

Discussion Paper  
Research Project on Renewable Energy Economics,  
Graduate School of Economics, Kyoto University

**Preliminary evaluation of obstacles and policy measures to facilitate offshore  
wind power expansion in Vietnam**



March 2024

**Akiko URAKAMI**  
Ph.D. Candidate,  
Graduate School of Economics,  
Kyoto University



## Preliminary evaluation of obstacles and policy measures to facilitate offshore wind power expansion in Vietnam

Akiko URAKAMI

Ph.D. Candidate, Graduate School of Economics, Kyoto University

### Abstract:

This study investigates the significant challenges impeding the advancement of offshore wind (OSW) power in Vietnam during the initial phase of development. The primary objective of this study is to address the increasing electricity demand and reach a target of 6 GW by 2030. The analysis of the existing literature indicates that the primary obstacles to OSW development in Vietnam are inadequate legal and regulatory frameworks and limited transmission grid capacity, rather than financial constraints. To obtain valuable insights from experts, semi-structured interviews were conducted with 16 professionals, including industry experts, international financial organizations, researchers, and legal advisors between November 2023 and January 2024. The majority of experts identified the absence of legal and regulatory frameworks, such as marine spatial planning, investor selection, electricity sales, survey licensing, and grid connection, as the primary obstacles to OSW development in Vietnam. Inadequate infrastructure, including transmission grids and ports, is also a significant challenge. To address these issues, researchers have proposed several recommendations, including 1) implementing pilot projects in various regions with feed-in tariffs before adopting competitive bidding, 2) establishing a regulatory authority to oversee OSW project development, and 3) designing a transmission grid system that can accommodate the generation of OSW power. Exporting OSW to Singapore offers a valuable opportunity to learn from real-world processes and to track the development of its legal framework. A bankable power purchase agreement is critical to attracting international OSW developers and financial institutions.

**Keywords:** offshore wind power, renewable energy, barriers, feed-in tariffs, auctions, transmission grids, private investment, climate change, net zero emission, Vietnam

## 1. Introduction

Vietnam has experienced rapid economic growth and urban development, which has led to a growing demand for electricity. Offshore wind (OSW) power is expected to meet this increasing demand, as it moves towards a low-carbon economy. Vietnam boasts a long coastline of over 3,260 km and advantageous wind conditions, which include all areas with wind speeds above 7 m/s at a height of 100 m, water depth less than 1,000 m, and a minimum size of 10 km<sup>2</sup>, making it an ideal location for OSW generation. The World Bank indicates that by 2030, OSW will meet 5 % of Vietnam's electricity demand in a high-growth scenario corresponding to a 10 GW capacity and reduce fossil fuel reliance. By 2050, it will supply 27 % of Vietnam's electricity with a capacity of 70 GW. These statistics emphasize the significant opportunity for the growth of OSW in Vietnam, making a meaningful contribution to the country's future energy requirements (World Bank, 2021).

In May 2023, Vietnam's Prime Minister (PM) approved the eighth power development plan (PDP8) for 2021-2030 with a long-term vision until 2050 (see Table 1). The plan includes ambitious targets for OSW to achieve 6,000 MW (4 % of the total capacity of power plants) by 2030 and between 70,000-91,500 MW (14.6-15.7 %) by 2050, alongside renewable energy (RE) sources, such as solar and onshore wind power. It estimated a huge investment capital for power generation and transmission grids (see Table 2) (Government of Vietnam, 2023). The aspiring goal for OSW power outlined in PDP8 demonstrates Vietnam's dedication to reaching a net zero emissions target by 2050, as committed by the country's PM at COP26 (Viet Nam Government Portal, 2021).

Table 1. Power Generation Capacity in 2020 and Projected Capacity in 2030 and 2050

Generation capacity (MW)/ percentage of total (%)	2020		2030		2050			
	MW	%	MW	%	min.(MW)	max.(MW)	min.(MW)	max.(MW)
(1) Gas- and oil-fired power (2050: LNG+Hydrogen)	9,030	13	37,330	24.8		14,930	3.1	2.6
(2) <b>Coal-fired power</b>	20,431	29.5	30,127	20.0		0		0
Traditional thermal power generation (1)+(2)	29,461	42.5	67,457	44.8		14,930	3.1	2.6
(3) Converted coal (biomass, ammonia, etc.)	0	0	0	0	25,632	32,432	5.3	5.5
(4) Hydrogen conversion (+Hydrogen-fired LNG thermal power generation)	0	0	0	0	20,900	29,900	4.4	5.1
(5) Hydropower	20,685	30	29,346	19.5		36,016	7.5	6.2
(6) Onshore wind power	630	0.9	21,880	14.5	60,050	77,050	12.5	13.2
(7) Offshore wind power	0	0	6,000	4	70,000	91,500	14.6	15.7
(8) Solar power	16,640	24	12,836	8.5	168,594	189,294	35.2	32.4
(9) Biomass	570	0.82	2,270	1.5	6,015		1.3	1.0
Renewable Energy (RE) (6)+(7)+(8)+(9)	17,840.00	25.72	42,986	28.5	304,659	363,859	63.6	62.3
(10) Stored power (2030: Included pumped storage power generation 2,400MW)	0	0	2,700	1.8	30,650	45,550	6.4	7.8
(11) Cogeneration	0	0	2,700	1.8		4,500	0.9	0.8
(12) Imports	1272	1.83	5,000	3.3		11,042	2.3	1.9
(13) Flexible power sources	0	0	300	0.2	30,900	46,200	6.4	7.9
Total (1)-(13)	69,258	100	150,489	100	479,229	584,429	100	100

Note: Recategorized and recalculated the data using the PDP8 (Decision 500/QD-TTg).



Table 2. Planned investment capital for power generation and transmission grids (PDP8)

Types	2021-2030	annual capital	2031-2050	annual capital
Power generation	119.8	12	364.4 – 511.2	18.2 – 24.2
Transmission grids	15	1.5	34.8 – 38.6	1.7 – 1.9

Unit: billion USD

Currently, no operational OSW projects exist in Vietnam. Instead, existing projects installed in the waters are nearshore and intertidal. The majority of the engineering, procurement, and construction (EPC) contractors for these 21 intertidal wind projects (779 MW) were adopted by the feed-in tariff (FIT) and fully or partially reached their commercial operation date (COD) in 2021. They were mainly from China (Williams & Zhao, 2023). Since November 2021, the government of Vietnam (GoV) has not issued any financial incentives, such as FITs and auctions, for all wind power projects, although GoV has a target of 21.8 GW onshore wind power in addition to 6 GW OSW by 2030.

The study of OSW highlights several barriers including an underdeveloped regulatory framework, imperfect bureaucratic procedures, and immature infrastructure and supply chains. A power purchase agreement (PPA) mainly includes non-bankable elements such as off-take (curtailment) risks, termination, and international arbitration for most international investors (Do et al., 2022). However, previous investors who applied for FITs concluded such non-bankable PPAs with Vietnam Electricity (EVN), a state-owned company and a single buyer.

Despite executing a few nearshore wind power projects, Vietnam lacks the knowledge and skills required to pursue the official incentives for OSW. It is essential to enhance international cooperation and establish partnerships with countries that have demonstrated expertise in advancing OSW energy technologies. Furthermore, the challenges of transmission grid connections and other infrastructure are within the scope of OSW projects. Integrating OSW into the existing grid infrastructure requires substantial investment and careful planning to ensure its reliability and stability (World Bank, 2021).

The timeline for completing OSW projects typically spans 6-8 years, from the initiation of development to the start of construction, provided that all relevant regulatory approvals are obtained. If the GoV requires several years to prepare for new regulations, it is unlikely to meet the 2030 target. Therefore, it is essential for the GoV to commence pilot projects as soon as possible (Dung, 2023; Williams & Zhao, 2023).

In February 2023, the PetroVietnam Technical Services Corporation (PTSC) of Vietnam and the Sembcorp Utilities Pte. Ltd. (SCU) of Singapore finalized a cooperation agreement for the export of energy derived from the OSW operating in Vietnam to Singapore. The agreement was signed in conjunction with a visit by the Prime Minister of Vietnam to Singapore. The initial capacity of energy export is approximately 2.3 GW and will be transmitted over approximately 1,000 km of high-voltage subsea cables. Singapore has provisionally approved

an import plan for 1.2 GW of OSW energy from Vietnam, which will help it achieve its goal of importing 4 GW of renewable energy by 2035. (Hoang, 2023; Trang, 2023).

