

Development of the National Standards for Offshore Wind Power (OWP) (Vietnam)



Terms of Reference |

Amendment 27 July 2023

Offshore wind power (OWP) can provide a sustainable solution for Vietnam's growing energy demand and has been included in Vietnam's Power Development Plan (PDP) VIII, Resolution 26 and 36 as one of the focuses. However, investment in wind power projects has been slow, with only 135 MW of wind power online by 2015. Slow investment and the lack of national standards for OWP have hindered its development.

ETP's project aims to assist the Directorate for Standards, Metrology, and Quality (STAMEQ) under the Ministry of Science and Technology (MOST) in developing a comprehensive set of national standards that provides a clear blueprint and framework for safe and successful development and implementation of OWP projects. This will also minimise risks and increase the confidence in the OWP sector, thereby promoting investments from investors. This project is in line with Vietnam's Power Development Plan VIII targets and supports ETP's second strategic outcome, which focuses on reducing investment risks in these sectors.

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I. Introduction

1. The Southeast Asia Energy Transition Partnership (ETP) brings together governments and philanthropies to work with partner countries in the region. ETP supports the transition towards modern energy systems that can simultaneously ensure economic growth, energy security, and environmental sustainability. To contribute to the achievement of the UN's Sustainable Development Goals (SDGs) and the Paris Climate Agreement objectives, ETP works in Southeast Asia, with a focus on three priority countries, namely Indonesia, the Philippines, and Vietnam. ETP's strategy is built around four inter-related pillars of strategic engagement that are squarely aligned to address the barriers to energy transition. These are (i) policy alignment with climate commitments, (ii) de-risking energy efficiency and renewable energy investments, (iii) extending smart grids, and (iv) expanding knowledge and awareness building.

II. Summary

2. The Technical Assistance project is an initiative of ETP in collaboration with the Directorate for Standards, Metrology, and Quality (STAMEQ) under the Ministry of Science and Technology (MOST). This project aims to establish a comprehensive set of Vietnamese National Standards (TCVN) for offshore wind power (OWP). Currently, the absence of national OWP standards in Vietnam has hindered the testing, manufacturing, endorsement, licensing, and operation of offshore wind power projects in Vietnam. Therefore, the development of these standards is critical for enabling state authorities to effectively manage the integration of OWP into RE projects and ensuring a dependable and sustainable energy system. This project aligns well with the Power Development Plan VIII and contributes significantly to Vietnam's net-zero commitment.

III. Project Details

C. Rationale

3. Vietnam's vast coastline of over 3000 km presents a promising opportunity for the development of offshore wind power (OWP) that could play a significant role in meeting the country's surging electricity demand sustainably. It is projected that OWP could provide up to 12 percent of Vietnam's electricity by 2035. The transition from fossil fuels to OWP could also provide an economic boost of at least US\$50 billion, contributing to the country's sustainable

development¹. Recognising the potential of OWP, the Vietnamese government has emphasised its importance as one of the nation's economic focuses in Resolution No. 36² and No. 26³.

4. However, investment in wind power projects has been slow to materialise. Only 135 MW of wind power was online by 2015, well under half the Power Development Plan (PDP) VII target for 2020⁴. In the latest draft PDP VIII, Vietnam has set an ambitious target of 7 GW by 2030⁵. While this is more reflective of the country's OWP potential and investment target, it is imperative that Vietnam develops mechanisms, policies, and regulatory frameworks to encourage investment in OWP.
5. The lack of national standards (TCVNs) specific to offshore wind power has been identified as a barrier to the testing, manufacturing, endorsement, licensing, and operation of offshore wind power projects in Vietnam. Although Vietnam's national standard system has four existing TCVNs on wind power in general⁶, more technical and safety requirements need to be standardised for the operation of offshore wind power and the generation of electricity to the grid. These include design requirements for wind turbine components, methods for evaluating wind turbine performance, and techniques for monitoring and controlling wind power plants..

D. Impact

3. The objective of ETP's project is to provide assistance to important stakeholders, such as MOST, STAMEQ, and the Ministry of Natural Resources and Environment (MONRE), in the development of a comprehensive set of national standards that will ensure the standardisation and protection of investments, constructions, and operations of OWP projects, thus facilitating the transition to a dependable and effective energy system. This project aligns with ETP's second strategic outcome, which aims to reduce risks associated with investments in renewable energy and energy efficiency.

¹ World Bank. 2021. Offshore Wind Roadmap for Vietnam. Offshore Wind Development Program.

² Resolution No. 36-NQ/TW, issued by the 8th Conference of the 12th Central Steering Committee of the Communist Party on the sustainable development strategy of Vietnam's ocean economy, sets the goal of achieving sustainable development by 2030 and beyond, with a vision towards 2045.

³ Resolution 26 pertains to the publication of the Government's master plan and five-year plan to implement Resolution No. 36-NQ/TW

⁴ IUCN. 2022. Opportunities and challenges in expanding wind in Vietnam's electricity mix

⁵ Global Wind Energy Council. 2022. GWEC's Statement on Implementing Vietnam's PDP 8 Target and Net Zero Commitment. Route to Market for Offshore Wind Development in Vietnam.

⁶ Four existing standards include:

- Wind turbines - Part 21: Measurement and assessment of power quality characteristics of grid connected wind turbines (TCVN 10687-21:2018)
- Wind turbines - Part 22: Guidelines for conformity testing and certification (TCVN 10687-22:2018)
- Wind turbines - Part 1: Design requirements (TCVN 10687-1:2015)
- Wind turbines - Part 24: Lightning protection (TCVN 10687-24:2015)

C. Objectives, Outcomes, and Outputs

6. The objective of this project is to formulate Vietnam's TCVNS for the regulation of wind power implementation activities, with a focus on offshore energy resources as outlined in PDP8.
7. The project aims to produce a comprehensive set of TCVNs on OWP in accordance to the [standardised process for TCVNs in Vietnam \(Annex 1\)](#) for submission to the MOST for promulgation, which will serve as a reliable platform for the management of state authorities regarding the study and integration of OWP into RE projects in Vietnam. The promulgation of the TCVNs will facilitate the deployment of renewable energy in Vietnam, as envisaged in the Power Development Plan VIII (PDP8), and contribute to achieving the net-zero commitment.
8. The specific activities and expected outputs are described in section IV. The primary outputs of this project are:
 - i. A comprehensive study and develop draft TCVNs for OWP;
 - ii. Development of TCVNs in close consultation with STAMEQ based on at least two consultation workshops held in two regions of Vietnam by the consultant;
 - iii. Organisations of seminars and consultation meetings;
 - iv. Two trips to international labs and collaboration with them to evaluate the feasibility of the TCVNs;
 - v. Promulgation of TCVNs with support from MOST; and
 - vi. Set of recommendations to scale up OWP in Vietnam.

