Fuels for Denmark' project, led by a partnership consisting of Ørsted, Copenhagen Airports, DSV, DFDS, SAS, Topsoe, A.P. Møller - Maersk, Neste Shipping Oy, HOFOR, BIOFOS, CTR and VEKS; H2 Energy Europe's 1 GW offshore wind-to-hydrogen project in Esbjerg; and Copenhagen Infrastructure Partner's 1 GW offshore wind-to-green ammonia project, also in Esbjerg.

Corporate Power Purchase Agreements

Activity in Denmark over the past year has underlined the appetite of and the potential for offshore wind project developers to generate additional revenues by entering into corporate power purchase agreements ("cPPAs"). For example, RWE's bid for Thor is indicative of an increasingly popular 'pay-to-play' approach—in return for the amounts it is expected to pay to the Danish government (capped at DKK 2.8 billion), as noted above, RWE has obtained the license to operate and produce power for 30 years, with the strong market for cPPAs (driven by not only corporates (see for example Danfoss' cPPA entered into with Ørsted) but also the demand for wind power to support the development of the Energy Islands and various Power-to-X projects (for example, Green Fuels for Denmark)) opening up the potential to develop diversified revenue streams through a hybrid revenue stack.

Extension Projects

The DEA announced in December 2023 that it was resuming the processing of pending applications for lifetime extensions of existing offshore wind farms, which had been paused as part of the suspension of the 'open-door' procedure, as discussed above.

Lifetime extension is being sought for the 40 MW Middelgrunden project (originally commissioned in 2001), the 160 MW Horns Rev 1 (originally commissioned in 2002), the 8 MW Rønland (originally commissioned in 2003), the 21 MW Samsø (originally commissioned in 2003) and the 166 MW Nysted (originally commissioned in 2003). If approved, the electricity production licences for these wind farms will be extended.

Conclusion

Denmark has a determined approach on climate change. It has pledged to be independent of oil and gas by 2050 and the promise of two new Energy Islands to harness offshore wind, on top of numerous new offshore wind and Power-to-X projects, represent significant steps towards cutting greenhouse gas emissions by 70% by 2030. Whilst offshore wind activity in Denmark slowed over 2023 due to regulatory developments, new projects referenced in this report will provide key opportunities for market players looking to capitalise on innovative infrastructure schemes, most notably, the promised Energy Islands.

MAP 3: DENMARK’S OFFSHORE WIND PROJECTS





FRANCE



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– refer to page 88 for contact details.

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 2023, the French government announced that the third multiannual energy programming (2024–2033) would aim to have 18 GW of offshore wind capacity by 2035¹.

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 for a total capacity of 45 GW. To reach this objective, the French President recently announced

the launch of a 10 GW tendering procedure commencing at the end of 2024 or the beginning of 2025.

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 three projects in the pipeline (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, two calls for tenders have 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.

Retrospective and Overview of the Existing French Offshore Wind Farms Pipeline

The French offshore wind project pipeline is busy with five tenders being launched in the last two 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) 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).

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.

1. French strategy for the energy and the climate (in French, *Stratégie française pour l'énergie et le climat*), November 2023, p. 49, available (in French) at the following address: https://www.ecologie.gouv.fr/sites/default/files/23242_Strategie-energie-climat.pdf. Please note that this document remains a draft and was submitted for public consultation between 22 November 2023 and 22 December 2023.

For instance, the final authorisations for the Fécamp and Courseulles-sur-Mer projects, the Saint-Nazaire project and the Saint-Brieuc 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, 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 and the Courseulles-sur-Mer project in February 2021.

The (i) Fécamp, (ii) Courseulles-sur-Mer and (iii) Saint-Brieuc projects are under construction and are expected to be commissioned in early 2024. The Saint-Nazaire project was the first French offshore wind farm commissioned, in November 2022.

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, 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 was 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)³.

Interested developers were required to submit their applications ("candidatures") for pre-qualifications by 1 July 2021. A total of 10 developers, who met the pre-qualification requirements or criteria provided by the pre-qualification document ("*document de consultation*"), were selected to participate in the competitive dialogue⁴. The competitive dialogue procedure lasted for several months. Developers had to submit their bids ("*offre*") on 2 October 2023. The maximum CfD reference electricity tariff has been set at €140/MWh in the final version of the specifications⁵. Results of this tender are expected in 2024.

Round 6 was launched in March 2022 and aims, as indicated above, at awarding two offshore floating wind farms in the Mediterranean Sea. The developers had to submit their pre-qualification applications by 23 May 2022. A total of 13 developers met the pre-qualification requirements or criteria provided for by the pre-qualification document ("*document de consultation*") and were selected to participate in the competitive dialogue⁶.

One interesting aspect to note with respect to round 6 is that a unique competitive procedure has been launched for the award of both projects (each project being a separate lot). The competitive dialogue procedure has ended in December 2023.

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 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 Oleron.

The competitive dialogue procedure was launched by the Energy Regulatory Commission (the Commission de Régulation de l'énergie or "CRE") on 21 October 2022⁷.

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.

4. The selected developers are (i) a consortium between CIP and ENI, (ii) Eoliennes Flottantes Bretagne Grand Large (an SPV between EDF Renouvelables and Maple Power), (iii) a consortium between Elicio and BayWa r.e., (iv) Equinor, (v) Iberdrola, (vi) Ocean Winds – Engie and EDPR, (vii) RWE, (viii) a consortium between Shell, Valeco and Eolien en Mer Participations, (ix) a consortium between TotalEnergies, Green Investment Group and Qair and (x) a consortium between wpd, Vattenfall and BlueFloat Energy.

5. <https://www.cre.fr/documents/Appels-d-offres/dialogue-concurrentiel-n-1-2021-portant-sur-des-installations-eoliennes-flottantes-de-production-d-electricite-en-mer-dans-une-zone-au-large-du-sud> (in French; no English version available).

6. The selected developers are (i) a consortium between BlueFloat Energy, Sumitomo Corporation and Akuo Energy, (ii) Eoliennes Occitanie Grand Large and Eoliennes Méditerranée Grand Larges (two SPVs between EDF Renewables and Maple Power), (iii) a consortium between Elicio and BayWa r.e., (iv) Equinor, (v) Iberdrola, (vi) Ocean Winds (a joint venture between Engie and EDPR), (vii) a consortium between RWE and Bourbon, (viii) Les Moulins du Leonis, a consortium between Shell, Valeco and EnBW, (ix) Archipel Energie Martine, a consortium between TotalEnergies, Qair and Corio Generation, (x) Skyborn Renewables, (xi) Vattenfall, (xii) Cobra Instalaciones y Servicios S.A. and (xiii) Eni Plenitude.

7. <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).

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 dialogue⁸. The competitive dialogue procedure is still ongoing to date.

The commissioning of this wind farm is expected in 2030.

Round 8 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 2022⁹. Interested developers had until 23 December 2022 to submit their applications. Seven developers were selected to participate in the competitive dialogue for this project¹⁰. The competitive dialogue procedure is still ongoing to date.

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 40 GW by 2050, the French government recently announced the launch of bigger tendering rounds, with notably a 10 GW call for tenders planned for the end of 2024 or the beginning of 2025.

A new tendering round (round 9), grouping several new projects adjacent to those of rounds 5, 6 and 7, is also expected to be launched at the beginning of 2024.

These projects may 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) or no CfD in France, the rest of the power being sold through corporate or utility PPAs—as recently allowed by French law (see below).

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.

Permitting

A. Developer's permits

When the project is built within the public maritime domain¹¹, 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 the project is less than or equal to 1 GW.

In addition to the operating permit, the operator must obtain two main authorisations: (i) an environmental authorisation and (ii) an authorisation to occupy the public domain, it being specified that the duration of such authorisation is of 40 years maximum.

A single authorisation is instead required when the project is built within the EEZ, pursuant to the provisions of Ordinance No. 2016-1687 of 8 December 2016 and Decree No. 2013-611 of 10 July 2013¹². The maximum duration of such authorisation was initially 40 years, but the Decree No. 2023-1419 of 29 December 2023 has 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 following page).

8. The selected developers are : (i) Eolien en Mer Oléron Atlantique (an 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.

9. <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).

10. 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 (an 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.

11. 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.

12. 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.

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.

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

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.

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.

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 to tender rounds as well as to the preferred bidder.

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 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.

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

Given that several projects will be implemented in the French EEZ¹³, 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 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) allows 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. Additional modifications in the legal framework applicable to offshore wind farms

The abovementioned legal framework has evolved again recently. As previously mentioned, the Decree no. 2023-1419 of 29 December 2023 (i) has extended the maximum duration of the site authorisation required for the offshore wind projects to 50 years (instead of 40 years previously), and (ii) has provided for the possibility to limit the number of projects a candidate could be awarded under the same tender.

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.

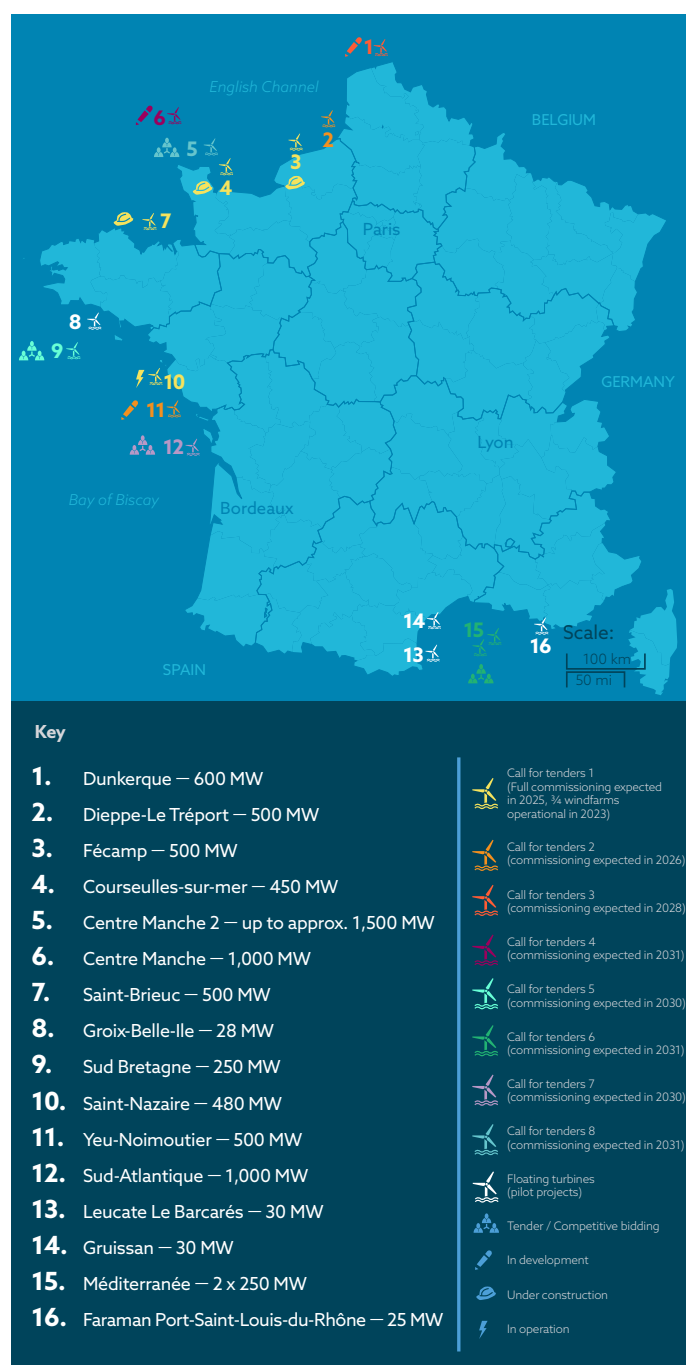
Outlook

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 announcing bigger tenders, which may be the opportunity to test options with no or a partial CfD to be awarded.

MAP 4: FRANCE'S OFFSHORE WIND PROJECTS





GERMANY



Authored by Dr. Werner Brickwedde (Orrick) and Alexander Dartsch (Orrick) – refer to page 88 for contact details.

Status Quo and Growth Path

The German offshore wind sector is slowly gaining momentum following years of stagnation. The aggregate installed capacity has grown from 7.7 GW in 2021 to 8.4 GW in 2023 and, with several projects in the construction phase, is set to increase to 11 GW by 2025. The pipeline of projects scheduled to take up operation by 2030 amounts to almost 20 GW of additional capacity. Development rights for 11.7 GW have already been awarded and further projects with an aggregate of 8 GW will be tendered in 2024 and 2025.

In sum, by 2030, the installed offshore wind capacity in Germany is expected to exceed 30 GW. 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.

Map 5 below illustrates the current development status of offshore wind projects in Germany's territorial waters in the North Sea and the Baltic Sea.

MAP 5: GERMANY'S OFFSHORE WIND FARMS



Legislative Amendments in 2023

To further accelerate the growth process, the legal framework for the promotion of offshore wind energy in Germany was substantially revised with effect as of 1 January 2023 in accordance with the amended version of the Offshore Wind Energy Act (*Windenergie auf See Gesetz*, "**WindSeeG**").

Additional tenders

The amended WindSeeG has 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**") has launched two separate tender processes in the same calendar year.

A substantial share of the total capacity available for tender in the relevant year will be 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 will be allocated in 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.

This situation has 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 ("**CfD**") 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 CfD concept foreseen in the draft has been abandoned in favor of an option for the introduction of a CfD 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 predefined financial and nonfinancial 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 August 2023 tenders, project rights for an aggregate capacity of 1.8 GW have been awarded for a total bid amount of EUR 784 million. Two areas with an aggregate capacity of 900 MW have been awarded to RWE. Vattenfall has exercised a step-in right to secure the rights for an area with a capacity of 630 MW after the bid was initially won by RWE. A fourth area with a capacity of 270 MW was awarded to an entity of the Luxcara group. Commercial operation of these projects is scheduled for 2028.

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 Total also secured two projects with an aggregate capacity of 3 GW. The auctions ended after 72 bidding rounds 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. 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 will be completed. Commercial operation is scheduled for 2030.

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.

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.

Outlook

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.

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 electrolyzers. An initial tender is scheduled for 2024. A suitable project area has already been identified and included in the FEP.



INDIA

authored in collaboration with



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India, with approximately 43 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 December 2022. Blessed with a coastline of about 7,600 km (approximately 4,700 miles) and surrounded by water on three sides, the Indian government now seeks to actively push 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. India is on the precipice of inviting bids for constructing its first offshore wind projects off the coast of Tamil Nadu and Gujarat by the end of 2023 and the Indian government also announced an official way-forward strategy towards achieving its offshore wind goals by 2030. However, India will still have to overcome initial obstacles for the reasons discussed below.

Tamil Nadu and Gujarat – the Test States and FOWIND

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). Other consortium partners include the Centre for Study of Science, Technology and Policy (“**CSTEP**”), DNV GL, the Gujarat Power Corporation Limited and the World Institute of Sustainable Energy with the National Institute of Wind Energy (“**NIWE**”) (nodal agency established by the government of India under the National Offshore Wind Energy Policy, 2015) being the knowledge partner.

FOWIND is a project 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 to 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 distributions networks in a planned manner over the next 10 to 15 years.

In the ‘Global Offshore Wind Report 2023’ released on 28 August 2023, by the Global Wind Energy Council, the council listed India

under “markets to watch” in the offshore wind energy sector, stating that the country has made “remarkable progress” ahead of the release of its first offshore tender. In this regard MNRE on 28 September 2023 floated the country’s first ever tender to allocate seabed sites along the coast of Tamil Nadu for developing offshore wind projects. The first tender has seven sites on auction spreading 1,443 square kilometres. The total scope of installed offshore wind capacity in these seven sites is 7,215 MW.

MNRE Strategy Paper

In a formal announcement of the tendering strategy leading up to 2030, the MNRE, on 17 August 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 1 (1 GW):** This model applies to the immediate offshore wind zones for which the MNRE and the 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 km² 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.

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. The successful bidders will enter into lease agreements for 30 years with MNRE's designated agency and a concessionaire 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 2 (24 GW):** This approach applies to identified offshore wind zones (within India's exclusive economic zone) under which detailed studies and surveys have not yet been carried out. Offshore wind developers may select a wind site within the identified zone and carry out required studies and surveys with the approval of MNRE on a site exclusivity basis. This model further comprises the following two sub-models:

Model 2(A): MNRE through the Indian government's implementing agencies will issue bids for the procurement of 2 GW of offshore wind power capacities tentatively in 2024 to 2025. This model entails the Indian government's financial support through VGF to achieve the predetermined tariff.

Model 2(B): Developers who have carried out studies and surveys may also decide to develop offshore wind power projects by themselves for the sale of power on a merchant basis or under a private bilateral agreement basis with consumers or for captive consumption. For such projects, benefits of provision of power evacuation infrastructure from offshore pooling delivery points, waiver of transmission charges, carbon credit benefits as determined and made applicable from time to time shall be applicable.

The first batch of projects being tendered will follow Model B. The bidding will follow a single-stage, two-envelope system whereby the bidders will respectively submit techno-commercial and financial bids. For the projects, the seabed area would be leased for a period of five years. The projects will be required to be commissioned within five years. The five-year lease period will be extended by a further one-year period on a case-by-case basis. The lease rental will have a minimum of INR 100,000 (USD 1,200 approx.) per km² per year for the offshore sites.

- c. Model 3 (12 GW):** Under this approach, the NIWE will identify from time to time, large offshore wind zones within India's exclusive economic zone but not covered by Model 1 or 2. 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 or sold through power exchanges. Similar benefits under Model 2(B) may also be available to the power developer.

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

- a.** a concept note for a VGF scheme of approximately INR 14,283 crore (USD 1.7 billion) for the initial 3 GW of offshore wind energy projects is under deliberation with the Department of Expenditure, Ministry of Finance, for an 'in-principle' approval;

- b.** a Draft Offshore Wind Energy Lease Rules, 2022, has been finalised and sent for legal vetting; and
- c.** draft contractual documents for offshore wind energy projects have been finalised and are being circulated for stakeholders' consultation.

NIWE is also in the process of setting up an offshore wind energy test facility in the state of Tamil Nadu in Dhanushkodi, which is the first of its kind in the Asia Pacific region. The project, funded by the Indian government, is expected to launch in 2024. The project will involve the construction of two wind turbines of over 8 MW capacity and will help to perform studies and collect data on the feasibility of large-scale projects.

These developments are welcomed by developers who, although 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. This was most recently seen when RWE and Tata Power Renewable Energy announced that they will be forming a joint venture to assess and develop potential offshore wind projects in India, with a particular focus on the states of Tamil Nadu and Gujarat.

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. This can now be seen with the announcement of VGF assistance and subsidy and exemptions for specified models under the MNRE Strategy Paper. The Indian government seems to be showcasing commitment for ensuring a successful foray into the offshore wind sector.

