Vietnam Offshore Wind Route to Market

April 2022

GWEC
SOUTH EAST ASIA TASK FORCE

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Introduction: Global Wind Energy Council (GWEC)

GWEC is a non-profit trade association that acts as **the authoritative voice for the global wind energy industry**. Our members represent more than 1,500 companies, organisations and institutions in over 80 countries, including manufacturers, developers, component suppliers, research institutes, national wind and renewables associations, electricity providers, finance and insurance companies. GWEC's Task Forces and activities are listed below:

GWEC AFRICA TASK FORCE | GWEC LATIN AMERICA COMMITTEE | GWEC SOUTH EAST ASIA TASK FORCE | GWEC OFFSHORE WIND TASK FORCE | GWEC OFFSHORE WIND TASK FORCE JAPAN | GWEC FLOATING OFFSHORE WIND TASK FORCE

Intelligence

Market intelligence, policy analysis, technical expertise

Summits & Conferences

Creating business environments to discuss challenges, find solutions and network

Advocacy & Policy

Communicating the benefits of wind power and working on regulatory frameworks

Business Matching

Connecting members to the right people to grow your business

Collaboration

Sharing best practices and connecting stakeholders

Capacity-Building

Establishing strong wind energy associations in emerging wind markets, transferring knowledge to stakeholders

3 Key Messages

1

GWEC commends the VN government on taking a leadership role in Southeast Asia with its commitment to be Net Zero by 2050, and its pledge to phase out coal-powered generation by the 2040s: 7-8 GW of OFW target by 2030 in current PDP 8 will play a key role in achieving Net Zero Goal

2

GWEC and the industry is asking for a quick start on “Route To Market” process to define the much needed policy and guidance to facilitate the investors to progress

3

In the Route to Market process, it is crucial to start an OFW transitional mechanism, such as FiT, to prepare the Auction; Expedite the permitting process and improve the PPA bankabilities.

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The Global Offshore Wind Industry

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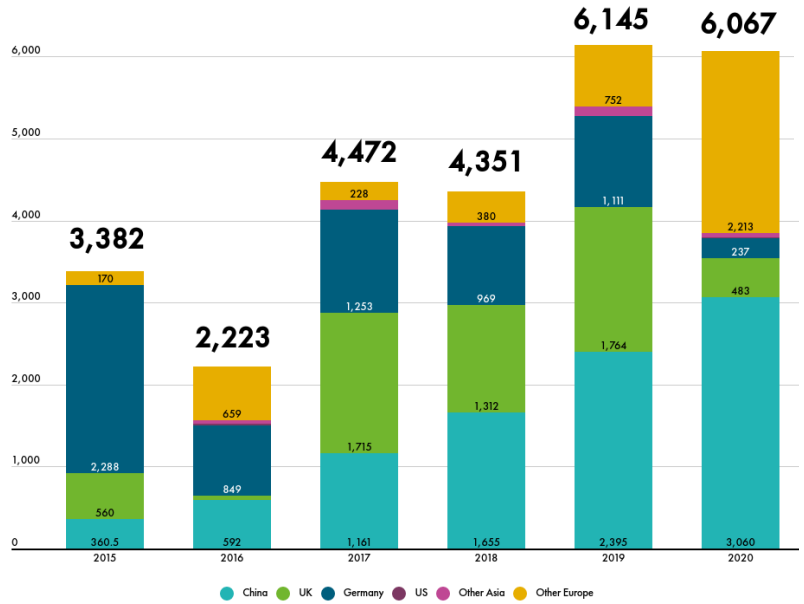
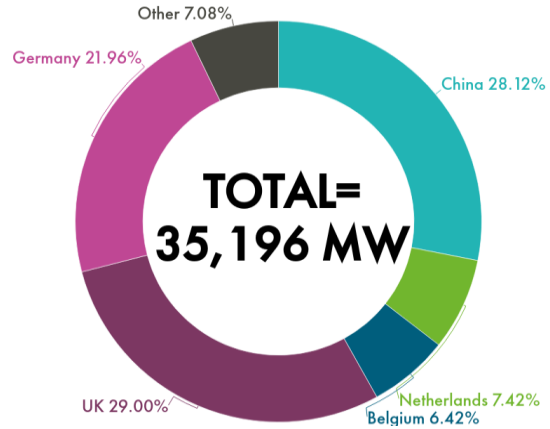
Global Offshore Wind Status to 2020

- Global annual installation reached 6 GW;
- Global total installation reached 35,196MW, which accounts for 5% of the global wind installations;
- Annual market leaders are China, Netherland and Belgium
- Overall, the offshore wind market has grown 106% over the past five years alone; Annual market trippled in 5 years;