D. Sustainability and Gender Mainstreaming

9. The Project is committed to the promotion, enhancement and development of gender sensitivity of its implementation activities. For cause-oriented groups, the Project shall be inclusive of the invited stakeholders during the consultation, more particularly women's groups. The Project shall also ensure gender balance among the officials designated into the inter-departmental committee. Emphasis shall be given to policy measures that shall not discriminate or alienate any personalities and groups based on gender.

IV. Project Deliverables

10. In line with the outputs and outcomes expected from this project (see Project Background), this section provides additional information on specific deliverables and activities required.
11. Table 1 outlines the key deliverables and associated activities which are expected in this project. Additional details about each deliverable follow Table 1.

Table 1. Key activities and desired outputs

#	Deliverables	Activities	Target Delivery and payment date
1	Inception Report	Mobilisation and Inception report	Month 1
2	A comprehensive study report	Conduct a study and propose step-wise for the development of the TCVN	Month 1
3	Draft of the National Standards (TVCN) for OWP according to the list agreed with STAMEQ	Develop TCVNs for OWP (the proposed list and detailed descriptions of each TCVN are provided in Annex 2) in a close consultation with STAMEQ	Month 6
4	Two hybrid-mode consultation workshops* to gather feedback and contributions on the draft TCVNs; and Workshop proceeding to be collected one week after each event	Organise two hybrid-mode, half-day consultation workshops in two regions in Vietnam (Hanoi and Ho Chi Minh City preferably) to gather feedback and contributions on the draft TCVNs. Detailed agenda and other information need to be discussed with ETP. Gender consideration has to be taken into consideration in the design and organisation of the workshop. One week after each event, the consultant needs to submit a workshop proceeding detailing the purpose, outcome, points of discussion, answers, etc. of the workshop.	Month 7 - 8
5	Trips to international labs* in countries with strong experience in management of OWP and reports including lessons learnt and recommendations for TCVNs in Vietnam	Conduct two 5-day trips to international labs in countries (both one in Asia and one in Europe) with strong experience in management of OWP for 12 representatives from MOST and MOIT	Month 6
6	Reports on testing principles, practicality of TCVNs, and	During the two 5-day trips conducted in task 5, the consultant and/or representatives	Month 7

#	Deliverables	Activities	Target Delivery and payment date
	categorisation of mandatory and optional standards	from MOIST and MOIT collaborate with labs to develop testing principles of TCVNs on OWP, evaluate the practicality of TCVNs on OWP, and decide mandatory standards that impact social and environmental safety, along with optional standards	
7	Final draft of the TCVNs for OWP according to the comments and feedbacks from different stakeholders and in a close consultation with STAMEQ submitted to the Appraisal Council	Finalise the final version of TCVNs on OWP and submitting it to the Appraisal Council in a close consultation with STAMEQ	Month 12
8	A full dossier of TCVNs on OWP to submit to MOST for promulgation	Prepare a full dossier of TCVNs on OWP based on suggestions of the Appraisal Council and submitting to the MOST for promulgation	Month 15
9	Organization of Final stakeholder workshop* and the final workshop report	The consultant organises the final stakeholder workshop. It should be hybrid and half-a-day, with a minimum participants of 75. Gender consideration needs to be taken into consideration in the workshop. Minimum % of women participants is 40%. All key stakeholders related to the topic, particularly governmental entities, should be engaged. The consultant is required to submit a final workshop report outlining the background, purpose, outcome, etc. of the workshop.	Month 14
10	Final completion report	Grand final report should include key findings of previous reports and explanation of the national standards (e.g., applicability, certification, impacts).	Month 15

*: All logistic costs associated with workshops and international trips will be reimbursable based on actual costs.

Deliverable1: Inception Report

12. The consultant must prepare a detailed work plan and mobilise the necessary resources. As a deliverable, the consultant develops and submits a detailed inception report detailing the plan, ensuring the expectations of ETP are aligned with the understanding of the project from the consultant.
13. The inception report should contain, as a minimum:
 - a. Introduction and project background
 - b. Scope of Services
 - c. Methodology and Workplan, including approach, methodology and project gantt chart
 - d. A detailed approach as to how each deliverable will be met and what each submission will contain
 - e. Results of the audience mapping and analysis and communication/ outreach plans (See table 2)
 - f. Identification of suitable media channels and rationale for choosing them
 - g. A donor coordination strategy
 - h. Project management inclusive of organisational chart detailing key personnel, their roles and responsibilities, as well as their locations (strong in country team and project management is expected)
 - i. Gender Equality and Social Inclusion Mainstreaming
 - j. Risks, mitigations and assumptions
 - k. Monitoring and Evaluation Framework, presented in the form of the ETP Results Based Monitoring Framework (RBMF)
 - l. Communications Plan as described in the below table.

Table 2. The Minimum Requirements of the Communications Plan

The consultant is responsible for drafting a detailed communications plan which will be embedded in the Inception Report. The minimum requirements for the communications materials are as follows:.

Item	Communications materials	Number
1	Social media posts (liaising with ETP)	5
2	Press releases	1 per public workshop/ event
3	Newspapers The Consultant is required to connect with at least five relevant news agencies. The news will be based on press release prepared (item 2)	5 per public workshop/ event
4	Online presentations of project progress and highlights work status to the ETP Secretariat and/or ETP Funders Steering Committees	4 (1 hour maximum/ each)

Deliverable 2: A comprehensive study report

14. This requires in-depth research and analysis of the current state of OWP in Vietnam, including the definition of OWP, regulatory environment, industry standards, and technical requirements. The proposed approach should be systematic and logical, providing a clear roadmap for the development of the TCVNs in accordance with [the government's procedures \(Annex 1\)](#).

Deliverable 3: Draft of the National Standards (TVCN) for OWP according to the list agreed with STAMEQ

15. The development process of TCVNs for OWP requires close consultation with STAMEQ to ensure that the standards align with the national regulatory framework and technical requirements. This task requires collaboration with experts and stakeholders from the OWP industry, research institutions, and government agencies to ensure the standards are comprehensive and inclusive of all relevant aspects of OWP deployment, such as safety, reliability, and efficiency. The proposed TCVNs ([Annex 2](#)) should be developed in a systematic and logical manner, taking into account the current state of OWP technology and international best practices.

Deliverable 4: Two hybrid-mode consultation workshops to gather feedback and contributions on the draft TCVNs; and Workshop proceeding to be collected one week after each event

16. The purpose of these hybrid, half-a-day consultation workshops is to engage with a wide range of stakeholders, including industry representatives, researchers, government officials, and other relevant parties to solicit their opinions, suggestions, and feedback on the draft standards. The events should be well-organised, structured, and include presentations on the draft TCVNs and their rationale, followed by facilitated discussions and Q&A sessions. The feedback and contributions collected should be documented and analysed to identify key issues, concerns, and areas for improvement in the draft standards. The results of the consultation process should be used to refine and improve the draft TCVNs to ensure that they are comprehensive, inclusive, and effective in promoting the safe and effective deployment of OWP in Vietnam. The consultant should include the ceiling cost for logistic matters. The cost will be reimbursable per actual cost.
17. Gender considerations should be taken into account. Minimum % of women participants is 40%. All key stakeholders related to the topic, particularly governmental entities, should be engaged. Journalists should be invited also to promulgate the findings of the workshop. The minimum number of participants for each workshop is 50. The workshops should be organised in different regions in Vietnam (Hanoi and Ho Chi Minh City preferably), organised in a hybrid mode, and happen for half-a-day.
18. After each workshop, the consultant is required to submit a post-workshop report, which should contain:

- i. Description of the workshop (e.g., background, objective, organisation)
- ii. Workshop agenda and participant components
- iii. Workshop proceedings (e.g., summary of presentations, key points raised, important insights, significant outcomes or decisions)
- iv. Gender considerations
- v. Stakeholder engagement
- vi. Monitoring and implementation
- vii. Media and communication
- viii. Conclusion and next steps
- ix. Annexes (supporting materials such as slides of the presentations, workshop handouts, participant list, list of comments, etc.)

