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GUIDELINES ON ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT FOR WIND POWER PROJECTS IN VIETNAM

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On behalf of the
German Federal Ministry for Economic Cooperation and Development (BMZ)

The MoIT/GIZ Energy Support Programme supports the Ministry of Industry and Trade and its Electricity and Reneable Energy Authority (EREA) in developing the renewable energy sector, and contribute to improving energy efficiency in Vietnam. Under the project "Up-Scaling to Wind Power in Vietnam", MoIT and GIZ work together to establish legal and regulatory frameworks that encourage (private) investments into wind power, support with developing capacities in the public and private sector through short- and long-term trainings, and contribute to increased research and private sector cooperation between Germany and Vietnam. The project runs from 2014-2018 with a total funding of EUR 6.9 million from the German Federal Ministry for Economic Cooperation and Development (BMZ) under its German Climate Technology Initiative (DKTI).

Foreword by the Department of Electricity and Renewable Energy, Ministry of Industry and Trade

The economic growth of Vietnam in recent years has led to the rapid increase in demand for energy. Total energy consumption over the past decade has grown by about 10 to 15 percent, twice as much as the GDP growth. According to the Annual report of Electricity of Vietnam (EVN) in 2016, total installed capacity of Vietnam's electricity system as of 31/12/2015 reached 38,553 MW, with total electricity production of nearly 160 billion kWh, coming from various sources include hydropower, thermal power, gas and wind power etc.

Although the potential is well appreciated in Vietnam, the share of renewable energy in general and wind power in particular in the electricity market is still limited. By mid-2018, nearly 200 MW of wind power put into operation, which is far from the target set by the Government in Decision No. 428 QD-TTg dated 18/03/2016, National Power Development Plan for 2011-2020 with a vision to 2030. Accordingly, the target was set to have 800 MW of wind power put into usage by 2020, which accounts for 0.8% of electricity production and 6,000 MW of wind power put into usage by 2030, which accounts for 2.1% of electricity production. To achieve this goal, many technical, financial and policy constraints need to be improved.

One of the difficulties of wind power projects is the access to international funds, while requirements related to environmental impact assessment are not satisfactory.

In order to help domestic wind power investors better understand the requirements of international financial institutions related to environmental impact assessment as well as Vietnam regulations, the Department of Electricity and Renewable Energy would like to introduce the "Handbook for Developing Report on

Environmental and Social Impact Assessment for Wind Power Projects in Vietnam". This handbook was developed by the Support to the Up-scaling of Wind Power in Vietnam under the MOIT/GIZ Energy Support Program. Due to differences between domestic and international requirements, this handbook aims to avoid the risk of creating a "two tier" guideline. It integrates both international and national requirements for environmental and social impact assessments for wind power projects, and thus provides full information on regulations that consultants and project developers should follow. We hope this handbook will contribute to promoting the development of Vietnam's renewable energy market in particular and the Vietnam electricity market in a sustainable and effective way in general, for a greener Vietnam.

Best regards,

Mr. Phuong Hoang Kim
Director General of the Department of Electricity and Renewable Energy
Ministry of Industry and Trade

Acknowledgement

The German Federal Ministry for Economic Cooperation and Development (BMZ) supported the development of these guidelines within the German Climate Technology Initiative (Deutsche Klimatechnologie Inititative – DKTI) in collaboration with the Ministry of Industry and Trade (MOIT).

We would like to thank MOIT, EREA and GIZ who provided insights, recourses and expertise that considerably supported the development and finalization of these guidelines.

The authors would also like to express our gratitutde to the institutional stakeholders who contributed to the elaboration of these guidelines, sharing information, data, practical experiences and vision related to the wind power sector in Vietnam, in particular officials and employees from DOITs of Binh Thuan, Bac Lieu and Can Tho provinces, Phu Lac Wind power project, KfW, IFC Hongkong and PECC3.

We would like to send our special thanks to all participants in the guidelines consolidation workshop. With their valuable comments and great interest in the wind power market, they have greatly supported the finalization of these guidelines.

Finally, we would like to express a special thanks to the Electricity and Renewable Energy Authority (MOIT), especially Mr Nguyen Ninh Hai – Director of the New and Renewable Energy Department and Ms Pham Thuy Dung from the same Department who directly contributed and provide guidance to the development and finalization of these guidelines with their valuable engagement, supports and time. Last but not least we would like to thank Mr Le Anh Tuan – lecturer from Can Tho university who has greatly supported us in the topics biodiversity regulations in Vietnam.

We hope these guidelines will support all stakeholders involved, ultimately supporting Vietnam in developing wind power in a sustainable and efficient manner.

Disclaimer

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Anybody using these Guidelines on environmental and social impact assessment for wind power projects in Vietnam is highly encouraged to provide feedback to GIZ on any legal or regulatory changes they may be aware of, as well as the application and interpretation of them. Feedback on the general usefulness of this document would be much appreciated as well, in order to further improve future versions.

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List of Abbreviations

CIT	Corporate Income Tax
CO_2	Carbon Dioxide
COD	Commercial Operation Date
DNO	Distribution Network Operator
DoIT	Department of Industry and Trade
DARD	Department of Agriculture and Rural Development
DoC	Department of Construction
DoNRE	Department of Natural Resources and Environment
DPC	District People's Committee
DPI	Department of Planning and Investment
EREA	Electricity and Renewable Energy Authority (EREA)
E&S	Environmental and Social
ESIA	Environmental and Social Impacts Assessment
EPTC	Electricity Power Trading Corporation
ERAV	Electricity Regulatory Authority of Vietnam
EUR	Euro
EVN	Electricity of Vietnam
FiT	Feed-In-Tariff
FS	Feasibility Study
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH
KfW	Kreditanstalt für Wiederaufbau

MoIT	Ministry of Industry and Trade, Vietnam
MoNRE	Ministry of Natural Resources and Environment
MPI	Ministry of Planning and Investment
NLDC	National Load Dispatch Center
NPT	National Power Transmission Corporation
NPDP	National Power Development Planning
ODA	Official Development Assistance
Pre-FS	Pre-Feasibility Study
PIT	Personal Income Tax
PPA	Power Purchase Agreement
PC	People's Committee
PPDP	Provincial Power Development Planning
PWPDP	Provincial Wind Power Development Planning
RLDC	Regional Load Dispatch Center
RPCo	Regional Power Corporation
SCADA/DMS	Supervisory Control and Data Acquisition / Distribution Management System
SCADA/EMS	Supervisory Control And Data Acquisition / Energy Management System
SPV	Special Purpose Vehicle
USD	US Dollar
VAT	Value Added Tax
VND	Vietnamese Dong

Introduction

By the end of 2017, there are 5 grid-connected operating wind farms in Vietnam with total installed capacity of approximately 200MW. Besides, there are numerous other wind farms with total installed capacity of several thousand MW at different stages of development. The Power Development Plan VII revised sets the target for wind power installed capacity of 800MW by 2020, 2,000MW by 2025 and 6,000MW by 2030[1].

Yet, there is however no specific regulation on ESIA for wind power projects in Vietnam. The Circular No.27/2015/TT/BTNMT on implementation procedures and content of ESIA is applied to all projects and therefore it is rather low and vague compared to international standards (for example IFC) applied to wind power projects which from their nature should follow different regulations than the other investment projects. Different or additional regulations for wind power projects should lead to some additional work to the project, they shall however help to ensure sustainability of wind power projects and to get better access to international finance which is becoming more and more restrictive in this respect.

A need to upgrade the current EIA regulations for specific wind power project is identified.

International standards are not designed in a way to contradict or change the national regulation, but they bring additional guidance in the process.

On the contrary to the perception that the implementation of an ESIA according to international standards would be costly and could create a negative image to the authorities and the public, if properly conducted it can be noted that ESIA will firstly help the project to identify environmental and social issues at early stage and allows to adjust its design in the beginning in a manner that avoids high cost of changes during the project construction stage and secondly, a proper provide sustainable monitoring and management plans that benefit all stakeholders in the long run.

1 Decision No. 428/QD-TTg dated 18 March 2016, adjustment of PDP VII

Therefore, guidelines on bankable ESIA for onshore and nearshore wind power projects meeting both requirements of Vietnamese regulations and of IFC performance standards. It could help the projects to one hand have enough documents for licensing procedure and on the other to be timely and financially more efficient as well as to open the door for additional financing partners such as the international financial institutions.

In local context the study is referred to as EIA (environmental impact assessment) and not as an ESIA (Environmental & social impact assessment). Nonetheless the social component is included in the local study for the moment being. However no specific regulatory body is in charge of appraising in detail the social aspects of the project in a qualitative manner, mostly quantitative aspects (mainly compensation) are appraised. According to IFC standards, social aspects are considered of outmost importance for the sustainability of the project. Not only from the quantitative perspective but also on the way they are assessed and mitigated during the whole process. For this purpose it was decided to call the guideline ESIA. For sake of sustainability and long-term efficiency, we strongly recommend all studies to cover environmental and social aspects in a satisfactory, detailed and sustainable manner.

1. Commercial Wind Energy Project and their potential environmental and social impacts

1.1 Commercial wind energy project

Wind turbines are built to use natural wind and converting it into electrical energy. These facilities are located in both onshore and near-/offshore locations. The primary factor in determining a site's feasibility and viability as a proposed wind energy facility is the presence of a good wind resource. An energy yield assessment is conducted to assess predicted energy generation and consequent revenues. Other significant factors in determining whether a site is appropriate for a wind energy project include environmental and social impacts, the cost of construction and operation, reaching agreement on the sale of electricity at a commercially appropriate price, and access to a grid connection with adequate capacity.

The life cycle of a wind energy project consists of a wind resource assessment/Feasibility Study, environmental and social impact assessment, construction, operation, maintenance, and decommissioning phases.