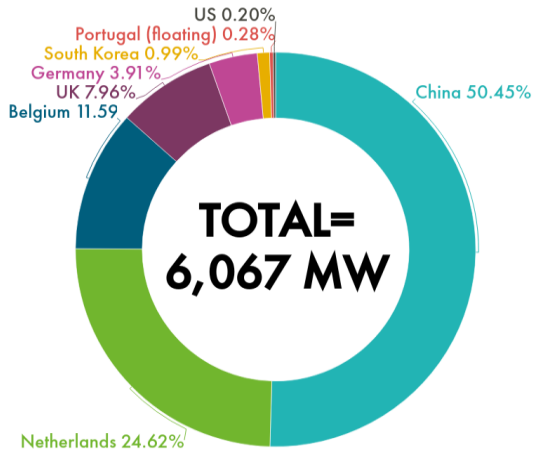
Global annual offshore wind installations from 2015-2020 (MW



Global cumulative offshore wind installations by end of 2020



Global annual offshore wind installations in 2020



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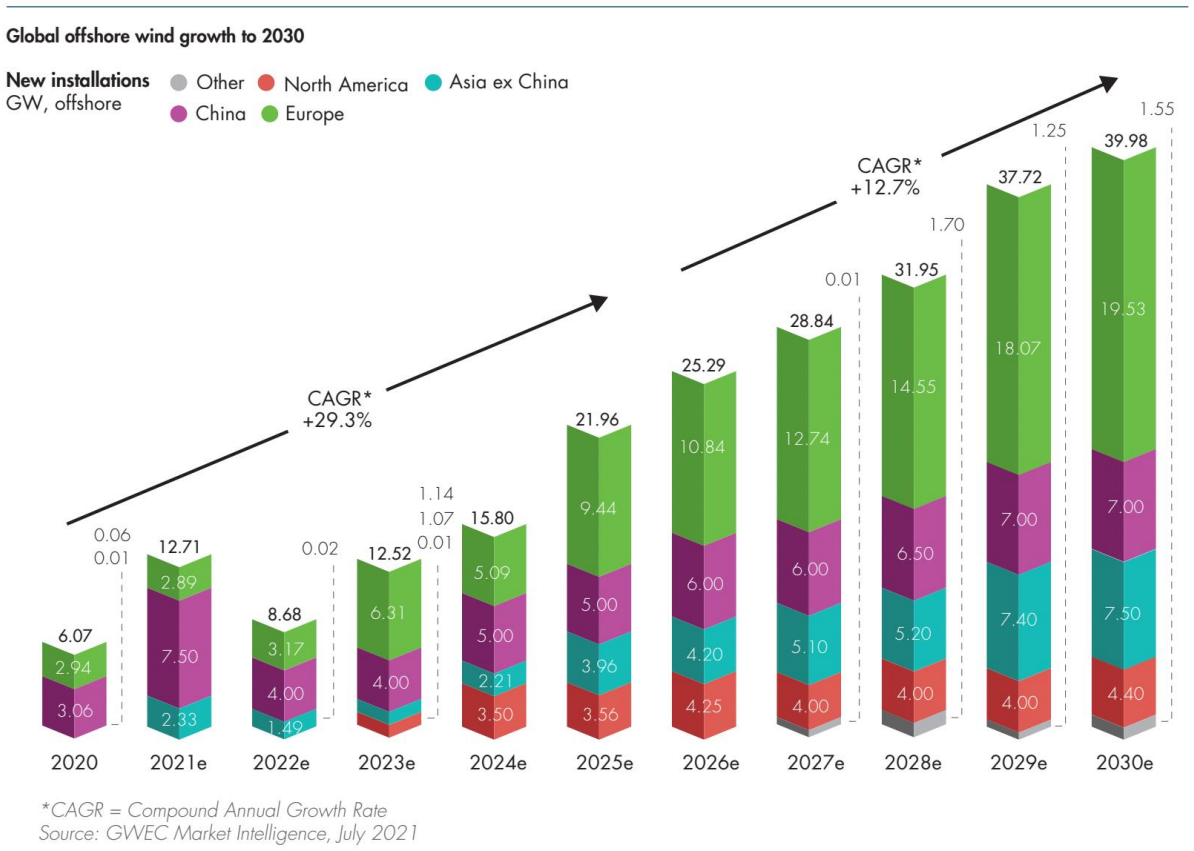
Global Offshore Wind Status (continued)



*CAGR = Compound Annual Growth Rate
Source: GWEC Market Intelligence, July 2021

- With a compound average annual growth rate of nearly 30% until 2025 and 12.7% up to the end of the decade, new annual installations are expected to sail past the milestones of 20 GW in 2025 and potentially 40 GW in 2030;
- Over 235 GW of new offshore wind capacity will be added over the next decade, bringing total offshore wind capacity to 270 GW by 2030;
- New installations outside Europe, predominantly in Asia, already surpassed Europe last year for the first time and this situation is likely to remain through to 2030.