The extent of academic research exploring the present state of OSW in Vietnam is limited, despite the evaluation of pertinent publications and documents from development banks and legal firms, as delineated in Section 3. Conducting a study that identifies the initial barriers to OSW projects and provides preferable policies at the initial stages of OSW power projects is valuable. This study aims to investigate the most significant obstacles to OSW development in Vietnam, which are inadequate legal and regulatory frameworks and the limitations of transmission grids, rather than financial constraints.

The remainder of this paper is organized as follows. Section 2 introduces the methods used in the study. Section 3 reviews the literature on the status of OSW-related activities led by the GoV and relevant stakeholders and identifies significant barriers to OSW development in Vietnam. Section 4 presents the qualitative analysis findings from interviews with experts, discussions on critical barriers at the initial stage of developing OSW, and policy recommendations for managing the barriers. The final section concludes the study and considers potential areas for further research.

## 2. Methodology

This study incorporated semi-structured interviews with experts on onshore and offshore wind-power development and transmission grids in Vietnam. Interviews were conducted in both Vietnam and Japan, with a mix of in-person and online sessions, between November 2023 and January 2024. The author employed mixed methods of a purposive sampling technique to tap into the network of stakeholders engaged in wind power development and related activities in the country (Timmermans & Tavory, 2012) and snowball sampling after identifying several candidates from the author's professional connections. There were 16 experts (about 50/50 from domestic and international sources), including industry, financial institutions, researchers, and legal advisors, aiming at participants in a balanced manner. The interviewees' names and organizations were treated confidentially.

The author inquired about the obstacles that hinder the development of OSW in terms of legal and regulatory frameworks, financial incentives, potential funding sources, infrastructure such as transmission grids and ports, initial steps that could be taken, and platforms that affect the policymaking process for OSW development using a questionnaire that was shared beforehand (see Appendix 1). The interviews were carried out for roughly 50 to 60 minutes, depending on the interviewees' willingness to express their thoughts. Additionally, some specialists with a technical background in transmission grids concentrated mainly on particular questions regarding the current state and problems of Vietnam's power systems that are relevant to the development of OSW energy. The interviews were analyzed using the MAXQDA coding system to uncover emerging topics and ideas and to identify connections and contradictions among diverse thoughts, which helped in developing theoretical frameworks (Timmermans &



Tavory, 2012). Three major obstacles were identified during the interviews: i) unclear uncertain legal and regulatory landscapes, including a lack of authority), ii) scarcity of financial incentives, and iii) constraints imposed by the transmission grid constraints on OSW projects.

In addition to the data generated by the interviews, various reports on issues related to OSW development and climate change, which were analyzed by different initiatives and research institutions, multilateral development agencies, consulting firms, and newspapers, were also complemented by a limited number of academic studies.

### **3. Literature Review**

#### **3.1 Overview of the offshore wind (OSW) power industry and its potential**

The OSW energy sector has experienced considerable global expansion and progress in several countries. Significant investments in OSW by countries, such as China, the United Kingdom, Germany, and Denmark, have resulted in increased installed capacity and cost savings. There are critical enablers of OSW development worldwide, including the facilitation of onshore and offshore grid deployment, design of seabed allocation mechanisms, streamlined approval processes, reduction of auction price risk through indexation to inflation and commodities, a transition from cost to value through consensus with generators and off-takers, alignment of seabed available for development with global long-term climate goals, collaboration between public and private sectors, broader coordination for clean power development, economic growth, job creation, and energy security, and promotion of efficient operations through a dedicated leasing authority (Williams & Zhao, 2023).

#### **3.2 Exploration of the legal framework surrounding offshore wind power for Vietnam**

Vietnam lacks a comprehensive legal and regulatory framework focusing on OSW projects. According to the survey and follow-up semi-structured interviews conducted by the researchers between January and September 2021, all survey respondents identified an insufficiently developed policy framework and incomplete bureaucratic procedures, including incomplete leases and licenses, as the main policy barriers to offshore wind projects in Vietnam. There were no specific targets for OSW development before 2020, and the three-year FIT duration for OSW generation was too short, accounting for 44 % of the survey respondents. Furthermore, they pointed out that no financial mechanisms encompass significant initial expenses, which have given relevant stakeholder uncertainty since the FIT expired in October 2021 (Do et al., 2022).

Vietnamese researchers mention that policies on investment procedures, power purchases, and sale contracts/prices between project investors and EVN (a single buyer) have not been thoroughly promoted. They also emphasize that proper government support and transparent legal procedures are inevitable (Doan & Tran, 2022).

International researchers point out the uncertainty of the future FIT and auction mechanism after the previous FIT expired in 2021, and the necessity of an effective marine spatial plan

(MSP) that allocates appropriate zones for OSW projects and relevant infrastructure, such as ports and undersea cables (Nguyen et al., 2022). Vietnam has not approved the national MSP, which is inevitable for OSW development, because several factors, such as insufficient data and expertise, and inconsistency with existing plans, lead to delays in project approval (Phan, 2023). There seems to be a rigid legal framework in several dimensions, including the allocation of rights on seabed licensing; however, the GoV does not have specific regulations that can give developers clear steps (Do et al., 2022).

The article on OSW in the Asia-Pacific region presents several benefits of introducing a FIT in the early stage of OSW deployment if the government considers the balance between the necessity of incentives and the cost burden for the long term. FIT can secure guaranteed remuneration for the electricity produced by OSW generators and provide investors with predictable and stable revenues. This can contribute to attracting investment in the early stages of development, when the technology is still relatively unsure and expensive. Additionally, FIT can help enhance industry and establish an OSW market (Hughes & Longden, 2024).

### 3.3 Examination of the transmission grid constraints facing OSW projects in Vietnam

Vietnam needs to upgrade its transmission grids to accommodate large-scale OSW; however, it is estimated to take at least five to ten years from design to construction, and a considerable investment (Phan, 2023; Williams & Zhao, 2023). The revised PDP7 assessment report (MOIT, 2022) revealed that investment in the construction of 500-220 kV power grids exceeded the approved amount, and some projects faced delays owing to factors such as financial constraints, technical construction solutions, postponements of other relevant works, including power plants and substations, and varying land compensation and support policies among provinces. In recent years, households have constructed temporary houses in foundation locations and corridors to claim compensation, which has caused project delays.

The northern region of Vietnam faces a power deficit, whereas the southern region has a promising wind and solar energy potential. Building transmission lines that connect the two regions is crucial for development. PDP8 estimates that constructing these lines will require US\$1.5 billion annually until 2030 and US\$1.9 billion annually until 2050. Historically, EVN has been responsible for grid maintenance; however, the Electricity Law now allows private sector companies to operate grids if they finance their construction. However, EVN's financial limitations have led to a loss of over 1.12 billion in 2022. Therefore, private sector investment is essential for expanding the transmission grid network (Government of Vietnam, 2023; Nguyen, A, 2023).

According to a report from EVN on December 1, 2023, the Deputy Prime Minister of Vietnam, Tran Hong Ha, authorized the National Power Transmission Corporation (EVN NPT) to invest in two 500 kV transmission line projects. The first project, Quang Trach-Quynh Luu, spans approximately 225.5 km and connects the Quang Trach Power Center in Quang Binh Province to a point 300m from the Quynh Luu 500 kV substation in Nghe An Province. The



second project, Quynh Luu - Thanh Hoa, spans approximately 91.8 km and extends from a point 300m from the Quynh Luu 500 kV substation to the Thanh Hoa 500 kV substation, crossing Nghe An and Thanh Hoa provinces. Both projects aim to improve the transmission capacity, guarantee power supply to northern regions, alleviate existing transmission lines, and transmit energy from northern central power plants to the national grid. The total cost of the Quang Trach-Quynh Luu project is estimated to be VND 10,110.915 billion, and the total cost of the Quynh Luu-Thanh Hoa project is estimated to be 4,116.027 billion. The deadline for completing these projects is June 2024, with an implementation period spanning 40 months from 2023 to 2025 (EVN, 2023a). They are part of PDP8, but the Prime Minister's request expedited the entire process for the 500 kV transmission line, as confirmed by interviews with experts.