Most wind turbines start generating electricity at approximate wind speeds of 4 meters/second (m/s) (10.8 to 14.4 kilometers/hour (km/h)). They generate maximum power at wind speeds of around 12 m/sec (43 km/h), and shut down to prevent damage at around 25 m/s (90 km/h).

The design lifetime of a wind turbine is approximately 20 years, but in practice turbines may last longer with proper maintenance. Routine maintenance will be conducted throughout the lifetime of the wind turbine. Maintenance activities may include turbine and rotor maintenance, lubrication of parts, full generator overhaul, and maintenance of electrical components, as necessary.

The structural elements and operation of a nearshore wind energy facility are similar to those of an onshore wind energy facility.

1.2 Potential environmental and social impacts of wind power projects

Due to their unique characteristics, wind power facilities do have environmental and social impacts, in particular at the stages of construction, operation and decommissioning.

Construction of wind power facilities include land clearing for site preparation and access route, excavation, blasting, and filling; transportation of supply materials and fuels; construction of foundations involving excavation and placement of concrete; operating cranes for unloading and installation of equipment; construction and installation of associate infrastructure; installation of overhead conductor or cable routes; and commission of new equipment. Decommissioning activities include removal of project infrastructure and site rehabilitation.

Environment impacts associated with the construction, operation and decommissioning of wind energy facilities may include, amongst others, impacts on the physical environment (such as noise or visual impact) and biodiversity (affecting birds and bats, for instance).

The IFC lists issues specific to the construction, operation and decommissioning of wind energy projects and facilities which include the following:

- Landscape, Seascape, and Visual impacts
- Noise
- Biodiversity
- Shadow Flicker
- Water Quality

Furthermore, the construction, operation and decommissioning of onshore and offshore also pose occupational and community health and safety hazards, including:

Occupational health and safety issues	Community health and safety issues
- Working at Height - Working over Water - Working in Remote Locations - Lifting Operations	- Blade throw - Aviation - Marine Navigation and Safety - Electromagnetic Interference and Radiation - Public Access - Abnormal Load Transportation

2. Development of a Wind Farm in Vietnam

As in most countries, in Vietnam the development stages of a wind power project consist of 5 phases including preliminary development, project development, project implementation, operation and maintenance (O&M), and at the end of the lifetime of the project, decommissioning.

The main laws governing wind power development in Vietnam are the Investment Law, the Construction Law, the Land Law, and the Law on Environmental Protection. Specifically, for wind power, Circular No. 32/2012/TT-BCT dated 12 November 2012 regulates the implementation of wind power projects development.

The main governmental interlocutors during wind farm development process are either the Ministry of Industry and Trade (MOIT) on central level or the Department of Industry and Trade (DOIT) in provinces, depending on the size of the projects. MOIT handles projects larger than 30 MW installed capacity and DOIT handles those less than 30 MW. These branches of the government coordinate the appraisal of the different stages of the wind farms development.

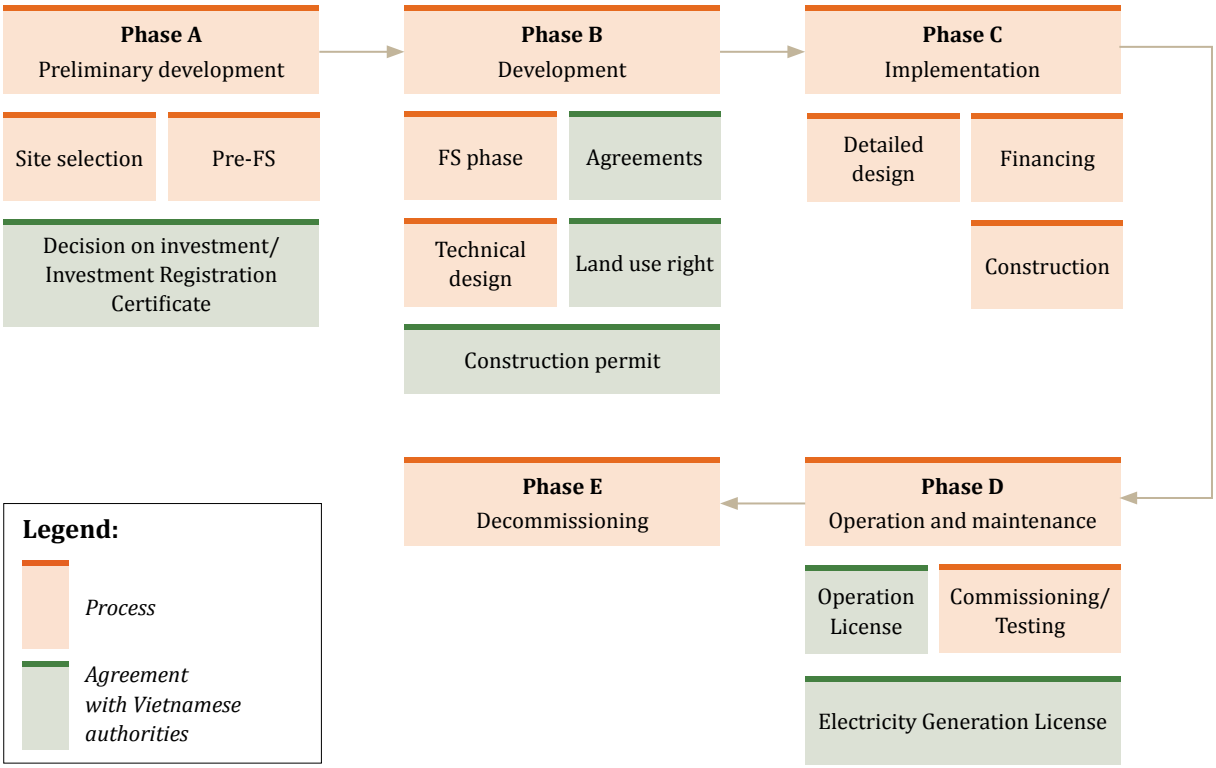
A key regulatory instrument for wind power in Vietnam are the Provincial Wind Power Development Plans (PWPDPs) if existing, if not it is the Provincial Energy Development Plan. In these plans, priority areas for wind power development are defined, for which wind measurement have already been performed. This allows for a streamlined permitting process and prioritizes wind farm development in areas with high wind resource.

The permitting process is estimated to take between 2 and 3 years, according to the current regulatory framework. However, the experiences of operational and under construction wind power projects suggest that development times are in the range of 3 to 5 years. This is comparable to the administrative lead times in the EU (2010), of 3.5 years on average for onshore projects.

The ESIA and Feasibility study/project design are strongly interconnected as they complement each other in a way that the results of the technical concept will influence the results of the ESIA. On the other hand the results of the ESIA might request a change in project design. Therefore it is of outmost importance to ensure proper interface management between technical and E&S team throughout the preparation and implementation phase of the project.

The Chart below outlines briefly the development process of wind projects in Vietnam.

Figure 2.1: The Development Process of Wind Projects in Vietnam



3. Purpose of an ESIA and Applicable Standards

The purpose of the an ESIA is to identify, assess and predict the potential environment and social impacts of the proposed project, to evaluate alternatives and to design appropriate mitigation, management and monitoring measures. It is a process that starts at the conceptual design stage of a project and continues throughout project construction, operation and decommissioning.

Typically, an ESIA process includes the following sequential steps:

1. **Screening**: a quick, high-level process to determine if a full ESIA is necessary
2. **Scoping**: if a full ESIA is required, scoping determine which impacts are likely to be significant and should become the focus of the ESIA
3. **Baseline studies**: to establish an understanding of the existing environment
4. **Impact assessment**: to establish an understanding of potential impacts arising as a result of the proposed development project and required propose mitigation measures (including alternatives) and management and monitoring commitments
5. **Environmental management and monitoring**: to establish ongoing management and monitoring measures required at each stage of development

3.1 National Standards

The requirements for environmental assessment for development projects that affect the natural and social environment are stated in the Law on Environmental Protection No. 55/2014/QH13, passed by the National Assembly on June 23, 2014, in effect on January 01, 2015. The Government Decree No. 18/2015/ND-CP dated February 14, 2015 and Circular No. 27/2015/TT-BTNMT dated May 29, 2015 of the Ministry of Natural Resources and Environment (MONRE) provide detailed regulation and guidance on Environmental protection planning, Strategic Environmental Assessment (SEA), Environmental Impact Assessment (EIA), and environmental protection planning.

By the Decree No. 18, EIA report is required only for the following wind power projects:

- Taking 100 ha or more of land, or
- Interfering protected areas, or
- Taking forest or paddy land, or
- Requiring construction of a 110 kV or above line for grid connection