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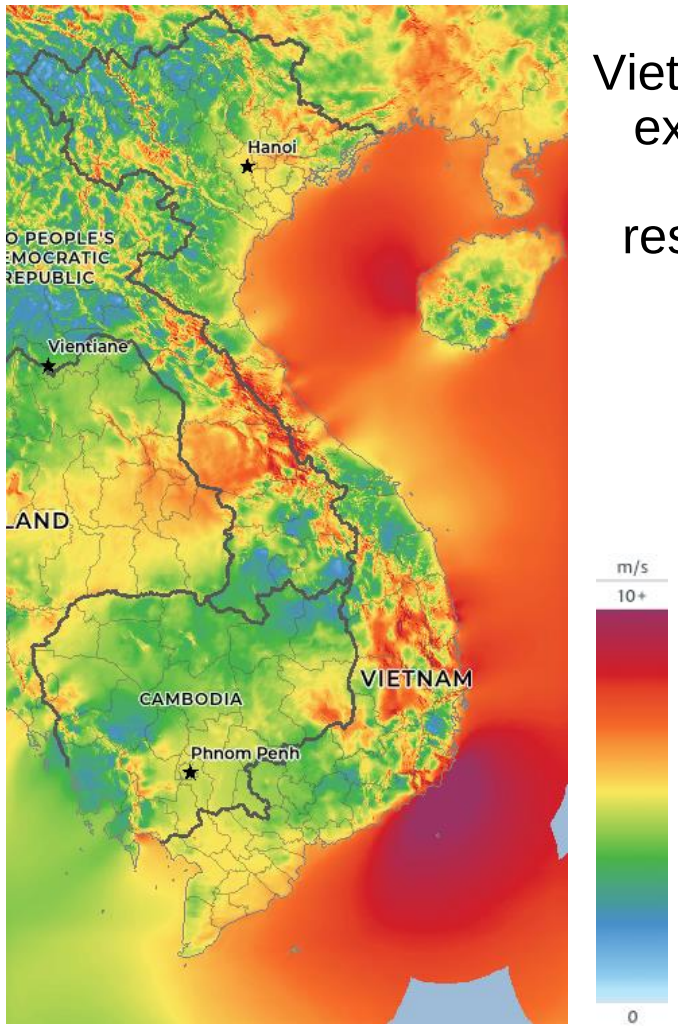
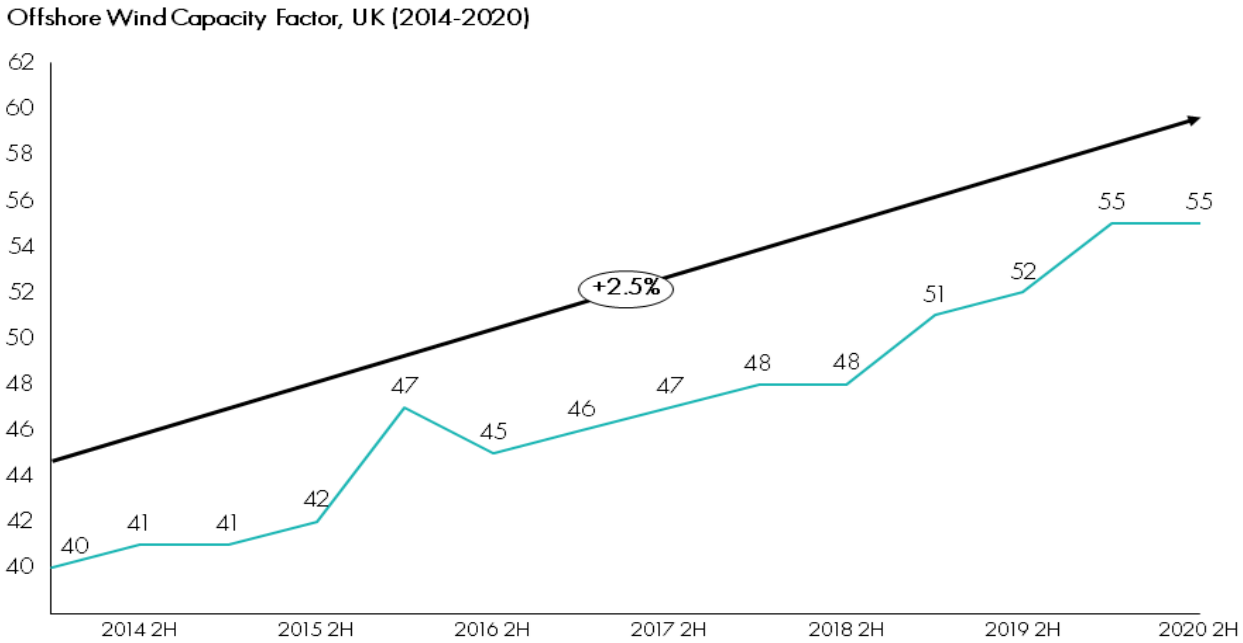
Offshore Wind is the ONLY Baseload Renewable Energy Power Generation Technology – International Energy Association