A report by GIZ (2021) identified the main obstacles to the development of OSW power projects in Vietnam, including the need for grid expansion and the potential for grid congestion owing to the geographic distribution of wind resources. To overcome these challenges, measures such as investing in transmission infrastructure, using power flow models to evaluate grid capacity, and implementing regional differentiation in FIT and market zones can facilitate the integration of OSW power into the energy system and ensure a reliable and efficient transmission grid to support renewable energy generation.

Another study (Nguyen et al., 2022) indicated that insufficient infrastructure plans, including ports and undersea transmission lines, are required for large-scale OSW farm deployment, limitation of potential transmission grids, and curtailment matters, especially in provinces where many solar power farms are installed and curtailed. Flexible solutions are required to accommodate higher shares of RE sources whose power output fluctuates.

According to international researchers, Vietnam is yet to establish marine planning and regulations for connection points between offshore wind farms and onshore grids. In addition, the country's inadequate transport infrastructure hinders the delivery of heavy and bulky wind turbines and towers. For grid connectivity from OSW sites, the research indicates that mandating OSW developers to connect their farms to the onshore grid would be more appropriate in the context of Vietnam. Connection from OSW sites to the national grid would be another option if the Electricity Law and relevant regulations allowed the private sector to invest in the transmission grid from the onshore connection point to the national grid (Do et al., 2021). In Japan, OSW power developers are responsible for building the necessary transmission infrastructure to connect OSW farms to the national grid, whereas the government and regional utility companies play important roles in setting regulations and technical standards and managing the integration of OSW power into the broader grid infrastructure (Li, 2022). Taiwan also applies for the same approach as Japan (Gao et al., 2021).



## 4. Findings and Discussion

Based on an analysis of various documents and interviews, this section discusses the critical barriers to developing OSW in Vietnam and provides possible policy options with a focus on the initial phase.

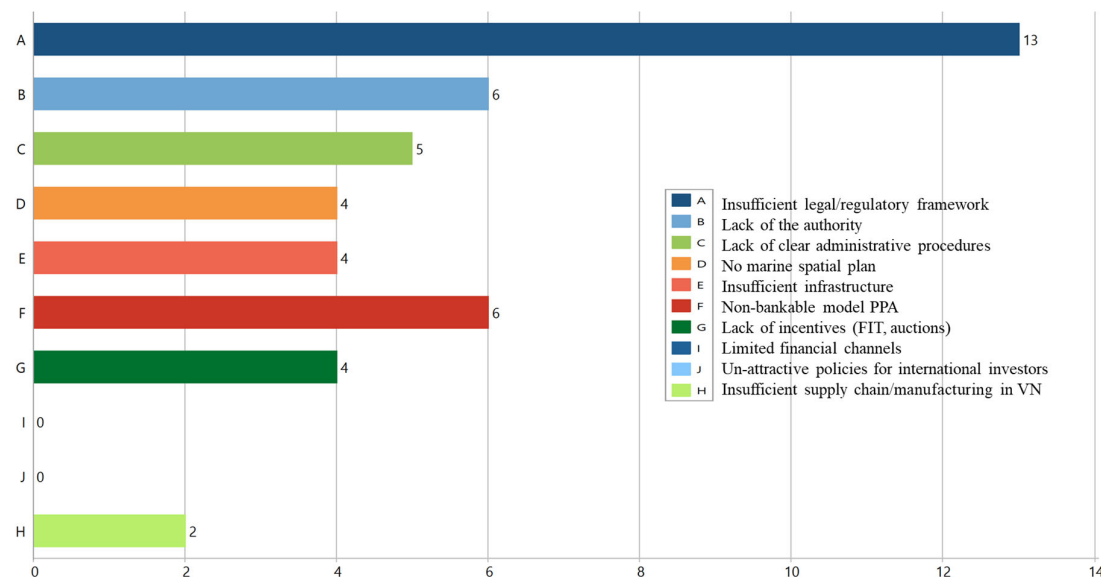
### 4.1 Barriers to OSW development at an initial phase

#### 4.1.1 Barrier to uncertainty legal/regulatory frameworks

Vietnam faces numerous legal and regulatory hurdles impeding the growth of OSW. Despite setting a goal for RE, including OSW, in PDP8 released in May 2023 for 2030 and 2050 (see Table 1), the government of Vietnam (GoV) has yet to approve a plan for implementation (as of March 2024). According to the survey respondents, the Ministry of Industry and Trade (MOIT) has reportedly collaborated with relevant provinces to establish specific targets aimed at facilitating the completion of the implementation plan.

The results of the survey indicated that approximately 90 % of the 13 respondents identified insufficient legal and regulatory frameworks, such as inadequate investment selection mechanisms, electricity-selling schemes, seabed leasing, survey licenses, and grid connections as major obstacles to the early development of OSW in Vietnam (see Figure 1), as further elaborated on in the subsequent paragraphs.

Figure 1: Three most critical barriers for GoV in the initial OSW development in Vietnam<sup>1</sup>



Several experts expressed deep concerns about the absence of regulations for OSW projects and the unclear roles of different ministries in managing the selection process of developers,

<sup>1</sup> The majority of respondents selected three options from A) to J) and ranked them in order of preference, while some individuals chose fewer than three or more than three options without specifying a ranking.



including the granting of investment licenses and other additional licensing procedures. Table 3 presents a thorough breakdown of the responsibilities allocated to each ministry, obtained through semi-structured interviews. The following paragraphs provide additional information on these details.

Table 3: Summary of each role to manage regulations

Regulations/rules	Responsible ministries	Expected key tasks
Marine spatial plan (MSP)	MONRE	Allocation of specific capacity for each region
Seabed survey license	MONRE	Decide selection criteria for developers to do seabed survey and the approval process to grant license
Investor selection	MPI	Decide multiple selection criteria for investors to develop OSW
Incentives (e.g., FIT, etc.)	MOIT	Regulate FIT for pilot projects before introducing competitive bidding (auction) (see 4.1.2)
Grid connectivity	MOIT/EVN	Grid connectivity rules and a timetable for transmission upgrades

According to several experts, it is crucial for the GoV to prioritize updating its MSP, led by the Ministry of Natural Resources and Environment (MONRE), to precisely identify the development blocks (locations) for OSW farms. For instance, the northern region should have a capacity of 2 GW, the central region should have a capacity of 1.5 GW, and the southern region should have a capacity of 2.5 GW, based on the 2030 goal. An international expert has projected that the simplified MSP will likely be officially unveiled either by the conclusion of 2024 or the start of 2025, based on the ongoing situation. Several experts mentioned that MONRE recently received comments from coastal provinces that could have potential OSW power projects and reflected them in the draft MSP.

In light of the MSP revision, industry experts stressed the importance of MONRE in allocating seabed licensing rights, as outlined in Decree 11/2021/ND-CP on the assignment of certain sea areas to organizations and individuals for exploitation and use of marine resources. A substantial number of survey respondents reported that there was considerable debate among stakeholders regarding the use of exclusive or non-exclusive project survey licensing methods for potential OSW locations. However, the GoV has recently changed its stance, shifting from a non-exclusive to an exclusive licensing method for up to three years (as of the end of November 2023). Many private companies, including large-scale OSW firms, have actively advocated that GoV grant licenses to specific agencies or companies to avoid potential confusion and conflicts between different survey activities. By streamlining the survey process and enabling efficient data collection, this approach can help ensure the successful implementation of OSW projects. However, experts have expressed concerns about the potential perceptual risks of granting a direct survey license to a private company without a broader procurement framework for OSW. It has been suggested that GoV conduct their own

surveys on upstream oil and gas to ensure transparency and accessibility of information. However, the government's ability to secure a necessary budget is uncertain. As an alternative, development agencies, such as the World Bank, could support the GoV in surveying the potential project seabed.

An expert in the legal realm has raised the issue of selecting companies to carry out seabed surveys under Decree 11/2021, and the determination of suitable investors for a project involves two distinct procedures. In essence, a competent firm for the survey does not necessarily equate to ideal investor choice. Generally, it falls under the purview of the Ministry of Planning and Investment (MPI) to make investor selection. As of November 2023, the MPI has been actively engaged in revamping the regulations governing the selection of investors in power projects that encompass those utilizing OSW. Several experts have pointed out that MPI needs to set criteria to select investors for OSW projects, which are at least three pillars: 1) track record (past experience), 2) commercial stability (investors' capacity to mobilize finance), and 3) technical plan competency.