Deliverable 5: Trips to international labs in countries with strong experience in management of OWP and reports including lessons learnt and recommendations for TCVNs in Vietnam

19. The consultant team is required to conduct two 5-day trips for a group of less than 12 representatives of MOIT and MOST to visit two labs in two countries (both trips to be in Europe) in Europe) with a strong experience in OWP management. The purpose of the two trips is to gain insights into the best practices and approaches for managing OWP and to identify potential strategies and lessons learned that can be applied in the Vietnamese context. The trips should include visits to OWP facilities, meetings with industry representatives, and discussions with relevant government agencies and experts. The site selected for the trips should have a robust and successful track record in the deployment and management of OWP and be similar in context to Vietnam. The trips should be well-planned, structured, and include a clear set of objectives and expected outcomes.
20. The consultant should include the ceiling cost for potential logistic matters i.e. 12-roundtrip flights (economy class), accommodations, and per diem. The cost will be reimbursable per actual cost. Potential agenda of the trips should be provided. The actual agenda and logistics details will be confirmed later during the implementation and needs to obtain approval from ETP and STAMEQ. The details provided here are for the standard of evaluation.
21. The Consultant is required to submit a report. The report should contain the insights and lessons learned from the trips and analysis to identify potential strategies and best practices that can be applied in Vietnam.

Deliverable 6: Reports on testing principles, practicality of TCVNs, and categorisation of mandatory and optional standards

22. The consultant team must collaborate with labs to evaluate the practical applicability of TCVNs on OWP and decide mandatory standards that impact social and environmental safety, along with optional standards. The purpose of this task is to test and verify the effectiveness and practicality of the TCVNs in real-world scenarios and identify potential areas for improvement. During the trips to two international labs, there needs to be discussion with relevant experts on the practical applicability of TCVNs on OWP, which standards should be mandatory and which should be optional, and the testing principles for OWP. The insights should be documented and analysed to identify areas for improvement and potential modifications to the TCVNs.

Deliverable 7: Final draft of the TCVNs for OWP according to the comments and feedbacks from different stakeholders and in a close consultation with STAMEQ submitted to the Appraisal Council

23. In this task, the Consultant finalises the TCVNs based on comments from different stakeholders and prepares them for submission to the Appraisal Council for their feedback in close collaboration with STAMEQ. The TCVNs should be aligned with international best practices and be appropriate for the Vietnamese context.

Deliverable 8: A full dossier of TCVNs on OWP to submit to MOST for promulgation

24. The consultant team prepares a full dossier of TCVNs on OWP based on suggestions of the Appraisal Council and submitting to the MOST for promulgation. Based on suggestions and recommendations of the Appraisal Council, the Consultant modifies the dossier. The Consultant then works with the MOST for promulgation of the dossier.

Deliverable 9: Organization of final stakeholder workshop and the final workshop report

25. The consultant organises the final stakeholder workshop to communicate the key points of the standards which are finalised based on comments of the appraisal council and promulgated by the MOST. The workshop is also to guide the relevant public and private sector stakeholders how to apply the standards and how the manufacturing and import activities will be monitored accordingly.
26. Gender consideration needs to be taken into consideration in the workshop. Minimum % of women participants is 40%. All key stakeholders related to the topic, particularly governmental entities, should be engaged. Journalists should be invited also to promulgate the findings of the workshop. The minimum number of participants is 75. The workshop should be in Hanoi, organised in a hybrid mode, and happen for half-a-day.

After the workshop, the consultant is to issue a report on the workshop. The post-workshop report should provide a comprehensive summary of the workshop proceedings, discussions, and outcomes. Here are the key elements that the report should contain:

- i. Description of the workshop (e.g., background, objective, organisation)
- ii. Workshop agenda and participant components
- iii. Workshop proceedings (e.g., summary of presentations, key points raised, important insights, significant outcomes or decisions)
- iv. Gender considerations
- v. Stakeholder engagement
- vi. Monitoring and implementation
- vii. Media and communication
- viii. Conclusion and next steps
- ix. Annexes (supporting materials such as slides of the presentations, workshop handouts, participant list, list of comments, etc.)

Deliverable 10: Final completion report

27. The Grand final report should include all key findings of previous reports and explanation of the national standards (e.g., applicability, certification, impacts). The report needs to provide a comprehensive overview of the project, its objectives, methodologies, findings, and recommendations. The report must include at least the following components:
- i. Executive Summary
 - ii. Methodology
 - iii. Regulatory and policy framework/ steps to develop the national standards
 - iv. Technical standards development, with rationale behind each standard clearly outlined
 - v. Environmental and social considerations
 - vi. Stakeholder engagement
 - vii. Implementation strategies
 - viii. Conclusion and recommendations for the expansion of OWP in Vietnam
 - ix. Appendices

Other key information to be considered:

- A public facing, publishable Executive Summary (no more than 2 pages) in professional English must be submitted with each deliverable.
- A public facing, catchy powerpoint presentation highlighting key information must be submitted with each deliverable.
- All project deliverables and presentations must be submitted in English and the local language.
- All deliverables are subject to review by ETP and beneficiary entity(ies) where applicable, before approval. If there are comments and suggestions, the deliverables need to be revised accordingly before payment is released.
- The consultant is required to update the results and achievements of the project in accordance with the agreed project level Results-Based Monitoring Framework, as per the approved template. All results, where applicable, must be gender disaggregated
- The consultant is required to organise and execute all aspects of the workshops and visits to international labs, including organisation and logistics.
- Any costs associated with workshops, visits to international labs, etc. are reimbursable based on actual spending.
- The consultant must consider and highlight specific gender considerations in their proposal.
- The consultant must be available to attend 1 in person workshop with the ETP secretariat in the region. The costs for this will be covered outside the financial scope of this proposal.

V. Timeline for the Project

28. The project will require **15 months from 2023 to 2024**. The actual project timeline will be presented by the consultant and agreed upon in the Inception Report. The timeline of the Project is shown in the TOR for the consultant's services.