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.

In recent years, the Indian government has been emphatic in its drive to strengthen domestic manufacturing of solar modules and wind turbines. It has localised 70% to 80% of the manufacturing of wind turbine generators with an annual production capacity of approximately 8,000 MW to 10,000 MW. As evidence of the Indian government's renewed commitment to manufacturing locally, the MNRE issued the 'Approved Models and Manufacturers of Solar Photovoltaic Modules (Requirements for Compulsory Registration) Order 2019' (updated as of February 2023) for the purpose of enlisting eligible models

and manufacturers of solar PV cells and modules complying with the Bureau of Indian Standards and the publishing of a list of such manufacturers in the "Approved List of Models and Manufacturers (ALMM)". Project bids after 2 February 2019 must include models and manufacturers from the ALMM list in order to be eligible for use in government or government-assisted projects.

A similar list of approved manufacturers has also been developed for wind turbine manufacturers.

Last year, the 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 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 offshore 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.

On 22 April 2022, India's NIWE and UK's Offshore Renewable Energy ("ORE") Catapult announced the signing of a Joint Declaration of Intent ("JDI") to establish a five-year collaboration programme involving a partnership on research and development, innovation, new technology tests, supply chain growth, etc. It is said to also include wind energy technology demonstration infrastructure in Tamil Nadu and aid in addressing unique challenges in deploying offshore wind. The nations consider this another step forward towards the 2030 roadmap to cooperate and collaborate on clean energy to support India in unlocking its offshore wind potential and helping its climate change target.

Additionally, NLC India Limited ("NLC"), a public sector undertaking under the Ministry of Coal, has entered into a memorandum of understanding ("MoU") with NIWE for strategic collaboration in developing onshore and offshore wind power projects in the country. This MoU is aimed at synergising the technical expertise of NIWE and the project development capabilities of NLC. Through the MoU, it is also envisaged to reap the benefit of repowering the operating wind turbines and work towards better operations and maintenance practices in the upcoming and operating wind power projects.

Developers are looking forward to the Indian government providing financial support to the country's offshore wind industry, including details as to the form that the support takes and the method for obtaining such support (which need to be clear and effective).

Permitting and Consents

Another challenge developers in the past have generally faced is having to navigate India's convoluted permitting and consent process. This has been anticipated under the offshore wind policy, where the NIWE has been identified as the body responsible for administering the key required consents and permits to develop an offshore wind farm. Developers will be all too aware of the large number of local

community objections that onshore renewables projects have faced in India, which have ultimately resulted in substantial delays to such projects. The MNRE through the MNRE Strategic Note has provided a responsibility matrix identifying institutions responsible for various activities (including for clearances) in the project development phases, which is a welcomed step.

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, e.g., Taiwan, 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 protests and port blockades during the construction and operation of the project.

Experience with coastal conventional power plants (particularly in coastal Gujarat) demonstrates that environment- and fishing-related concerns can significantly delay the implementation of projects, particularly in view of the proactive roles played by India's green tribunal and constitutional courts in protecting the rights of indigenous communities and sensitive habitats.

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 distribution companies ("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 nonperforming assets (for example, the Reformed Distribution Sector scheme, which aims to bring down losses to within 12% to 15% and align the supply costs and revenues to be received by 2025, etc.). 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 (though the Indian government's movement towards further relaxations may be monitored in this regard), 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.

In addition to the above, developers will be mindful that, at present, other than the newly proposed policies and strategies mentioned above, there is no policy for the delivery and ownership of offshore transmission systems in India, nor any framework for the planning of offshore transmission infrastructure. The country's current connection regime also does not address offshore wind.

Corporate Power Purchase Agreements

Recent studies have stated that India is the world's second-largest growth 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 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. However, to help the development of the country's offshore wind farms, developers are likely to be eyeing the appetite for CPPAs as well, to potentially create (or form part of) a project's revenue stack.

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 5 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. MNRE will formulate the scheme guidelines for the implementation of the respective components. The MNRE in its press release earlier this year stated that the Mission will result in the following likely outcomes by 2030:

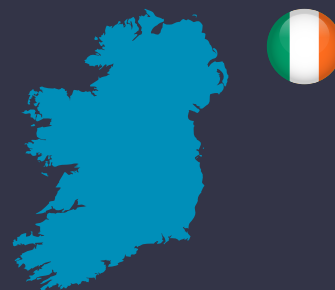
- a. Development of green hydrogen production capacity of at least 5 MMT (Million Metric Tonne) per annum with an associated renewable energy capacity addition of about 125 GW in the country;
- b. Over INR 8,000 billion in total investments;
- c. Cumulative reduction in fossil fuel imports over INR 1,000 billion; and
- d. Abatement of nearly 50 MMT of annual greenhouse gas emissions.

Conclusion

Evidently, India's offshore wind potential is huge and the participation being seen by various institutions is heartening. However, this potential will only be met through clear and targeted government support, which although is now coming through, will have to be monitored to actively solve any problems that may arise in the vital first decade. Provided that there is such steady and adaptive support from the Indian government (which has started to take shape) and changes made to the grid infrastructure, India can achieve its goal of 30 GW installed offshore capacity by 2030.



IRELAND



Authored by Adam Smith (Orrick), Barry Cahill (Orrick) and Oliver Sikora (Orrick) – refer to page 89 for contact details.

From Big Potential to Reality

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

The granting of the first Maritime Area Consents (“**MACs**”) and the announcement of 3.1 GW of offshore renewable energy (“**ORE**”) projects being awarded long-term revenue contracts in the first Offshore Renewable Electricity Support Scheme (“**ORESS 1**”) auction in 2023, marks a significant milestone in Ireland’s ORE journey.

2023 also saw a continuation of significant transactions in the Irish ORE market as international developers continue to see Ireland as a promising jurisdiction for ORE development. This included Ørsted’s partnership with ESB on a 5 GW offshore wind portfolio, Vårgrønn’s partnership with Energia on two 900 MW projects and EDF’s partnership with Simply Blue Group on a 2.6 GW floating offshore wind portfolio.

Delivering on a Legislative Wave

Since the introduction of the Maritime Area Planning Act (the “**Act**”) in December 2021, six projects (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 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 ORE projects.

Phase 1 Projects

There are several offshore wind projects which commenced development under the previous legislative framework (the Foreshore Act, 1933). Under the Act, these projects benefit from a transitional protocol in the new marine planning process. These Phase 1 Projects, which have a combined capacity totalling approximately 3.5 GW, have been afforded a ‘fast-track’ into the MAC procedure discussed above and were entitled to participate in the first ORESS 1 auction (see below). The Phase 1 Projects (as also detailed in Map 6) 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.

Route to Market: ORESS 1 Auction Results

History was made with the running of the first ORESS 1 auction 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 UK’s Contract-for-Difference regime, with the Public Service Obligation 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 3 GW, the average clearing price was just €86/MWh.

The ORESS 1 auction was held before the Phase 1 Projects had secured development consent for those projects. Therefore, the Phase 1 Projects will need to secure development consent before proceeding to construction.

Alternative Routes to Market

Phase 1 Projects that were not successful in the ORESS 1 auction 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 '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. This is an encouraging development for Merchant Phase 1 Projects and for the wider offshore industry as it gives the potential for future offshore wind projects to be delivered on an unsupported basis.

What's Next After Phase 1 Projects?

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

On 10 March 2023, the Government published its Policy Statement on the Framework for Phase Two Offshore Wind (the "**Phase 2 Policy Statement**") which commits Ireland to meet its target of delivering 5 GW of offshore wind capacity by 2030 and also targets a further 2 GW of floating offshore wind capacity to be in development by 2030. The key policy features for Phase 2 projects include:

- Phase 2 projects will be dictated in large part by the availability of onshore grid connections. This has led to the identification of the South Irish coast as a location for Phase 2 projects.
- The location of offshore wind and offshore transmission system infrastructure for Phase 2 projects will be identified through forward spatial planning through an offshore zoning process (Designated Maritime Area Plans or 'DMAPs').
- A new ORESS 2 auction will seek to procure approximately 900 MW of Phase 2 projects for delivery by 2030.

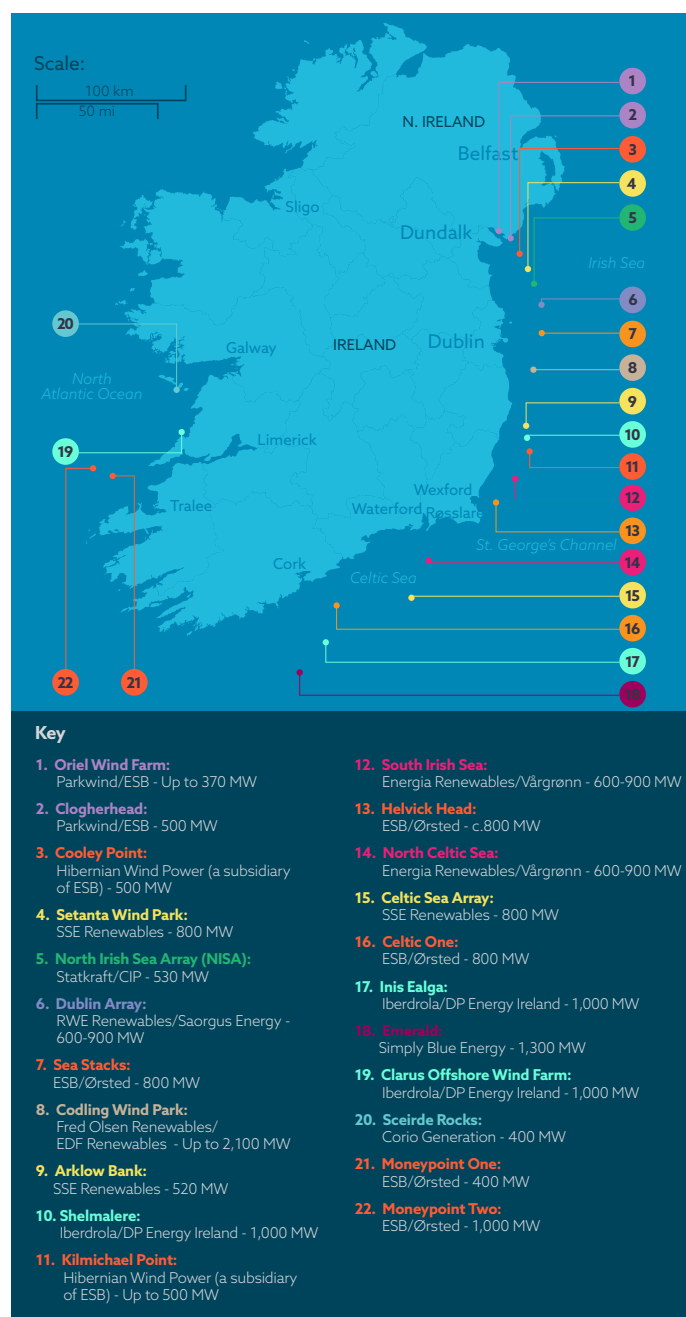
The approach to Phase 2 projects marks an important change from the developer-led approach adopted for the Phase 1 Projects as the Irish Government moves towards an enduring development model involving greater State involvement in the sustainable development of the ORE sector.

Conclusion

The Irish offshore wind sector is now moving towards a delivery phase. 2023 has seen significant progress in Ireland's offshore wind journey, with the Phase 1 Projects leading this charge. In order to achieve the goal of 5 GW of offshore wind capacity by 2030 and an additional 2 GW of offshore wind for green hydrogen production, this momentum will need to continue to provide the framework and infrastructure for all future offshore wind projects in Ireland.

Longer-term legal and policy certainty is important to attracting investment in the sector. With greater clarity emerging on the Irish Government's long-term ambitions and policy for the ORE sector, it is not surprising to see continued investment from well-known international developers in Irish ORE projects.

MAP 6: A SAMPLE OF IRELAND'S OFFSHORE WIND PROJECTS





JAPAN



Authored by Minako Wakabayashi (Orrick) and Gohshun Kawamura (Orrick) – refer to page 89 for contact details.

Offshore Wind Promotion Act

Japan has installed approximately 5.1 GW of wind power as of March 2023; however, approximately only 0.1 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, including two new promotion areas designated in October 2023 that are now to be available for bidders in the third round of the public bidding under the Maritime Renewable Energy Act expected to be held in 2024 (please see Map 7 on the following page 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 government consequently revised the evaluation criteria for the promotion areas designated in September 2021 and September 2022 (“**Round 2**”), which have a combined total capacity of 1.8 GW. The changes made by the government for Round 2 capped the total capacity one winner can receive in the same round at 1 GW. The application window for Round 2 was closed in June 2023 and the results for three areas out of the four were announced in December 2023, and the result for the remaining one will be announced no later than March 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. 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 projects, which are all fixed-bottom, are only expected to benefit from the FiP support scheme. The government suggests that floating wind projects be eligible for both the FiT and FiP support regimes for the time being.

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 GW 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.

Opportunities, Floating and Hydrogen

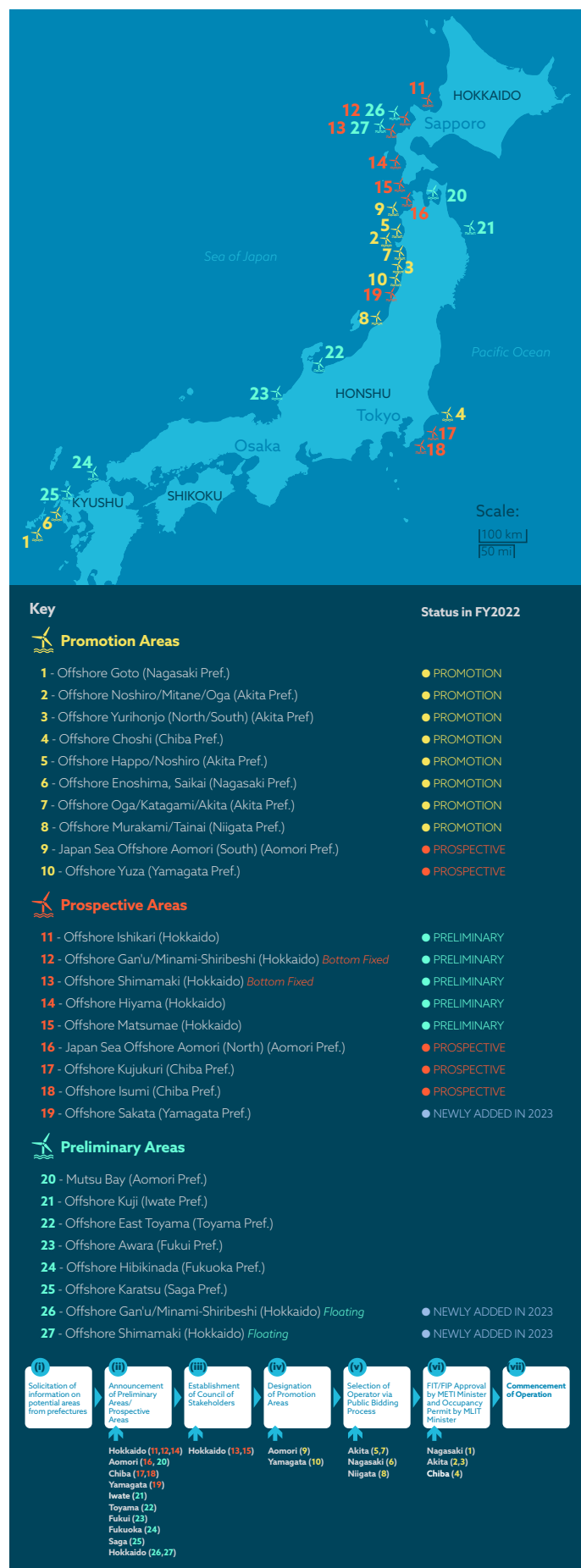
Since the offshore market in Japan has no established players, opportunities for new investors abound, especially considering that numerous foreign companies have recently installed onshore renewable energy projects under Japan's FiT programme. European and American companies recognise this potential; 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 scheduled to conduct pilot projects utilising the result of such studies. The government announced in October 2023 four candidate areas for such pilot projects. The developer/operators of pilot projects are to be selected through public bidding (not under the Maritime Renewable Energy Act). The government is also exploring the potential for floating offshore wind projects in Japan's Exclusive Economic Zone ("EEZ") and has started discussions to establish new laws to enable such, after an expert committee published its opinion that Japan can conduct offshore wind projects in its EEZ in compliance with United Nations Convention on Law of the Sea (UNCLOS). Further, given Japan's long-held aspirations for hydrogen, there is also a potential for the production of green hydrogen.

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.

MAP 7: JAPAN'S OFFSHORE WIND PROJECTS





SOUTH KOREA

authored in collaboration with
KIM & CHANG



Authored by Adam Smith (Orrick), Oliver Sikora (Orrick), Albert Yu (Orrick), John Park (Kim & Chang), Chang Sup Kwon (Kim & Chang) and Jin Seong Lee (Kim & Chang) – refer to page 89 for contact details.

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 12 GW of new capacity to be installed by 2030.

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

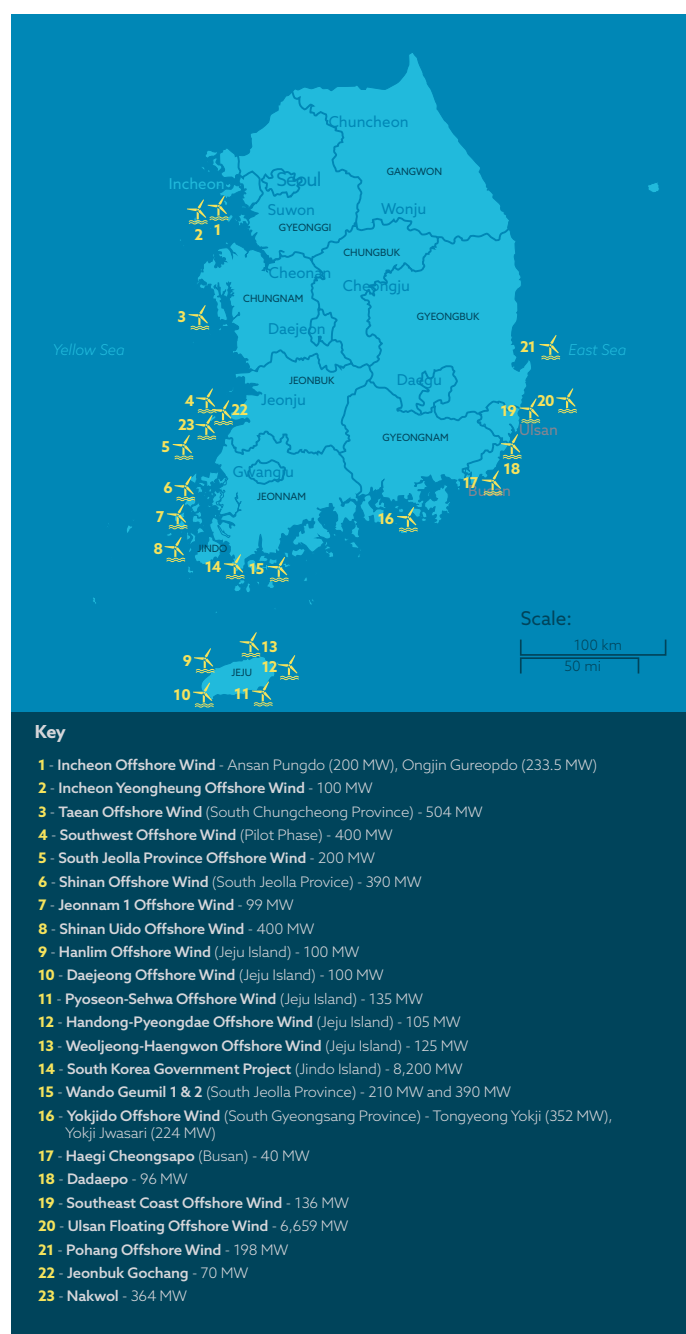
This commitment to decarbonisation was affirmed in July 2020 when the South Korean government announced its "Green New Deal", which promises over USD 7 billion of government investment in wind, solar, hydrogen and other renewables sectors by 2025 and aims to set South Korea on a path to net zero by 2050.