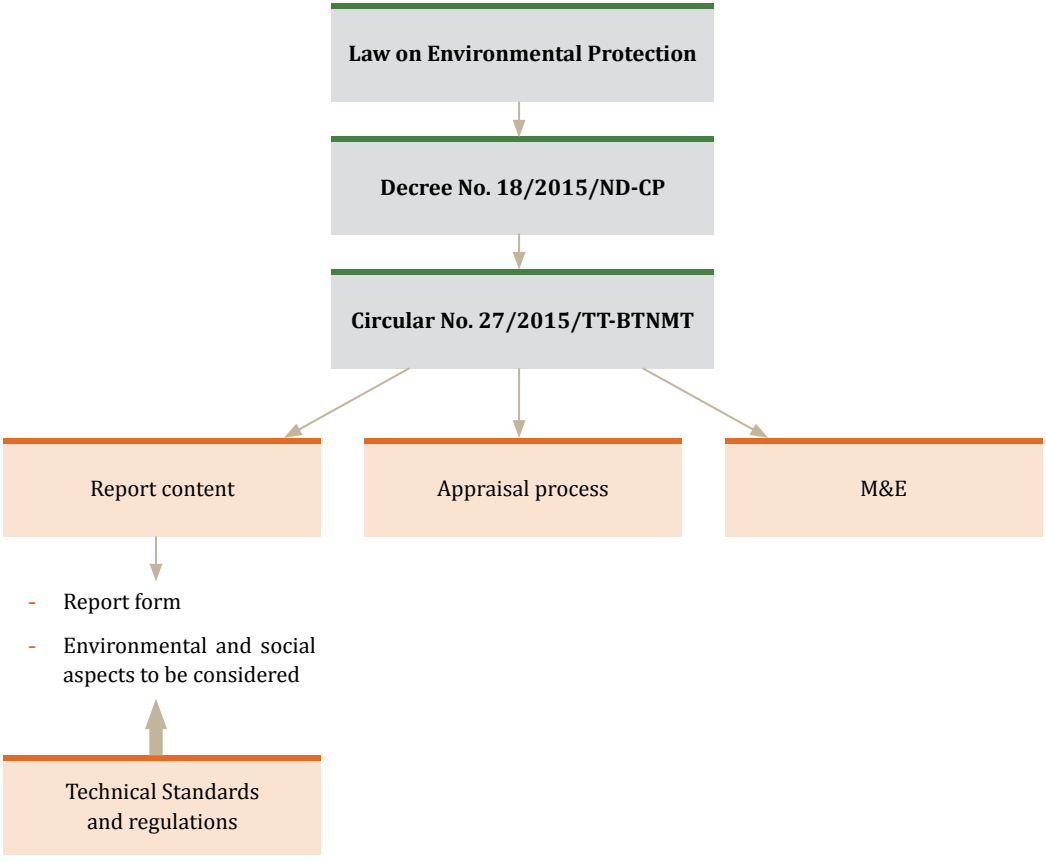
For others, the EIA is integrated into the Feasibility Study report.

Environmental and social aspects to be considered in the EIA are specified by Circular No. 27 and

requirements for those aspects are regulated by national standards and/or regulations. Circular 27 also provides guidance on appraisal process as well as monitoring and evaluation during the operation phase of the projects. This regulation and guidance is applicable for all development projects in Vietnam including wind power projects and is illustrated graphically in Figure 1.

Current national regulations and standards applicable for environmental assessment and protection in Vietnam are presented in the Annex.

Figure 3.1: Legal framework on EIA



By regulation the Decree No. 18, MONRE appraises and approves EIAs for wind power projects that are:

- Project with the investment capital of 5,000 billion or more under the investment policy authority decision of the National Assembly, the Government, the Prime Minister, under the Investment Law No. 64/2014/QH13, or
- Encroachment of 20 ha or more, *or*
- Taking 20 ha or more of protective forest or specialized forest *or* 100 ha or more of natural forest *or* 10 ha or more of paddy land
- Interfering national parks, protected areas; taking 1 ha or more of national graded cultural-historical areas *or* 5 ha or more of world heritage or national graded sites, *or 10* ha or more of biosphere reserves.

Projects other than those listed above will be appraised and approved by the People's Committee of the province where the projects are located.

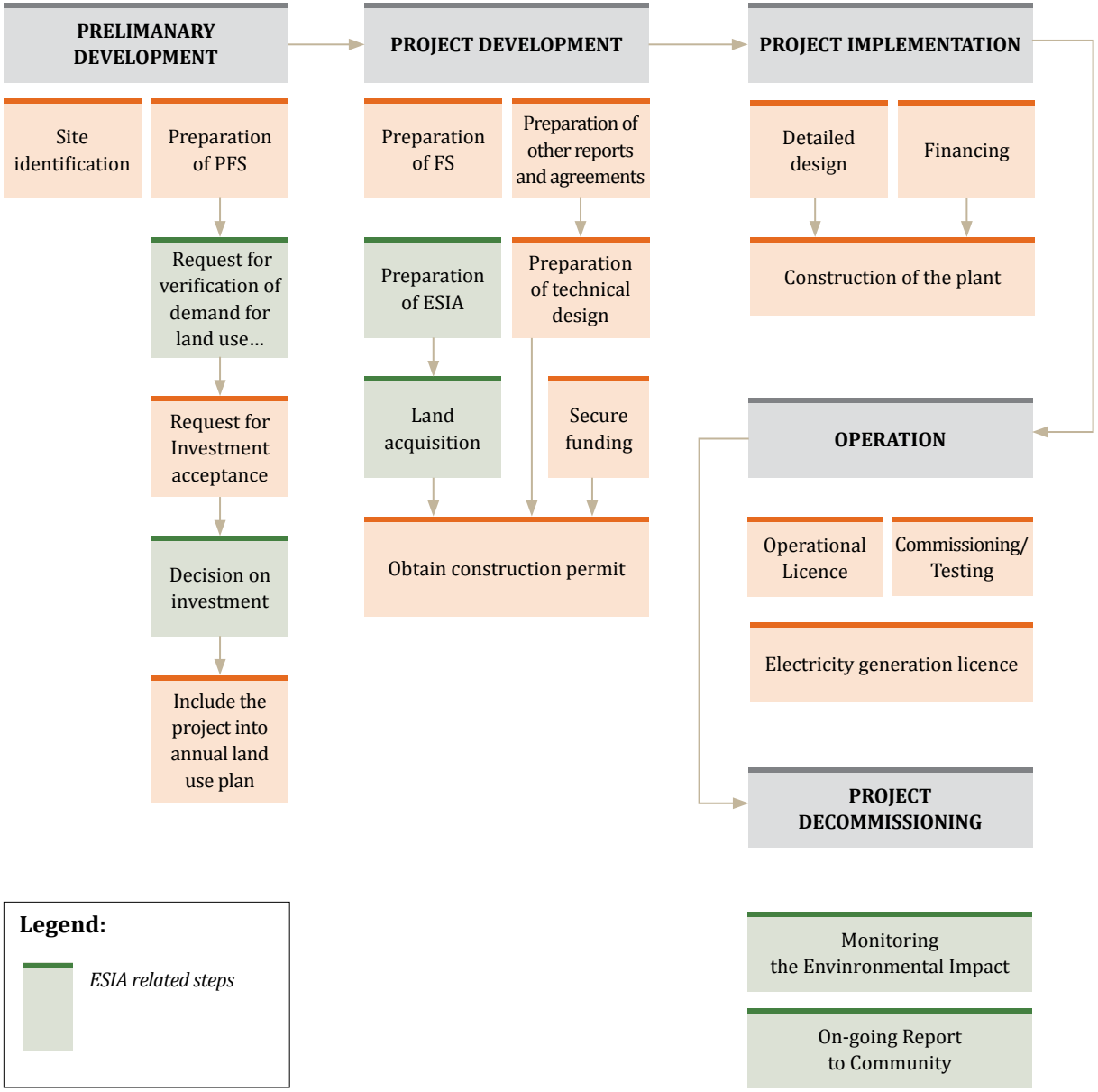


Figure 3.2: ESIA process for wind power project in Vietnam

3.2 IFC International Standards and reasons to follow

In the industrial countries, investors have good confidence to ensure that social and environmental risks will be adequately addressed, removing a key barrier to finance. As developing countries cannot yet provide this assurance, financial institutes have developed various standards and guidelines to manage these risks – collectively referred to here as "international standards". Key examples include the International Finance Corporation's Performance Standards on Environmental and Social Sustainability (the IFC standards). Financial institutions without in-house standards commonly sign up to the equator principles (EPs), which are based on IFC Performance Standards.

In fact, the current reference on the international market for energy infrastructure project relate mostly to the IFC performance standards in the version from 2012. They are considered to be comprehensive and well suited to this type of project as IFC focuses on private sector financing in developing countries. 32 export credit agencies of the OECD countries benchmark private sector projects against IFC's Performance Standards. The World Bank applies IFC's Performance Standards to projects supported by IBRD/IDA (International Bank for Reconstruction and Development/ International Development Association) that are owned, constructed and/or operated by the private sector.

The IFC Performance Standards are directed to provide guidance on how to identify risks and impacts, and are designed to help avoid, mitigate, and manage risks and impacts as a way of doing business in a sustainable way, including stakeholder engagement and disclosure obligations of the client in relation to project-level activities. Most of international financial institutions require their clients to apply the Performance Standards to manage environmental and social risks and impacts so that development opportunities are enhanced.

- IFC Performance Standards are listed below and presented in full in the Annex
- Performance Standard 1: Assessment and Management of Environmental and Social Risks and Impacts
- Performance Standard 2: Labour and Working Conditions
- Performance Standard 3: Resource Efficiency and Pollution Prevention
- Performance Standard 4: Community Health, Safety, and Security
- Performance Standard 5: Land Acquisition and Involuntary Resettlement
- Performance Standard 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources
- Performance Standard 7: Indigenous Peoples
- Performance Standard 8: Cultural Heritage

3.3 Purpose of this Guideline

Due to the difference between the national and international standards and requirements, the guideline aims at avoiding the risk of generating a "two-tier" study. The consultant must avoid the temptation to do a "local" only to save cost and move fast with the project. Such an approach creates a risk of delays with design and cost implications when upgrading to international standards to get access to international financial institutions. The guideline which consolidates while harmonizing the requirements both from national and international ones is expected to provide a full pledge of regulations for consultants and project developers/ investors to follow.

The performance of an ESIA according to international standards is not contradicting the national regulation but it will help the project to cope in a more sustainable manner with the following aspects:

a. Guard against unforeseen risks and impacts

Implementing the Performance Standards helps developers to identify and guard against interruptions in project execution and in the project operation

b. Improve financial and operational performance

IFC indicate that meeting the Performance Standards helps clients to improve their bottom line. Implementation of the Standards can help optimize the management of the project leading to a more efficient and cost-effective operation.

c. Improve social acceptance

In addition, the Standards help clients to maximize local development benefits and encourage the practice of good corporate citizenship. This often results in greater acceptance of the project by local communities and governments leading to enhanced brand value and reputation which may also be attractive to new investors or financiers.

d. Gain an international stamp of approval

The "Equator Principles," which have been adopted by more than 70 of the world's leading investment banks in developed and developing countries, are based on IFC's Performance Standards. These principles are estimated to cover nearly 90% of project financing in emerging markets.