Table 3. Proposed timeline of the project's deliverables

DELIVERABLES	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Inception Report															
2. A comprehensive study report															
3. Draft of the National Standards (TCVN) for OWP according to the list agreed with STAMEQ															
4. Two hybrid-mode consultation workshops to gather feedback and contributions on the draft TCVNs; and Workshop proceeding to be collected one week after each event															
5. Trips to international labs in countries with strong experience in management of OWP and reports including lessons learnt and recommendations for TCVNs in Vietnam															
6. Reports on testing principles, practicality of TCVNs, and categorisation of mandatory and optional standards															
7. Final draft of the TCVNs for OWP according to the comments and feedbacks from different stakeholders and in a close consultation with STAMEQ submitted to the Appraisal Council															

VI. Key Beneficiaries

Table 4. List of beneficiaries of this project

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Government of Vietnam	Indirect	ETP's support to the ministries and private sector shall contribute to the Government's efforts to achieve climate change targets in the Paris Agreement and to realise the net-zero emission by 2050 commitment.
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30. A [donor mapping](#) was conducted to prevent duplication of efforts between ETP and other development partners in the same areas, as well as to identify areas where ETP could provide support for energy transition that had not yet been addressed

VII. Results Based Monitoring Framework and Risks

A. Results Based Monitoring Framework

31. The Results of the Project are monitored through the following Framework in Table 2.
All reports will update the achievement of the indicators.

Table 5. Results-based monitoring framework

Project Name: Development of the National Standards for Offshore Wind Power (OWP)

IMPACT

- Share of renewable energy (RE) in the total final energy consumption (TFEC)

OUTCOMES

1. Strengthened RE and EE policy enabling environment
3. Increasing the amount of RE integrated in smarter grids

OUTPUTS

- 1.1 National RE and EE policies, regulations, standards, and energy plans reflect a clear commitment to Energy Transition agenda and integrated into sectoral plans to contribute to the achievement of Paris Agreement
- 3.1 National energy strategy and sectoral plans involve evidence-based planning for an improved national-smart-grid system along with related infrastructure and innovative technologies

INDICATORS	TARGET
IN 1.1-03 - No. of RE and EE policies, laws, regulations, and/or technical standards developed/revised and presented to/by the government entities IN 3.1-02 - No. of technical design, demo, modelling projects supported for smart infrastructure	IN 1.1-03 - A set of national standards for offshore wind power will be developed and presented to MOST for publication IN 3.1-02 - The national standards will guide the development of offshore wind power projects so that they are safe, efficient, and environmentally responsible.

ACTIVITIES

- A detailed work plan for the development of the national standards in accordance with the government's procedures
- Develop the national standards for offshore wind power in consultation with STAMEQ
- Two national hybrid-mode consultation workshops to collect feedbacks/ contributions on the national standards
- Evaluate the practical applicability of national standards on offshore wind with experts from two international labs with a strong experience in these technologies
- A full dossier of national standards on offshore wind power based on suggestions of the Appraisal Council and submit it to the MOST for promulgation

32. The results are reported with additional supporting information and evidence where applicable and necessary.

B. Risks and Mitigation Measures

33. The ETP team and the STAMEQ had discussions on the technical assistance activities and confirmed that there is no risk of overlapping with activities implemented by other donors in Vietnam. On the other hand, during the project design and development stage, ETP and STAMEQ will work closely to ensure that the project addresses the needs of STAMEQ and in line with the Government's regulations. The two teams will jointly provide proper justifications to any questions coming from the relevant authorities, which secure the timely approval of the project.

VIII. Qualification and Experience of the Service Provider

A. General requirements

34. The bidder should have a minimum of 5 years of continuous experience in delivering similar projects in the past with a track-record of success. What is considered as relevant experience are the following:
- i. Developing and implementing ministerial-level standards or ministerial-level legal documents in Vietnam
 - ii. Conducting projects with investigation and document collection works with the participation of international organisations and experts.
 - iii. Technical/legal review of OWP equipment, production, operation and management.
 - iv. Organising successful international workshops/seminars and national stakeholder consultations.
35. Offeror must provide a minimum of two (2) customer references from which similar services have been successfully provided, within any of the last 5 years

B. Requirements for the Consultant team leader

3. The lead individual should have the following qualifications:

Education:

- Master's Degree or higher education in Energy, Economics, Development Policies, Social Sciences, Environmental Sciences or related fields to Quality/Standards Management is required.
- Minimum bachelor's degree with knowledge in engineering in either Electronic or Electrical, Renewable Energy or other relevant fields.

Work Experience

- At least 5 years of experience in the field of scientific research and standards development process.
- At least 5 years of experience in developing National standards related to Renewable energies, such as Solar energy, wind energy, hydroelectric power, inverters or related fields.
- Experiences for similar assignments.
- Experience in working with development projects, government agencies.
- Computer literacy in Microsoft packages (MS Word, MS Excel, MS Access, MS Power Point) is required.

C. Requirements for the project team

4. The project team members should have the following qualification:

- Extensive experience in energy management, technical, engineering, electrical, mechanical equipment, project / Scientific research management.
- Strong knowledge and experience of Renewable Energy such as solar energy, wind energy, hydroelectric power, inverter, energy storage system, testing lab, standards or related fields.
- Experience in dealing procedures for development of standards and regulations.
- Knowledge and experience in energy management system, energy audits.
- Proven work experience with MOST and/or other governmental authorities and industrial sectors is a preference

5. Considering the importance of close coordination with stakeholders in Vietnam, it is required that the team proposed consists of consultant(s) who understands the local context in Vietnam.

6. The bidder should also assign a Contract Manager who would liaise on the non-technical part of the contract implementation, including coordination, liaising with key counterparts, liaising with UNOPS on submission of invoice and payment-related documents.

1. Engineering Expert	<ul style="list-style-type: none"> • Master degree in engineering, Energy, Mechanics or related fields. • Minimum 10 year - experience in electric projects related to renewable energy or (e.g., Wind Power, Solar Power) • Deep understanding in the electricity generation in the Vietnamese power grid • Good English skills (English certificate submitted or at least 1 report written in English submitted)
2. Offshore Wind Power Expert	<ul style="list-style-type: none"> • Doctorate/Phd's degree in relevant fields • At least 3 years of experience in ocean engineering or renewable energy
3. Energy Expert	<ul style="list-style-type: none"> • Master's degree in Energy, Economics, Development Policies, Social Sciences, Environmental Sciences or related fields. • At least 10 years of experience working on Energy/ OWP fields. • Experience related to Renewable Energy such as Solar Energy, Wind Energy, Thermal or related fields. • Certificate in Energy Audit • Knowledge of energy technologies
4. Electrical /Electronic Expert	<ul style="list-style-type: none"> • Bachelor's degree in relevant fields • At least 10 years of experience working on Electronic or Electrical Engineering • Experience related to Energy projects such as Solar Power, Wind Power or T&D.
5. Oceanography Expert	<ul style="list-style-type: none"> • Doctorate/Phd's degree in relevant fields • At least 5 years of experiences working on oceanography, coastal area or related fields
6. Hydrology Expert	<ul style="list-style-type: none"> • Doctorate/Phd's degree in relevant fields • At least 10 years of experience working on Hydrology or water resources engineering • Experience related to water resources or related fields
7. Energy System Operation Expert	<ul style="list-style-type: none"> • At least 10 years of experience working or researching on energy system or related fields • Experience and knowledge on controlling programmes (such as PLC, HMI, and SCADA), operations and maintenance of energy systems, etc.
8. Meteorology Expert	<ul style="list-style-type: none"> • Doctorate/Phd's degree in relevant fields • At least 10 years of experience working or researching on meteorology, climate change in ocean or coastal area or related fields
9. Standard Expert	<ul style="list-style-type: none"> • Master's degree in relevant fields • At least 10 years of experience on standards and regulations • Knowledge of medical equipment and energy process • Experience in dealing procedures for development of standards and regulations • Good English skills, can communicate and write English well (at least 1 report written in English submitted)