The study participants highlighted a lack of decision-making authority for investment policies and clearly defined administrative procedures at both the central and provincial levels as additional weaknesses in the regulatory framework. Although the MOIT has taken on the responsibility of coordinating with the provinces for solar and onshore wind power projects over the past four to five years, primarily by developing and implementing incentives such as the feed-in tariff (FIT), it is necessary for several other ministries, including the Ministry of Natural Resources and Environment (MONRE), the Ministry of Planning and Investment (MPI), and the Ministry of Defense, to update or develop regulations for OSW power projects. According to various experts, it is crucial for the GoV to establish a specialized authority tasked with formulating comprehensive investment policies. Moreover, one expert suggested that the GoV establish a steering committee for OSW, similar to the steering committee for key national energy projects that was established in November 2023. The committee for OSW oversees all aspects and addresses cross-sectoral issues as a national focal point.

The survey findings revealed divergent views on the grid connectivity rule, despite the absence of any regulatory framework established by the GoV. A significant number of respondents opined that OSW developers should construct a transmission line from the OSW site to the onshore connection point (substation), while the National Power Transmission Corporation (EVN NPT) or local power companies should be responsible for upgrading or building the transmission line from the onshore substation to the national grid. Nonetheless, the developers expressed apprehension about the potential risks and lack of control because the substation would be required to commence transmitting power without delay.

Experts, both domestic and international, concur that developers typically bear the expense of connecting offshore farm substations to onshore connection points. However, one expert expressed apprehension about the potential risks that international developers may face when negotiating land acquisition, resettlement, and compensation with localities, if they are required

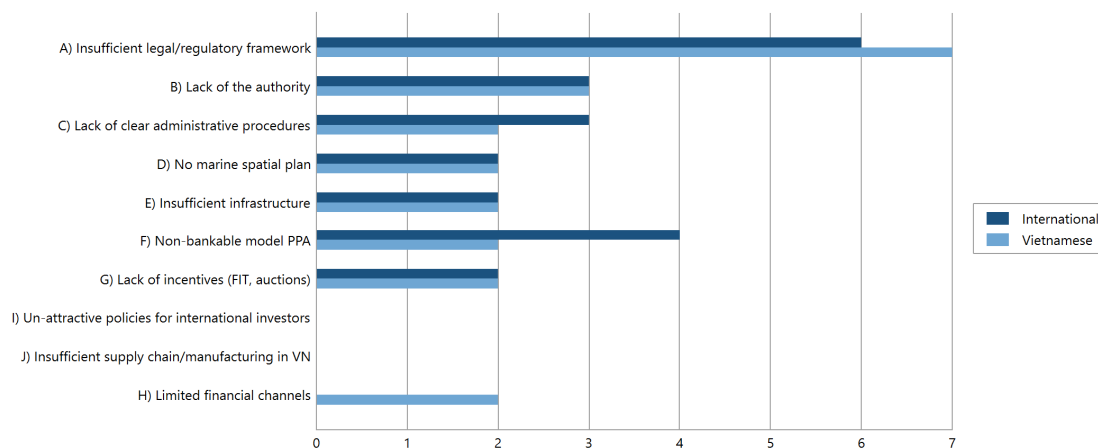
to construct transmission lines from OSW plants to the national grid instead of onshore connection points. Another international expert proposed that if a transmission line is shared among multiple projects, the GoV should manage it. In the event that OSW developers are responsible for constructing the transmission grid, the GoV or EVN NPT must cover the cost and oversee its operation and management.

In addition, the interviewees stressed the need for a timetable for upgrading the transmission grids to connect with existing solar and onshore wind power farms as well as potential future OSW farms. This would allow GoV to transport RE power from the central and southern regions to the northern regions, where power generation is inadequate. However, most respondents expressed concerns about the financial capabilities of EVN NPT to construct additional transmission grids for OSW power generation.

#### 4.1.2 Barrier to lack of incentives

This section mainly concentrates on incentives related to tariffs and pricing, which can also be viewed as part of the regulatory framework, as well as financial constraints. According to the findings, approximately one-third of the respondents identified G) lack of incentives, such as FIT and auctions, as a significant obstacle in the early stages of their OSW projects (see Figures 1 and 2).

Figure 2: Three most critical barriers for GoV in the initial OSW development in Vietnam



According to the majority of respondents, who were primarily industry professionals, the GoV should initiate the execution of FIT for the initial few pilot projects, which would range in size from approximately to 1-2 MW to 1-2 GW in total. The primary objective of these pilot projects was to gain a comprehensive understanding of the actual costs associated with OSW projects, particularly those that are cost-effective. Many of the respondents emphasized the importance of implementing a few pilot projects, such as one in the north and the other in the south, which would be carried out by state-owned enterprises such as Petro Vietnam (PVN) and Vietnam Electricity (EVN), in collaboration with experienced foreign developers who have

previously developed OSW power projects in other countries. The majority of respondents suggested that, given that PVN has been developing an LNG project in the south, it would be more appropriate for them to undertake an offshore pilot project rather than EVN.

Pilot projects serve as benchmarks for the development of a new pricing mechanism, such as auctions, for future negotiations. Undertaking pilot projects enables relevant stakeholders, including ministries, investors/developers, and suppliers, to learn from these projects and incorporate the insights and lessons gained into new regulations, such as auction mechanisms. The participants in the survey emphasized that FIT offers investors certainty and enables them to assess business cases before the establishment of a new market in Vietnam. In November 2018, the GoV introduced revised Feed-in Tariff (FIT) rates for onshore wind power projects (8.5 US cents/kWh) and OSW projects (9.8 US cents/kWh), with a commercial operation date (COD) of November 1, 2021 (Government of Vietnam, 2018). Some experts have suggested that the regulated FIT for OSW was intended for nearshore or intertidal wind projects, rather than actual OSW farms, as there were no specific regulations for the latter, and the three-year period was deemed insufficient for the development of OSW projects. According to two experts with technical backgrounds, the appropriate initial FIT was estimated to be in the range of 14-15 USD cents/kWh. The consensus among most interviewees was that the process of constructing an auction mechanism for GoV takes several years, owing to the extensive preparatory work that is required, such as data gathering and infrastructure improvements. Despite this, the GoV has yet to launch a pilot auction scheme for solar and onshore wind power projects since the FITs for these sources expired in 2020 and 2021, respectively. Some industry professionals anticipate that auctions will be introduced by the GoV in 2025 or 2026. Two experts from the field used the example of Taiwan's successful OSW development as a positive illustration. Taiwan initially implemented FITs for the first 3 GW of OSW capacity, and then transitioned to an auction system.

According to a prominent international expert, the GoV has experienced a challenging situation with FITs, particularly for solar power, in recent years. This is attributed to the detention of many officials from the Ministry of Industry and Trade (MOIT) and other relevant ministries and provinces as a result of an anti-corruption campaign led by Nguyen Phu Trong, the General Secretary of the Communist Party of Vietnam. The reason for these arrests was that these officials granted more approval to solar investors than the revised target (800 MW) set by the revised Power Development Plan 7 (PDP7) (Thu, 2023). The majority of the respondents expressed concern about insufficient coordination between various ministries and provinces during the approval process. Consequently, the installed solar power capacity exceeded the target of ten times PDP7, resulting in inefficiencies and curtailment due to the absence of transmission infrastructure in certain provinces. The international expert opines that the MOIT's position to lead the energy sector is vulnerable, as officials are hesitant to make decisions and fear accusations of corruption. The MOIT plans to determine the appropriate pricing schemes for solar and onshore wind power through competitive bidding, similar to other economic



activities, but half of the survey respondents expressed concerns that it would be difficult for the GoV to approve a new incentive for RE, including OSW, until the anti-corruption campaign is completed.