Source: Global Wind Atlas

Vietnam has excellent wind resources

- Offshore wind can displace fossil fuels baseload generation offering **lower variability, greater stability and greater predictability** compared to other VRE – clean generation while supporting energy security
- Offshore wind has the **highest capacity factors of any VRE** (~50%), on par with the most efficient gas-fired power plants
- More stable generation can increase system flexibility by **coupling with storage solutions** like hydro, pumped storage, batteries and green hydrogen for fuel



Source: BNEF

Offshore Wind Route To Market in Vietnam

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Background

- GWEC commends the VN government on taking a leadership role in Southeast Asia with its **commitment to be Net Zero by 2050**, and its **pledge to phase out coal-powered generation by the 2040s**
- The 20 GW of wind and solar that have been installed over the last three years has cemented the **country's leadership on a coal-to-clean pathway and built confidence towards the net zero target**
- The **7 or more GW of offshore wind** currently planned by 2030 in the PDP 8 is an excellent initial step, and the higher overall targets for onshore and offshore wind by 2045 **send positive signals to industry and investors**
- However, incorporating the 20 GW has been a challenge for the grid – if left unresolved, **grid and transmission bottlenecks could restrict the growth of offshore wind** in Vietnam and **prevent the country from meeting its PDP 8 targets**
- Other challenges, such as **delays to establishing appropriate policies and regulations**, will also affect the fullfillment of the PDP 8 target
- GWEC and its partners would like to **offer support to the Government of Vietnam** with sufficient guidance and regulation for investors to progress to achieve the shared aim to **meet the 2030 OFW targets.**
- With this document GWEC outlines a Route to Market to ensure that this goal is achieved: **Getting the first offshore projects fully online by 2030 means that we need to start today.**

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Benefits of Offshore Wind in Vietnam

The current draft of the PDP 8 has 2030 targets for offshore wind of 7 or 8 GW

- This will bring **investments of more than $20 billion dollars**, port infrastructure upgrades, supply chain investments and significant industrial development

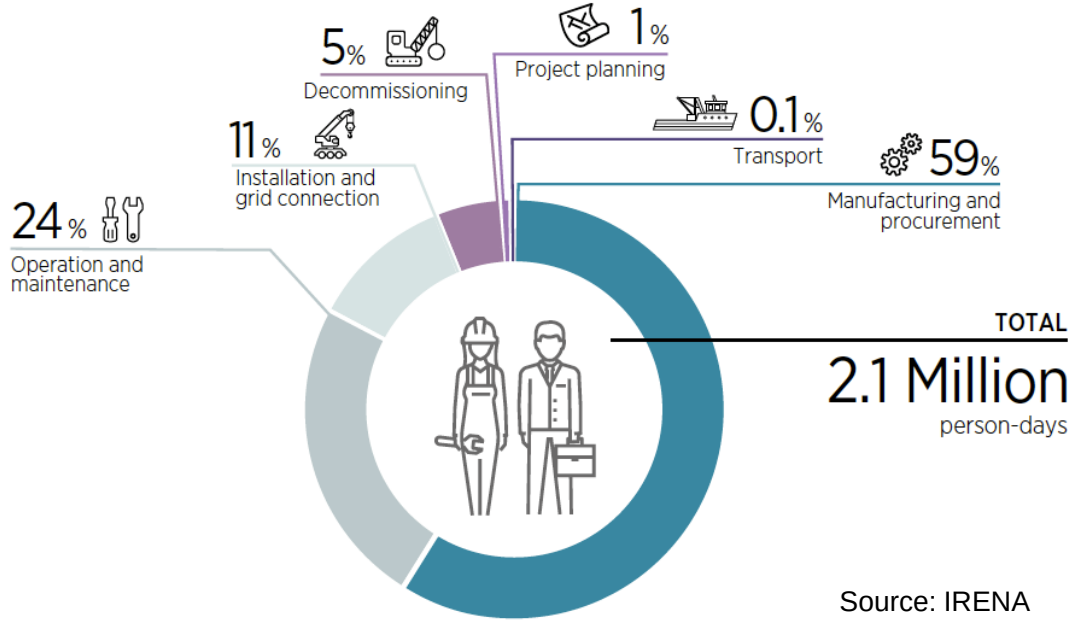
Wind is a domestic resource, **improves energy security** and is not subject to the volatility seen in gas & coal markets

- 7 GW of wind will **avoid $2 billion/year of coal and gas imports**
- Avoiding the export of $2 billion/year will **create 10s of thousands more jobs** domestically