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 2020" 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 four offshore wind projects totalling 1,295 MW, either having commenced construction or seeking to reach financial close by next year.

South Korea's offshore wind capacity is expected to be predominantly located within the South Jeolla Province (as part of the greater Sinan Offshore Wind Complex), with additional major offshore wind projects planned for the North Jeolla Province (in the greater Jeonbuk Southwest Offshore Wind complex), off South Korea's southeast shores (the greater Southeast Floating Offshore Wind complex), near Jeju Island (the greater Jeju Offshore Wind complex), near Incheon (the greater Incheon Offshore Wind complex) and near Ulsan City (the greater Ulsan Floating Offshore Wind complex) (see Map 8), with developers eyeing potential synergies from the use of existing infrastructure at the nearby Donghae gas field as a means of reducing capital expenditures in such area.

MAP 8: SOUTH KOREA'S OFFSHORE WIND PROJECTS



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 resetting 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 of supply in South Korea's energy mix is expected to increase significantly amongst the different types of renewable sources.

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 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 are issues which could cause significant delay to the development of offshore wind projects in South Korea. Recognising 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 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. The bill for the One-stop Shop Act is currently under review by the National Assembly. With general elections for lawmakers scheduled to be held in April 2024, the bill will need to be passed by the end of the current session of the National Assembly, or otherwise it will automatically lapse and may need to be discussed again in the next session of the National Assembly.

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.

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.

Also, another uncertainty that 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 organisations regarding the use of domestic contractors in order for a project to obtain a REC Offtake Agreement (defined below) with the 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 that source more than 50% of their major wind farm components from contractors that manufacture/produce such components in Korea, however, amendments were made in 2023 which dis-applies this incentive in the case of competitive bids held by the New and Renewable Energy Center (the **"NREC"**) for long-term fixed-price contracts for wind power projects (see *"Renewable Energy Certificates"* below). Notwithstanding this, the bidder's proposed contribution to the domestic economy (i.e., 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.



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 and, in principle, only KEPCO can purchase electricity from the KPX for resale to domestic electric 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 17 other large generation companies (together, the “Mandatory Generators”) must ensure that 13% or more of the electricity they supply is derived from new and renewable energy resources (this is set to increase to 25% by 2030). If any of these Mandatory Generators fail 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 a year (in the case for wind power projects) or twice a year (in the case for solar power projects)¹. 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.

A complicating factor of the REC regime is that the actual REC Multiplier that a project will be entitled to will not be known with certainty until the project is commissioned, as this is when the REC Multiplier is assessed by the NREC. 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 generation 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 wind farms, this 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 macroeconomic factors, as the market price for RECs has been unstable. The price appeared to be decreasing since 2018, which in turn flagged the risk of a reduced fixed price that a GenCo may offer a project for the RECs produced from its offshore wind farm. Since late 2021, the market price for RECs has started to increase, however, it has been subject to material fluctuations.

This uncertainty around the number of RECs a project may receive, together with the macro-economic market prices, makes 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, the South Korean government, in October 2021, introduced a process that will notify offshore wind project developers of projected REC allotments well in advance of commissioning (although, this projection is not a cast-iron guarantee as to the number of RECs that would be provided, and so some residual uncertainty remains).

For the reasons stated above, some participants have suggested that a switch to a Feed-in Tariff/Premium model would be more attractive to developers, although this would involve a large shift in government policy and currently this does not look likely.

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. This is a major advancement in the South Korean power market.

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 four direct PPAs being signed.

1. 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. Starting in September 2022, the competitive bidding system expanded to cover wind power producers also (but to be held once a year for wind power projects, whereas it will be held twice a year for solar power projects). The bidding not only evaluates the pricing but also local resident acceptance, contribution to the domestic economy and grid acceptability. Following the first competitive bid for wind power held in September 2022, the successful bidders in the 2023 auction were selected in December 2023. The auction for 2023 was for an increased bid volume compared to 2022 and divided the bidding for onshore wind and offshore wind projects.

Previously, it was the case that electricity users exceeding 300 kW were not able to enter into indirect PPAs, which was a condition that did not apply to direct PPAs. Responding to views raised by the industry pointing out this inconsistency, the government amended the notification on Indirect PPA in August 2023 to ease the standard by allowing electricity users exceeding 300 kW to enter into indirect PPAs, thereby applying the same standards and conditions as direct PPAs for indirect PPAs.

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 may be critical to foreign developers.

Floating Technologies and Power-to-X

While established fixed-bottom technologies will likely be featured in initial projects, as expected from Ørsted's proposed development of an up to 1.6 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.

Given the natural synergies, a number of offshore wind developers with potential projects in South Korea are also looking to co-locate electrolyzers with their offshore wind projects, to produce green hydrogen, possibly for export. Such co-located hydrogen projects are at their early stages.

Expected Market Developments

We expect to see continued evolution and liberalisation of the Korean power market into 2024, including as follows:

- i. more direct PPAs being entered into between renewable energy generators and electricity consumers;
- ii. more indirect PPAs (the first indirect PPA signed in April 2022) being entered into between renewable energy generators and 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;
- iii. 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;
- iv. 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
- v. 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 plans to introduce it on a trial basis in Jeju Island in early 2024, with further plans for a nationwide roll out in due course.

These developments, especially alternative offtake arrangements which could mitigate foreign consternation surrounding the REC issues noted above, will be welcome news for developers. Other expected regulatory changes, including the introduction of a one-stop-shop for offshore wind permitting and official guidance on appropriate levels of compensation for fishermen and other local stakeholders, 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.

If you would like to know more about the latest offshore wind developments in South Korea then please get in contact with albert.yu@orrick.com



NETHERLANDS

authored in collaboration with

LOYENS  LOEFF



Authored by Adam Smith (Orrick), Oliver Sikora (Orrick), David O'Donovan (Orrick), Roland de Vlam (Loyens & Loeff), Nanne Kusters (Loyens & Loeff) and Roel Duncker (Loyens & Loeff) – refer to page 89 for contact details.

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 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 Roadmap 2030, 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 current 11.5 GW to 22.2 GW of operating offshore wind capacity by 2030. More recently, in December 2023, the government voiced its ambition to increase the offshore wind targets even further, to 50 GW by 2040 and 70 GW by 2050. To that effect, a partial revision of the North Sea Programme 2022–2027 is under preparation in which the government aims to designate space for approximately 23-26 GW of additional offshore wind capacity to ensure the continuous, uninterrupted development of offshore wind capacity post-2030.

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

The 2030 Roadmap 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 21.5 GW of operating offshore wind capacity by 2030. The intention is to develop new offshore wind capacity within newly designated zones as well as the existing zones. In March 2022, the Netherlands Enterprise Agency ("NEA") confirmed three new wind energy areas—Nederwiek, Lageland and Doordewind—with the northern part of IJmuiden Ver and the

southern part of Hollandse Kust (west) being confirmed as the existing areas that will be used for these developments as well. Spatial planning procedures are already underway.

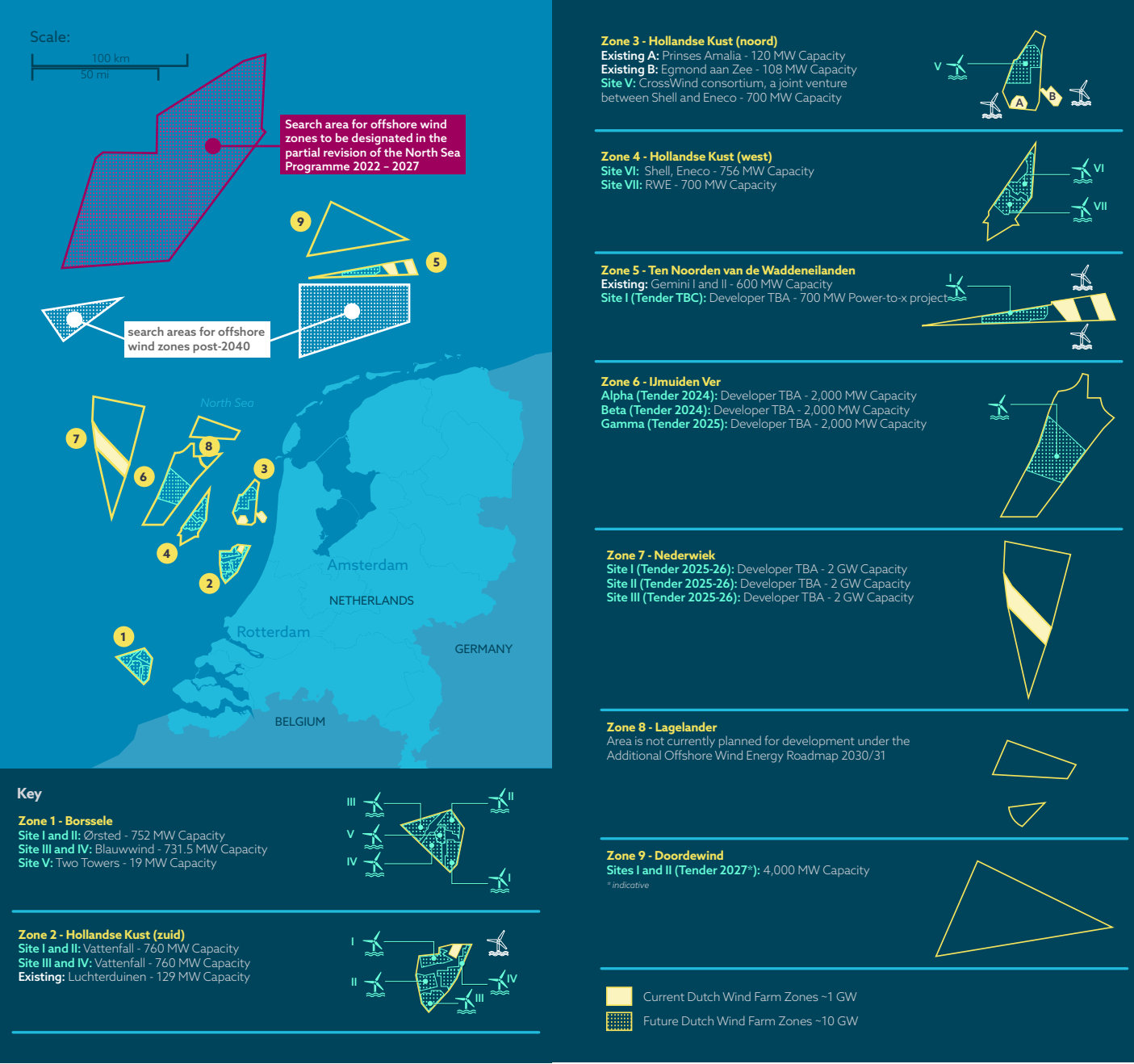
The Netherlands is also busy laying the foundations for its offshore wind development roadmap post-2030. As continuous development of offshore wind post-2030 requires timely designation of new offshore wind sites, the Dutch government plans to further partially revise its North Sea Programme 2022–2027. This revision is planned for 2025 and through it additional zones with a combined capacity of 23-26 GW are expected to be designated.

The Netherlands expects that the country will need approximately 70 GW of operating offshore wind capacity to meet the Dutch electricity demand and to produce a strategic amount of hydrogen. It is noted that the feasibility of these ambitions is currently still under further investigation. At the very least, the Dutch government expects to require 38 GW of offshore wind capacity to reach the climate-neutral status by 2050, meaning the government will need to develop a minimum of 16 GW of additional offshore wind capacity between 2030 and 2050.

Map 9 on the following page shows an overview of existing and new locations of offshore wind farm zones in the Netherlands.

Following multiple sales in 2021 and 2022, the past year has seen continuing transactional activity in relation to Dutch offshore wind assets, as private equity firm Partners Group sold a 15% and a 10% stake in Borssele III and Borssele IV to Nuveen Infrastructure and Octopus Energy Generation, respectively.

MAP 9: NETHERLAND'S OFFSHORE WIND PROJECTS



Subsidy vs. Subsidy-Free

The NEA conducts the offshore wind energy subsidy and permit tenders on behalf of the Ministry of Economic Affairs and Climate Policy. The tender process is currently 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 bid in which the ranking of the tenderers is determined on the basis of both elements (i.e., the comparative assessment and the financial bid) 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 assessment¹.

The two tenders for Hollandse Kust West, HKW VI and HKW VII, were also held using comparative assessment, again without subsidy. The tenders were also the first to include a financial bid (capped at EUR 50 million) in the selection process. RWE were successful in obtaining the first 700 MW of capacity, under the system integration

tender. Ecowende, a joint venture between Eneco and Shell, won the 756 MW site HKW VII, which tender had a special focus on reducing the ecological impact of the wind farm on the North Sea.

Currently, the preparations for the first two IJmuiden Ver tenders, site Alpha and site Beta, are at an advanced stage and the application window is expected to be open from 29 February 2024 until 28 March 2024. Contrary to initial plans, the tender exists of two 2 GW sites, rather than four 1 GW sites. Notable (and new for offshore wind tenders in the Netherlands) is that both tenders include responsible business conduct and circularity criteria in the comparative assessment. The maximum financial bid has also been increased to EUR 420 million, as the prior cap of EUR 50 million left room for increase. From a technical perspective, these wind farms will also be the first to be connected to the onshore grid with a high-voltage direct current (HVDC) connection.

The subsequent tenders are the IJmuiden Ver site Gamma (2 GW) and the Nederwiek site I (2 GW), both expected in Q2 of 2025, followed by Nederwiek site II (2 GW) and Nederwiek site III (2 GW) in 2026.

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% (for subsidy tenders) or 20% (for subsidy-free tenders) of the total planned investment of the project and if such equity capital is less than 20% for subsidy tenders, confirmation must be provided by financiers in relation to financing the remaining part of the 20%; (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 Decision². 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.

1. Note to draft: OHS to update for consistency across all chapters. Orrick to come first and then local counsel second. 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.

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.

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 European Union, 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 2023, 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.

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.

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 as 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. 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.

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

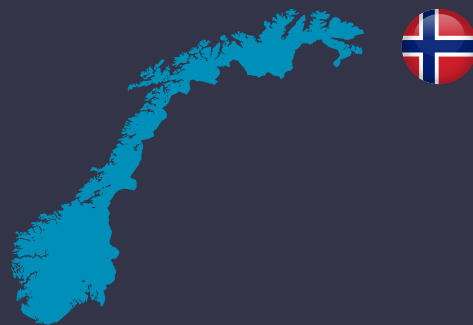
The Netherlands continues to focus on offshore wind as a key tool in tackling climate change. The country has expanded on the targets established in the Offshore Wind Energy Roadmap 2030 through the North Sea Programme 2022-2027, amendments to the OWEA and the addition of new as well as the expansion 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

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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 15 zones for offshore wind development (see Map 10 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 the Norwegian sea area.

Areas Opened for Development

In 2020, the Norwegian government opened the first two zones for development; Sørliche Nordsjø II ("SN II") and Utsira Nord ("UN") (zone details below), which are both currently subject to competitors applying to develop projects in such zones (see below).

Sørliche 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

MAP 10: NORWAY'S OFFSHORE WIND ZONES



Flagship Competitions for Development

On 29 March 2023, the Norwegian Ministry of Petroleum and 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 zones. The details of how developers can apply for projects in such zones are set out in the Offshore Energy Act and Regulations to the Offshore Energy Act.

Sørlige Nordsjø II

The SN II competition will be determined through a pre-qualification and subsequent auction. Six to eight developers will be selected from the pre-qualification procedure and granted the right to participate in the auction. The winner of the auction will enter into a two-way Contract for Difference ("**CfD**") (with cap and reservation price) with the Norwegian government and will be granted the right to carry out a project-specific study programme and apply for a licence to construct, own and operate the production facility. From the granting of the 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.

The deadline for applications for the pre-qualification process was 15 November 2023, with a decision expected in January or February 2024, and the subsequent auction to follow in February or March 2024.

On 17 October 2023, the Ministry amended the competition rules by making "*Sustainability*" and "*Positive local benefits*" into minimum conditions that have to be satisfied in order for a developer to be considered as eligible, leaving "*Execution capacity*" as the only pre-qualification criteria to be objectively assessed for each applicant. Furthermore, the Ministry amended the "*Positive local benefits*" requirement to remove the local content requirement, which means that these positive local benefits do not need to be limited to Norway. The use of the local content criteria has been controversial, see, e.g., [EU challenges discriminatory practices of UK's green energy subsidy scheme at WTO \(europa.eu\)](#).

The target for commercial operations for projects successful in this competition remains 2030 despite extensions and delays to the awarding process.

Bearing in mind the failure to attract interest in the UK's Round 5 CfD auction, the Norwegian government is acutely aware that the CfD strike price needs to take due consideration of the prevailing market situation, including higher inflation and interest rates, which have significantly affected developers' costs. A draft CfD has been published by the Ministry; however, this may be subject to further amendments to ensure that there is sufficient market interest.

Utsira Nord

The competition process for UN is different to SN II as applications will be based and evaluated on the basis of qualitative criteria. Such criteria are more extensive than the SN II pre-qualification criteria 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, 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 SN II zone, 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; however, it is expected that 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.

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 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.

We expect the new deadline to be set sometime during Q1 2024. No amendments have so far been notified with respect to the qualitative criteria.

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

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.