The majority of respondents highlighted the need for the government to amend the power purchase agreement (PPA) with EVN, a state-owned enterprise and exclusive purchaser, in order to enhance its attractiveness to international investors and financial institutions for OSW projects. According to Figure 2, the findings indicate that international experts consider F) non-bankable model PPA to be a more critical concern than Vietnamese stakeholders. The current PPA utilized for solar and onshore wind projects includes terms that are not bankable, such as absence of termination, international arbitration, force majeure, and government guarantee. An international expert indicated that the Prime Minister requested that the private sector industry association, the Vietnam Business Forum (VBF), work on a comprehensive PPA framework, not only for OSW. The private sector also regards off-take (curtailment) risk as a significant issue; therefore, it would require a dependable grid development plan to ensure that the chosen projects can be integrated into the grid. Several international industry experts have emphasized that the investment scale of OSW farms is considerably larger than that of past mega-solar and onshore wind power projects, making it essential for the government to provide bankable PPA to OSW project investors.

#### 4.1.3 Transmission grid constraints

The data shown in Figures 1 and 2 suggest that approximately one-third of the participants identified E) insufficient infrastructure, particularly the transmission grid, as a significant obstacle during the early stages of the OSW development.

Experts in technical fields have emphasized the need for a GoV to enhance its transmission grids. The primary reason for this is the imbalanced demand for electricity between the northern and southern regions, which results in insufficient transmission infrastructure to transport power from south to north. Consequently, the northern regions suffer from electricity shortages due to high demand, whereas the central and southern regions have sufficient capacity to meet demand. Moreover, the majority of existing solar and onshore wind power plants are located in the central and southern regions, with the potential for future solar and wind power generation in the same areas. Although there is a surplus of electricity in the south, the transmission capacity for transferring electricity from south to north is inadequate. In June 2023, a severe dry situation in hydro dams and unexpected outages at thermal power plants led to a generation deficit, causing blackouts in the northern provinces for ten days. The GoV plans to increase the capacity of gas and LNG plants from approximately 9,000 MW in 2020 to 37,000 MW in 2030. However, the construction of these facilities is time-consuming. To prevent blackouts in 2024, the GoV intends to prioritize increasing hydropower import capacity from Laos and China.

A recent trend has witnessed a decrease in investment for the transmission grid, despite an overall increase in the Vietnam Dong per kilowatt-hour budget. This has led to a reduction in

power output, particularly in the Ninh Thuan and Binh Thuan provinces, where solar and onshore wind power plants are concentrated. According to the EVN press release (EVN, 2023c), the percentage of RE output for the first ten months of 2023 is only 13.5 (see Table 4), which is significantly lower than the 25 % RE percentage of the total installed capacity in 2020 (see Table 1). Technical experts have expressed grave concerns about the insufficient transmission grids in the southern region to transport power to the north despite the abundant potential for OSW in the region.

Table 4: Accumulated power system's output from January to October in 2023

Types	Output (billion kWh)	Percentage of the total capacity
Hydropower	66.74	28.5 %
Coal thermal power	107.74	46.0 %
Gas turbines	22.9	9.8 %
Oil thermal power	1.23	0.5 %
Renewable energy	31.58	13.5 %
Imported electricity	3.56	1.5 %
Others	0.38	0.2 %
	234.13	100.0 %

Source: EVN (2023)<sup>2</sup>

Most interviewees expressed that the National Power Transmission Corporation (EVN NPT) does not possess adequate financial resources to construct a sturdy, versatile, dependable, and secure power grid. According to reports, EVN suffered substantial losses amounting to over 28.7 trillion VND (approximately 1.18 billion USD) during the initial eight months of 2023 (EVN, 2023b), and 1.12 billion USD in losses in 2022 (Nguyen, A, 2023). PDP8 for 2021-2030 indicates that Vietnam necessitates an annual investment of 1.5 billion USD in the transmission grid. However, technical experts have pointed out that EVN NPT has not invested even 400-500 million USD annually in 2022 and 2023, and it is unclear where the additional funds will come from.

As reported by technical experts, prompt execution of measures, such as digitalization to enhance the lifecycle of assets, demand management, ancillary services, and power quality improvements, is essential to increase the capacity of the grid. This facilitates the integration of additional RE sources and other power sources. Although grid-scale storage and energy storage are also significant, the uncertainty in battery prices remains a factor to consider.

Experts suggest that the GoV should consider implementing regulations for EVN and EVN NPT to charge transmission, distribution, operation, and ancillary fees to all Independent Power

<sup>2</sup> The output of renewable energy consists of solar power (22.35 billion kWh), wind power (8.52 billion kWh) and others (<https://en.evn.com.vn/d6/news/Operational-situation-in-October-2023-andobjectivesand-tasks-in-November-2023-66-142-3770.aspx>).



Producers (IPPs), including renewable energy developers, from a cost recovery and profitability perspective. Although the GoV has discussed the application of direct power purchase agreements (DPPAs) to renewable energy projects in recent years, no pilot project has been initiated. Both international and domestic investors have expressed an interest in applying the DPPA scheme, including charge payments. DPPA could potentially serve as a means for GoV to charge various system-related costs to IPPs.

#### 4.1.4 Limited finance channels

Limited access to financial channels was identified as one of the three main obstacles by two experts from Vietnam. On the other hand, numerous international experts believe that once a GoV can create a bankable power purchase agreement (PPA), OSW projects will attract international investors and financiers. Furthermore, the interviewees indicated that GoV preferred to seek less concessional funding rather than increasing public debt. Owing to the financial losses incurred by EVN and the difficulties faced in obtaining financing, two experts suggested that Official Development Assistance (ODA) is more suitable than mobilizing private finance. Some international experts have shown that it is difficult for EVN to utilize ODA loans to upgrade transmission grids because of the absence of on-lending decrees for state-owned enterprise investments (e.g., Decree 97<sup>3</sup> and Decree 104<sup>4</sup>). In light of the GoV's ambitious target for 2030, it will be challenging to achieve without implementing rigid regulations and collaborating with international investors and financiers.

#### 4.1.5 International cooperation

The initial international collaboration endeavor for Vietnam will entail the Singapore project, in which PetroVietnam Technical Service Corporation (PTSC), a subsidiary of Petro Vietnam (PVN), has been designated to invest in an OSW project to provide green electricity to Singapore in accordance with the Joint Development Agreement. Several international experts have suggested that this initiative presents a promising opportunity for the PTSC to fulfill the technical requirements and showcase its capabilities to Singaporean authorities, while it will play a crucial role in contributing to OSW pilot projects and advancing the development of OSW policy frameworks in Vietnam.

The development of OSW power in Vietnam has been significantly affected by numerous platforms. A comprehensive overview of each platform is presented in Table 5. Despite acknowledging from international experts of the benefits of sharing knowledge and best practices with the GoV, efforts have mainly been limited to dialogue, and have yet to result in concrete actions. It is widely recognized that a more integrated official coordination platform

<sup>3</sup> Decree 97 /2018/ND-CP dated June 30, 2018 on on-lending of the government's ODA loans and foreign concessional loans (<https://lawnet.vn/en/vb/Decree-97-2018-ND-CP-on-lending-of-the-government-s-ODA-loans-and-foreign-concessional-loans-5F5DD.html>)

<sup>4</sup> Decree No. 104/2007/ND-CP of June 14, 2007, on provision of debt collection services (<https://lawnet.vn/en/vb/104-2007-ND-CP-14E4C.html>)



is needed among key ministries (e.g., MOIT, MPI, and MONRE) to address critical regulatory issues, including marine spatial planning and tendering pro, in addition to existing platforms.

Table 5: A list of platforms to support GoV on energy-related matters

Name	Led by whom?	Focus on OSW?	Key features (Summary from the interviewees)
Vietnam Energy Partnership Group (VEPG)	MOIT with donors (e.g., EU, GIZ, WB, etc.)	Technical WG on OSW	GoV (MOIT)-led donor coordination platform Systematic approach through dialogue
Just Energy Transition Partnership (JETP)	MONRE with IPG led by G7+Norway and Denmark	Technology and Energy WG covering OSW	GoV (MONRE)-led donor coordination platform Providing loans with low-interest rates by 2030 Issued Resource Mobilization Plan in December 2023
Glasgow Financial Alliance for Net Zero (GFANZ)	Private sector	-	Helping connect finance institutions for JETP projects Leading the bankable PPA discussion with VBF
Vietnam Business Forum (VBF)	Private sector	Power & Energy WG	Active advocacy activities Focusing on overall energy (including OSW) Leading the bankable PPA discussion with GFANZ
Global Wind Energy Council (GWEC)	Private sector (mainly wind power developers)	Covers onshore & OSW	Active advocacy activities Providing technical advice with GoV Sharing experiences in developed countries via WS

Most interviewees expected JETP to significantly impact Vietnam's OSW power development from a political standpoint. Their Resource Mobilization Plan (RMP), launched at COP28 on December 2023, prioritized the transmission grids, energy storage, and OSW. The JETP fund, totaling \$15.5 billion by 2030, can support grid development and OSW power in Vietnam. Some experts also believe that it can support OSW power pilot projects. However, the uncertainty and invisibility surrounding JETP's contributions to concrete projects through the RMP and the extent to which private companies and banks could commit remain concerns for most interviewees.