The World Bank Group forecasts that tens of thousands of jobs will be created by offshore wind in Vietnam:

- Illustration is example of 500MW OFW project;
- With a route to market of 8GW, as well as a well-formed strategy for targets every 5 years after this, the % of jobs created in terms of people days will be much higher;

Jobs Created for a 500 MW Offshore Wind Project



Source: IRENA

Vietnam possesses strong existing Capabilities of the supply chain and skills:

- With legacy of O&G industry and manufacturing and construction industries;
- With strong initial level of transferrable skills for the supporting/required workforce & for businesses to adapt to support the offshore wind industry

Statement of challenge: Meet the 7-8GW Target by 2030

Offshore wind (OFW) needs a **clear and feasible Route to Market** to achieve its full potential in Vietnam

- For most countries, the **first generation of OFW projects require 5-7 years,** which means this Route to Market needs to be established within the **next year** to achieve 2030 goals

GWEC and the wind industry believe that Vietnam can **meet the 7-8GW 2030 target**, but only with rapid resolution of several key items, including:

- A process for surveying, permitting and licensing which **outlines how developers obtain acreage, exclusive development rights**, which permits are required and how to obtain them; avoid repetitive surveys which drive high costs across multiple developers;
- A mechanism for offtake of OFW to allow the first tranche of projects to achieve financial close and begin construction before 2026, which should **consider a transitional Feed-in Tariff (FiT) before a competitive auction**
- **PPA and financing issues**, including the bankability concerns of the current wind PPA around curtailment, arbitration, termination and other areas
- **Planning on power evacuation and locational choice** issues, e.g. building OFW in the north of Vietnam to ease transmission bottlenecks
- OFW Definition: Based on the near shore transportation Route/distance off coastal line rather than the water depth;
- A **marine spatial planning (MSP)** framework which addresses cross-sector use and conflict resolution for ocean space (shipping channels, acreage for wind, defense exclusions, commercial fishing, tourism and other ocean uses) and clearly defines the areas for OFW energy: on a longer time horizon and should move without interfere the 2030 goal;
- **Other issues: Supply chain development** planning to strengthen local industry; **Transmission planning and support**, including who owns, pays for and builds the offshore transmission infrastructure; **Port infrastructure**

Proposed way forward

Key to ensuring success is to **define a clear way forward** for all aspects of OFW

- **Given how long it takes to develop an effective auction scheme for offshore wind** (2+ years generally), and the new stage of offshore wind in Vietnam, **GWEC proposes the first 4-5 GW (to be adjusted once PDP 8 finalized) of projects are developed under a FiT**
- A **FiT provides certainty and clarity** to developers, particularly in a new market for offshore wind, takes less time to implement and allows for long-term revenue predictability to enable local supply chain investment
- A FiT can be assigned to projects **through a selection process or a hybrid selection/competition** process which allows for 4-5 GW to access the tariff
- Further study and consultation with industry is needed to determine a suitable FiT level, selection criteria and timelines
- GWEC is ready to support the Government of Vietnam on identifying a feasible offshore wind FiT that can bring 4-5 GW of offshore wind to financial close by 2025
- Marine spatial planning and permitting issues should also be a priority – this to ensure that the projects receiving the FiT have clear rights that will allow better finance terms, lower return expectations, etc. – done incorrectly MSP issues can add years to the project development cycle
- Suggest considering adding more about a centralized and well-organized function/department within the government to coordinate a smoother development/permitting process

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Key Issue #1 – Route to Market defined

Issue

To meet the country's goals for offshore wind (and net zero commitments), action needs to be taken now

Description

- The online date for the first OFW project in Vietnam can be 2028 or 2029 – see timelines on next page
- While aggressive, this is achievable if sufficient urgency is in place

Key Actions

- Government confirms that a transitional FiT will be implemented for the initial 4-5 GW, of selected offshore wind projects, followed thereafter by an auction (see next slide)
- Detail MSP, permitting, licensing and other issues by working with MONRE, GWEC and other stakeholders
- PPA bankability issues (curtailment, termination, etc.) are addressed
- Grid availability and infrastructure issues are considered in the FiT selection process, possibly considering location to help alleviate grid congestion
- Establishing a FiT for the first wave (4-5GW) of offshore wind projects provides enough certainty and visibility for long-term local supply chain investment

Getting the first offshore projects fully online by 2028 – 2030 means that we need to start today.

Using a FiT is the only way for Vietnam to achieve its 2030 goals of 7 or more GW online.