The government has previously been sceptical to hybrid cables but has instructed Statnett (the system operator) to assess whether hybrid grid solutions should be developed for production at the Sørvest F area and made a premise for the announcement of new areas in 2025. This indicates a willingness to adopt hybrid cables.

Power-to-X

Whilst the concept of Power-to-X is still in its infancy, a demonstration project called 'Deep Purple' led by Repsol will design, build and test a physical land-based pilot at TechnipFMS's Norwegian headquarters in Kongsberg. 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 electrolyzers that can be stored under pressure in the seabed and converted back to electricity when required.

Separately, Norway's Hywind Tampen is one of the first examples of the electrification of the oil and gas sector. The electricity from Hywind Tampen will be 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. This is a synergy that developers will be eyeing closely, given Norway's developed oil and gas industry.

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.





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Introduction

The Philippine Archipelago, with its vast coastline and abundant wind resources, holds a 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. 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%¹. 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 recognised the State’s ownership of natural resources within its territory and imposed nationality restrictions on the exploration, development and utilisation of natural resources. This limited the extent of foreign ownership 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 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, which require that a certain minimum percentage of the Philippines’ total generation should be sourced from RE sources. Furthermore, it 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).

The Renewable Energy Act incentivises 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 Renewable Energy 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.

1. 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)

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 price² (subject to adjustments for local inflation and foreign exchange) for a given period of time (at least 12 years), as determined by the Energy Regulatory Commission ("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. 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, future rounds may include OSW considering that there is now a policy to increase the capacity of OSW in the Philippines.

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.

2. 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.

Challenges Facing the Philippine OSW Sector

Despite the adoption of several regimes that would incentivise 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 utilisation of RE. Although the DOJ Opinion and the recent implementing regulations of the Renewable Energy Act now allow foreign developers to exploit, develop and utilise 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. Enhancing grid stability, transmission capacity and interconnection capabilities are matters that the Philippine Government and regulators would need to address.

Prospective Regulations/Deregulations and Other Possible Developments/Outlook

Pursuant to Executive Order No. 21, Series of 2023, the DOE has in June 2023 promulgated Department Circular No. DC2023-06-0020 ("**OSW Circular**"), which aims to streamline all the permitting processes relevant to OSW plants via the Energy Virtual One-Stop Shop ("**EVOSS**"). This is anticipated to be completed one year after the effectivity of the OSW Circular (i.e., around June 2024). This would hopefully be the start of the development of a clearer permitting and regulatory framework for OSW projects.

The OSW Circular also establishes the Philippine OSW Databank, which contains all the documents submitted in relation to, and information on, OSW projects. These include permits, clearances, requirements and fees to be paid to the relevant permitting agencies or entities that issue permits or authorisations relevant to (or required for) the development of OSW projects. These permits are issued by various government agencies and entities, such as the Department of Environment and Natural Resources, Bureau of Internal Revenue, Energy Regulatory Commission, National Grid Corporation of the Philippines, National Transmission Corporation and Power Sector Assets and Liabilities Management Corporation. The Philippine OSW Databank would serve to provide greater transparency and information access to prospective players and stakeholders in the Philippine OSW industry.

The OSW Circular also directs the DOE to issue guidelines on the award of OSW energy service contracts, and the RE contracts issued and awarded by the DOE for the exploration, development and/or utilisation of wind energy in offshore areas (which include estuaries and other bodies of water). Such guidelines have not yet been adopted at the time of this writing.

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 for renewable energy development 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 in the Philippines.





POLAND

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Although Poland does not yet have any operational offshore wind farms, the country has big ambitions to move away from its dependency on coal to a renewable energy future, which, in part, will be achieved by targeting 5.9 GW of installed offshore wind generating capacity by 2030. Looking further ahead, Poland is positioning itself to be the largest producer of offshore wind energy in the Baltic Sea, with an estimated capacity of up to 11 GW of installed generation by 2040 (and even up to 18 GW—according to the ‘Polish Energy Policy until 2040’, which currently is being updated after public consultations which took place in mid-2023). In 2024, this journey will continue.

The Two-Phase Approach

The Polish government has previously designated certain zones within the Polish zone of the Baltic Sea where developers can apply to construct and operate an offshore wind farm; each of these zones are located in Poland’s Exclusive Economic Zone.

In February 2021, the Polish “Act on promoting production of electricity in offshore wind power plants” became law (the “**Act**”). The Act provides for Poland’s offshore wind industry to be developed in two phases. The Polish government has since started to work on amendments to the Act and other offshore wind-related acts in order to clarify certain provisions in response to signals received from developers.

In 2021, eligible phase 1 projects applied for a 25-year CPI-index-linked support scheme, which takes the form of a Contract-for-Difference (“**CfD**”) mechanism (see “A Contract for Difference” below). The President of the Energy Regulation Office (the “**ERO**”) subsequently awarded seven CfDs to each of the following projects: Bałtyk II,

Bałtyk III, Baltica 2, Baltica 3, Baltic Power, FEW Baltic II and BC-Wind Polska. Please see Map 11 for the location of these projects. Together, these projects comprise the phase 1 projects and have an aggregate capacity of 5.9 GW. The strike price of each of these CfDs is set at 319.60 PLN/MWh, subject to indexation (equal to approximately 71 EUR/MWh – see “EUR-PLN Split Mechanism and Strike Price Indexation” below), which was set by the Minister of Climate and Environment. This is less than what industry participants had hoped for. The European Commission has issued two decisions confirming that individual aid awarded under the Act is compatible with the internal market: (i) in September 2022 for the Baltica 2 and Baltica 3 offshore wind projects; and (ii) in February 2023 for the Baltic Power offshore wind project. The President of the ERO subsequently issued the decisions confirming the previously awarded CfD strike price of 319.60 PLN/MWh, respectively, for each of the Baltica 2, Baltica 3 and Baltic Power offshore wind projects.

Phase 2 is the next stage of Poland’s offshore wind rollout, and the Act, together with Poland’s new marine spatial management plan, has designated 13 zones which could be used for the development of these phase 2 projects. Notably, some developers had already applied for the requisite permits to develop an offshore wind farm prior to the marine spatial plan coming into effect. The consequence of this was that, where a developer’s existing permit covered (even partly) an area not included in the zones noted in the marine spatial management plan, that developers’ existing permits or proceedings on issuance of such permits were cancelled and the relevant zones were reoffered by the government to the market via a competitive procedure. The effect of this was that the

permits for only two out of the 13 phase 2 zones were permitted to be retained (sites 60.E.1 and 60.E.2), which left 11 designated zones available for developers.

Some of the investors have challenged the cancellation of the proceedings in court, as their site applications were submitted before the Act entered into force. However, the Supreme Administrative Court has already ruled against the investors in four cases.

Notwithstanding the above, competition for the permits to develop phase 2 offshore wind projects eligible to participate in the 2025 CfD auction was intense. The second phase applications were submitted by Orlen Group, PGE (both individually and also in partnership with Tauron, Enea and also Ørsted), Ocean Winds (EDPR & Engie), RWE, Equinor, Shell, a joint venture between ZE PAK and Ørsted, and a joint venture between ENI and Copenhagen Infrastructure Partners. Overall, 132 applications were submitted by all offshore wind energy investors. However, only 54 applications reached the statutory qualifying minimum criterium. The Polish energy group PGE won five sites (three projects with co-investors), while further five sites were won by the Polish energy group Orlen. The Polish State Treasury is a stakeholder in both companies. The proceedings concerning site 53.E.1 have not been resolved yet. However, the construction of offshore wind farms within this site will not be possible before the end of year 2040, as the area is currently used for NATO submarine training purposes. Please see Map 12 for the location of these zones.

Despite the strong interest from domestic sponsors, foreign developers are of the opinion that the bid evaluation rules favour domestic companies who have no experience in offshore wind and such rules also do not attribute value to any credentials earned by offshore wind developers outside the EU area.

The Act prescribes that potential phase 2 projects can apply for a 25-year CfD from the President of the ERO but, unlike phase 1, the CfD strike price will be determined through a competitive auction. The first auction is scheduled to commence in 2025 for 4 GW of capacity, with the second round to commence in 2027 for 4 GW plus any excess capacity not awarded in the first round; the third round is to commence in 2029 for 2 GW plus any excess capacity not awarded in the second round; the fourth round is to commence in 2031 for 2 GW plus any excess capacity not awarded in the third round; and the fifth round is to commence in 2032 for any excess capacity not awarded in the fourth round, provided that at least 0.5 GW of the capacity available in the fourth round was not awarded.

A Contract for Difference

The Act legislates that any CfD awarded pursuant to the Act will take the form of a two-sided support structure, similar to the UK's regime, whereby: (i) if the settlement price (the wholesale electricity market price – fixing II) for the electricity generated by a project's offshore wind farm is less than the strike price under the CfD, then the project will be reimbursed for this "negative balance"; or (ii) if the settlement price (the wholesale electricity market price – fixing II) for the electricity generated by a project's offshore wind farm is higher than the strike price under the CfD, then the project will be obliged to return this "positive balance" to the state-owned settlements manager. Whether a project has a negative or positive balance is assessed on a monthly basis and in practice, if applicable, any positive balance is netted by the project against the following month's negative balance. If at the end of a calendar year the project still has a positive balance, the amount of the positive balance is paid by the project by 30 June of the following year. As in the United Kingdom, appropriate cashflow management will be expected by project finance lenders in this respect.

The maximum support which a project can receive under its CfD is subject to a capacity cap under both phases of 100,000 hours of electricity production per each MW of capacity installed. Where a project is project-financed, that project's forecasted lifetime electricity output should therefore be carefully modelled against this cap to see if there is a risk that the CfD support will expire before the proposed final repayment date of the debt.

Note that, unlike the United Kingdom, there is no separate CfD contract between a project and the relevant Polish state entities. The key mechanics of the CfD are set out in the Act itself.

Importantly, the Act prescribes that a project must transmit electricity into the grid within seven years from the final decision on the award of its CfD. The CfD commences on the date that the project transmits its first electricity to the grid under the power generation licence. This means that, where a project is built in phases but benefits from a single CfD, the support term for the last batch of turbines to be installed will be less than the 25-year support period provided for by the CfD. Assuming a debt tenor of around 20 years, this should not be an issue from a project finance perspective.

It is expected that the financiers will want to take security over a CfD, in particular, the monetary receivables arising from the right to receive any "negative balance", which appears to be contemplated for under the Act.

EUR-PLN Split Mechanism and Strike Price Indexation

On 1 January 2024, two new CfD-related mechanisms in the Act entered into force: (i) the EUR-PLN split mechanism and (ii) the amended strike price indexation mechanism.

The EUR-PLN split mechanism will allow the holders of CfDs to amend the method of negative balance calculation by changing the percentage proportions in which the awarded strike price is calculated in PLN and which is calculated in EUR to their preferred split (by default 100% is calculated in PLN). This is desirable for investors as if the PLN/EUR FX rate is higher than the rate determined in the regulation of the Minister of Climate and Environment (please see the paragraph below, being currently 4.45 PLN per 1 EUR) then it would be more desirable to calculate the strike price in EUR to create a higher strike price, which would result in a bigger payment to the developer (provided that the strike price is higher than the settlement price from the wholesale electricity market price – fixing II). Nevertheless, the payment method cannot be changed, thus negative balance payments will still be made exclusively in PLN. The investors may determine these proportions by filing a statement to the state-owned settlements manager not later than 30 days before filing of the first application to settle the negative balance. Investors may elect to change the selected split of PLN versus EUR once within the 15-year period from transmitting first electricity to the grid.

Note that the Minister of Climate and Environment had already adopted a regulation on the EUR-PLN exchange rate used for calculation of the maximum strike price, where: (i) the EUR exchange rate amounts to 4.45 PLN per 1 EUR and (ii) the maximum strike price of 319.60 PLN/MWh amounts to 71.82 EUR/MWh.

The Act will also provide for amended indexation principles of the strike price (as confirmed in a final decision on the award of the CfD, i.e., the second decision of the President of ERO issued upon decision of the European Commission on individual aid awarded under the Act being compatible with the internal market). The strike price shall be indexed annually by the annual average CPI of the previous calendar year as specified by the President of the Central Statistical Office, starting from: (i) year 2022 – for phase 1; or (ii) the year following the year of conclusion of the auction – for phase 2.

Those mechanisms were expected by the investors and will have a great importance on future investment decisions, in particular in light of seeking the multinational financing.

Transmission Assets

There are many aspects of the Act which developers will need to consider, and which are beyond the scope of this report, but, in particular, we note that the Act prescribes certain parameters relating to local content, equipment age and sell-downs. The Act also provides the transmission system operator, Polskie Sieci Elektroenergetyczne S.A., with certain rights in respect of the project's transmission assets, including an option to purchase those assets from the project. This includes that if the transmission assets are sold by the project to a third party, the transmission system operator has a preemptive purchase right over the third party. In theory, this may be of concern to financiers as it could complicate the enforcement process in respect of any security over the transmission assets. However, in practice, the value of the security is in nominally appropriating the assets for the benefit of the secured creditors (as a means of leverage against unsecured creditors) and the security that is more likely to be enforced is the relevant share pledge.

Regarding local content, we note that although the Act prescribes a requirement for a developer to prepare a local supply chain plan, there is no penalty for failure of a developer to comply with that plan (such a penalty would fall foul of the EU's procurement rules). This contrasts with Taiwan, for example. However, the Act provides for penalties for investors who had been awarded with a CfD but have not submitted a report on the performance of the local supply chain plan or if the information submitted by a developer is untrue.

The Grid

It also remains to be seen how the Polish government intends to modernise and strengthen the onshore transmission and distribution networks, including the associated costs, in the north part of the country (where Poland's offshore wind farms will connect into the grid). If the grid is not strengthened in parallel with the development of Poland's offshore wind farms, then developers may find that there are capacity limitations. However, pursuant to the so-called Transmission Network Development Plan until 2032, the transmission system operator plans to modernise and/or build new transmission networks. The implementation of the Transmission Network Development Plan is intended, i.e., to support the development of offshore wind farms in Poland. The aim is to create an infrastructure to transport electricity from the northern part of Poland to the south, where most of the country's industrial facilities are located. Currently, the cost of such grid improvements is expected to be paid by the transmission system operator (i.e., not developers), and the Polish state wishes to obtain financial support from the NextGenerationEU stimulus package (the EU's COVID-19 economic recovery fund) to help finance these costs. At the end of August 2023, the Polish government submitted a request for amendments to the Polish National Recovery Plan, while on 21 November 2023, the European Commission approved a modified Polish National Recovery Plan. The amendments created a special REPowerEU chapter with funds, i.e., for the development of transmission networks and offshore wind farms. The European Commission has accepted the amendments and has already paid out €5 billion in pre-financing for energy projects. The disbursement of part of the funds does not imply the future release of all payments from the Polish National Recovery Plan. The European Commission will authorise further regular disbursements based on the satisfactory fulfilment of the three "super milestones".

Following the parliamentary elections in October 2023, investors expect that the dispute between the European Commission and the Polish government concerning the rule of law in the common courts will soon be resolved, meaning that a milestone for unlocking the full amount of EU funding should be achieved.

Power Sales

Although corporate power purchase agreements are permitted under relevant Polish laws and regulations, it is not expected at this stage that the phase 1 offshore wind projects that were awarded CfDs in Poland will seek to sell their power to final corporate offtakers. This is largely because of the comfort and the stability of revenues offered by CfDs backed by the fees collected from every kWh sold on the wholesale market. Phase 1 projects are expected to sell their power to the wholesale market.

Given the current macroeconomic environment, it remains to be seen what strike price the CfDs for the phase 2 offshore wind projects come out at. The effects of inflation and increased steel prices will likely increase the capex of projects, which may raise the bid price in the phase 2 2025/2026 auctions.

Floating Technology and Power-to-X

Each of Poland's phase 1 offshore wind projects will deploy fixed-bottom foundations as the Baltic Sea is sufficiently shallow enough to permit this. It remains to be seen whether floating technology will be used on any of the phase 2 offshore wind projects, or whether any of these projects will seek to incorporate additional Power-to-X capacity. The Act does not specifically contemplate the possibility of adjoining Power-to-X capability to an offshore wind project. In addition, the maritime spatial plan does not allow for Power-to-X, therefore limiting permitted activity to power generation only.

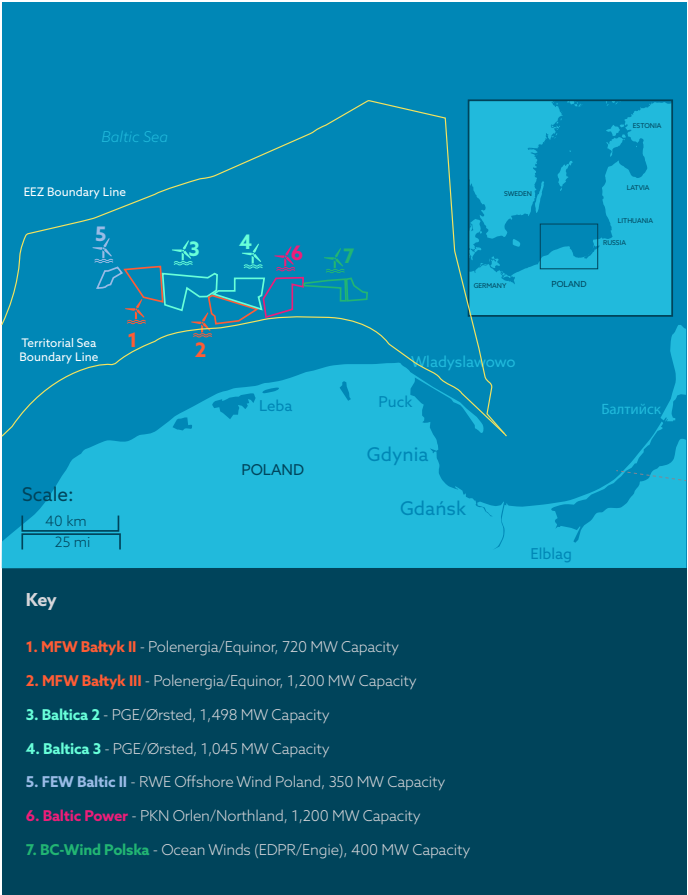
Outlook – Joint Ventures and Project Finance

Given that there is now a strong, industry-backed, legislative framework for the development of Poland's offshore wind industry in the form of the Act, Poland's offshore wind market is an exciting prospect for industry participants. Indeed, several notable joint ventures have already been formed: (i) the Ørsted/PGE 50:50 joint venture to develop the Baltica 2 and Baltica 3 offshore wind projects; (ii) the Northland/PKN Orlen joint venture to develop the Baltic Power offshore wind project; and (iii) the Equinor/Polenergia joint venture to develop the Bałtyk II and Bałtyk III offshore wind projects. The winning applications in the second phase were submitted by the joint venture Ørsted/PGE, Tauron/PGE and Enea/PGE. Please note that in the second phase, five sites were won by Orlen and two sites by PGE acting independently, while it is possible that these companies will search for future co-investors to develop the projects.