#### 4.2 Implications for OSW development in an initial phase

Vietnam's growing electricity demand, driven by its economic growth, has led the country to shift towards green energy sources to achieve its net-zero emissions targets by 2050. During COP26 in 2021, the Prime Minister committed to this goal. In May 2023, the government approved the eighth Power Development Plan (PDP8), which includes targets of 6 GW for offshore wind (OSW) power generation by 2030 and 70-91.5 GW by 2050. The transition to green energy is crucial for promoting a low-carbon economy. Although there are currently no comprehensive legal or regulatory frameworks for OSW projects in Vietnam, meeting the 2030



target will be difficult because of the lengthy construction process for OSW power farms. This process typically takes six to eight years to complete, following administrative procedures, as observed in other countries. Additionally, Chinese researchers have indicated that the general construction duration for OSW projects is 2-3 years (He et al., 2022). There is also a gap between Vietnam's commitment to international climate change agreements and the actual implementation of renewable energy (RE) projects within the country.

Table 6 provides a reference for Vietnam's transition by illustrating the actions taken by two neighboring countries.

Table 6: Neighboring countries' experience in OSW policies

	Taiwan	Japan
target	5.7 GW by 2025 and 15 GW by 2035	30 GW by 2030
	- GoV-led approach (Ministry of Economic Affairs (MOEA) and Bureau of Energy (BOE) have been involved in	- One-stop-shop approach ("Central Method")
site identification	identifying potential sites for OSW projects, including conducting preliminary site selection, FS, and EIA)	
interministerial platforms	Established platforms for relevant ministries (MOEA and BOE) to coordinate OSW power development	- METI, MLIT, and MOE are involved in streamlining permitting requirements and ensuring regulatory clarity for OSW projects.
Incentives	- pilot projects with 4 MW in 2016; - FIT from 2016; and - a tendering in 2017 and 2019	- pilot projects; - FIT in 2014; Readjusted FIT in 2021 for fixed foundations and floating foundations; - a tendering from 2021
grid connectivity	- The Taiwan Power Company (TPC) regularly dispatches correspondence that delineates the project capacity, commissioning year, and connection points for OSW projects.	- Based on the Central Method, the government has led the grid connectivity.

Sources: Taiwan, R.O.C., 2018; Gao et al., 2021; GWEC, 2021; Li, 2022; Interview with a Japanese expert, 2024

The Vietnamese Ministry of Natural Resources and Environment (MONRE) is working on revising two regulations, the marine spatial plan (MSP) and the seabed survey licensing process, to identify suitable locations for offshore wind (OSW) power projects. The MSP is used to allocate potential sites based on the eighth power development plan (PDP8), whereas the seabed survey licensing process is closely tied to future OSW power projects for the private sector. However, the regulations for investor selection are managed by the Ministry of Planning and Investment (MPI) and are not directly related to the outcome of the seabed survey licensing

process. Even if a private firm conducts a survey of a specific seabed area, this does not necessarily mean that the firm will be able to implement OSW power farms based on the results of the survey. This inconsistency among the regulations of different ministries is an example of the challenges faced in identifying suitable locations for OSW power projects. In Taiwan, two governmental agencies, MOEA and BOE, have led the identification of potential sites in collaboration with other ministries, including preliminary site selection, feasibility study (FS), and environmental impact assessment (EIA), which is a similar approach to that adopted in Japan (see Table 6).

Coordinating legal and regulatory frameworks for OSW power projects often involves collaboration between multiple government agencies in two countries (see Table 6). According to a news article (Viet Nam New, 2024), Deputy Prime Minister Tran Hong Ha agreed to establish an interdisciplinary working group (WG) for OSW power development led by the MOIT, including officials from relevant ministries. The main goal of the WG is to identify and rectify any shortcomings in current regulatory frameworks, particularly in the areas of marine territory allocation to organizations and individuals using non-state funds for exploration, surveying, bidding, and investor selection. This interministerial coordination WG among ministries could contribute to reducing the inconsistency of multiple regulations and expediting readiness for OSW projects, which was also identified in the interviews.

Implementing OSW power projects can benefit the GoV by launching pilot projects across various regions of the country. During the pilot project phase, a fixed feed-in tariff (FIT) was used in Japan and Taiwan before transitioning to a competitive bidding mechanism with a feed-in price (see Table 6). Some international interviewees expressed that MOIT officials were interested in adopting a bidding mechanism to ensure a transparent and fair investor selection process, as they had negative experiences of implementing the FIT for solar and onshore wind power projects in the past. Despite considering a bidding mechanism for solar and onshore wind power projects over the past three–four years, no pilot bidding projects have been initiated. To prepare for bidding in OSW power projects, survey respondents emphasized the need for extensive preparatory work, such as revising regulations and upgrading transmission and other infrastructure, through coordination among relevant ministries and provinces. Two experts noted that introducing a bidding mechanism in a new market poses significant risks and challenges for both government and developers. It would be prudent for the GoV to launch pilot projects with fixed FITs to gain valuable lessons that can be applied to future bidding schemes.

To attract international investors and financial institutions, such as those involved in the JETP and GFANZ initiatives (as shown in Table 5) for OSW power projects, it is essential to revise the non-bankable terms used in past solar and onshore wind power purchase agreements (PPAs) and adhere to international standards. Domestic developers who had no alternative but to accept non-bankable PPAs for their solar and onshore wind power projects also emphasized the need for technical and financial support from experienced international OSW partners. Consequently, they should aim to rectify the non-bankable terms of the PPA for OSW power



farms between EVN and international partners. Enhancing the bankability of PPAs is a top priority in Vietnam.

The government should consider upgrading the transmission system for transporting electricity, including offshore wind (OSW), from the central to the southern and northern regions because the current supply is insufficient. In addition, developers must address grid connectivity issues to link their OSW farms to the national grid. Based on the survey, there are two connectivity options available in other markets. First, developers must build transmission lines from their OSW farms to onshore connection points, which would be suitable for the Vietnamese context based on interviewees' responses. Second, developers can build transmission lines directly from their farms to the national grid; however, there are potential risks, such as negotiations with landowners, resettlement, and compensation with localities, especially for international developers. The Electricity Law was revised to allow private sector investment in the transmission grid, but it must establish regulations for the government and OSW developers' roles and cost responsibilities. According to Do et al. (2022), the first option for connectivity would be more appropriate for the Vietnamese context, whereas the second option, which entails transmission connections to the national grid, could be employed for OSW wind farms and has been implemented in China and Taiwan. However, this approach should be limited to large deep-water projects, as suggested by Do et al. (2022).

## 5. Conclusion

This research emphasizes the critical need for Vietnam's legal and regulatory framework for offshore wind (OSW) power development. A lack of comprehensive policies and bureaucratic procedures, including marine spatial plans, has been identified as a significant barrier to progress. Additionally, the uncertainty surrounding future feed-in tariffs and auction mechanisms composes these challenges. Moreover, the absence of clear policies on investment procedures, such as investor selection and power purchase agreements (PPA) between project developers and the state-owned electricity company EVN, hinders OSW power project development. What steps can the government of Vietnam (GoV) take to resolve these issues? One potential solution could be the establishment of an interdisciplinary working group for OSW power development, led by the Ministry of Industry and Trade (MOIT) in January 2024. It is imperative that MOIT exhibits effective leadership and delineates the responsibilities and coordination with other ministries in the management of OSW power development, as the two energy-related agencies have already achieved considerable success in this area in collaboration with the relevant authorities in Taiwan.