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Key Issue #2 – Timing of auctions

Issue Identification

- Successful auctions take at least two years to develop, slightly less if they follow an FiT.
- As an FiT can be developed in a much shorter time frame, it allows more time for supply chain development.
- Better supply chain development/clarity will allow developers to bid more aggressively in auctions

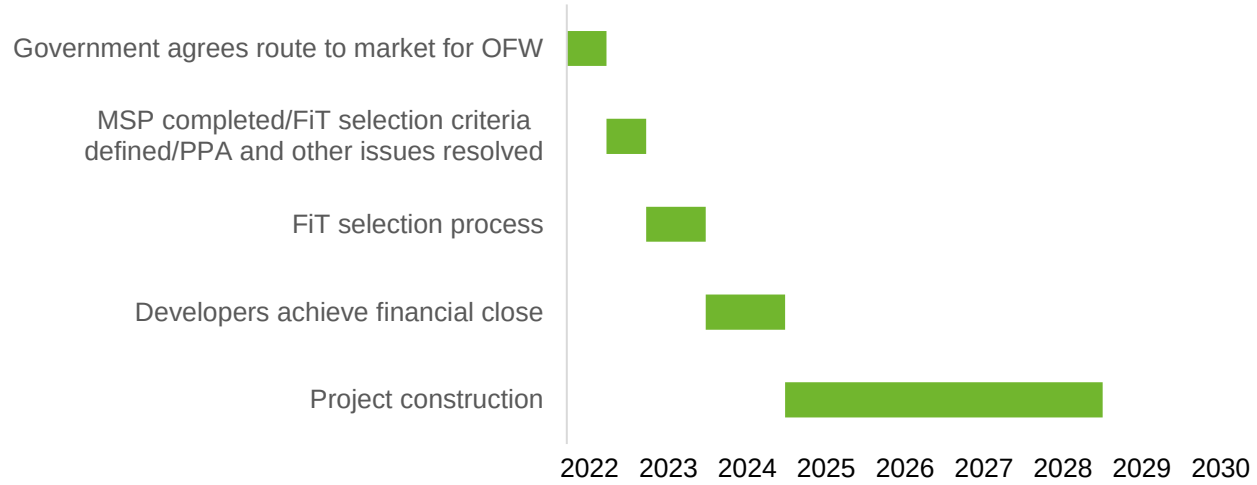
Description

- To help guide government, there should be a view into expected timing of an OFW auction
- The charts on the right show the timeline for an auction that will bring the first auctioned project online in 2029 or 2030.
- Risk of starting directly an Auction without FIT as transition: French OFW first auction failure etc.

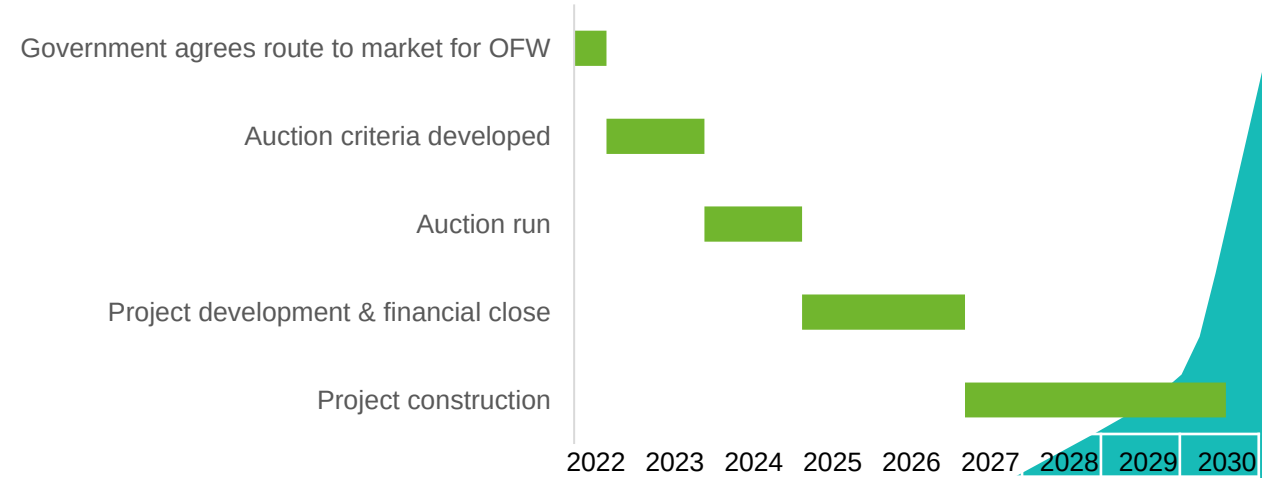
Key Actions

- In Route to Market, define proposed auction timing.
- Focus of 2022 should be on industry consultation to determine the appropriate FiT and learn from international experience.