These guidelines are recommended to project developers, local financial institutions, consultants but also to local authorities and regulatory bodies to provide a high level overview of the steps and processes to be implemented to both fullfill national and international requierements.

3.4 How to use the ESIA Guidelines

This guideline is designed to provide developers and national consultants with an overview and guidance on the main activities and requirements in order to develop a bankable ESIA and E&S process according to international standards, to comply with national administrative procedure and obtain national permits. These guidelines are not designed to replace the work of specialised national and international consultants who shall be involved in the process since the beginning. It is recommended to implement international standards from the very beginning of the process. The results of the studies can be then used and adapted for the submission of the Vietnamese report to the local authorities. This can slightly delay the procedure during the preparation and development phase of the project compared to national standards (mainly because of additional studies), however this will save resources and time during project financing and implementation.

The main part of the guidelines outlines the activities to be undertaken during the main five phases of the project which are:

- The Preliminary phase
- The Development phase
- The Implementation phase
- The Operation & Maintenance phase
- The Decommissioning phase

Additional information on the national regulations, IFC performance standards, and specific wind energy impact and mitigation measures can be found in Annex. The guidelines do not include templates on specialist studies (ex. Birds, bats, noise etc.) as it is strongly recommended to commission specialised and experienced consultants to cover these topics. In the specialist studies the emphasis should be put mainly on the methodology and content to be developed for each project through assessment, measurement and analysis. Including templates to this guidelines could arise the impression that a “copy pasting” would be sufficient to elaborate a study of quality, however it is not the case as each project presents different charachteristics and challenges which requiere an adapted and tailored approach and methodology.

4. ESIA Guidelines

The implementation of an Environmental, Health, and Safety Guidelines in a wind energy project is an interactive process between studies, actions and administrative requirement. The guidelines follow the main five project phases which are: preliminary, development, implementation, operation & maintenance and decommissioning to conduct a full ESIA for wind project as shown in Figure 3.2.

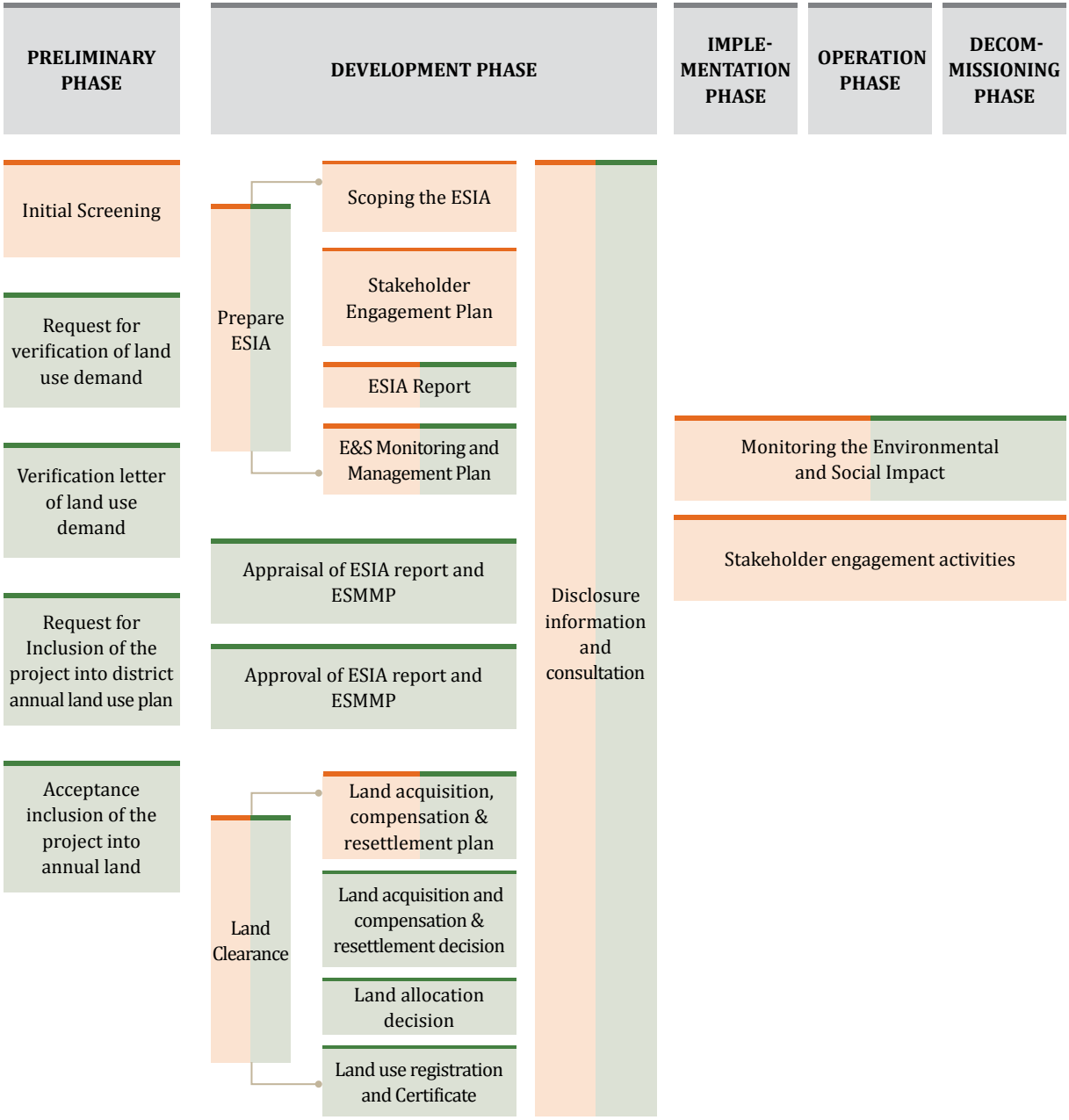
The following conventions on colour coding for ESIA steps are used by the guideline:

 => Administrative steps required by Vietnamese regulations only

 => Steps required by IFC standards only

 => Steps that are recommended in order to comply with the national and IFC standards

Besides, at the end of each step, gaps between local practice/regulation and international standards or observations are displayed and recommendations are provided to guide the developers/investors in their activities.


PRELIMINARY PHASE
DEVELOPMENT PHASE
IMPLE-MENTATION PHASE
OPERATION PHASE
DECOM-MISSIONING PHASE
Initial Screening
Request for verification of land use demand
Verification letter of land use demand
Request for Inclusion of the project into district annual land use plan
Acceptance inclusion of the project into annual land
Prepare ESIA
Scoping the ESIA
Stakeholder Engagement Plan
ESIA Report
E&S Monitoring and Management Plan
Appraisal of ESIA report and ESMMP
Approval of ESIA report and ESMMP
Land Clearance
Land acquisition, compensation & resettlement plan
Land acquisition and compensation & resettlement decision
Land allocation decision
Land use registration and Certificate
Disclosure information and consultation
Monitoring the Environmental and Social Impact
Stakeholder engagement activities

4.1 Preliminary Phase

At the beginning of the project life cycle the developer shall implement different steps and studies to prepare the project from an environmental and social impact perspective. This includes:

1. Initial site screening
2. Request for verification of demand for land use
3. Verification letter of land use demand
4. Request for Inclusion of the project land use into provincial annual land use plan
5. Acceptance letter for inclusion of land use plan of the project into district annual land use plan

4.1.1 Initial Site Screening

Description	The initial screening of the project against the applicable local laws and regulations and the Performance Standards should indicate whether the project may pose social or environmental risks that need to be further analysed through additional steps of the identification process. Screening results will define whether or not a full ESIA is to be carried out.
Requirements	Initial Screening involves in site study, including: - The determination of the location, scale and duration of project activities, including those of associated facilities, and impacts arising through supply chains or other third party relationships - The presence of significant affected value (such as endangered species and proximity to protected areas or critical natural habitats) or potential impacts to ecosystem - The types of technology that will be used
Responsible	- The Project Developer shall contract a specialised Consultant
Regulations	- 2012 IFC Performance Standards (PS) and Guidance Notes - IFC Environmental, Health, and Safety (EHS) Guidelines (General EHS Guidelines, Wind Energy Sector EHS Guidelines)
Time line	1 month
Stage	Project Preparation Phase
Comments/ Recommendations	Although the screening of potential impacts to ecosystem services by the project development is not required during the site identification and approval process according to local regulation, it is recommended that the developer/investor should conduct this step to ensure the suitability and hence avoid potential cost impact of the site for the project development and implementation.

4.1.2 Request verification land use

Description	The developer/ investor shall check with DONRE if its project's proposed land use suits the province's existing land use planning and regulations.
Responsible	Developer/investor
Requirements	The dossier shall consist of: - A request letter from the developer/investor which shall include at least the following information: Project scale (MW), location with coordinates by VN.2000 projection, expected land use (separated by permanent and temporary use), estimated investment cost, source of finance (equity and loan) - A map showing the boundary of the proposed project and arrangement of key items (wind turbines, power substation, internal road, cable trench…) - Evidence showing the financial capability of the developer and its ability to mobilize finance to realize the project
Regulations	- Land Law No. 45/2013/QH13 (Article 58) passed by the National Assembly on November 29, 2013, in effect on July 01, 2014; - Decree No.43/2014/NĐ-CP (Article 14) dated May 15, 2014 of the Government, detailing implementation some articles of Land Law in effect on July 01, 2014;
Time line	- Before submission of request for Decision on investment.
Comments/ Recommendation	This step is necessary for the developer to ensure the suitability of the proposed project land use with the existing land use planning and regulations.