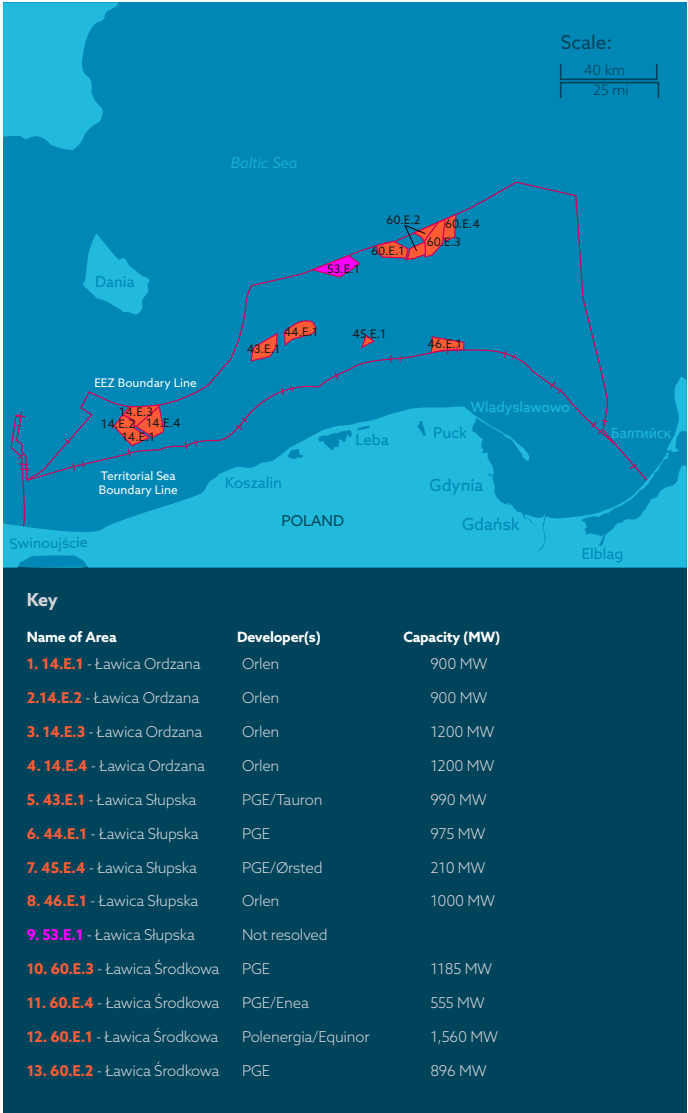
What is more, in September 2023, the Baltic Power offshore wind project secured the first project financing of an offshore wind project in Poland with more than EUR 4.4 billion of project financing to be provided by a group of 25 international and local commercial banks, Export Credit Agencies and multilateral financing institutions. It is expected that other projects will seek for project finance in the following years.

Please see Map 11 and Map 12 outlining the offshore wind projects in Poland, which are currently in development and have exclusive permission to develop an offshore wind project in that area.

MAP 11: POLAND'S OFFSHORE WIND PROJECTS – PHASE 1



MAP 12: POLAND'S OFFSHORE WIND PROJECTS – PHASE 2 OFFSHORE WIND SEABED ZONES

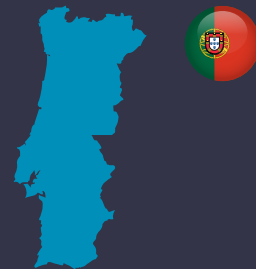




PORTUGAL

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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 wind energy in Portugal is much more significant for floating turbines (40 GW) than for fixed turbines (1.4 GW to 3.5 GW).

For example, a recent pre-commercial phase 2 MW prototype project led by the Portuguese-based electricity company EDP Renewables has successfully tested the Windfloat floating offshore wind technology in the Aguçadoura area. As a result of this successful pilot, this floating technology secured funding from the European Commission (under the NER300 Programme) to create a floating offshore wind farm with an installed capacity of 25 MW off the coast of Viana do Castelo.

The Roadmap for an Industrial Strategy for Ocean Renewable Energies, approved by the Portuguese Government in November 2016 (the "**Roadmap**"), estimates that ocean renewable energies could potentially supply 25% of the annual electricity consumed in Portugal. This would contribute not only to the reduction of energy imports but also would prevent the emission of 8 million tonnes 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 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 and can be demonstrated in technological showrooms (near the ports), in a real operational environment. The result is 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 (the "**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.

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.

Furthermore, the recently enacted Decree-Law no. 15/2022, of 14 January 2022, containing the National Electricity System's framework, creates 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 km 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 75 GWh, reaching the project's planned figures. The energy produced is enough to supply 60,000 inhabitants and has avoided the emission of 33,000 tonnes of CO².

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 announced in 2022 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 in 2023

The government launched the first competitive auction for offshore wind energy at the end of 2023.

Ahead of the abovementioned auction, the 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:

- i. a capacity of up to 3.5 GW should be made available in Viana do Castelo (1 GW, divided into two lots), Leixões (one 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-customised 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 provided the framework for the government to define details of the auction mentioned above. A pre-qualification phase has now commenced and is expected to last three months with interested parties previously being requested to submit an expression of interest to participate in the ongoing dialogue phase. The procedure documents will be published afterwards, and finally, the bidding process will begin.

In parallel, the government ordered the Directorate General for Natural Resources, Safety and Maritime Services to proceed with the preparation of a plan for the use, until 2050, of areas of the national maritime space for the commercial operation of renewable oceanic originated or located energy sources. This plan was delivered to the government on 20 October 2023, alongside the result of the Strategic Environmental Assessment. The approval of the plan can allow the immediate award of the TUPEM.

Corporate Power Purchase Agreements “cPPAs”

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.

Power-to-X

Pursuant to the applicable legal framework, there are no obstacles to using the electricity generated by offshore wind farms for different purposes, in particular to supply electricity for the production of green hydrogen. Currently, there are no specific requirements to confirm the origin of green hydrogen. However, the European Commission is expected to approve a delegated regulation supplementing Directive (EU) 2018/2001 of the European Parliament and of the Council by establishing a Union 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.

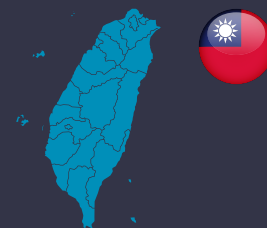
The appetite amongst international offshore wind developers is clearly growing with the Portuguese Government having met with the world’s largest companies in this sector that are interested in investing in Portugal, such as Spain’s Iberdrola, Denmark’s Ørsted and the Portuguese/French consortium EDP Renewables/ENGIE.





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 electricity generation) and 15 GW by 2035. To date, 19 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 wind farms, Formosa I, Changhua Phase I of Taipower ("**TPC**") and Formosa II, have entered into the operation stage with the others all at some stage of development or advanced construction. Currently, each offshore wind farm 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 13.

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 is expected to release 15 GW of capacity between 2026-2035 in two stages, i.e., the first stage between 2026-2031 for allocation of 9 GW of capacity, and the second stage between 2032-2035 for allocation of 6 GW of

grid capacity. The first stage is further divided into 3 phases, Round 3.1 (2026-2027 for 3 GW), Round 3.2 (2028-2029 for 3 GW) and Round 3.3 (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 on 30 December 2022 by the MOEA/EA for the auction of 3 GW of capacity to developers across grid connection years 2026 and 2027 (0.9 GW for 2026 and 2.1 GW for 2027).

According to the MOEA/EA's current plan, the Round 3.2 and Round 3.3 auctions will be held in Q1 2024 and Q2~Q3 2024.

Round 2 Projects (Transition)

All Round 1 and Round 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 4 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 2¹. Capacity awarded to each offshore wind farm 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 wind farm, development benefits and efficiency. Therefore, the maximum Round 3.1 project size was 600 MW.

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.

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 promulgated 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 must 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., Orsted, not entering the Round 3.1 2022 auction. Out of the seven winning projects of the Round 3.1 auction, two 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.

Localisation

As part of the Taiwanese government's push to develop the local supply chain, the MOEA has developed a series of lists of components used in the construction and operation of an offshore windfarm, 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.

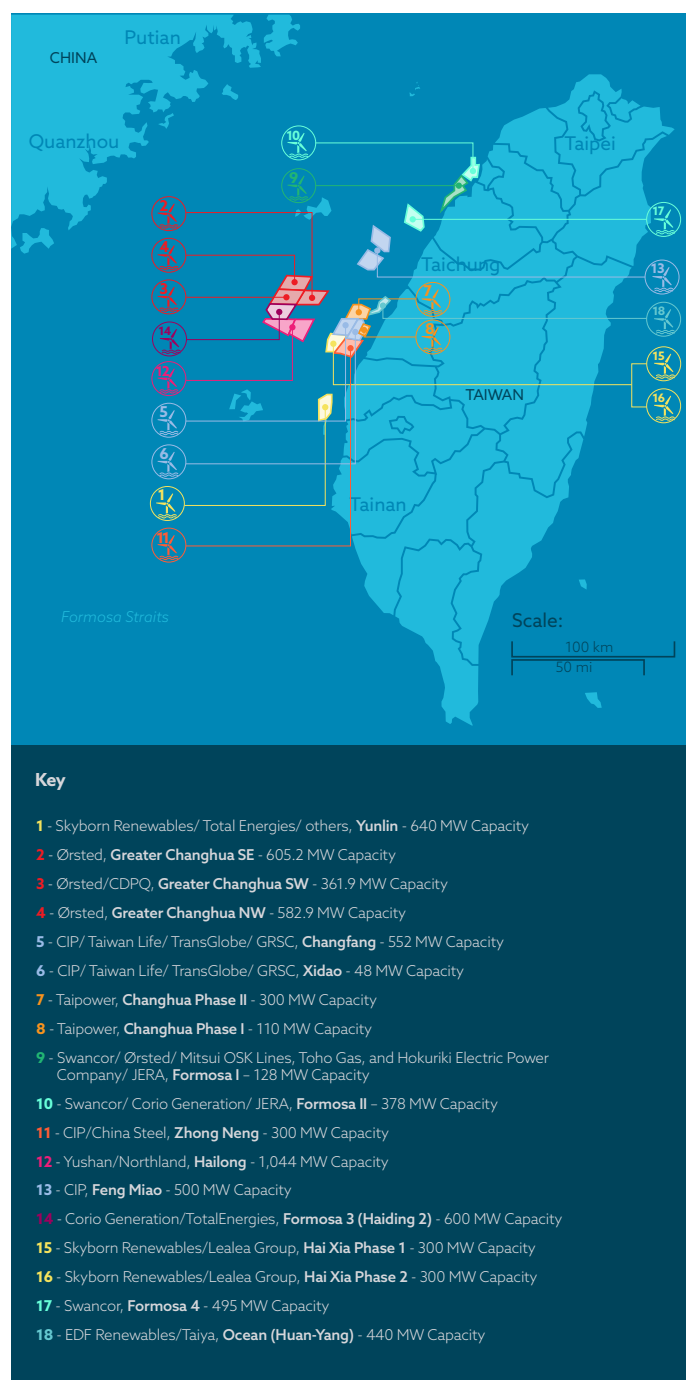
There is no additional priority given by the MOEA/IDA to projects that comply with the mandatory localisation requirements for >60% of the applied for capacity. However, the Round 3.1 localisation bonus points were used to decide a winning bidder in the reverse price auction if more than one developer 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.

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: eight points), which comprise: (1) at least two kinds of major domestic work vessels (100% * eight points); (2) a domestic turbine installation vessel or a domestic foundation installation vessel (100% * seven points); or (3) a domestic cable laying vessel (100% * five 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.

MAP 13: TAIWAN'S CONSENTED OFFSHORE WIND PROJECTS



Corporate PPAs

Offshore wind farm 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 some developers bidding in at NTD0/kWh in the Round 3.1 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 and 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.

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 institution authorised by the National Credit Guarantee Administration may guarantee an offtaker's 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 two 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 windfarm (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 Administrative Contract template applicable to Round 3.1 further stipulates the circumstances that constitute "a change in shareholding" of a project which will trigger the requirement for prior consent from the MOEA. The Administrative Contract template for Round 3.2 is yet to be announced. It remains to be seen whether there will be change to the MOEA's position on such restriction.

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 auction has provided the insight into the next stage of Taiwan's rapid offshore wind growth.

UNITED KINGDOM



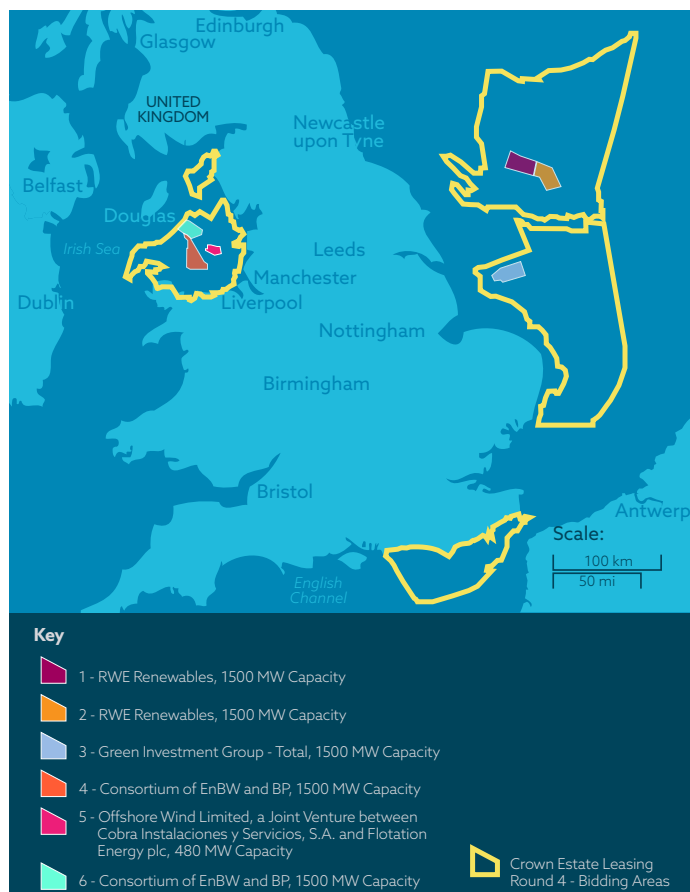
Authored by Ravinder Sandhu (Orrick), Simon Folley (Orrick), Rebecca Grevitt (Orrick), Craig Bruce (Orrick) and Craig Johnston (Orrick) – refer to page 91 for contact details.

Throughout 2023, offshore wind projects faced challenges from persistently high inflation and interest rates and supply chain challenges, placing significant pressure on the economics of many in-progress projects.

In addition, Allocation Round 5 saw no CfD bids from developers of new offshore wind farms, given the low tariffs on offer. That said, the UK Government appears to have taken the response from industry on board, with higher administrative strike prices set for offshore wind in the forthcoming Allocation Round 6.

Given the high electricity prices and volatility in recent times, sponsors are increasingly looking to alternative means (such as corporate power purchase agreements) to increase and stabilise project revenues, and we expect this trend to continue through 2024 and beyond.

MAP 14: CROWN ESTATE LEASING ROUND 4 – AWARDED PROJECTS



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 £442.6 million net revenue for the year 2022-2023. Table 1 shows the current status of each of these Round 4 projects.

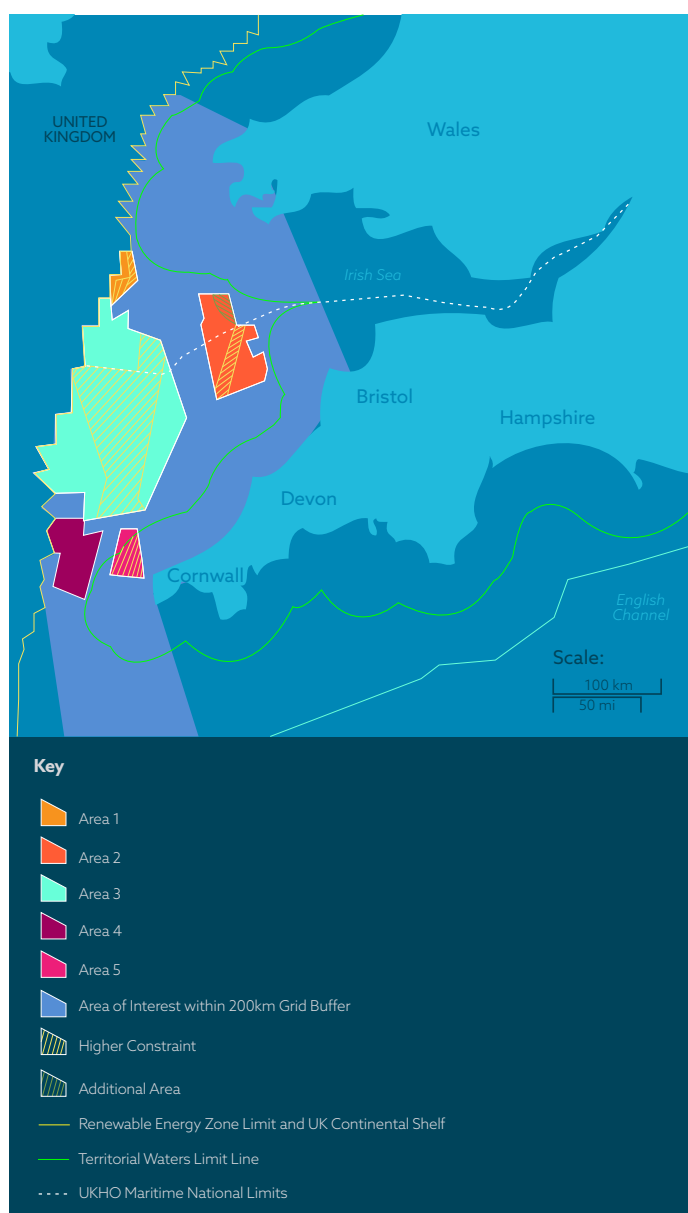
TABLE 1: LEASING ROUND 4 PROJECTS

Project	Capacity	Developer(s)	Status
Dogger Bank South (West)	1,500 MW	RWE	Pre-planning (application for DCO expected Q2 2024)
Dogger Bank South (East)	1,500 MW	RWE	Pre-planning (application for DCO expected Q2 2024)
Outer Dowsing	1,500 MW	Total Energies and Corio Generation	Pre-planning (application for DCO expected Q1 2024)
Mona	1,500 MW	EnBW and bp	Pre-planning (application for DCO expected Q1 2024)
Morecambe	480 MW	Cobra and Flotation Energy	Pre-planning (application for DCO expected Q2 2024)
Morgan	1,500 MW	EnBW and bp	Pre-planning (application for DCO expected Q2 2024)

Celtic Sea Floating Offshore Wind Leasing Round 5 (in England and Wales)

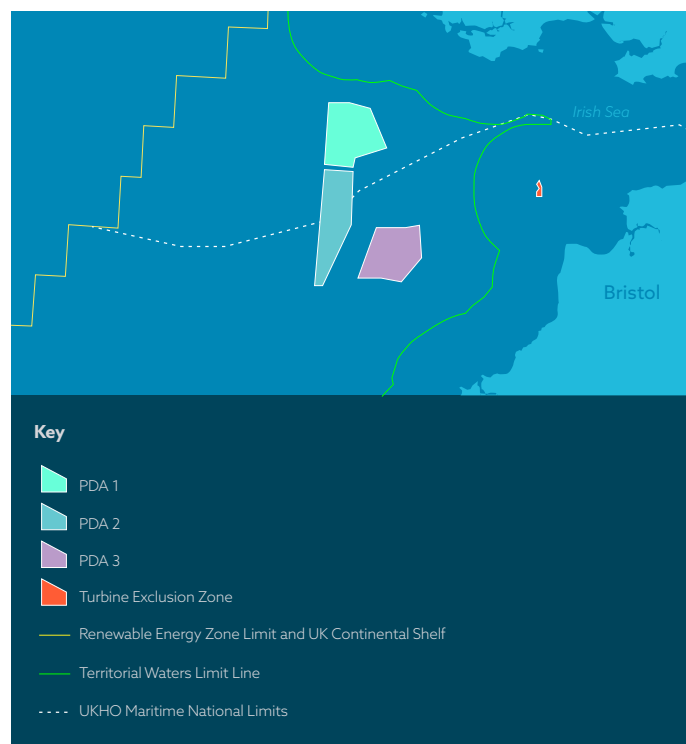
The Crown Estate announced in March 2021 that it would establish a leasing round solely for floating offshore wind projects in the Celtic Sea off the coast of South Wales and South West England ("Leasing Round 5"). Five "Areas of Search" (see Map 15) were announced in July 2022, which were identified following technical analysis and extensive engagement between The Crown Estate, the UK and Welsh governments and key agencies, and specialist stakeholders.