Timing for FiT Projects



Timing for Auctioned Projects



* Timeline is indicatively for a fixed bottom 500MW project

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Key Issue #3 – Marine Spatial Planning, licenses and permitting

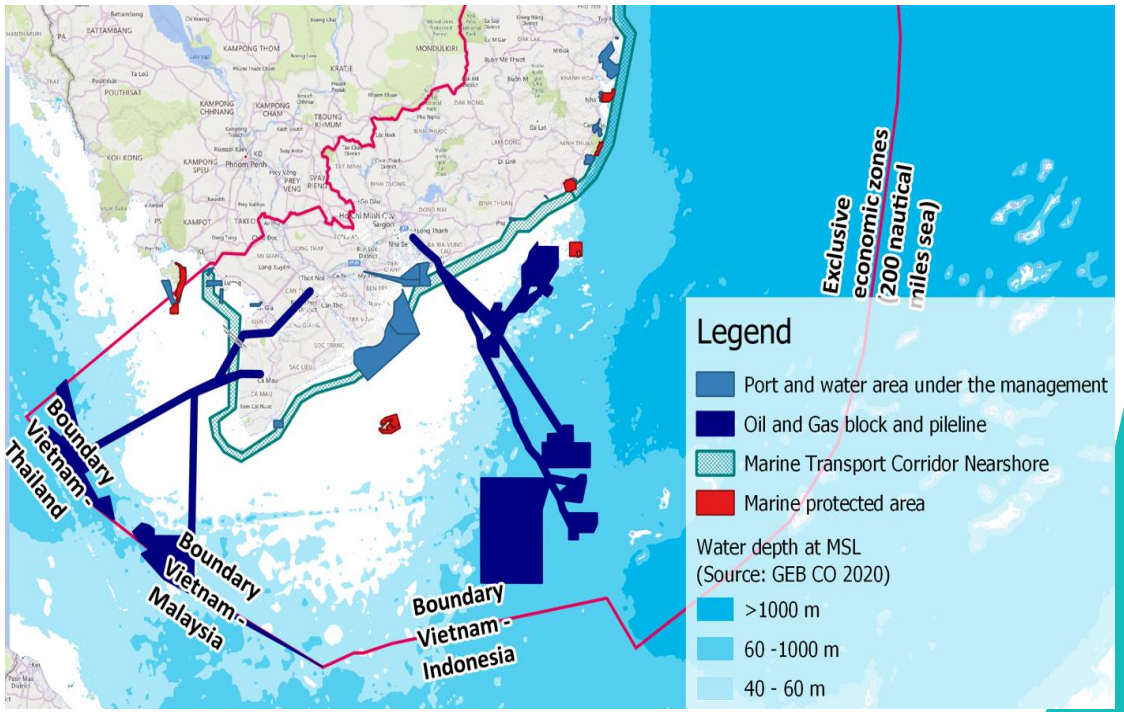
Issue Identification

- Marine spatial planning issues (shipping channels, acreage for wind, defense exclusions, marine protected areas, commercial fishing, tourism and others) and what surveys, permits and licensing (which developers get which acreage, exclusive development rights, what permits are required, etc.) is required

Description

- MSP and permitting issues are a critical early-stage enabler so that developers and government have a clear understanding of where the wind farms will developed, are the rights exclusive, etc. – this before developers spend up to $50 million in surveys, design, consents, etc.
- Currently MONRE appears to have responsibility for granting survey licenses, but many provinces are also issuing licenses to developers – how to ensure exclusivity and avoid overlapping?
- To assist developers, the provinces and other stakeholders, a complete list of all the required permits and licenses should be developed – this should include who is responsible