4.1.3 Verification letter of land use demand

Description	During this verification process, DONRE will check if the proposed land use of the project fits with the existing land use planning and regulations. If the project takes 20 ha or more of protective forest or specialized forest or 10 ha or more of paddy land then by the Land Law No. 45/2013/QH13, the PC must seek approval by the Prime Minister before making decision on and use change, or approval by the Provincial people's commission in the form of a resolution in case the project takes less than the above (less than 20 ha of protective forest or specialized forest or less than 10 ha of paddy land).
Responsible	DONRE/PC
Requirements	- Approval by the Prime Minister or the Provincial People's commission in case the project takes protective forest, specialized forest or paddy land - The project developer shall demonstrate its own financial capability (equity) not less than 20% of the expected total investment cost in case the project land take is below 20 ha and not less than 15% if land take is 20 ha and above. - The project developer should have a good profile of land use, for example by proving it has not violated any regulations on land use
Regulations	- Land Law No. 45/2013/QH13 (Article 58) passed by the National Assembly on November 29, 2013, in effect on July 01, 2014; - Decree No.43/2014/NĐ-CP (Article 14) dated May 15, 2014 of the Government, detailing implementation some articles of Land Law in effect on July 01, 2014;
Time line	2 weeks after getting approval of the Prime Minister or of the Provincial People's Commission if applicable
Comments/ Recommendations	International standards do not consider the size of the project as relevant criteria in itself but rather the impact of the project on the site and its surrounding.

4.1.4 Request for Inclusion of the project land use plan into district annual land use plan

Description	Once the project has got the Principle Decision on Investment by the Provincial People's Committee, the developer/investor shall register its land use plan with the PC at district level to have it included in the district land use plan.
Responsible	Developer/investor
Requirements	The dossier shall consist of: - A request letter which shall include at least the following information: project scale (MW), location with coordinates by VN.2000 projection, description of land use plan - Decision on Investment by the PPC - The project report (Pre-FS) - The verification letter of land use demand of the project by DONRE - A map showing the boundary of the proposed project and arrangement of key items (wind turbines, power substation, internal road, cable trench…) and their corresponding land areas
Regulations	- Land Law No. 45/2013/QH13 (Article 45) passed by the National Assembly on November 29, 2013, in effect on July 01, 2014; - Decree No.43/2014/NĐ-CP (Article 9) dated May 15, 2014 of the Government, detailing implementation some articles of Land Law in effect on July 01, 2014; - Decree No.01/2017/NĐ-CP (Article 8) dated 06/01/2017 providing amendments, supplements to some decrees guiding the implementation of the Land Law
Time line	After obtaining the Principle Decision on Investment for the project from the provincial PC
Comments/ Recommendations	This step is necessary to ensure the project has land available for its development

4.1.5 Acceptance for inclusion of land use plan of the project into the district annual land use plan

Description	Upon receipt of land use plan by the developer/investor, the PC at district level shall update it into its annual land use plan and then submit it to DONRE for appraisal in the third quarter of the year. After the proposed land use plan has been appraised, DONRE shall be responsible for reporting it to the Provincial People's Committee who will then submit it to the Provincial People's Commission for approval and determination of state budget for land compensation and clearance at its year end meeting.
Responsible	DONRE/PC
Requirements	
Regulations	- Land Law No. 45/2013/QH13 (Article 45) passed by the National Assembly on November 29, 2013, in effect on July 01, 2014; - Decree No.43/2014/NĐ-CP (Article 9) dated May 15, 2014 of the Government, detailing implementation some articles of Land Law in effect on July 01, 2014; - Decree No.01/2017/NĐ-CP (Article 8) dated 06/01/2017 providing amendments, supplements to some decrees guiding the implementation of the Land Law
Time line	District annual land use plan shall be approved before end of the previous year.
Comments/ Recommendations	

4.2 Project Development Phase

Once the site has been selected and the risk and impact identification is completed, the developers take responsibility to

- Prepare a full ESIA report, which shall be submit to the Department of Natural Resources and Environment (DONRE) for appraisal.
- Implement Information Disclosure, report and consultation with the Affected Communities.

After the ESIA Report is approved, an Information Disclosure, Report And Consultation process is conducted, in collaboration with local authorities, as well as the affected communities to provide the overview of projects, with up-to-date information relevant to potential risks and impacts and mitigation measures.

4.2.1 ESIA Development

4.2.1.1 Scoping the Environmental and Social Risk and Impacts

Description	The scoping shall cover the physical, biological, socio-economic and cultural environments within the proposed Project scope and identify the key issues relevant to the Project to be considered in the full ESIA. It will also define the focus and work plan of the required baseline studies, ongoing stakeholder engagement and assessment. The scoping contents should be included in Preliminary ESIA report, in which, the scope and level of efforts to devote environmental and social risks and impacts of the projects is clarified.
Requirement	The results of the scoping need to be summarized and presented within a concise Scoping Report (or also called Preliminary Report): - A Brief project Description - Description of legal framework (both national and international, including the gap analysis) - Identification of the key environmental and social risk and potential impacts - Description of the alternatives to be considered in the ESIA - Stakeholder analysis/stakeholder mapping to identify the stakeholder groups - Outline of methodology and approach for community engagement to be applied during ESIA - Detailed work plan for the ESIA, including timeline of activities and other necessary studies as required - Terms of Reference for any additional baseline studies needed, which will be implemented through the next ESIA tasks
Responsible	Developer/investor should contract a specialised consultant for this task

Regulations	2012 IFC Performance Standards (PS) and Guidance Notes FC Environmental, Health, and Safety (EHS) Guidelines (General EHS Guidelines, Wind Energy Sector EHS Guidelines)
Time line	1-2 months
Comment/ Recommendations	The scoping will help the developer to ensure the suitability and potential cost impacts of the specific site for the project development and implementation. Although this report is not required by the national standards, it is proven useful for the developer/ investor as it lays out systematically the process, allowing the developer/investor to provide comments/feedback in the process thus creating a sense of ownership and also in engaging relevant stakeholders in the process. This report is first step and necessary to complete the report and is thus recommended. Along with the requirement on this deliverable, it is also recommended to follow IFC standards to address environmental and social impacts and other issues associated with the construction, operation and decommissioning of the wind power projects in case there is no or insufficient local regulations or standards to ensure the sustainability of the project. The content of this study will be necessary to complete the full ESIA report.

4.2.1.2 Preparation of Stakeholder Engagement Plan

Description	The Developer shall prepare a SEP to guide the stakeholder engagement activities (disclosure information, consultant, report, etc.) to be undertaken during the Project stage(s) (as applicable, e.g. Project planning/design, construction, operation and maintenance) and to ensure that any interested and affected stakeholder group/communities encountered within the project footprint will be consulted in a culturally appropriate and participatory manner regarding the positive and negative impacts. The provisions of Engagement Plan are to: - Consult the commune's committee and entities who are directly affected by the project by sending the draft ESIA - Consult local communities who are directly affected by the project in the form of having meetings with them.
Requirement	The SEP consists of: - Identification, characterisation, and priority of stakeholders focusing on affected group - Engagement programs - Previous public consultation and disclosure activities information - Requisite and Regulation (Local Regulation, international standard, the gap) - Grievance mechanism - Monitoring, reporting and review

Regulations	- 2012 IFC Performance Standards(PS) and Guidance Notes - IFC Environmental, Health, and safety (EHS) Guidelines (General EHS Guidelines, Wind Energy Sector EHS Guidelines) - For further guidance, the Sample content of IFC Stakeholder Engagement Good Practice Handbook (2007) shall be used.
Responsible	The developer shall conduct this work in collaboration with a specialised Consultant.
Stage	Project Development Phase
Time line	The process might take 1 to 2 months
Comments/ Recommendations	The Stakeholder Engagement Plan are necessary for developers to have a clear sight of stakeholder engagement activities in next phases. According to Vietnam Regulation, the SEP is not compulsory. However, due to the International requirements, it is likely to be more transparent and specified if include the SEP into the full ESIA report. In Vietnamese context a well defined and clear grievance mechanism extending to all project phases up to decommissioning is considered of outmost importance. All stakeholders should be informed accordingly about the grievance mechanism and procedure apllicable. (more details to be found in annex).

4.2.1.3 Prepare the full ESIA Report

Circular No. 27/2015/TT-BTNMT provides the template for ESIA which contains the following sections and chapters

- Project background
- Assessment of current status of natural and socio-economic environment
- Estimate & projection of impacts
- Measures to manage, treat and mitigate impacts
- Environmental management and monitoring program
- Consultation results
- Cost estimate for construction of environment protection works and implementation of measures to minimize environmental impacts

Whereas per IFC standards, ESIA shall include the following deliverables

- Scoping the Environmental Risks and Impacts.
- Environmental and Social Impact Management Program.
- Monitoring Program.
- Emergency Preparedness and Response
- Stakeholder Engagement Plan

Thus, there are difference in process and content by the two standards. In light of this, the following shed light into those differences and from that perspectives provides recommendations to developer/investor so that the ESIA that will be prepared accordingly could meet both international standards and local regulations.