10. Conformity/ Certification Experts	<ul style="list-style-type: none"> • At least 5 years of experience working on conformity and certification • Knowledge of laboratory testing relating to Electronic/ Electrical, hydroelectric power, Renewable Energy or other relevant fields • Knowledge of international certification process
11. Quality Management System Expert	<ul style="list-style-type: none"> • At least 7 years of experience working on quality management system, particularly for Electronic/ Electrical, Renewable Energy or other relevant fields • Knowledge of quality assurance procedures including but not limited to ISO 9001, ISO 14001, ... • Experience in setting up the quality management system

IX. Evaluation Criteria

A. Eligibility and Formal Criteria

7. The criteria contained in the table below will be evaluated on Pass/Fail basis and checked during Preliminary Examination of the proposals:

Criteria	Documents to establish compliance with the criteria
1. Offeror is eligible as defined in Instructions to Offerors, Article 4	<ul style="list-style-type: none"> • Form A: Joint Venture Partner Information Form, all documents as required in the Form, in the event that the Proposal is submitted by a Joint Venture. • Form B: Proposal Submission Form
2. Completeness of the Proposal. All documents and technical documentation requested in Instructions to Offerors Article 10 have been provided and are complete	<ul style="list-style-type: none"> • All documentation as requested under Instructions to Offerors Article 10, Documents Comprising the Proposals
3. Offeror accepts UNOPS General Conditions of Contract as specified in Section IV	<ul style="list-style-type: none"> • Form B: Proposal Submission Form

B. Qualification Criteria

8. The criteria contained in table below will be evaluated on Pass/Fail basis and checked during Qualification Evaluation of the proposals.

Criteria	Documents to establish compliance with the criteria
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1. The company should have a minimum of 5+ years of continuous experience in delivering similar projects in the past with a track-record of success.	<ul style="list-style-type: none"> • Certification of incorporation of the Offeror • Form F: Performance Statement Form
2. Offeror must provide a minimum of two (2) customer references from which similar services have been successfully provided, within any of the last 5 years	<ul style="list-style-type: none"> • Form F: Performance Statement Form

C. Technical Criteria

9. Technical evaluation will be carried out to bids that pass the eligibility, formal and the qualification criteria, with requirements as follows:
- The maximum number of points that a bidder may obtain for the Technical proposal is 80. To be technically compliant, Bidders must obtain a minimum of 56 points
 - Minimum pass score: 70% of maximum 80 points = 56 points

Section 1: Offeror's qualification, capacity and expertise

Section 1: Offeror's qualification, capacity and expertise		Points	Sub points
1.1	Brief description of the organisation, including the year and country of incorporation, and types of activities undertaken, including relevance of specialised knowledge and experience on similar engagements done in the past. Bidders partnering up with a Vietnamese entity to provide for the strategic consultation, translations; as well as the communications expertise is considered a valuable asset. (Max 4 pages written text plus 1 Matrix)	20	
	1.1.1 Experience in projects of comparable size, type, complexity and technical specialty		10
	1.1.2 Experience in providing similar services in the region, especially Vietnam		5
	1.1.3 Understanding of local context, and partnering up with a Vietnamese entity to provide for the strategic consultation, translations; as well as the communications expertise		5
1.2	General organisational capability which is likely to affect implementation: management structure, and project management controls. (Max 4 pages written text)	5	
	1.2.1 Management structure, management controls, and extent to which any part would be subcontracted		3

	<p>1.2.2 . Financial capacity/financial stability: Bidder should have minimum annual turnover of 300,000 USD in any of the past 2 years.</p> <p>Offerer has sufficient liquidity, demonstrated by the ratio of “current assets / current liabilities” should be a minimum of 1, in any of the past 2 years. Offerors must include the 2 year most recent financial statements.</p> <p>In case of a joint venture, annual turnover is calculated based on the total annual turnover of the JV members. In case of a joint-venture, at least one of the JV members should have 1 liquidity/quick ratio in any of the past 2 years.</p>		2
Total points for section		25	

Section 2: Proposed Methodology, Approach and Implementation Plan

Section 2: Proposed Methodology, Approach and Implementation Plan		Points	Subpoints
2.1	Description of the Offeror’s approach and methodology for meeting or exceeding the requirements of the Terms of Reference	20	
	2.1.1. Description of the offeror’s approach to conduct the study and propose the TCVN set for OWP		10
	2.1.2. Description of the offeror’s approach to develop a full dossier of TCVNs on OWP to submit to MOST for promulgation in Vietnam		10
2.2	Quality Assurance	5	
	A plan outlining how the bidder intends to ensure oversight and quality assurance throughout the assignment. Quality Assurance plan should include discussion on risk-assessment and its mitigation plan		5
2.3	Implementation Timeline	5	
	Bidder submits a detailed implementation timeline which includes detailed activities to be undertaken during this assignment, and is completed with gantt chart		5
Total points of the section		30	

Section 3: Key personnel proposed and Sustainability Criteria

Section 3: Key personnel proposed and Sustainability Criteria		Points	Sub points
3.1	Qualifications of key personnel proposed	20	
	1. Project lead		4
	2. Offshore wind power expert		2.5

	3. Energy expert		1.5
	4. Electrical / Electronic Expert		1.5
	5. Oceanography Expert		1.5
	6. Hydrology Expert		1.5
	7. Energy System Operation Expert		1.5
	8. Meteorology Expert		1.5
	9. Standard expert		1.5
	10. Conformity/ certification expert		1.5
	11. Quality management system expert		1.5
3.2	The bidder shall provide a statement or approach that demonstrates its commitment to support and mainstream gender equality and social inclusion through its operations and project implementation activities.	5	
Total points of the section		25	