MAP 15: CROWN ESTATE LEASING ROUND 5 – CELTIC SEA AREAS OF SEARCH



In October 2023, The Crown Estate confirmed that it had, following detailed spatial design and close engagement and agreement with UK Government (who had been working to address a number of competing demands in the Celtic Sea), refined the Areas of Search to offer three "Project Development Areas" to bidders in Leasing Round 5 (see Map 16). It is intended that these areas will deliver a combined capacity of up to 4.5 GW of floating offshore wind power (rather than the 4 GW originally envisaged).

MAP 16: CROWN ESTATE LEASING ROUND 5 – CELTIC SEA PROJECT DEVELOPMENT AREAS



A competitive tender on the Leasing Round 5 Project Development Areas is set to be launched in early 2024, within which The Crown Estate will be tendering three larger, 1.5 GW-scale projects which may be developed in a phased or "stepping stone" approach. 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 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 UK Government's ambition for 5 GW of commissioned floating offshore wind by 2030 and is in addition to the 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. 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.

Leasing Round 5 is intended to be the first phase of commercial offshore development in this area, with the UK Government confirming as part of its Autumn Statement in November 2023 its intention to unlock space for a further 12 GW of capacity in the Celtic Sea.

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 in February-April 2024, which will be assessed by The Crown Estate to establish the suitability of bidders to proceed to invitation to tender (ITT) stage 1 starting in August 2024. Bidders are expected to be notified of the outcome of ITT Stage 1 in Q1 2025, with the ITT stage 2 auction and announcement of preferred bidders to take place in Q1-Q3 2025.

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 are shown in Table 2.

TABLE 2: EXTENSION PROJECTS

Original Project	Extension Name	Extension Capacity	Operator
Sheringham Shoal	--	up to 317 MW	Equinor ¹
	Status: permitting in progress. The application for a development consent order was accepted on 3 October 2022 and a decision from the UK Government on the application is expected in 2024 (the current deadline for a decision for the application is 17 April 2024).		
Dudgeon	--	up to 402 MW	Equinor ²
	Status: permitting in progress. The application for a development consent order was accepted on 3 October 2022 and a decision from the UK Government is expected in 2024 (the current deadline for a decision for the application is 17 April 2024).		
Greater Gabbard	North Falls	up to 504 MW	RWE, SSE Renewables
	Status: pre-application. The development consent order application is expected to be submitted in 2024.		
Galloper	Five Estuaries	up to 353 MW	Macquarie, RWE, Siemens Financial Services, ESB and Sumitomo
	Status: pre-application. The development consent order application is expected to be submitted in Q1 2024.		
Rampion	Rampion 2	up to 1,200 MW	RWE, Enbridge, Macquarie
	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 early 2025.		
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 UK Government on 19 September 2023.		

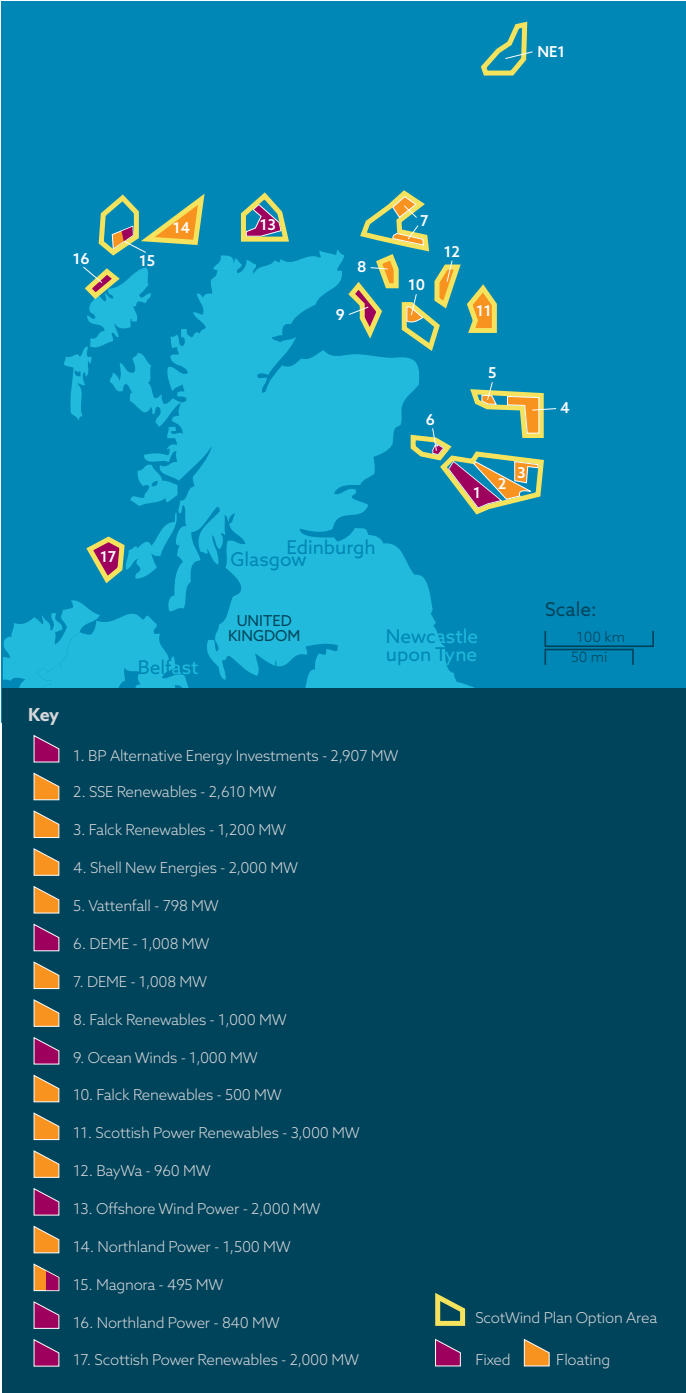
Following requests from the developers of these Extension Projects and the developers of the Dogger Bank D project, the Crown Estate announced in November 2023 that it was launching a formal process to assess capacity increases for these Extension Projects and Dogger Bank D of up to an additional 4GW.

1. The other Sponsors (Macquarie GIG, Equitix and The Renewables Infrastructure Group) to the original project have reserved the right to enter the extension during the construction stage.
2. To be developed in parallel with Sheringham Shoal, given the proximity of the two projects. The other sponsors are Masdar and China Resources (Holdings).

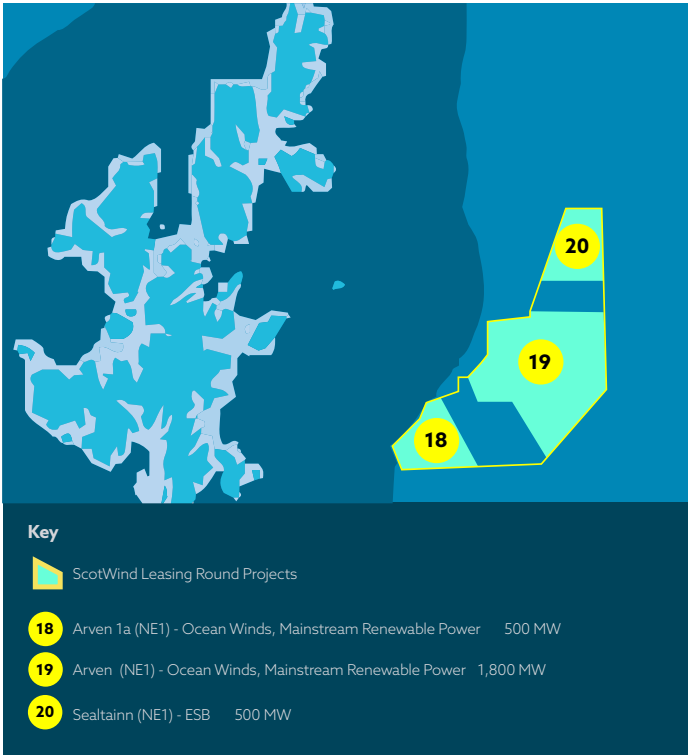
ScotWind Leasing Round (applies to Scotland)

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 three further projects granted rights through the clearing process – refer to Map 17 (initial ScotWind awarded projects, developers and capacity/technologies), Map 18 (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).

MAP 17: SCOTWIND - INITIAL PROJECTS



MAP 18: SCOTWIND - SHETLAND PROJECTS



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.

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	Floating
	Status: pre-planning		
Bellrock (3)	1,200 MW	BlueFloat Energy and Renantis	Floating
	Status: pre-planning		
Bowdun (6)	1,008 MW	Thistle Wind Partners	Fixed
	Status: pre-planning		
Broadshore (10)	900 MW (500 MW*)	BlueFloat Energy and Renantis	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: pre-planning		
CampionWind (4)	2,000 MW	ScottishPower and Shell	Floating
	Status: pre-planning		
Havbredey (14)	1,500 MW	Northland Power	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: pre-planning		
Ossian (2)	3,610 MW (2,610 MW*)	SSE Renewables, Marubeni Corporation and CIP	Floating
	Status: pre-planning		
Sealtainn (NE1 20 (Map 5))	500 MW	ESB	Floating
	Status: pre-planning		
Spiorad na Mara (16)	840 MW	Northland Power	Fixed
	Status: pre-planning		
Stromar (8)	1,000 MW	Ørsted, BlueFloat Energy and Renantis	Floating
	Status: pre-planning		
Talisk (15)	495 MW	Magnora Offshore Wind	Floating
	Status: pre-planning		
West of Orkney (13)	2,000 MW	Corio Generation, TotalEnergies and 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		

* Original projected project capacity

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 UK 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).

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.

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/Renantis Partnership	£5,401,360	IN	99.45
Bluefloat Energy/Renantis 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 UK	£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

CfD Allocation Round 5

Developers of offshore wind farms in the UK can apply for revenue support through a 15-year indexed contract-for-difference (**"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 latest 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. The UK Government noted that inflationary pressures and the impact on supply chains had presented challenges for projects participating in this round, and that similar results had been seen in countries such as Germany and Spain. See Table 5 below for the capacity caps between these pots.

In line with the UK 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 to be held will commence in March 2024 ("**Allocation Round 6**"). The UK Government has announced that the maximum strike price for offshore wind would be increased to £73 MW/h (a 66% increase versus Allocation Round 5) and to £176MW/h for floating offshore wind projects (a 52% increase) in Allocation Round 6.

TABLE 5: ALLOCATION ROUND 5 CFD POTS

Pot	Scope	Allocation
1 – Established Technologies	Offshore wind, Onshore wind (>5MW), Remote island wind (>5MW), Solar Photovoltaic (PV) (>5MW), Energy from Waste with CHP, Hydro (>5MW and <50MW), Landfill Gas and Sewage Gas.	£190M
2 – Less Established Technologies	ACT, AD (>5MW), dedicated biomass with CHP, floating offshore wind, geothermal, tidal stream and wave.	£37M (£10M of which allocated to tidal stream)

OFTO Tender Rounds 10 and 11

Pursuant to the unbundling regime⁴, an entity cannot be both a generator and a transmitter of 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 UK 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. 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”).

Tender Round 10 relates to three UK offshore wind farms, the 1.2 GW Dogger Bank A, the 448 MW Neart na Gaoithe, and the 882 MW Moray West offshore wind farms, which are all at the invitation to tender round. The bidders that passed the enhanced pre-qualification stage include previous OFTO bidders EKITD Consortium and Transmission Capital Partners.

In July 2023, Ofgem confirmed its decision, as consulted upon in November 2022, to modify OFTO licences to: (i) create two new pass-through items which would allow all OFTOs to claim for the cost of carrying out health reviews of their transmission assets, and investment works then required to extend the lifetime of those assets; (ii) allow all OFTOs to claim adjustments for transmission availability lost as a direct result of carrying out the aforementioned activities; and (iii) allow OFTOs licensed in Tender Rounds 1 to 3 to seek to recover additional costs or expenses incurred if VAT is applied to decommissioning costs, where this is not otherwise accounted for in the licence and/or as a result of the disallowance of scrap value from the decommissioning security. These licence conditions came into effect in September 2023.

Building on the July 2021 policy decisions, Ofgem further consulted on the proposed policy framework in relation to the OFTO end of tender revenue stream (“**EoTRS**”). This consultation closed in August 2022 and Ofgem published a decision on 24 January 2024. Ofgem has 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 had 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 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. Ofgem will keep this matter under review, as more evidence on the health and performance of transmission assets becomes available.

Tender Round 11 is set to launch on 14 February 2024 and is expected to include the Dogger Bank B offshore wind farm.

Procurement

The procurement market in the UK (and globally) has faced several challenges in 2023 with increasing pressures on the supply chain availability and overall costs. As a result of the increasing number of projects being built out globally, developers are having to seek early engagement with the market to ensure that there is vessel and factory slot availability locked in to allow the project to meet its target construction dates. Market conditions have also resulted in many projects having to reconsider internal costs as material costs, insurance and interest rates have impacted models that were developed in different market conditions. In our experience, such market conditions are resulting in contractors seeking to discuss the contractual risk profiles historically seen in the wider market.

3. See s.10F, Electricity Act (1989).

M&A Activity

The year 2023 saw significant M&A activity in UK offshore wind. Indeed, in 2023, amongst others, we advised a joint venture owned by Ørsted (50%) and AXA Investment Managers and Crédit Agricole Assurances (jointly 50%) on its GBP1.141 billion sale of the transmission assets of the 1.3GW Hornsea Two offshore windfarm to Diamond Transmission Partners (a consortium of HICL Infrastructure PLC and Mitsubishi Corporation) and, separately, Ørsted on the divestment of its remaining 25% interest in the London Array Offshore Wind Farm to funds managed by Schroders Greencoat. See our press releases here: "Orrick Advises Hornsea Two on GBP 1.141 Billion Sale of Transmission Assets"; and "Ørsted Divests its Remaining Interest in the London Array Offshore Wind Farm".

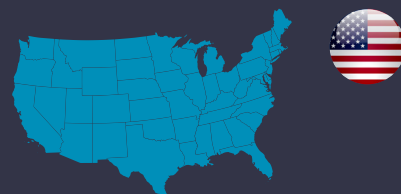
In addition, in March 2023, Daiwa Energy & Infrastructure, a strategic investment arm of Daiwa Securities Group, acquired a 3.3% stake in the Hornsea One project (constructed on its partnership with Equitix). This followed GIP's sale (in 2022) of a 10.2% stake in the project to The Renewables Infrastructure Group, a combined 12.5% stake to Octopus Energy Group and GLIL Infrastructure, and a 12.5% stake to Greencoat UK Wind. Hornsea One benefits from a high CfD (£140/MWh), secured in a one-off non-competitive allocation round in 2014, and this activity clearly highlights the attractiveness of such projects.

Also in March 2023, INPEX Renewable Energy Europe acquired a 16.7% in the Moray East wind farm. This was followed by the acquisition of a 16.6% stake by Equitix in October 2023, topped up with a further 10% stake in January 2024.

In December 2023, Vattenfall announced that it was selling 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. This followed Vattenfall's decision to halt work on Norfolk Boreas in July 2023, given economic challenges associated with the project and a particularly low CfD (£37.35/MWh) secured in Allocation Round 4 in 2022. The sale is expected to complete in Q1 2024.



UNITED STATES OF AMERICA



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The United States offshore wind sector has been making considerable progress and has gained major momentum after a long ramp-up period dating back to the early 2000s. Notwithstanding that the United States offshore wind sector saw some project cancellations, delays and re-negotiations of power purchase arrangements in 2023, significant offshore wind projects continue to advance toward commercial operation. For example, the 806-MW Vineyard Wind and 130 MW South Fork projects reached their steel-in-the-water milestones, and delivered the first power from their initial turbines on January 2, 2024 and December 6, 2023, respectively, to make these projects the first utility scale offshore wind projects in the United States.

In October 2023, New York announced the results of a very competitive offshore wind OREC solicitation, selecting three new offshore wind projects to deliver over 4 GW of power.¹ 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 ORECs.² Other states are also working with developers to offer flexibility and support in reaching industry viability.³ In addition, significant new power purchase agreements are expected to be awarded in 2024 in key offshore markets.⁴ As a result, 2024 is shaping up to be another very important year in United States offshore wind.

Financing Outlook For U.S. Offshore Wind

After growing momentum over the past several years, the timing for financings for some offshore wind projects have slowed due to increases in pricing and interest rates and other factors effecting the economics of the advanced development-stage projects. The financing market for U.S. renewable energy projects remains keenly interested in offshore wind, as more than 50 major lenders and tax equity providers have expressed interest in financing United States offshore wind projects. This includes numerous European lenders with offshore wind financing experience who will likely be a driving force for offshore wind financing in the United States. Some of these European lenders will need to adapt to the financing structures that are unique to the United States renewable energy market, such as tax equity financings (including the potential transfer of tax credits to third party buyers) and the intercreditor arrangements between tax equity and debt. Many lenders (both foreign and domestic) also perceive offshore wind to have heightened construction risk. This perception is likely to change over time as more projects reach commercial operation.