This study also highlighted the significant barriers posed by transmission grid constraints to the advancement of the OSW technology. In conjunction with the development and revision of regulations for grid connectivity with OSW power projects, it is also necessary for the GoV to develop a detailed plan that upgrades transmission grids to absorb the electricity generated from OSW power projects. As most international experts have stressed, the scale of general

OSW power projects differs from that of solar and onshore wind power projects built in Vietnam. So, it is quite essential for OSW developers to ensure whether electricity of their OSW power plants can be connected to the national grid via connection points and bought by EVN.

As outlined in Section 3.3, the prompt approval of the 500 kV transmission line project, which connects the central and northern regions, was attributed to the Prime Minister's urgent request to avert power outages in the northern provinces. EVN and the National Transmission Corporation (NPT) promptly initiated procurement and utilized their own financial resources to expedite the completion of the project. Despite the urgency, EVN and NPT were able to act swiftly, despite delays in the construction of transmission grids in PDP7rev and a decrease in investment over the past six years. The Prime Minister's request accelerated the entire process for this specific 500 kV transmission line.

The urgency for MOIT, EVN, and NPT to modernize inadequate transmission infrastructure is critical. This is necessary to alleviate the disparity in electricity demand between the northern and southern provinces and to facilitate the integration of additional RE sources in specific provinces that have been curtailed. Furthermore, GoV should implement measures such as enhancing transmission grids and implementing demand management and ancillary services to transport RE sources from south to north. This will enable the absorption of electricity from potential OSW power projects planned for construction in the southern region. According to the provisions outlined in PDP8, it is recommended that GoV consider implementing regulations for EVN and NPT in order to recover their costs and generate profits that can be used to upgrade the transmission grid and establish efficient measures for grid systems. As an initial step, it is suggested that GoV and the private sector engage in DPPA to learn valuable lessons. This study revealed the potential of international cooperation to support the development of OSW in Vietnam. The concrete OSW project agreed with the government of Singapore and could serve as a pilot project, providing insights into the domestic OSW market. Collaborative efforts involving platforms such as the Vietnam Energy Partnership Group (VEPG) and the Just Energy Transition Partnership (JETP) are promising avenues for exchanging knowledge and best practices. Led by key ministries (MOIT and MONRE) and international partners, these platforms have the potential to address critical regulatory issues including marine spatial planning and tendering procedures. Additionally, private sector participation through initiatives such as the Glasgow Financial Alliance for Net Zero (GFANZ) presents opportunities for connecting financial institutions and driving discussions on bankable PPAs. This study highlights the significance of fostering international cooperation to derive insights from practical experiences, monitor the maturation of legal infrastructure, and obtain financial aid and professional guidance. It is anticipated that these international collaborations will prove instrumental in promoting the development of OSW power in Vietnam and support the nation's shift towards a sustainable and adaptable energy framework.



## Appendix 1

### Experts' perspectives on barriers to developing offshore wind power (OWP) in Vietnam

This research explores barriers various stakeholders have faced in developing OWP development in Vietnam. Based on the literature review, I set questions. I kindly ask you to express your opinion.

**Confidentiality:** Your response will be treated confidentially (the interviewee's name and organization will not be cited in publicly available papers), and the results will be used only for academic research purposes.

Contact: Akiko Urakami (Ms): Ph.D. Candidate, Graduate School of Economics, Kyoto University

Email: [urakami.akiko.65a@st.kyoto-u.ac.jp](mailto:urakami.akiko.65a@st.kyoto-u.ac.jp) / [akiko.urakami.kyoto@gmail.com](mailto:akiko.urakami.kyoto@gmail.com)

---

1. What are the most essential meanings for OWP development in Vietnam?
  - A) Meet increasing electricity demand
  - B) Archive the net zero emission target by 2050
  - C) Produce environmental-friendly and cheaper electricity
  - D) Create new jobs in the marine economy industry
  - E) National Defense
  - F) Other (Please specify)
  
2. What are the three most critical barriers for the government of Vietnam (GoV) in the initial stage of developing OWP in Vietnam? Why do you think so?
  - A) Insufficient legal/regulatory framework (e.g., investor selection mechanism, selling electricity mechanism, seabed leasing, survey licenses, grid connection, etc.)
  - B) Lack of the authority to decide the investment policies
  - C) Lack of clear administrative procedures needed at the central/provincial levels
  - D) No marine spatial plan
  - E) Insufficient infrastructure, such as port systems, transmission grids, etc.
  - F) Non-bankable model PPA / No PPA, which includes loans from banks/IFIs
  - G) Lack of incentives (e.g., FITs, auctions, RPS, etc.)
  - H) Limited financial channels
  - I) Un-attractive policies for international investors (e.g., PPP Law, etc.)
  - J) Insufficient supply chain/manufacturing in the domestic market
  - K) Others (please specify.)
  
3. Which methods (non-exclusive or exclusive) should GoV apply for a project survey license in Vietnam? (It should avoid overlapping the project survey.)

4. GoV is willing to apply for a competitive bidding mechanism for OWP instead of FIT. What elements should GoV prioritize as selection criteria?
  5. Given the unique characteristics and risks of OWP development, which current model PPA element is most critical (red line) for investors?
    - A) Off-take (curtailment) risk
    - B) Absence of government guarantee
    - C) Absence of force majeure
    - D) Absence of international arbitration
    - E) Absence of termination
    - F) Others (please specify.)
  6. What procurement processes should GoV prepare for OWP? (e.g., bidding for the lease and PPA for particular areas, etc.)
  7. Which organization should build/pay for the ports/harbors and transmission grids from OWP sites to onshore transmission grids?
    - A) Government
    - B) EVN/NPTC
    - C) OWP developers
    - D) Others (please specify.)
  8. There are several active platforms/task groups (e.g., JETP, VEPG, VBF, GWEC, etc.) to accelerate OWP development in Vietnam.
    - 1) Considering the latest situation, what resources/inputs/achievements can each platform provide to GoV (e.g., MONRE, VASI, MOIT, IE, EVN/NTPC, etc.)? Can you share examples?
    - 2) How can JETP contribute to accelerating OWP deployment in Vietnam?
  9. What impacts does the news of Orsted withdrawal from Vietnam have on OWP generation in Vietnam in the future?
  10. Considering the timeframe, it seems challenging for Vietnam to reach the 2030 target. Is there any way that this can be achieved with the GoV's leadership?
- 

<Transmission Grid>



11. GoV announced that the Quang Trach - Pho Noi 500kV transmission line project (circuit 3; 4 projects of 500kV transmission lines: Quang Trach - Quynh Luu, Quynh Luu - Thanh Hoa, Nam Dinh I Thermal Power Plant - Thanh Hoa, Nam Dinh I Thermal Power Plant - Pho Noi) will be completed by June 2024 to supply power to the Northern provinces. Reducing the curtailment in Binh Thuan and Ninh Thuan would be hard.  
To reduce the curtailment in two provinces and absorb more solar and onshore/offshore wind power in Vietnam, what should GoV do? (e.g., prioritizing grid upgrades of the specific sites via competitive bidding, etc.)
  12. Experts indicate concerns relating to national energy security in inviting the private sector to invest in transmission grids. How should GoV deal with this?
  13. Are there any possibilities for GoV to plan to charge the network price (transmission/ distribution cost, SMO cost, and ancillary cost) for solar/wind power plants from a cost recovery perspective when GoV introduces a DPPA and an auction?
-