Resources Map of Southern Vietnam



Key Issue #3 – Marine Spatial Planning, licenses and permitting

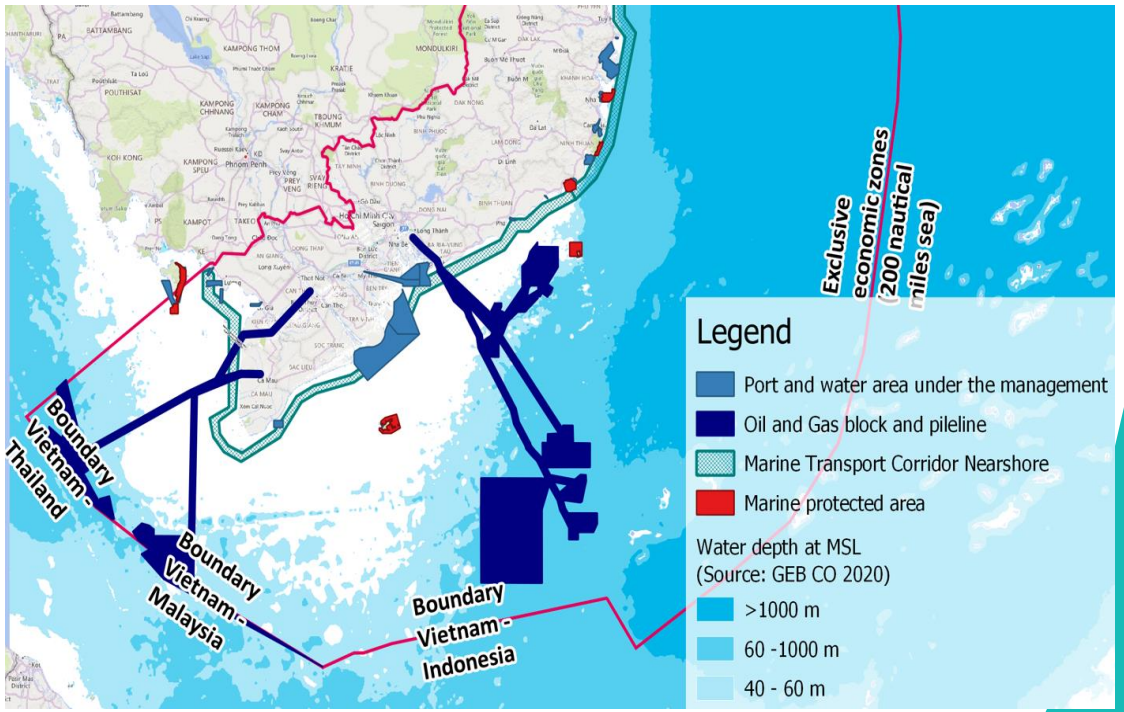
Description

- Ideally there should be a “one-stop shop” with timelines for permit approvals, etc.
- MSP should also coordinate with grid planning and auction design to consider locational issues
- International experience has shown that challenges from other ocean users due to unclear MSP and permitting guidelines can hold up development of OFW projects for years

Key Actions

- Within the Route to Market, define all the issues noted above in regards to MSP, licenses and permitting issues

Resources Map of Southern Vietnam



Key Issue #4 – PPA

Issue Identification

- The current PPA has worked for onshore wind and solar, but offshore wind projects require substantial volumes of finance, and will likely require a consortium of international and domestic banks, multi-laterals and export credit agencies (ECAs)
- There are a number of issues in the PPA that are causes for concern for international finance
- Risks and uncertainty is magnified in a new market: Takes time for a new market to lower its risk profile for the investors

Description

- OFW projects are typically much larger and more complex than onshore projects – a ”small” OFW project costs over $1 billion while most onshore projects are $50-100 million
- Many onshore wind projects have been financed through local bank guarantees – that is unlikely to work given the large scale of OFW projects
- For such large projects, the current PPA has a number of items (curtailment, arbitration, termination, etc.) that are of concern to developers and lenders
- There is room for compromise on some issues, others will need to be addressed if international finance is to be mobilized

Key Actions

- The GWEC Vietnam Finance Working Group composed of international banks, ECAs and domestic banks – we would be pleased to work with the government, EVN, domestic banks and other stakeholders to address some of the concerns in the existing PPA

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Key Issue #5 – Grids, locational planning and ownership

Issue Identification

- Currently the grid is congested in some areas due to the high penetration of wind and solar – the grid was designed to facilitate large gas and coal plants and not the relatively distributed and variable nature of wind and solar
- Who builds and owns transmission infrastructure (e.g. to connect offshore wind to the main grid) is also a question

Description

- Vietnam's power demand is growing rapidly and the grid will need to be expanded to meet this need. With Vietnam's move towards Net Zero, grid development and operation needs to be adapted away from large coal and gas plants to fit the needs of a future with more wind, solar, hydro, batteries, etc.
- In the FiT selection process and the upcoming auctions, location can be considered – projects which are better located in regards to grid congestion can receive higher scores – this to help optimize the grid, limit curtailment and ensure demand can be met
- As the Vietnamese power system further develops, demand side response and other types of programs can be implemented to improve grid flexibility
- Different countries have different models for transmission ownership – these models can be examined to assess their relevance for Vietnam

Key Actions

- Re-imagine how the grid of the future will look in Vietnam as the country moves to toward Net Zero, including the planning and operations of the grid and how future FiT and auctions can help to optimize the grid

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Key Issue #6 – Fit selection process

Issue Identification

- The country has a target of 7 or more GW of OFW by 2030 – the only way to meet this target is to start development of OFW with a FiT, as has been applied in Taiwan and other early offshore wind markets
- If starting with an FiT, and it is limited to 4-5 GW of OFW, which developers should be selected and how is this done?

Description

- FiT selection criteria can be developed and can include:
  - Year of COD of the project: 2027-2028; 2028-2029; 2029-2030
  - Financial strength with key numbers and ratios defined
  - Technical capabilities – to achieve the 2030 targets, it is important that experienced developers with a proven track record of on-time delivery are selected (usually with a local partner)

Key Actions

- GWEC would be pleased to work with MOIT, MPI and other stakeholders to highlight selection criteria used in other countries and to modify them to be relevant in Vietnam

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Thank you!

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