Descriptions	After the scoping is completed, the developer will prepare the full Environmental and Social Impacts Assessment (include Actions Plans) that, in sum, will describe mitigation and performance improvement measures and actions that address the identified environmental and social risks and impacts of the project, in compliance with applicable national laws and regulations, and to meet the requirements of the applicable Performance Standards.	
	National requirement	**IFC Standard**
Requirements	The developers must include the following contents in Management Program: - The overview of project - Description impacts of project throughout the project lifetime (5 phases) - Project Risk and Impacts mitigation measures for each phase perspectively (The level of mitigation levels depend on the Risk and Impacts affection of project throughout lifetime. The details of Management Program is mentioned in Circular No. 27/2015/TT-BTNMT dated May 29, 2015 of the MONRE on Strategic Environmental Assessment, Environmental Impact Assessment, and Environmental Protection Plans; Annex 2.3, chapter 1,3,4,5.	The program should cover the several main aspects: - Description of the project and its associated facilities - Description of the baseline environment conditions - Description of the legislative and regulatory framework: - Description of policy, legal and administrative framework, as well as gaps between the national legislation and international requirements - Determination of impacts of project and mitigation measures - Evaluation of cumulative impacts The impacts of project and mitigation measures are listed in EHS Guidelines, include Wind Energy Sector EHS Guideline, and 2012 IFC Performance Standard. Specialist studies need to be conducted on following aspects: - Noise/visual impact/shadow Flicker/ Birds and Bats/Ecology and Biodiveristy/ Water quality - Indigenious people - For nearshore marine safety/Ecosystem and safety

Regulations	- Law on environmental protection No. 55/2014/QH13 (Chapter III), passed by the National Assembly on June 23, 2014, in effect on January 01, 2015; - Decree No. 18/2015/ND-CP (Article 12), dated February 14, 2015 of the Government on environmental protection planning, regulating Strategic Environmental Assessment, Environmental Impact Assessment and Environmental Protection Commitment; - Circular No. 27/2015/TT-BTNMT (Article 6), dated May 29, 2015 of the MONRE on Strategic Environmental Assessment, Environmental Impact Assessment, and Environmental Protection Plans;	- 2012 IFC Performance Standards(PS) and Guidance Notes - IFC Environmental, Health, and Safety (EHS) Guidelines (General EHS Guidelines, Wind Energy Sector EHS Guidelines)
Responsible	The developer/investor shall contract a specialised consultant for this task.	
Timeline	The study might be from 6 to 12 months	
Comments/ Recommendations	The Vietnamese report will be used to apply for environmental approval to the local authorities, whereas the full report according to IFC standards will be used for project financing, implementation and monitoring activities.	

4.2.1.4 Monitoring Management Action Plan

Descriptions	As a part of ESIA, the Developer shall prepare Environmental Monitoring Plan to monitor and review the effectiveness of Management Program. The Monitoring Program shall include a table of the commitments based on the mitigation measures identified, with detail on the anticipated objectives of each measure, related to project phases and reporting requirements as well as competencies and human resources, required equipment, materials and budgets required for the implementation of this commitment.

	National requirement	IFC Standard
Requirements	According to Vietnam Regulation, The environmental monitoring program should be set up throughout the project implementation process, designed in stages of preparation, construction, operation and other stages of the project. The Environmental Monitoring Program consists of the following contents for each phase: - Monitoring objectives: specify the objectives to be achieved by the monitoring activity. - Monitoring contents: specify supervisors, time, frequency of monitoring, monitoring parameters/ directives and monitoring locations (if any). - Resources for monitoring: specify resources for monitoring including personnel, funding and other material conditions necessary for monitoring - Responsibility for monitoring: specify the organization, in collaboration with local authorities and communities affected by project in the process. performance monitoring.	The monitoring program include for each potential impact at least the following content: - Item Section - Activity/Aspect - Potential Impact - Mitigation/Management - Responsibility Implementation - Monitoring Performance/Key indicators Also, the Developer will have to include a precise and specific action plan, detailing needed training (technical assistance, equipment and supplies, organizational changes) for the monitoring of environmental and social impacts as well as corresponding costs. Where significant residual impacts remain after application of mitigation measures, the Developer shall propose measures to compensate/offset the identified impacts. The Monitoring Plan shall be clearly structured and should cover from Project Development Phase to Operation Phase.
Regulations	- Decree No. 18/2015/ND-CP (Article 12), dated February 14, 2015 of the Government on environmental protection planning, regulating Strategic Environmental Assessment, Environmental Impact Assessment and Environmental Protection Commitment; - Circular No. 27/2015/TT-BTNMT (Article 6), dated May 29, 2015 of the MONRE on Strategic Environmental Assessment, Environmental Impact Assessment, and Environmental Protection Plans;	- 2012 IFC Performance Standards(PS) and Guidance Notes - IFC Environmental, Health, and safety (EHS) Guidelines (General EHS Guidelines, Wind Energy Sector EHS Guidelines)
Responsible	The developer/investor shall contract a specialised consultant for this task.	
Timeline	1-2 months	
Comments/ Recommendations		

4.2.1.5 Emergency Preparedness and Response	
Descriptions	An emergency preparedness and response system will be established and maintained so that the developers will be able to respond to accidental and emergency situations associated with the project in an appropriate manner to prevent and mitigate any harm to people and/or the environment. The emergency preparedness and response plans support developers to prepare for the worst scenario. They should define clearly assigned responsibilities for the assessment of the degree of risk to life, property and environment, with procedures on who and with whom to communicate regarding different types of emergencies.
Requirement	The Developers, in cooperation with Government Agency and Community, should take an Emergency Plan into account, which consist of: - Identification of the emergence scenarios - Specific emergence response procedures - Trained emergency response team - Emergency contacts and communication systems/protocols (including communication with Affected Communities when necessary) - Procedures for interaction with government authorities (emergency, health, environmental authorities) - Permanently stationed emergency equipment and facilities (e.g., first aid stations, firefighting equipment, spill response equipment, personal protection equipment for the emergency response teams) - Protocols for the use of the emergency equipment and facilities - Clear identification of evacuation routes and muster points - Emergency drills and their periodicity based on assigned emergency levels or tiers - Decontamination procedures and means to proceed with urgent remedial measures to contain, limit and reduce pollution within the physical boundaries of the project property and assets to the extent possible.
Responsible	The developers, Government Agency, Affected Communities.
Regulation	2012 IFC Performance standard and Guild Note Wind Energy Sector EHS Guidelines)
Stage	The Development Phase
Timeline	1 – 2 months
Comments/ Recommendations	As the project risk and impacts influence extent is expect to change during the project lifetime, it is recommended for developers to including and Emergency Preparedness and Response for unpredictable situations which are likely to be generate serious consequences.

4.2.1.6 Land Compensation/Resettlement Action Plan

Descriptions	Based on IFC standards it is recommended to avoid involuntary resettlement by all means wherever feasible or to minimize it by exploring alternative project designs and sites. Where involuntary resettlement is unavoidable, developer must engage affected people in the planning, implementation, and monitoring of the resettlement process. A Resettlement Action Plan (RAP) is a document drafted by the developer or other parties responsible for resettlement (such as government agencies), specifying the procedures it will follow and the actions it will take to properly resettle and compensate affected people and communities. Affected people shall be compensated for loss of physical assets, revenue, and income resulting from economic displacement or physical relocation whether these losses are temporary or permanent. If domestic law does not already specify such a framework, the project developer should establish transparent methods for the valuation of all assets affected by the project. These methods should include consultation with representatives of the affected communities to assess the adequacy and acceptability of the proposed compensation.
Requirement	The RAP must identify the full range of people affected by the project and justify their displacement after consideration of alternatives that would minimize or avoid displacement. The involuntary resettlement policy also applies to all components of a project (also associated facilities). The RAP shall include at least following chapters: 1. Project Description. 2. Potential Impacts. 3. Main Goals of the Resettlement Program. 4. Socioeconomic Studies. 5. Legal Framework. 6. Institutional Framework. 7. Eligibility (definition of individuals to be displaced) 8. Valuation and Compensation for Losses. 9. Resettlement Measures. 10. Selection of Site, Preparation and Relocation. 11. Housing, Infrastructure and Social Services. 12. Protection and Management of the Environment 13. Community Involvement. 14. Integration with Host Populations. 15. Complaint and Grievance Procedures. 16. Organizational Responsibilities. 17. Execution Calendar. 18. Costs and Budgets. 19. Monitoring and Assessment
Responsible	The developer
Regulation	2012 IFC Performance standard 5 and Guidance Note
Stage	The Development Phase
Timeline	3 months
Comments/ Recommendations	Due to the land situation in Vietnam, the implementation of an adapted RAP (if applicable) and assessment of compensation level is of outmost importance.

4.2.2 Appraisal of ESIA

Description	After the ESIA report has been drafted and incorporated with comments and feedback from the consultation process, the developer/investor is responsible for submitting the report for appraisal. By the regulation (Decree No. 18/2015/ND-CP), MONRE appraises and approves ESIAs for wind power project larger than 30 MW (Investment Law Nr 67/2014/QH13, Article 31), or project that encroaches 20 ha or more, *or t*akes 20 ha or more of protective forest or specialized forest *or* 100 ha or more of natural forest *or* 10 ha or more of paddy land, while DONRE/PC appraises and approves ESIAs for other projects than those listed above. The appraisal of the ESIA is conducted by an appraisal committee established by the MONRE or DONRE as per above regulation and consisted of at least 7 members. The appraisal committee is responsible for reviewing the ESIA content and subsequently provides its appraisal opinions to the appraisal agency (MONRE or DONRE) for its consideration and accordingly making decision on approval of its ESIA. During the appraisal process, MONRE or DONRE is authorized to (I) conduct survey, verification of information/data regarding status quo on environment at the project location and the surroundings, (ii) collect sample for verification, (iii) get experts' opinions and opinions from socio and professional organizations.
Responsible	Developer/investor
Requirements	The dossier shall consist of: - A request letter for ESIA report appraisal (letter template is provided in Circular No. 27/2015/TT-BTNMT) - ESIA report (7 sets) - The feasibility study report (1 set)
Regulations	- Environment Protection Law Nr 55/2014/QH14 (Annex II and III approved by the National Assemly in 23/06/2014) - Invetsment Law Nr 67/2014/QH13 (Article 31) approved by the National Assemly on 26/11/2014 - Decree No. 18/2015/ND-CP (Article 14), dated February 14, 2015 of the Government on environmental protection planning, regulating Strategic Environmental Assessment, Environmental Impact Assessment and Environmental Protection Commitment; - Circular No. 27/2015/TT-BTNMT (Article 8), dated May 29, 2015 of the MONRE on Strategic Environmental Assessment, Environmental Impact Assessment, and Environmental Protection Plans; - Cricular 56/2018/TT-BCT on 25/06/2018 of Minsitry of Finance providing regulation on collection, remittance, management and use of evaluation fees for environmental impact assessment reports and environmental impact assessment projects detailed by the central level agencies for implementation of appraisal