## References

- Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH. 2021. *Grid Management Solutions to Support the Optimal Operation of Renewable Energy Sources in Power System*. (Hanoi, Vietnam: Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH). [https://gizenergy.org.vn/wp-content/uploads/20210930\\_SGREE\\_Final\\_Report\\_Task1\\_2\\_Final.pdf](https://gizenergy.org.vn/wp-content/uploads/20210930_SGREE_Final_Report_Task1_2_Final.pdf).
- Do, Thang Nam, Paul J Burke, Llewelyn Hughes, and Ta Dinh Thi. 2022. "Policy options for offshore wind power in Vietnam." *Marine Policy* 141, no. 105080 (Elsevier). <https://doi.org/https://doi.org/10.1016/j.marpol.2022.105080>. <https://www.sciencedirect.com/science/article/pii/S0308597X22001270>.
- Do, Thang Nam, Paul J. Burke, Hoang Nam Nguyen, Indra Overland Overland, Beni Suryadi, Akbar Swandaru, and Zulfikar Yurnaidi. 2021. "Vietnam's solar and wind power success: Policy implications for the other ASEAN countries." *Energy for Sustainable Development* 65: 1-11. <https://doi.org/https://doi.org/10.1016/j.esd.2021.09.002>. <https://www.sciencedirect.com/science/article/pii/S097308262100096X>.
- Doan, Tram Thi, and Quang Van Tran. 2022. "Offshore wind power - the new trend for economic development and security of island sovereignty." *Journal of Mining and Earth Sciences* 63 (3): 74-81. [https://doi.org/10.46326/JMES.2022.63\(3\).09](https://doi.org/10.46326/JMES.2022.63(3).09). <https://jmes.humg.edu.vn/en/archives?article=1457>.
- Dung, Phuong. 2023. "Offshore wind and gas power projects are at risk of difficulty operating before 2030." VN Express. Accessed December 25. <https://vnexpress.net/cac-du-an-dien-khi-gio-ngoai-khoi-nguy-co-kho-van-hanh-truoc-2030-4693304.html>.
- Gao, Xue, Michael Davidson, Joshua Busby, Christine Shearer, and Joshua Eisenman. 2021. "The Challenges of Coal Phaseout: Coal Plant Development and Foreign Finance in Indonesia and Vietnam." *Global Environmental Politics* 21, no. 4: 110-133. [https://doi.org/10.1162/glep\\_a\\_00630](https://doi.org/10.1162/glep_a_00630). <https://go.exlibris.link/qM00C6bL>.
- Global Wind Energy Council (GWEC). 2021. *Global Wind Energy Report 2021*. <https://gwec.net/wp-content/uploads/2021/03/GWEC-Global-Wind-Report-2021.pdf>.
- Government of Vietnam. 2018. Decision 39/2018/QĐ-TTg on Amending and Supplementing a Number of Articles of Decision 37/2011/QĐ-TTg dated June 29, 2011 by the Prime Minister on Support Mechanism to Develop Wind Power Projects in Vietnam. Hanoi, Vietnam: Government of Vietnam.



- . 2023. Decision 500/QD-TTg on approving the National Power Development Master Plan for the 2021-2030 period, with a vision to 2050. Hanoi, Vietnam: Government of Vietnam.
- He, Qianya, Haoyong Chen, Zhenjia Lin, Xinyun Dai, Yuxiang Huang, and Weijun Cai. 2022. *A cost-based life-cycle pricing model for offshore wind power plants within China's carbon trading scheme*.  
<https://www.sciencedirect.com/science/article/pii/S2352484722015414>.
- Hoang, Ha. 2023. "Singapore to import 1.2GW of low-carbon electricity from Viet Nam." SOCIALIST REPUBLIC OF VIET NAM Government News. ONLINE NEWSPAPER OF THE GOVERNMENT OF THE SOCIALIST REPUBLIC OF VIET NAM. Accessed October 26. <https://en.baochinhphu.vn/singapore-to-import-12gw-of-low-carbon-electricity-from-viet-nam-111231025101310403.htm>.
- Hughes, Llewelyn, and Thomas Longden. 2024. "Offshore wind power in the Asia-Pacific: Expert elicitation on costs and policies." *Energy Policy* 184, no. 113842.  
<https://doi.org/https://doi.org/10.1016/j.enpol.2023.113842>.  
<https://www.sciencedirect.com/science/article/pii/S0301421523004275>.
- Li, Aitong. 2022. "Centralization or decentralization: Divergent paths of governing offshore wind between China and Japan." *Energy Research & Social Science* 84.  
<https://doi.org/https://doi.org/10.1016/j.erss.2021.102426>.  
<https://www.sciencedirect.com/science/article/pii/S2214629621005132>.
- Ministry of Industry and Trade (MOIT). 2022. *ASSESSMENT REPORT National PDPs (REVISED PDP VII)*. Ministry of Industry and Trade, ELECTRICITY AND RENEWABLE ENERGY AUTHORITY (Hanoi, Vietnam). <https://vepg.vn/wp-content/uploads/2023/06/A.3-Report-on-assessment-of-the-current-status-of-the-PDP7-revised-ENG.pdf>.
- Nguyen, Angela. 2023. "EVN loses more than \$1.12 billion." Vietnam Investment Review. Accessed 15 October. <https://vir.com.vn/evn-loses-more-than-112-billion-100864.html>.
- Nguyen, Phuong H., Van Nguyen Dinh, Hoang Anh Nguyen Trinh, To Nhien Ngo, An Ha Truong Truong, and Minh Ha-Duong. 2022. "Options for zonation and grid integration of offshore wind in Vietnam." *Springer* vol.208, no. Lecture Notes in Civil Engineering (Singapore): pp. 509-517. [https://doi.org/10.1007/978-981-16-7735-9\\_57](https://doi.org/10.1007/978-981-16-7735-9_57).

<https://cora.ucc.ie/items/6d169e48-7918-4e11-9aac-1d53738fb581>.

- Phan, Xuan Dung. 2023. "Can Vietnam reach its offshore wind power goals?". ISEAS – Yusof Ishak Institute. Accessed 10 November. <https://fulcrum.sg/can-vietnam-reach-its-offshore-wind-power-goals/>.
- Taiwan, R.O.C. 2018. Directions for Allocating Installed Capacity of Offshore Wind Potential Zones.
- Thu, Hoai. 2023. "Installed solar power capacity exceeds plan: government inspectors." VN Express International. Accessed 31 December. <https://e.vnexpress.net/news/business/economy/installed-solar-power-capacity-exceeds-plan-government-inspectors-4693594.html>.
- Timmermans, Stefan, and Iddo Tavory. 2012. "Theory Construction in Qualitative Research: From Grounded Theory to Abductive Analysis." *Sociological Theory* 30: 167--186. <http://www.jstor.org/stable/41725511>.
- Trang, Tran Thi Huyen. 2023. "PTSC and SCU presented the Joint Development Agreement (JDA) for export of electricity to Singapore from offshore renewable sources in Vietnam." PTSC. Accessed November 11. <https://www.ptsc.com.vn/en-US/news/ptsc-news-1/operating-news/ptsc-and-scu-presented-the-joint-development-agreement-jda-for-export-of-electricity-to-singapore-from-offshore-renewable-sources-in-vietnam>.
- Viet Nam Government Portal. 2021. "Full remarks by PM Pham Minh Chinh at COP26." ONLINE NEWSPAPER OF THE GOVERNMENT OF THE SOCIALIST REPUBLIC OF VIET NAM. Accessed May 20. <https://en.baochinhphu.vn/full-remarks-by-pm-pham-minh-chinh-at-cop26-11142627.htm>.
- Viet Nam News. 2024. "Deputy PM tells trade-industry ministry to develop project surveying wind power potentials." Viet Nam News. Accessed 27 January. <https://vietnamnews.vn/environment/1639785/deputy-pm-tells-trade-industry-ministry-to-develop-project-surveying-wind-power-potentials.html>.
- Vietnam Electricity (EVN). 2023a. "Approval of investment policy for two circuit 3 500kV transmission line projects: Quang Trach – Quynh Luu and Quynh Luu – Thanh Hoa." VIETNAM ELECTRICITY (EVN). Accessed December 5. <https://en.evn.com.vn/d6/news/Approval-of-investment-policy-for-two-circuit-3-500kV-transmission-line-projects-Quang-Trach-Quynh-Luu-and-Quynh-Luu-Thanh->



Hoa-66-163-3809.aspx.

---. 2023b. "EVN's losses mainly attributed to high input prices." Accessed 10 October.

---. 2023c. "Operational situation in October 2023 and objectives and tasks in November 2023." Accessed 5 December. <https://en.evn.com.vn/d6/news/Operational-situation-in-October-2023-andobjectivesand-tasks-in-November-2023-66-142-3770.aspx>.

Williams, Rebecca, and Feng Zhao. 2023. *GLOBAL OFFSHORE WIND REPORT 2023*. Global Wind Energy Council (GWEC) (Brussels, Belgium: Global Wind Energy Council (GWEC)). <https://gwec.net/wp-content/uploads/2023/08/GWEC-Global-Offshore-Wind-Report-2023.pdf>.

World Bank. 2021. *Offshore Wind Roadmap for Vietnam*. World Bank (Washington, DC.). <https://documents1.worldbank.org/curated/en/261981623120856300/pdf/Offshore-Wind-Development-Program-Offshore-Wind-Roadmap-for-Vietnam.pdf>