Offshore wind financing will not be limited to European lenders. 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 U.S. onshore wind financing providers will also participate in upcoming offshore wind project financings (including corporate participants). Domestic lenders and tax equity investors are anxious to fund these projects in part because many of the planned U.S. 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, significantly expanded the U.S. federal income tax regime for renewables projects, including offshore wind. The two tax credits available for offshore wind projects are the investment tax credit ("ITC") and the production tax credit ("PTC"). These tax credits will exist for offshore wind until at least 2032. The ITC, which is calculated as a percentage of the cost of the electric generating equipment in a project, starts at 6% and increases to 30% if the project satisfies new prevailing wage and apprenticeship requirements, or if construction begins before an outside date that is 60 days after administrative guidance is published regarding prevailing wage and apprenticeship. IRS guidance on the IRA has been coming out in stages over the course of 2023, with more to come. The PTC, which is calculated based on the quantity of energy produced and sold to an unrelated party over a 10-year period, is worth a base rate of 0.3 cents/kWh and an increased rate of 1.5 cents/kWh, and is adjusted annually for inflation. For qualified facilities placed in service before January 1, 2022, the credit for renewable wind electricity production during the 2023 calendar year is 2.8 cents/kWh.⁵

1. See portal.nyserda.ny.gov/servlet/servlet.FileDownload?file=00P8z000003cmKBEAY.

2. See <https://www.nj.gov/bpu/newsroom/2023/approved/20240124.html>.

3. For example, Connecticut, Massachusetts and Rhode Island announced the United States' first multi-state cooperative offshore wind solicitation, promising a streamlined bidding process in January 2024 with combined solicitations of up to 6 GW of offshore wind.

4. See <https://portal.ct.gov/Office-of-the-Governor/News/Press-Releases/2023/10-2023/Connecticut-Massachusetts-and-Rhode-Island-Sign-First-Time-Agreement-on-Offshore-Wind>.

5. See <https://public-inspection.federalregister.gov/2023-13191.pdf>.

For qualified facilities placed in service after December 31, 2021, the credit is 0.55 cents/kWh.⁶ Projects qualify for the maximum PTC rates by meeting the prevailing wage and apprenticeship requirements, or by beginning construction before the grandfathering deadline. The ITC and PTC amounts can be increased further by up to 10% (for a total increase of 20%) if the project includes a minimum percentage of US-sourced “domestic content,” or if it is located in an “energy community” (generally, a brownfield site, and area with a minimum percentage fossil fuel-related employment or tax revenues, and higher than average unemployment, or near a recently closed coal mine or coal-fired plant).

Prior to the IRA, offshore wind projects could only qualify for a 30% ITC, and there was an additional requirement to begin construction by the end of 2025. The extended tax credit runway, ITC/PTC optionality 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. However, as described above, the tax credit amounts are ultimately contingent on factors such as apprenticeship and prevailing wage compliance. Projects should expect significant scrutiny of their qualification strategies given the cost of the offshore projects and the expectation that multiple tax equity 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 U.S. 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 very high, initially market participants expected most of these projects would elect to use the ITC over the PTC, however, some projects are now also considering directly selling the tax credits or hybrid financings that include tax equity and direct sale transactions, which could include ITCs or PTCs.

In October 2023, Avangrid and Copenhagen Infrastructure Partners closed a \$1.2 billion tax equity financing with J.P. Morgan, Chase, Bank of America and Wells Fargo for the 800 MW Vineyard Wind project — a first-of-its-kind and the largest ever single asset tax equity deal in the U.S. tax equity market.⁷ The financing was a very important milestone for United States offshore wind and serves as a valuable precedent for upcoming financings.

Project Permitting and Environmental Considerations

The Bureau of Ocean Energy Management (“BOEM”) oversees the development of wind projects on the United States’ Outer Continental Shelf, or 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’s roadmap (above right) outlines the overall offshore wind development process. Briefly, BOEM issues leases under either a competitive or non-competitive 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.

6. Id.

7. See 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

8. See 30 C.F.R. § 585.214.



If there is 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.⁸ NEPA requires consultation with appropriate Federal agencies, States, local governments, affected Indian Tribes, and other interested parties.

Following 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 term of 12 months during which time most projects file a Site Assessment Plan (“SAP”) with BOEM for approval. A SAP describes the initial activities needed to study the lease area. BOEM leases provide five years to complete site assessment work. At least six months before that five-year term ends, a COP is due. A COP contains information describing all planned 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. BOEM also must review and approve Facility Design and Fabrication and Installation Reports prior to project development/construction. BOEM is currently in the process of amending its renewable energy regulations, in part to address recommendations by the wind industry. BOEM anticipates issuing these regulations in 2024.⁹

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 associated infrastructure. As a result, the permitting and development process for upcoming projects remains complex and highly project-specific.

Structure of Energy Purchase Transactions (PPAs and OREC Transactions)

Two different transaction structures have been utilized 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 Cape Wind project off of the shore of Massachusetts, the Bluewater Wind project off of the shore of Delaware, and the Block Island project off the shore of Rhode Island, many offshore wind energy transactions have been agreed upon using traditional bilateral PPAs with local utilities. These PPAs have been similar to utility PPAs for U.S. 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.

The second transaction structure is for the purchase and sale of ORECs, representing the environmental attributes associated with one megawatt-hour of 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 U.S. offshore wind, including solicitations in Connecticut, Massachusetts, New York, New Jersey and Rhode Island.

Despite being prevalent in U.S. onshore wind project structuring, corporate or C&I (commercial and industrial PPAs) and hedging transactions have not yet been utilized yet as the primary revenue contract for any of the offshore wind farms under development or construction in the U.S.

Project Interconnection and Transmission

When connecting an offshore wind project to the U.S. 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 U.S. 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 planning and development of transmission necessary 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 April 21, 2022, FERC issued a notice proposing reforms to its *pro forma* Open Access Transmission Tariff, which are intended to improve regional transmission planning and cost allocation for certain types of transmission facilities. If implemented by FERC, the proposed rule would require transmission providers to conduct regional transmission planning on a sufficiently 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 would be required to consider federal, state, and local laws and regulations that would affect the generation resource mix and demand. Such policy considerations would include renewable portfolio standards and other policies supporting the development and integration of renewable resources, including offshore wind. FERC has not yet issued a final rule in this proceeding, but it could do so in 2024.

9. See <https://www.reginfo.gov/public/do/eAgendaViewRule?pubId=202310&RIN=1010-AE04>.

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 proposes to increase study deposit and site control requirements while implementing penalties for withdrawing a request from an interconnection queue. These reforms should 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 more quickly.

While FERC was working on Order No. 2023, the largest RTO in the U.S. – 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. FERC accepted PJM’s proposed reforms in an order issued on November 29, 2022. PJM is currently evaluating further reforms that it might need to make to address FERC’s directives in Order No. 2023, but PJM is already implementing reforms that should accelerate its interconnection study, which would benefit offshore wind projects.

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 the 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.

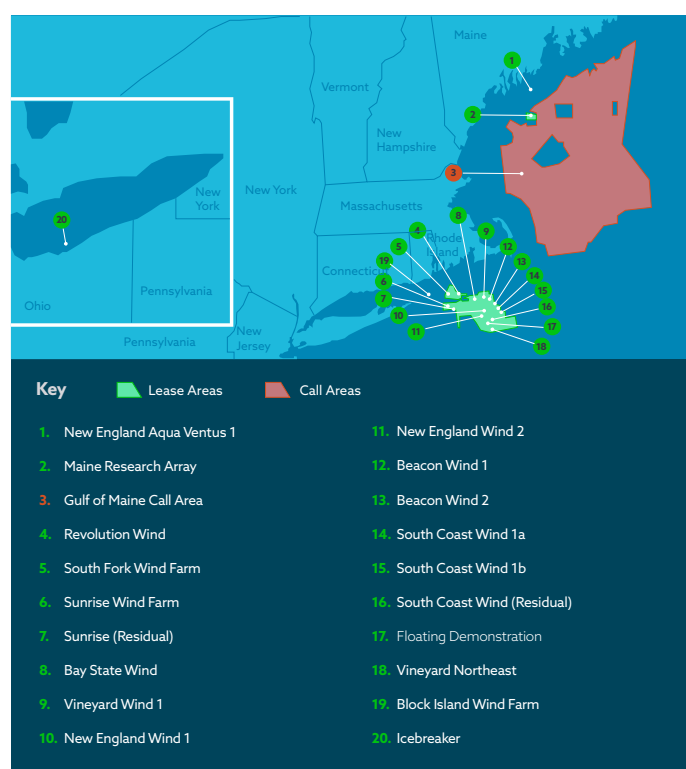
Jones Act

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.¹⁰ 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.”¹¹

The practical effects of the Jones Act ripple through all aspects of offshore wind development. Currently, there are no operating U.S.-flagged jack up vessels (vessels designed to install offshore wind turbine structures). As a result, while efforts to build U.S. flagged vessels progress,¹² one Jones Act compliance strategy employed by developers is the use of U.S. flagged feeder vessels to transport turbine components from U.S. ports for installation by a foreign-flagged jack up vessel. Other approaches suggested are to use a foreign-flagged vessel able to jack up U.S. flagged barges or use of a combination of U.S.-flagged vessels to install turbine foundations and the turbines themselves.

North Atlantic and Great Lakes

MAP 19 UNITED STATES OFFSHORE WIND ACTIVITY IN NORTH ATLANTIC AND GREAT LAKES



United States Department of Energy, Office of Energy Efficiency & Renewable Energy Offshore Wind Market Report: 2023 Edition.

10. We note that the industry must also be aware of the Passenger Ship Act of 1886 that applies to the transportation of passengers in U.S. 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.
11. The U.S. 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.
12. The first Jones Act-compliant turbine installation vessel is scheduled to be completed in late 2024/early 2025. See <https://www.dominionenergy.com/projects-and-facilities/wind-power-facilities-and-projects/charybdis>.

On October 19, 2023, BOEM announced a Draft Wind Energy Area in the Gulf of Maine that covers approximately 3,519,067 acres offshore from Maine, Massachusetts and New Hampshire. According to BOEM's Offshore Wind Leasing Path Forward 2021-2025, BOEM is targeting auctions in the Gulf of Maine in 2024.¹³

The Notice of Availability of a Draft Programmatic Environmental Impact Statement ("PEIS") for Expected Wind Energy Development in the New York Bight was published in the Federal Register on January 12, 2024.¹⁴ There are currently six leases in the New York Bight¹⁵ and

the draft PEIS provides the assessment of the potential impacts (e.g., noise in the marine environment) of wind development in this area of the Atlantic as well as possible avoidance, minimization and monitoring efforts ("AMMMs") to avoid or minimize such impacts. BOEM is accepting public comments no later than February 26, 2024. BOEM will then consider these comments in its preparation of a final PEIS that will inform BOEM's adoption of AMMMs in the applicable COPs of those projects located in the New York Bight.¹⁶

General information about various projects in the North Atlantic and Great Lakes 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	N/A	TBD
3	ME	Gulf of Maine Call Area	N/A	N/A
4	MA/RI	Revolution Wind	Ørsted and Eversource	OCS-A 0486
5	MA/RI	South Fork Wind Farm	Ørsted and Eversource	OCS-A 0517
6	MA/RI	Sunrise Wind 1	Ørsted and Eversource	OCS-A 0487
7	MA/RI	Sunrise Residual	Ørsted and Eversource	OCS-A 0487
8	MA	Bay State Wind	Ørsted and Eversource	OCS-A 0500
9	MA	Vineyard Wind 1 ¹⁷	Avangrid and CIP	OCS-A 0501
10	MA	New England Wind 1	Avangrid	OCS-A 0534
11	MA	New England Wind 2	Avangrid	OCS-A 0534
12	MA	Beacon Wind 1	Equinor and BP	OCS-A 0520
13	MA	Beacon Wind 2	Equinor and BP	OCS-A 0520
14	MA	SouthCoast Wind 1a	Shell, EDPR, and Engie	OCS-A 0521
15	MA	SouthCoast Wind 1b	Shell, EDPR, and Engie	OCS-A 0521
16	MA	SouthCoast Wind Residual	Shell, EDPR, and Engie	OCS-A 0521
17	MA	Floating Demonstration	Shell/ Kent Houston Offshore Engineering/Ocergy	TBD
18	MA	Vineyard Northeast	Avangrid	OCS-A 0522
19	RI	Block Island Wind Farm	Ørsted and Eversource	State Lease
20	OH	Icebreaker	LEEDCo	State Lease

Adapted from United States Department of Energy, Office of Energy Efficiency & Renewable Energy Offshore Wind Market Report: 2023 Edition.

¹³. Available at [boem.gov/sites/default/files/documents/renewable-energy/state-activities/OSW-Proposed-Leasing-Schedule.pdf](https://www.boem.gov/sites/default/files/documents/renewable-energy/state-activities/OSW-Proposed-Leasing-Schedule.pdf).

¹⁴. See <https://www.govinfo.gov/content/pkg/FR-2024-01-12/pdf/2024-00512.pdf>.

¹⁵. 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 (Invenenergy 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.

¹⁶. 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>.

¹⁷. 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>.

Mid and South Atlantic

MAP 20 UNITED STATES OFFSHORE WIND ACTIVITY IN THE MID AND SOUTH ATLANTIC

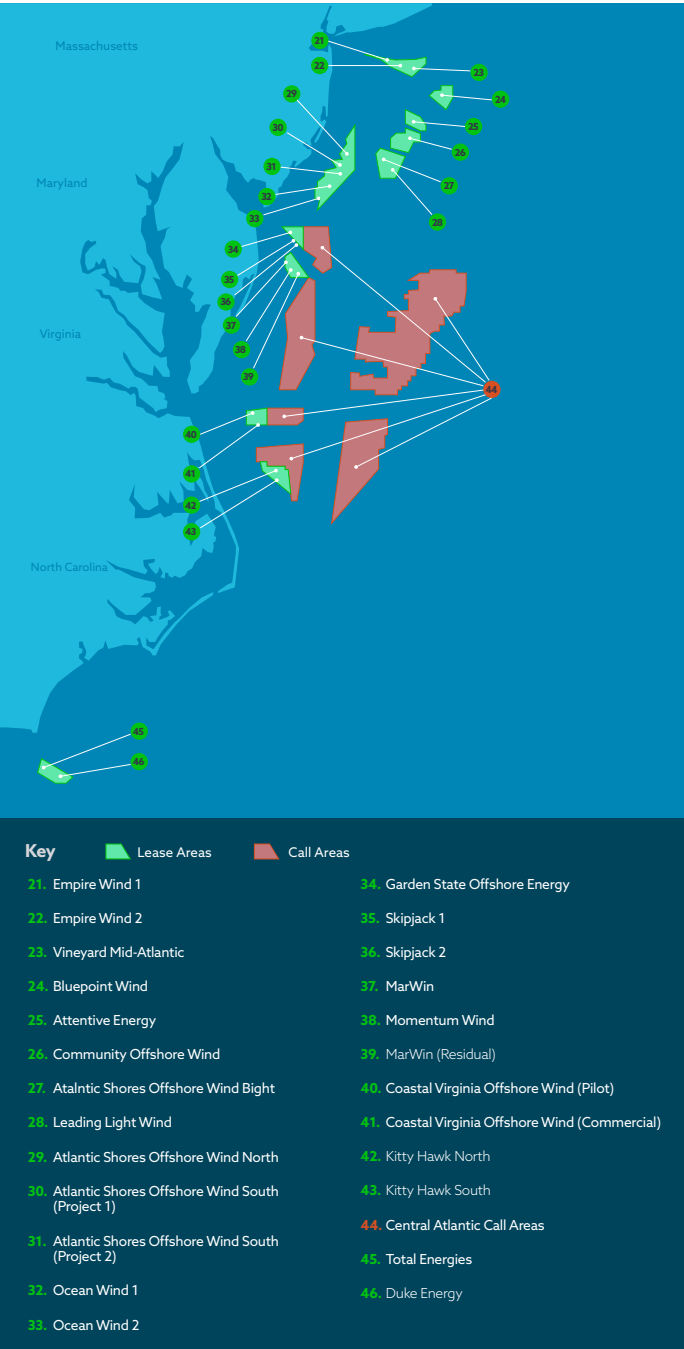


TABLE 2: STATUS OF OFFSHORE WIND DEVELOPMENT IN THE MID AND SOUTH NORTH ATLANTIC

No.	State	Project	Developer	Lease
21	NY	Empire Wind 1	Equinor and BP	OCS-A 0512
22	NY	Empire Wind 2	Equinor and BP	OCS-A 0512
23	NY/NJ	Vineyard Mid-Atlantic	Avangrid	OCS-A 0544
24	NY/NJ	Bluepoint Wind	EDPR and Engie	OCS-A 0537
25	NY/NJ	Attentive Energy	Total Energies	OCS-A 0538
26	NY/NJ	Community Offshore Wind	RWE and National Grid	OCS-A 0539
27	NY/NJ	Atlantic Shores Offshore Wind Bight	Shell and EDF	OCS-A 0541
28	NY/NJ	Leading Light Wind	Invenergy	OCS-A 0542
29	NJ	Atlantic Shores Offshore Wind North	Shell and EDF	OCS-A 0549
30	NJ	Atlantic Shores Offshore Wind South (Project 1)	Shell and EDF	OCS-A 0499
31	NJ	Atlantic Shores Offshore Wind South (Project 2)	Shell and EDF	OCS-A 0499
32	NJ	Ocean Wind 1 ¹⁸	Ørsted and PSEG	OCS-A 0498
33	NJ	Ocean Wind 2 ¹⁹	Ørsted and PSEG	OCS-A 0532
34	DE	Garden State Offshore Energy	Ørsted	OCS-A 0482
35	DE	Skipjack 1	Ørsted	OCS-A 0519
36	DE	Skipjack 2	Ørsted	OCS-A 0519
37	MD	MarWin	US Wind	OCS-A 0490
38	MD	Momentum Wind	US Wind	OCS-A 0490
39	MD	MarWin Residual	US Wind	OCS-A 0490
40	VA	Coastal Virginia Offshore Wind Pilot	Dominion Energy	OCS-A -0497
41	VA	Coastal Virginia Offshore Wind	Dominion Energy	OCS-A -0483
42	NC	Kitty Hawk North	Avangrid	OCS-A 0508
43	NC	Kitty Hawk South	Avangrid	OCS-A 0508
44	DE, MD, VA, NC	Central Atlantic Call Areas	N/A	N/A
45	NC	Total Energies	Total Energies	OCS-A 0545
46	NC	Duke Energy	Duke Energy	OCS-A 0546

BOEM published a Call in the Central Atlantic on April 27, 2022.²⁰ In response, BOEM received nominations of interest from Avangrid Renewables LLC, US Mainstream Renewable Power Inc. and OW North American Ventures LLC. On December 11, 2023, BOEM announced a proposed lease sale for the Central Atlantic to occur in 2024 that includes one area off the coasts of Delaware and Maryland, and off the coast Virginia.