The Scoring Matrix for Key Personnel

	Minimum Qualification	Preferred experience	Max Points
Project Lead	Master's Degree or higher education in Energy, Mechanics or related fields Computer literacy in Microsoft packages (MS Word, MS Excel, MS Access, MS Power Point) is required.	<ul style="list-style-type: none"> Minimum 10 year - experience in electric projects related to renewable energy or (e.g., Wind Power, Solar Power/ Deep understanding in the electricity generation in the Vietnamese power grid. 	4
Offshore Windpower Expert	Doctorate/Phd degree in offshore windpower, offshore turbine or ocean engineering or related fields.	<ul style="list-style-type: none"> 3 years of experience in ocean engineering or renewable energy 	2.5
Energy Expert	Master degree or higher in Energy, Economics, Development Policies, Social Sciences, Environmental Sciences or related fields.	<ul style="list-style-type: none"> At least 10 years of experience working on Energy. Experience related to Renewable Energy such as Solar Energy, Wind Energy, Thermal or related fields. Certificate in Energy Audit Knowledge of energy technologies 	1.5

Electrical/ Electronic Expert	Bachelor degree in Electronic or Electrical or related fields	<ul style="list-style-type: none"> At least 10 years of experience working on Electronic or Electrical engineering Experience related to Energy projects such as Solar Power, Wind Power or T&D. 	1.5
Oceanography Expert	Doctorate/Phd degree in oceanography or ocean engineering or related fields.	<ul style="list-style-type: none"> 5 years of experiences working on oceanography, coastal area or related fields 	1.5
Hydrology Expert	Doctorate/Phd degree in hydrology or water engineering or related fields.	<ul style="list-style-type: none"> At least 10 years of experience working on Hydrology or water resources engineering Experience related to water resources or related fields 	1.5
Energy System Operation Expert	Master's degree or higher in electrical engineering, power systems or related fields.	<ul style="list-style-type: none"> At least 10 years of experience working or researching on energy system or related fields Experience and knowledge on controlling programmes (such as PLC, HMI, and SCADA), operations and maintenance of energy systems, etc. 	1.5
Meteorology Expert	Doctorate/Phd degree in meteorology or water engineering or related fields.	<ul style="list-style-type: none"> At least 10 years of experience working or researching on meteorology, climate change in ocean or coastal area or related fields 	1.5
Standard Expert	<p>Master's Degree or higher education in Energy, Economics, Development Policies, Social Sciences, Environmental Sciences or related fields to Quality/Standards Management.</p> <p>Additional two years of similar experience with a Bachelor Degree is considered equivalent.</p>	<ul style="list-style-type: none"> At least 10 years of experience on standards and regulations Knowledge of medical equipment and energy process Experience in dealing procedures for development of standards and regulations 	1.5
Conformity/ Certification Expert	<p>Master degree in Electronic or Electrical System or related fields.</p> <p>Additional two years of similar experience with a Bachelor Degree is considered equivalent.</p>	<ul style="list-style-type: none"> At least 5 years of experience working on conformity and certification Knowledge of laboratory testing relating to Electronic/ Electrical, Renewable Energy or other relevant fields Knowledge of international certification process 	1.5

Quality Management System Expert	Bachelor degree in Energy, Electronics, Communications, Economics, Development Policies, Social Sciences, or related fields	<ul style="list-style-type: none"> • 7 years of experience working on quality management system, particularly for Electronic/ Electrical, Renewable Energy or other relevant fields • Knowledge of quality assurance procedures including but not limited to ISO 9001, ISO 14001 • Experience in setting up the quality management system 	1.5
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D. Financial Criteria (20 maximum points)

10. The financial part of those proposals that are found to be technically compliant will be evaluated as follows.
11. The maximum number of points that a bidder may obtain for the Financial Proposal is 20. The maximum number of points will be allocated to the lowest evaluated price bid. All other prices will receive points in reverse proportion according to the following formula:
12. Points for the Financial Proposal of a bid being evaluated =

$$\frac{[\text{Maximum number of points for the Financial Proposal}] \times [\text{Lowest price}]}{[\text{Price of proposal being evaluated}]}$$

13. Financial proposals will be evaluated following completion of the technical evaluation. The bidder with the lowest evaluated cost will be awarded (20) points. Financial proposals from other bidders will receive prorated points based on the relationship of the bidder's prices to that of the lowest evaluated cost.

Formula for computing points: Example

Points = (A/B) Financial Points
Bidder A's price is the lowest at \$20.00. Bidder A receives 20 points
Bidder B's price is \$40.00. Bidder B receives (\$20.00/\$40.00) X 20 points = 10 points

14. The total score obtained in both Technical and Financial proposals will be the final score for the proposal, with 80% allocated to the Technical proposal and 20% to the Financial proposal. The proposal obtaining the overall highest score will be considered as the winning proposal. This proposal will be considered to be the most responsive to the needs of UNOPS in terms of value for money.
15. The selection of the preferred bidder will be based on a cumulative analysis, analysing all relevant costs, risks and benefits of each proposal throughout the whole life cycle of the

services and in the context of the project as a whole. The lowest priced proposal will not necessarily be accepted.

Annex 1. Background Information:

Nationals Standards for Offshore Wind Power (OWP)

1. ETP collaborates with the Directorate for Standards, Metrology, and Quality (STAMEQ) under the Ministry of Science and Technology (MOST) to establish a comprehensive set of Vietnamese National Standards (TCVNs) for offshore wind power (OWP). The absence of these standards has hindered the testing, manufacturing, endorsement, licensing, and operation of offshore wind power projects in Vietnam. Thus, the development of these standards is critical for effective management of the integration of OWP into renewable energy (RE) projects, contributing to a dependable and sustainable energy system. This initiative is in line with the Power Development Plan VIII and Vietnam's net-zero commitment.
2. OWP in Vietnam offers numerous economic, social, environmental, and security benefits to the country and OWP projects generate significant investment across the entire wind value chain. OWP has the potential to play a crucial role in meeting Vietnam's rapidly growing electricity demand in an environmentally sustainable manner and is estimated to provide up to 12 percent of Vietnam's electricity needs by 2035. The transition towards OWP could also stimulate the country's economy by generating a minimum of US\$50 billion, contributing significantly to Vietnam's sustainable development goals⁷.
3. Vietnam's government has recognised the immense potential of offshore wind power (OWP) and has prioritised it as a key focus for the nation's economic development. This is evident in the inclusion of OWP in two of the government's significant resolutions - No. 36 and No. 26. These resolutions recognise the vital role that OWP could play in achieving the country's energy goals sustainably, as well as in promoting economic growth through job creation and investments across the entire wind value chain. The government's emphasis on OWP reflects its commitment to transitioning to a more sustainable energy system, while also driving socio-economic development in the country. The latest draft of Vietnam's Power Development Plan VIII establishes a significant target of 7 GW of offshore wind power (OWP) by 2030. According to GWEC, the installation of 7 GW of offshore wind by 2030 as set out in the Power Development Plan (PDP) VIII could result in over \$20 billion dollars (or \$3 billion/GW) of project investment, initiate port infrastructure upgrades, and encourage local supply chain investment and other industrial development⁸.
4. Nonetheless, investment in and implementation of wind power projects has been sluggish in Vietnam. As of 2015, the country had only 135 MW of wind power installed, which is significantly less than the PDP VII target for 2020⁹. Additionally, while there are inter-tidal or nearshore projects, there is currently no true OFW installed in the country¹⁰. Developing an OFW project from conception to commercial operation typically takes 5-7 years, with the majority of this time spent on permitting and consenting. However, OFW projects may take even longer if there

⁷ World Bank. 2021. Offshore Wind Roadmap for Vietnam. Offshore Wind Development Program.