Fee	- Vary from 9.6 to 96 million VND to project scale in case it is appraised by MONRE - Appraisal fee for ESIA appraised by DONRE is to be decided by the Provincial People's Commission.
Time line	DONRE/MONRE is responsible for organizing the appraisal within 30-45 days since the date of receiving valid dossier and organizing the approval within 20 days since the date of receiving the dossier after incorporation of comments by the appraisal committee
Comments /Recommendations	

4.2.3 Approval of ESIA

Description	After the ESIA report has been incorporated with comments (if any) from the appraisal committee, the developer/investor shall be responsible for sending it to the relevant agency (MONRE/DONRE) for approval. If the report is appropriate, MONRE/DONRE shall approve it and let the developer/ investor know about its decision in writing. At the same time, MONRE/DONRE shall send its decision and ESIA report to the related agencies for their management.
Responsible	Developer/investor
Requirements	The dossier shall consist of: - A request for approval of the ESIA report. This letter shall elaborate parts or sections which have been adjusted or supplemented per comments of the appraisal committee. - ESIA report (hard and soft copies)
Regulations	- Decree No. 18/2015/ND-CP(Article 14), dated February 14, 2015 of the Government on environmental protection planning, regulating Strategic Environmental Assessment, Environmental Impact Assessment and Environmental Protection Commitment; - Circular No. 27/2015/TT-BTNMT (Article 9), dated May 29, 2015 of the MONRE on Strategic Environmental Assessment, Environmental Impact Assessment, and Environmental Protection Plans;
Fee	- None
Time line	Within 20 days since the date of receiving valid dossier
Applicability	
Comments/Recommendations	

4.2.4 Information Disclosure, Report and Consultation

Descriptions

The disclosure, report and consultation involves in delivering information about the project to stakeholders and collect stakeholder comments about the projects.

The project owners shall consult with People's Committee, local government and communities affected by the project, to gather their opinions and recommendation to minimize the adverse impacts which are relevant to natural environment, biodiversity and public health.

The consultations with the commune-level People's Committees of the localities where the projects are executed and the organizations directly affected by the projects shall be conducted in the following process:

	National Requirements	IFC Standard
Requirements	The project owner shall send a report on the environmental impact assessment of the project to the local communities at where the project is implemented and the organizations directly affected by the project, enclosed with the written request for comment. The People's Committees at location affected by the projects construction shall reply in writing within fifteen (15) working days from the date of receiving the requests. Consultation is conducted in the meeting organized by the project developers and the local people's committees. The opinions of participants in the meeting must be fully and truthfully expressed in the minutes of the community meeting.	The client will provide Affected Communities with access to relevant information on: - The purpose, nature, and scale of the project; - The duration of proposed project activities; - Any risks to and potential impacts on such communities and relevant mitigation measures; - the envisaged stakeholder engagement process - The grievance mechanism When Affected Communities are subject to identified risks and adverse impacts from a project, the client will undertake a process of consultation in a manner that provides the Affected Communities with opportunities to express their views on project risks, impacts and mitigation measures, and allows the client to consider and respond to them.
Regulation	- Decree No. 18/2015/ND-CP (article 12) and Circular No. 27/2015/TT-BTNMT (article 7) prescribes the undertaking of consultation during the ESIA preparation. - Circular No. 27/2015/TT-BTNMT provides templates for the consultation	- 2012 IFC Performance Standards (PS) and Guidance Notes

Stage	At the beginning of Project Development Phase	Project Development Phase to Operation Phase
Responsible	The Developers, Local Authorities, Affected Communities	
Comments/ Recommendations	This step is necessary to ensure that any interested and affected stakeholder group/ communities encountered within the project footprint will be consulted in a culturally appropriate and participatory manner regarding the positive and negative impacts and issues raised shall be listed, and the ESIA should demonstrate how these issues have been addressed within the ESIA. Due to Vietnam Law and Regulation mentioned above, the activities will be conducted just at the beginning of the Project Development phase. However, it is recommended that according to IFC Standard, this process should continuously be available during the Development phase in order to gathering up-to-date comments from the Affected Communities.	

4.2.5 Land Clearance

4.2.5.1 Develop a land acquisition plan and plan for land compensation, support and resettlement

Description	- Based on the estimated land use in the Decision on Investment and the approval land use plan, the PPC will issue announcement on land acquisition. The announcement shall be sent to every affected land user, be announced in mass media and be posted at the office of the commune and at the community where the land is acquired. The announcement shall include plan for land acquisition, survey, measurement and inventory. - The announcement should be made before the decision on land acquisition is made at least 90 days for agricultural land and 180 days for non-agriculture land. - The developer/investor cooperates with the land compensation and clearance organization (composed of members from the land use public service organization and compensation, support and resettlement committee of the province) to carry out the inventory of the land to be used by the wind farm and related installations and then develop a plan for land compensation, support and resettlement. - The organization shall be responsible for seeking opinions on the proposed plan by holding meetings with the affected people and at the same time posting the plan at the office of the commune and at the community where the land is acquired. The organization shall be responsible for consolidating opinions in writing with detailed note on number of agreement and number of disagreement and number of other opinions with the plan; for holding dialogue with those who disagree with plan; and afterwards for finalizing the plan.
Responsible	Developer/Investor, Land user, Communal PC, Provincial PC

Requirements	The inventory, compensation and resettlement plan shall include the following items: 1. Area of each type of land to be used; 2. Number of land users in the area to be used; 3. Estimated cost for compensation for each type and position of the land; 4. The plan of resettlement (estimated number of households, location and manner of resettlement); 5. Estimated total amount to be paid for compensation and resettlement, and source of this capital; 6. Milestones for land clearance.
Regulations	- Land Law No. 45/2013/QH13 (Article 67, 69), passed by the National Assembly on November 29, 2013, in effect on July 01, 2014; - Decree 43/2014/NĐ-CP (Article 17) of Government dated 15/05/2014 on regulations on implementation of some articles of the Land Law in effect on 1/7/2014; - Decree No. 44/2014/NĐ-CP, dated May 15, 2014 of Government on land fees; - Decree No.47/2014/ND-CP (Article 3, 17, 28), dated May 15, 2014 of Government on regulations on compensation, support and resettlement on land acquisition by government; - Decree No. 1/2017/NĐ-CP, dated on January 06, 2917 of Government on adjustment and amendment of some decrees regulating the implementation of Land Law; - Circular No. 37/2014/TT-BTNMT dated June 30, 2014, detailed regulations on compensation, support, and resettlement upon land expropriation by the state
Validity	
Time line	3-6 months
Applicability	
Comments /Recommendations	- Potential conflict on land use - Potential disagreement on compensation and resettlement plan It is recommended to coordinate closely with the local authorites for the most efficient approaches and solutions.

4.2.5.2 Decision on land acquisition and appraisal and implementation of compensation, support and resettlement plan	
Description	- The project developer submit the land acquisition plan and the plan on compensation, support and resettlement to DONRE for appraisal. DONRE will submit to the PPC for approval. - Once the plan has been approved, the developer/investor will pay the compensation fees to the land compensation and clearance committee who will then transfer it to the land owners. - The land compensation and clearance committee shall be responsible for collaborating with the commune's committee in disseminating it; posting it at the office of the commune and at the community where the land is acquired; sending it to every affected land user in which details on the compensation, support and resettlement plan along with implementation schedule shall be informed. - The committee is also responsible for implementing the approved compensation, support and resettlement plan and managing the land after it has been cleared. - Within 30 days after the Decision on land acquisition is effective, the land compensation and clearance committee shall transfer the compensation fees to the land owners.
Responsible	Developer/Investor, Land user, Communal PC, Provincial PC
Requirements	Land acquisition plan and the plan on compensation, support and resettlement is developed.
Regulations	- Land Law No. 45/2013/QH13 (Article 93), passed by the National Assembly on November 29, 2013, in effect on July 01, 2014; - Decree No.47/2014/ND-CP (Article 30) dated May 15, 2014 of Government on regulations on compensation, support and resettlement on land acquisition by government - Circular No. 37/2014/TT-BTNMT dated June 30, 2014, detailed regulations on compensation, support, and resettlement upon land expropriation by the state - Land fees announced by DONRE shall be a reference
Validity	
Fee	The clearance fee is regulated by local authorities and depend on the location and land type.
Time line	3-6 months
Applicability	
Comments/ Recommendations	

4.2.5.3 Land allocation decision	
Description	Once land clearance is completed and payment for land rental (if appliable) has been settled, the PPC will grant a decision on land allocation.
Responsible	The PPC
Requirements	Once land clearance is completed.
Regulations	- Land Law No. 45/2013/QH13 (Article 58, 59), passed by the National Assembly on November 29, 2013, in effect on July 01, 2014; - Circular No. 30/2014/TT-BTNMT (Article 3, Template 1 and 2), dated 02/06/2014 regulating dossiers for land allocation, rental, land use change and land acquisition
Validity	
Fee	
Time line	Within 20 days after the land clearance is completed.
Applicability	
Comments	

4.2.5.4 Land use registration and certificate	
Description	Once land clearance is completed, the developer/investor shall make registration of land use in the land book for state management. Land use classification is governed by the land law (Article 10) and determined based on the decision on land allocation. The registration can be made electronically or in writing both have the same legal value. If the registration is proven valid, the PPC will grant land use certificate.
Responsible	Developer/Investor, the PPC
Requirements	Decision on land allocation has been granted.