Gulf of Mexico

BOEM held the first offshore wind lease auction for three separate areas in the Gulf of Mexico on August 29, 2023. RWE Offshore US Gulf, LLC won the auction of the Lake Charles Lease Area (OCS-G 37334 (102,480 acres)). It was one of only two bidders. No bids were received for the other two lease areas offered (Galveston I - OCS-G 37355 (102,480 acres) and Galveston II - OCS-G 37336 (96,786 acres)). In addition, on October 27, 2023, BOEM announced that it finalized four additional Wind Energy Areas in the Gulf of Mexico which collectively total approximately 763,337 acres available for leasing.

¹⁸. On October 31, 2023, Ørsted announced that it would cease development of the Ocean Wind 1 project.

¹⁹. On October 31, 2023, Ørsted announced that it would cease development of the Ocean Wind 2 project.

²⁰. See <https://www.boem.gov/renewable-energy/state-activities/central-atlantic>.

Pacific

BOEM accelerated offshore wind development on the pacific coast with its lease auction in December 2022 of five Wind Energy Areas off the coast of California, which will be developed with floating offshore wind turbines in water depths of 500 to 1,300 meters deep.²¹ Each lease awardee (see Table 3 below) executed its lease as of June 1, 2023, and has up to one year from lease execution to submit a Site Assessment Plan to BOEM for review.²² BOEM also released a Notice of intent on December 19, 2023 to prepare a programmatic environmental

impact statement to (i) analyze potential environmental impacts of floating offshore wind energy on the five lease areas and (ii) identify mitigation measures that could lessen those impacts, and which may be required as a condition for approval of a lessee's construction and operations plan.²³

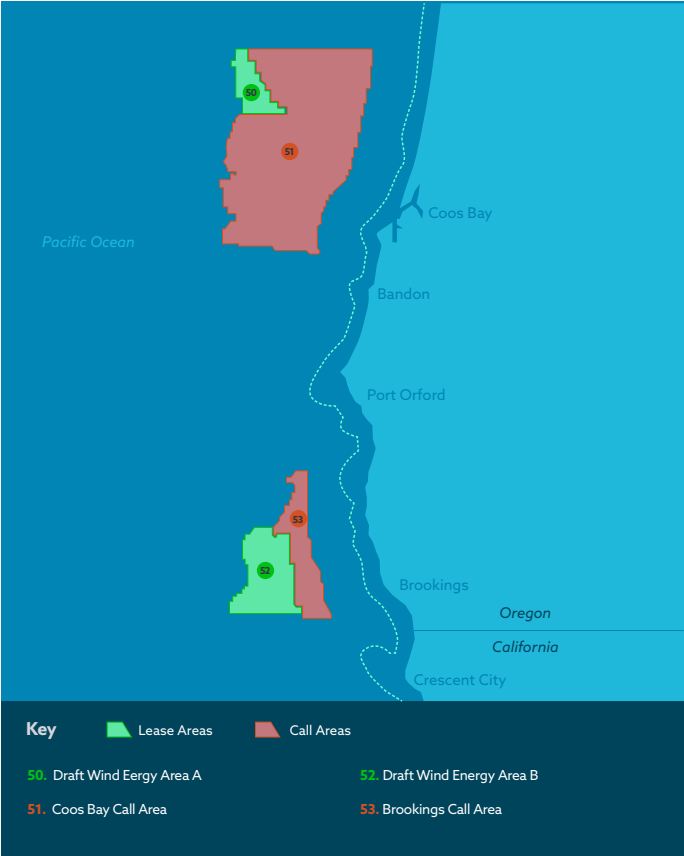
TABLE 3: PACIFIC LEASE AREAS

Lease	Geographical Area	Acres	Winners
OSC-P 0561	North Coast (Humboldt)	63,338	RWE Offshore Wind Holdings, LLC
OSC-P 0562	North Coast (Humboldt)	69,031	California North Floating, LLC
OSC-P 0563	Central Coast (Morro Bay)	80,062	Equinor Wind US, LLC
OSC-P 0564	Central Coast (Morro Bay)	80,418	Golden State Wind, LLC (formerly known as Central California Offshore Wind, LLC)
OSC-P 0565	Central Coast (Morro Bay)	80,418	Invenergy California Offshore, LLC

The State of California has in parallel been taking action to support offshore wind development. In recognition that procurement is key to establishing a path to market, the State Legislature adopted Assembly Bill 1373 in October 2023 to create a central procurement mechanism at the Department of Water Resources for large-scale, long-lead time clean energy sources, including offshore wind. The California Energy Commission ("CEC") has also adopted the AB 525 Offshore Wind Energy Permitting Roadmap²⁴, describing options for a coordinated and efficient permitting and environmental review process for offshore wind projects, and is engaged in an ongoing strategic planning process expected to be completed by early 2024. CEC's strategic plan will address key aspects of offshore wind energy deployment, including procurement, transmission and port upgrades, permitting, supply chains, and workforce training.

BOEM also continues to assess offshore wind leasing opportunities off the coast of Oregon. On August 15, 2023, BOEM initiated a public comment period on two draft Wind Energy Areas (shown opposite)²⁵ within the Coos Bay and Brookings Call Areas, respectively, which could tap up to 2.6 GW of Oregon's offshore wind potential. BOEM will consider these comments as it works to identify final Wind Energy Areas that may be offered in a commercial offshore wind lease auction.²⁶

MAP 21: OREGON DRAFT WIND ENERGY AREAS



21. See <https://www.boem.gov/sites/default/files/documents/renewable-energy/state-activities/CA-PEISOSWFRN.pdf>.
22. See <https://www.boem.gov/renewable-energy/state-activities/california>.
23. See <https://www.federalregister.gov/documents/2023/12/20/2023-27930/notice-of-intent-to-prepare-a-programmatic-environmental-impact-statement-for-future-floating-wind>.
24. See <https://www.energy.ca.gov/news/2023-05/california-continues-advance-offshore-wind-new-report-detailing-options>.
25. See <https://www.boem.gov/renewable-energy/state-activities/Oregon>.
26. Announcement available at <https://www.boem.gov/newsroom/press-releases/boem-identifies-draft-wind-energy-areas-offshore-oregon-public-review-and>.



VIETNAM

authored in collaboration with



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The Power Development Master Plan VIII

The Power Development Master Plan VIII (the “**Master Plan VIII**”) was adopted on 15 May 2023, pursuant to which Vietnam targets to 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 2050¹. 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 2050².

The Ministry of Industry and Trade (“**MOIT**”) has been preparing an action plan for Master Plan VIII, and the drafts have been submitted to the prime minister (“**PM**”) of Vietnam for approval (“**Draft Implementation Plan**”). The Draft Implementation Plan suggests the allocation of offshore wind power projects by region up to 2030 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

An important recent development to note is that the PM has cautiously proposed for the initial development of Vietnam’s offshore wind power projects to be assigned to Vietnam Electricity (“**EVN**”) and domestic investors³. As such, foreign players might not be able to participate in Vietnam’s offshore wind sector in the immediate future.

PPA Bankability Issues

One of the key hurdles to offshore wind development in Vietnam relates to the form of a Vietnamese law power purchase agreement (“**PPA**”) into which developers of offshore wind projects are 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.

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 from 1 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. On 3 October 2022, MOIT issued Circular No. 15/2022/TT-BCT on the method for the formulation of a price framework, effective from 25 November 2022 (“**Circular 15**”), which is designed to compensate for those transitional ground-mounted and floating solar and onshore and offshore wind power plants that signed PPAs with EVN before 1 January 2021 and were not entitled to FiTs. In Circular 15, the earnings after taxes are embedded in the fixed-cost element of the price framework and is determined to be set at 12% (ROE), which is reportedly lower than the current 15%–20% internal rate of return earned by an eligible wind power project under the FiT regime⁴.

1. Master Plan VIII, Section IV.2.

2. Master Plan VIII, Section III.1(c).

3. See: <https://tuoitre.vn/bo-cong-thuong-thieu-co-so-phap-ly-khi-giao-evn-lam-dien-gio-ngoai-khoi-20231017104006217.htm>, in Vietnamese.

4. See: <https://baodautu.vn/dien-gio-dien-mat-troi-het-mo-sieu-loi-nhuan-d160593.html>, in Vietnamese.

The recently issued electricity price for offshore wind projects is capped at 1,815.95 VND/kWh (approx. 7.727 cents/kWh) (VAT exclusive)⁵. Other wind power projects not falling within the scope of application of Circular 15 will have to be subject to a competitive bidding mechanism, the details of which have not been finalised.

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.

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. 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. For now, the expectation is that regulations governing power development in general and PPP projects specifically may be analogously applied to the development of offshore wind farms.

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. The first steps have been taken towards this cohesive framework, with MONRE appraising and continuing to develop a maritime spatial plan setting out where it will be possible to develop Vietnam's offshore wind projects.

Corporate PPAs

In Vietnam, developers must obtain a power generation license from the Electricity Regulatory Authority of Vietnam ("**ERAV**") in order to generate and sell power. At present, state-owned EVN has a monopoly over the transmission, distribution and purchase (wholesale and retail) of offshore wind electricity in Vietnam, and, therefore, corporate power purchase agreements ("**CPPAs**") are not possible. This contrasts with the country's rooftop solar industry where CPPAs are possible. As discussed above, given the credit rating of EVN, the lack of regulation enabling CPPAs is one of the key factors restricting the development of offshore wind in Vietnam.

However, this is expected to change. The MOIT has recently released a draft decree to enable the implementation of a scheme permitting the synthetic purchase of power between renewable energy generators and third-party offtakers. The decree does not impose any limitation on the total capacity of the participating power plants, and sets out two options for private offtakers to purchase electricity from generators. These options are either: (1) through a private grid connection, or (2) through a national grid connection. In order to utilise Option 2, the generators/third-party offtakers must demonstrate (x) that the installed capacity is at least 10MW, and (y) the offtake power will be used for manufacturing purposes with voltage levels of 22 kV or higher. The implementation of Option 2 requires further amendments and guidance on the existing regulations, which remain to be seen.

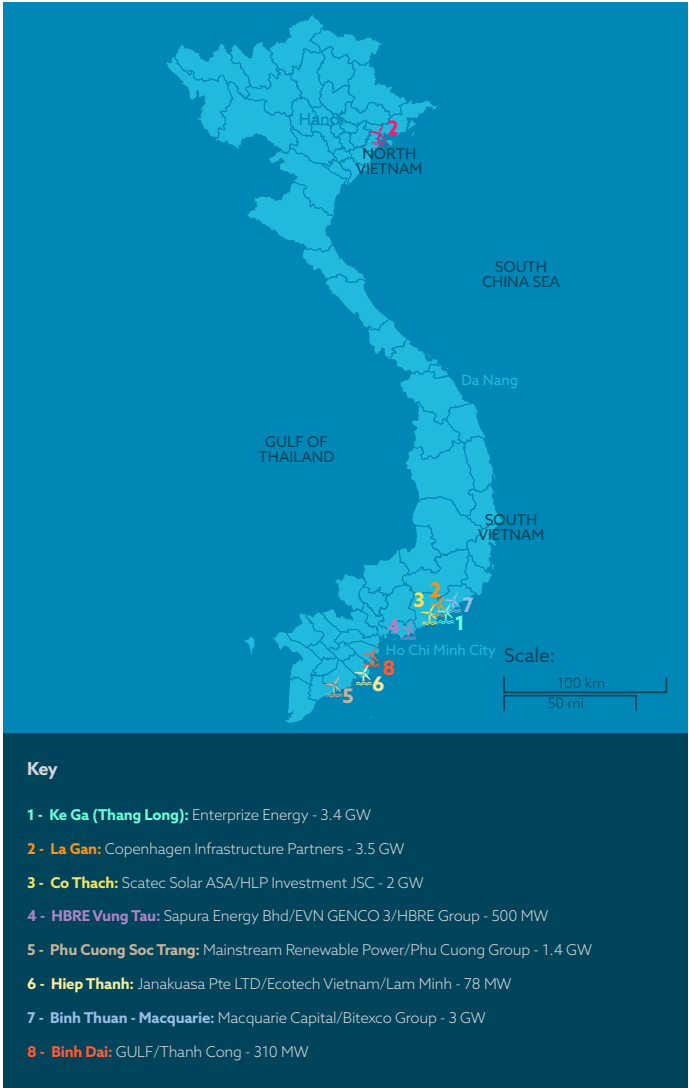
Given the synthetic arrangement with no physical delivery of power, a Contract for Difference will therefore be required to arbitrage the cost between the strike price under the CPPA and the spot price (equal to or less than the ceiling price of the power generation price bracket applicable to renewable power plants). This would be the first time a Contract for Difference would be used in the Vietnam power market.

5. Decision No. 21/QĐ-BCT dated 7 January 2023, providing the framework for electricity prices of transitional solar power plants and wind power plants.

Outlook

Whilst offshore wind development is new territory for Vietnam, once favourable mechanisms have been created to facilitate a viable legal framework and an attractive investment opportunity for international institutions, there is no reason why Vietnam won't be a major player in the offshore wind sector. Indeed, many developers think that the challenges will be overcome with several international sponsors currently developing projects in the country, as set out below.

MAP 22: VIETNAM'S MORE PROGRESSED OFFSHORE WIND PROJECTS





OTHER KEY JURISDICTIONS

Authored by Adam Smith (Orrick) and Oliver Sikora (Orrick) – refer to page 91 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. In 2022, China alone made up almost 49% of the total global offshore wind capacity installed.

In total, 50GW+ of offshore wind capacity is expected to connect to the Chinese grid by 2030. 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). This would make China the world's largest offshore wind market (with the United Kingdom being second).

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.



Italy

Italy has tremendous offshore wind potential. A recent study shows that by 2030, Italy could install up to 5.5 GW of offshore wind capacity, significantly more than the 900 MW target set by the Italian government.

Italy could be at the forefront in the development of floating offshore wind projects, a technology that could overcome the difficulties related to the high sea floors associated with the Mediterranean Sea. The Ministry for Ecological Transition has received several proposals to install 40 floating offshore wind projects off the Italian coasts. The Ministry is now working with the proposing companies to evaluate the projects and, should the evaluation be positive, to authorise them.

The first offshore wind project in the Mediterranean was completed in 2022. The 30 MW pilot project is located offshore of the town of Taranto, and the same developer is exploring solutions for a floating wind project in the Strait of Sicily. Furthermore, the Italian authorities are currently processing a concession application for a new wind energy project in the waters off Taranto.



Lithuania

Although there are no operational offshore wind farm projects in Lithuania, the Lithuanian parliament passed a suite of legislation in April 2022 to facilitate the development of its flagship offshore wind tender of 700 MW in the Baltic Sea.

This approval by the Lithuanian government of the development of offshore wind in the Baltic Sea indicates its strategy to now utilise the sea for its renewable energy potential. The Lithuanian National Energy Regulatory Council (NERC) has since confirmed the joint venture between Ocean Winds and Ignitis Renewables as the winner of Lithuania's first 700 MW offshore wind tender after the partnership was selected in the auction in July 2023 and declared the provisional winner. Subject to obtaining the relevant permits, contracting suppliers and securing financing, the project is expected to become operational by 2030. The 700 MW project is set to cover up to 25% of Lithuania's current annual electricity demand with a further auction for an additional 700 MW offshore wind project launched in January 2024. It is therefore clear that offshore wind will be a key player in Lithuania achieving its green energy targets.



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 plans to have offshore renewables regulations in place by 2024. 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 an MoU between Parkwind and New Zealand power generation company Meridian Energy to explore the joint development of offshore wind projects off the Taranaki coast.



Romania

Romania is still very much in the early stages of offshore wind development but developing, nonetheless. The Black Sea (being the only opportunity for Romania to explore offshore wind and currently not home to any operational wind project) is stirring interest. According to a report, the total potential natural capacity for offshore wind in Romania is expected to be 94 GW, out of which 22 GW could be for fixed-bottom wind turbines, and the remainder for floating.

WPD (now Skyborn Renewables) became the first company, in 2021, to apply for the development of an offshore wind project in the Black Sea. The Romanian Ministry of Energy is now preparing a framework to enable it to auction off 3 GW of offshore wind capacity that should be in operation by 2035 in the country's sector of the Black Sea, and award CfDs to winning projects.

The race is on for Romania to become the first country to develop offshore wind projects in the Black Sea.



Spain

Given the weather conditions, Spain has a strong solar sector, and the Mediterranean does not lend itself well to fixed-bottom projects. However, Iberdrola, responsible for the operation of a number of offshore wind projects worldwide, plans to invest more than EUR 1 billion at home to develop an industrial-scale floating offshore wind farm project. It is hoped that this investment will kick-start the development of up to 2 GW of offshore wind projects identified off the coasts of Galicia, Andalusia and the Canary Islands.

Earlier this year, after five years of negotiations with other stakeholders in the maritime sector, Spain's government approved its first delimitations for where wind farms can be developed off the country's coast. Spain has said it aims to develop as much as 3 GW of installed offshore capacity by 2030.

In addition, Ferrovial and RWE have entered into an MoU to analyse the joint development, construction and operation of floating offshore wind projects off the Spanish coast. Ferrovial has said it expects the new delimitations to allow for more than 20 GW of offshore capacity in Spain.



Sweden

Since the 2022 announcement by the Swedish government to have up to 120 terawatt-hours of generating capacity annually from offshore wind, Sweden has sought to meet its declared target.

The government has given permission for two offshore wind farms off the west coast, despite strong opposition from local residents. In addition, Hexicon and Mainstream Renewable Power have entered into a joint venture and submitted a planning application for a 2.5 GW floating wind farm with the Swedish authorities.

Contrastingly, the Swedish government rejected Vattenfall's application to build an offshore wind farm off Sweden's west coast due to "negative effects on the environment" and "national interests". For the moment, an updated application remains to be seen.

Developers clearly recognise Sweden's massive potential with developer OX2 having a strong pipeline of potential Swedish offshore wind projects and is currently developing the 5.5 GW Aurora wind farm, to be located between the islands of Gotland and Oland. Orrick advised OX2 on the sale of a 49% stake in three offshore wind projects in Sweden to Ingka Investments.



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 25 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, it is expected that Greece will hold its first auctions for offshore wind as early as 2025. 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.

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