⁸ Global Wind Energy Council. 2022. GWEC's Statement on Implementing Vietnam's PDP 8 Target and Net Zero Commitment. Route to Market for Offshore Wind Development in Vietnam.

⁹ IUCN. 2022. Opportunities and challenges in expanding wind in Vietnam's electricity mix

¹⁰ Global Wind Energy Council. 2022

are delays or obstacles in the permitting process¹¹. It is crucial to develop national standards (TCVNs) to address these challenges.

5. TCVN stands for Vietnam standard phrases, used as a prefix notation for the national standards of Vietnam. There are now thousands of TCVN including basic standards, terminology standards, standard technical requirements, test methods and standards in fields such as mechanical engineering, metallurgy, transportation, construction, chemical, oil and gas, minerals, agriculture, food, consumer goods, environmental, safety, electrical, electronics, information technology, etc.
6. Currently, Vietnam's national standard system has only 04 existing TCVNs on wind power in general, namely:
 - Wind turbines - Part 21: Measurement and assessment of power quality characteristics of grid connected wind turbines (TCVN 10687-21:2018)
 - Wind turbines - Part 22: Guidelines for conformity testing and certification (TCVN 10687-22:2018)
 - Wind turbines - Part 1: Design requirements (TCVN 10687-1:2015)
 - Wind turbines - Part 24: Lightning protection (TCVN 10687-24:2015)
7. However, there are a number of technical and safety requirements need to be standardised in order to operate OWP and generate electricity to the grid, including:
 - Design requirements for wind turbines, including specific requirements for OWP.
 - Design requirements for wind turbine components such as turbine gearboxes, turbine blades, towers and foundations, including specific requirements for OWP.
 - Methods of measuring and evaluating wind turbine performance such as measuring noise, measuring blade speed, measuring the effects of mechanical loads during wind turbine operation, measuring the availability of wind turbines, including specific requirements for OWP.
 - Methods of monitoring and control of wind power plants, including specific requirements for OWP.
8. The primary objective of this project is to offer crucial insights and recommendations to the key stakeholders, such as the Ministry of Science and Technology (MOST), the Directorate for Standards, Metrology and Quality (STAMEQ), the Ministry of Industry and Trade, and the Ministry of Natural Resources and Environment, about the offshore wind power (OWP) sector in Vietnam. The ultimate goal is to develop a comprehensive legal framework and institutional mechanisms to establish national standards for OWP. With the implementation of a robust national standard, the OWP sector can operate sustainably and dependably in Vietnam. Overall, this project aims to support VietNam in achieving its net-zero goals and targets set out in the PDP VIII.
 - The Ministry of Science and Technology (MOST) is responsible for establishment and implementation of all National Standards (TCVN). The Directorate for Standards, Metrology and Quality (STAMEQ) is in charge of development and appraisal of draft national standards (TCVN), including those for OWP.
 - The Ministry of Industry and Trade (MOIT) or Department of Industry and Trade (DOIT) are the main governmental interlocutors involved in the RE development process, depending on the size of the project. These branches of the government coordinate the appraisal of different stages of RE project development. The Electricity Regulatory Authority of Vietnam (ERAV) oversees the development of the power sector, including

¹¹ Wind Europe. 2019. Our Energy, Our Future. How Offshore Wind Will Help Europe Go Carbon-Neutral.

planning and regulation of electricity tariffs. Vietnam Electricity (EVN), the national and vertically integrated utility, operates the power system. Its different subsidiaries are engaged during the different development phases for integration of the RE into the national grid.

- The Ministry of Natural Resources and Environment (MONRE), and its provincial branches (DONRE), are in charge of approving environmental impact assessments and action plans. Besides, the RE project owner/ investor must also address the Department of Fire Prevention and Fighting to ensure compliance with national safety standards.
9. The national standards shall be created/ approved through the government's procedures¹², including the following steps:
- Step 1: Submission of proposal for the development of the national standards
 - Step 2: Approval of the standard development project and its development schedule
 - Step 3: Technical development of the draft standards, including data collection and analysis, translation of relevant international standards, drafting the international standards and technical preamble, testing prototypes and/ or products available in the market, site surveys to local factories or countries where the products are produced, internal technical consultations and finalisation of the draft.
 - Step 4: Consultation workshops with experts, manufacturers, and relevant stakeholders, finalisation of the draft standards
 - Step 5: Appraisal: the draft standards shall be appraised by the National Appraisal Committee
 - Step 6: Announcement of the national standards
 - Step 7: Publication of the national standards

¹² The procedures in Vietnamese published on Vietnam Standards Quality and Institute can be found in this link: <https://vsqi.gov.vn/standards-development-process-a36>

Annex 2. Proposed List of TCVNs for OWP

No	TCVN	Description
I	Wind energy generation systems design standards (5 TCVNs)	
1	Wind energy generation systems - Part 3-1: Design requirements for fixed offshore wind turbines	This part specifies additional requirements for assessment of the external conditions at an offshore wind turbine site and specifies essential design requirements to ensure the engineering integrity of fixed offshore wind turbines. Its purpose is to provide an appropriate level of protection against damage from all hazards during the planned lifetime.
2	Wind energy generation systems - Part 3-2: Design requirements for floating offshore wind turbines	<p>This part is a technical specification, specifies additional requirements for assessment of the external conditions at a floating offshore wind turbine (FOWT) site and specifies essential design requirements to ensure the engineering integrity of FOWTs. Its purpose is to provide an appropriate level of protection against damage from all hazards during the planned lifetime.</p> <p>This document focuses on the engineering integrity of the structural components of a FOWT but is also concerned with subsystems such as control and protection mechanisms, internal electrical systems and mechanical systems.</p>
3	Wind turbines - Part 4: Design requirements for wind turbine gearboxes	<ul style="list-style-type: none"> – Outlines minimum requirements for specification, design and verification of gearboxes in wind turbines. It is not intended for use as a complete design specification or instruction manual, and it is not intended to assure performance of assembled drive systems. – Provides guidance on the analysis of the wind turbine loads in relation to the design of the gear and gearbox elements. – Also included is guidance on the engineering of shafts, shaft hub interfaces, bearings and the gear case structure in the development of a fully integrated design that meets the rigours of the operating conditions. – Guidance on the operation and maintenance of the gearbox.
4	Wind energy generation systems - Part 5: Wind turbine blades	<p>The purpose of this document is to provide a technical reference for designers, manufacturers, purchasers, operators, third party organisations and material suppliers, as well as to define requirements for certification.</p> <p>This part specifies requirements to ensure the engineering integrity of wind turbine blades as well as an appropriate level of operational safety throughout the design lifetime. It includes requirements for:</p> <ul style="list-style-type: none"> – aerodynamic and structural design, – material selection, evaluation and testing, – manufacture (including associated quality management), – transportation, installation, operation and maintenance of the blades.

5	Wind energy generation systems - Part 6: Tower and foundation design requirements	This part specifies requirements and general principles to be used in assessing the structural integrity of onshore wind turbine support structures (including foundations). The scope includes the geotechnical assessment of the soil for generic or site-specific purposes.
II	Wind energy generation systems on test and measurement of performance standards (8 TCVNs)	
6	Wind turbines - Part 11: Acoustic noise measurement techniques	This part provides guidance in the measurement, analysis and reporting of complex acoustic emissions from wind turbine generator systems.
7	Wind turbines - Part 13: Measurement of mechanical loads	This part describes the measurement of fundamental structural loads on wind turbines for the purpose of the load simulation model validation. The standard prescribes the requirements and recommendations for site selection, signal selection, data acquisition, calibration, data verification, measurement load cases, capture matrix, post-processing, uncertainty determination and reporting. Informative annexes are also provided to improve understanding of testing methods.
8	Wind turbines - Part 14: Declaration of apparent sound power level and tonality values	This part gives guidelines for declaring the apparent sound power level and tonality of a batch of wind turbines.
9	Wind turbines - Part 23: Full-scale structural testing of rotor blades	This part defines the requirements for full-scale structural testing of wind turbine blades and for the interpretation and evaluation of achieved test results. The standard focuses on aspects of testing related to an evaluation of the integrity of the blade, for use by manufacturers and third-party investigators. The following tests are considered in this standard: – static load tests; – fatigue tests; – static load tests after fatigue tests; – tests determining other blade properties. The purpose of the tests is to confirm to an acceptable level of probability that the whole population of a blade type fulfils the design assumptions.

10	Wind energy generation systems - Part 26-1: Availability for wind energy generation systems	The purpose is to provide standardised metrics that can be used to create and organize methods for availability calculation and reporting according to the user's needs. The document provides information categories, which unambiguously describe how data is used to characterise and categorise the operation. The information model specifies category priority for discrimination between possible concurrent categories. Further, the model defines entry and exit criteria to allocate fractions of time and production values to the proper information category.
11	Wind energy generation systems - Part 27-1: Electrical simulation models - Generic models	This part defines standard electrical simulation models for wind turbines and wind power plants. The specified models are time domain positive sequence simulation models, intended to be used in power system and grid stability analyses. The models are applicable for dynamic simulations of short-term stability in power systems.
12	Wind energy generation systems - Part 27-2: Electrical simulation models - Model validation	This part specifies procedures for validation of electrical simulation models for wind turbines and wind power plants, intended to be used in power system and grid stability analyses.
13	Wind energy generation systems - Part 50-3: Use of nacelle-mounted lidar for wind measurements	The purpose of this part is to describe procedures and methods that ensure that wind measurements using nacelle-mounted wind lidars are carried out and reported consistently and according to best practice.
III Communications for monitoring and control of wind power plants (7 TCVNs)		
14	Wind energy generation systems - Part 25-1: Communications for monitoring and control of wind power plants - Overall description of principles and models	This part gives an overall description of the principles and models on the communications between wind power plant components such as wind turbines and actors such as SCADA (supervisory control and data acquisition) systems.
15	Wind turbines - Part 25-2: Communications for monitoring and control of wind power plants - Information models	This part specifies the information model of devices and functions related to wind power plant applications. In particular, it specifies the compatible logical node names, and data names for communication between wind power plant components. This includes the relationship between logical devices, logical nodes and data.

16	Wind turbines - Part 25-3: Communications for monitoring and control of wind power plants - Information exchange models	This part specifies an abstract communication service interface describing the information exchange between a client and a server for: <ul style="list-style-type: none"> – data access and retrieval, – device control, – event reporting and logging, – self-description of devices (device data dictionary), – data typing and discovery of data types
17	Wind energy generation systems - Part 25-4: Communications for monitoring and control of wind power plants - Mapping to communication profile	This part specifies the specific mappings to protocol stacks encoding the messages required for the information exchange between a client and a remote server for: <ul style="list-style-type: none"> – data access and retrieval, – device control, – event reporting and logging, – publisher/subscriber, – self-description of devices (device data dictionary), – data typing and discovery of data types.
18	Wind energy generation systems - Part 25-5: Communications for monitoring and control of wind power plants - Compliance testing	This part specifies standard techniques for testing of compliance of implementations, as well as specific measurement techniques to be applied when declaring performance parameters. The use of these techniques will enhance the ability of users to purchase systems that integrate easily, operate correctly, and support the applications as intended.
19	Wind energy generation systems - Part 25-6: Communications for monitoring and control of wind power plants - Logical node classes and data classes for condition monitoring	This part specifies the information models related to condition monitoring for wind power plants and the information exchange of data values related to these models, focusing on condition monitoring.
20	Wind energy generation systems - Part 25-71: Communications for monitoring and control of wind power plants - Configuration description language	The purpose of this part is to formally and efficiently exchange wind turbine and wind power plant intelligent electronic device capability descriptions, and system descriptions between intelligent electronic device engineering tools and the system engineering tool(s) of different manufacturers in a compatible way. This part is also intended to provide report configuration and alarms as well as interface information from a wind power plant.

Annex 3. Donor Mapping

Offshore Wind Power

Table 1. Relevant programs/ projects on Offshore Wind National Standards

Name of Organization	Topic and detailed activity
GIZ (German Corporation for International Cooperation)	GIZ conducted a study called Assessing the Applicability of Wind Energy Auction for Vietnam – A Comprehensive Overview . It aims to analyse the current market conditions in Vietnam and assess the feasibility of implementing an auction model for offshore wind. The study will also provide a comprehensive overview of international auction models, identify potential challenges and trade-offs associated with the new support model, and offer recommendations on the most appropriate timing and approach for introducing an auction model in Vietnam.
The Royal Norwegian Embassy in Hanoi	Vietnam Supply Chain Study , conducted by the Royal Norwegian Embassy in Hanoi, aims to analyse the strengths and weaknesses of the offshore wind supply chain in Vietnam and provide recommendations for enhancing its efficiency and competitiveness. <i>Offshore wind is only one aspect of the study.</i>
WB	Offshore Wind Development Program OFFSHORE WIND ROADMAP FOR VIETNAM The study provides a strategic analysis of offshore wind development potential in Vietnam to help the government establish policies, regulations, processes, and infrastructure for the industry's successful growth.
Danish Embassy in Hanoi / Danish Energy Agency	The Danish Embassy in Hanoi released ' Vietnam Offshore Wind Potential and Roadmap ' under the Danish Energy Partnership Programme (DEPP) to support the cost-efficient development of offshore wind energy in Vietnam by leveraging local context and government activities.
ADB	Lotus Wind Power Project: Report and Recommendation of the President The project aims to increase renewable power to Vietnam's domestic grid by generating 422 GWh of electricity from wind energy and avoiding 162,430 tons of CO2 emissions annually. This aligns with ADB's Energy Policy, prioritising renewable energy and private sector participation