Regulations	- Land Law No. 45/2013/QH13 (Article 95, 105, 126), passed by the National Assembly on November 29, 2013, in effect on July 01, 2014; - Decree No. 43/2014/NĐ-CP dated 15/05/2014 (Article 26) guiding the implementation of the Land Law - Decree No.01/2017/NĐ-CP (Article 22) dated 06/01/2017 providing amendments, supplements to some decrees guiding the implementation of the Land Law
Validity	50 years
Fee	
Time line	
Applicability	
Comments	Land use certificate is a legal document which can be used as asset when it comes to business cooperation or as colateral at lender for loan securing (Article 175).

4.3 Project Implementation Phase

Once the project has obtained all the permits required, the relevant studies have been successfully completed and the financing is available the developer might start the construction of the wind farm. During this phase, from and environmental and social perspective following steps shall be covered:

- Monitoring Environmental and Social Impacts
- On-going Report to Communities

4.3.1 Monitoring Environmental and Social Impacts

Description

Monitoring is the client's primary means for tracking and evaluating progress towards the implementation of the management system and programs, including all action items specified in the Action Plans.

	National Requirement	IFC Standard
Requirement	In this phase, the Monitoring activities will be conducted as proposed in Monitoring Program from ESIA Report For wind project, the issue from both environmental and social aspects, is addressed by specified monitoring section, including: - Noise Monitoring - Monitoring other environmental issues (in case the project can impact): sliding, sliding, landslides, sedimentation and sediment erosion; changes in surface water level, groundwater, salinity intrusion, alum intrusion, rare and endangered species are prioritized for protection in order to monitor the spatial and temporal variability of these problems with frequency At least 01 time/06 months. - Labour Working Conditions and Occupation Safety Monitoring Results of monitoring of environmental parameters must comply with national environmental standards and regulations.	The key risks and impacts monitoring of the project focus on employees, communities and the natural environment aspects. The monitoring is divided to: - Environmental Monitoring: Emission in construction, water pollution, solid waste in construction, erosion. - Noise monitoring - Biodiversity monitor - Occupational Health and Safety Control. For each monitoring programs, the developers must follow the international standard requirement for each type of impacts and solutions from General EHS guideline and Wind Energy Sector EHS Guideline; and also harmonizing with National Regulation See Annex 7.2.3 for details.

Regulations	- Law on environmental protection No. 55/2014/QH13 (Chapter III) - Law on occupational safety and health No. 84/2015/QH13 - QCVN 24:2016/BYT – National Technical Regulation on Noise - Permissible Exposure Levels of Noise in the Workplace - TCVN 7878-1:2008 (ISO 1996-1:2003)–Acoustics–Decsription, measurement and assessment of environmental noise - Part 1: Basic quantities and assessment procedures; - QCVN 26:2010/BTNMT – National technical regulation on noise; - QCVN 01:2008/BCT – National technical regulation on electricity safety. - QCVN 14:2014/TT-BXD – National technical regulation on safety in construction - QCVN 18:2014/BTTTT – National technical regulation on general electromagnetic compatibility for radio communication equipment - QCVN 27:2010/BTNMT – National technical regulation on vibration; - QCVN 03:2008/BTNMT – National technical regulation on heavy metals concentration in soil; - QCVN 08:2008/BTNMT – National technical regulation on quality of surface water; - QCVN 09:2008/BTNMT – National technical regulation on quality of ground water; - QCVN 14:2008/BTNMT – National technical regulation on quality of domestic waste water; - QCVN 40:2011/BTNMT – National technical regulation on quality of industrial waste water; - Law on water resources No. 17/2012/QH13, passed by the National Assembly on June 21, 2012, in effect on January 01, 2013;	- 2012 IFC Performance Standards(PS)and Guidance Notes - IFC Environmental, Health, and safety (EHS) Guidelines (General EHS Guidelines, Wind Energy Sector EHS Guidelines)
Responsible	The developer in collaboration with a with a specialised consultant	
Stage	Project Implementation to Decommissioning Phase	
Comments/ Recommendations	In case some impacts are considered to be more severe than previously assessed, or impacts increase due to external factors the developer/operator has to implement corrective measures to limit the impacts, these can included for example, curtailment, training on the employees, application of new H&S regulations etc.	

4.3.2 Stakeholder Engagement activities

Descriptions	On-going Report involves in delivering information about the project conditions and relevant issues to stakeholders and collect stakeholder comments throughout the project lifetime and to inform them about on-going mitigation activities as well as about the grievance mechanism and procedure in place.
Requirements	The client will provide periodic reports to the Affected Communities that describe progress with implementation of the project Action Plans on issues of on-going risk to or impacts affecting the communities. If the management program results in material changes in or additions to the mitigation measures or actions described in the Action Plans on issues of concern to the Affected Communities, the updated relevant mitigation measures or actions will be communicated to them. The frequency of these reports will be proportionate to the concerns of Affected Communities but not less than annually. The on-going report requires providing up-to-date information of Management Program implemented from the beginning of project. Furthermore, successful measures and unexpected outcomes should be listed in report for transparency.
Responsible	The Developers, Government Agency
Regulation	2012 IFC Performance Standards(PS) and Guidance Notes, Performance Standard 1
Stage	Project Development Phase to Operation Phase
Comments/ Recommendations	The on-going report is continuous process of previous report activities in Development phase. As the Wind Project Impacts is long-term and predicted to be changing during the project lifetime, the annual on-going report is considered necessary for project stakeholders.

4.4 Project Operation Phase

Once the construction is finalised the wind farm will be commissioned and then enter the operation phase. The wind farm will need to obtain an environment protection certificate which allows the project to be operated according to national environmental laws.

Usually a wind farm is operated for a period of 20 years. During this phase the impact of the wind farm have to be monitored. In case the impacts which are measured are more important than originally assessed some corrective measures might need to be implemented and reporting to local communities is required.

4.4.1 Monitoring Enviromental and Social Impacts

Description

During this phase, the impact of the wind farm have to be monitored with the same methods along with mitigations as Implementation Phase.

However, in case the impacts are more important and likely to generate more serious risk and impacts than originally assessed, several corrective measures with more comprehensive analysis might need to put into considerations.

	National Requirement	IFC Standard
Requirement	In this phase, the plan should cover monitoring of other project related environmental issues (in case project can impact), as follows: - Sliding, landslides, sedimentation and sediment erosion; - Changes in surface water level, ground water, salinity intrusion, alum intrusion, rare and endangered species are prioritized for protection in order to monitor the spatial and temporal variability of these problems with frequency at least 01 time/06 months. - For noise, it is necessary to clarify the scale and level of impacts associated with time and impact factors.	The monitoring activities must be implemented according to the Monitoring Plan in ESIA Report, in which the monitoring procedures and mitigations are determined and expected to react on time. The key risks and impacts monitoring in this phase of project include: - Operation noise monitoring - Visual Impacts monitoring - Water quality monitoring Detail impacts, as well as mitigation measures, are mentioned in IFC Environmental, Health, and safety (EHS) Guidelines for Wind Project.
Responsible	The developer in collaboration with a with a specialised consultant	

Regulations	- Law on environmental protection No. 55/2014/QH13(Chapter III) - Decision No.15/2008/QĐ-BTNMT provide general regulations on protection of water sources - QCVN 08:2008/BTNMT – National technical regulation on quality of surface water; - QCVN 09:2008/BTNMT – National technical regulation on quality of ground water; - QCVN 24: 2016/BYT – National Technical Regulation on Noise - Permissible Exposure Levels of Noise in the Workplace	- 2012 IFC Performance Standards(PS) - Guidance Notes - IFC Environmental, Health, and safety (EHS) Guidelines (General EHS Guidelines, Wind Energy Sector EHS Guidelines)
Stage	From Project Implementation to Decommissioning Phase	
Comments/ Recommendation	DONRE is responsible for investigating the implementation of monitoring plan.	

4.4.2 Stakeholder Engagement activities

Descriptions	In this phase, the on-going reporting to communities is considered as continuous process from previous phase. The aim is to inform the significant outcome from the implementation of Action Plan on project issue and the updated relevant mitigation measures to communities as well as to inform them about the grievance mechanism and procedure.
Requirements	The developers shall provide sustainability reports on - The project state (for several sensitive aspects, e.g. finance, the developer should balance the need of transparency with the disclosure information), - Environmental and social aspects of their operations, including areas of success of performance measures and positive project impacts that are being enhanced, as well as any unsuccessful outcomes and lessons learned.
Responsible	The Project Developers
Regulation	2012 IFC Performance Standards(PS) Guidance Notes
Stage	Project Development Phase to Decommissioning Phase
Comment/ Recommendation	The developers are recommended to conduct a periodical report in order to avoid the significant impacts happening during project lifetime.

4.5 Project Decommissioning Phase

Decommissioning activities usually occur at the end of the project life time and it depends on the proposed subsequent use of the site. If the site is not planned to be reused for wind power, decommissioning typically consist of dismantling and removal of infrastructure (e.g., turbines, substations, roads) and reinstatement of the project site to its pre-project condition. Depending on the original and subsequent land use, underground cable might need to be removed. If necessary vegetation needs to be replanted and all the dismantled infrastructure needs to be removed from the site and treated accordingly.

4.5.1 Monitoring Environmental and Social Impacts

Description

For this phase' activities, the below risk and impacts could be considered:

- Noise Impacts from Dismantling
- Labor Safety
- Infrastructure Transportation Risks
- Solid Waste Emission to water (for Offshore Wind Farm)

Therefore, the monitoring is necessary to ensure the risk and impacts are in control and in compliance with national environmental regulation as well as IFC standard.

	National Requirement	IFC Standard
Regulations	- Law on environmental protection No. 55/2014/QH13 - Decision No.15/2008/QĐ-BTNMT provide general regulations on protection of water sources - QCVN 08:2008/BTNMT – National technical regulation on quality of surface water; - QCVN 09:2008/BTNMT – National technical regulation on quality of ground water; - Law on road transport No. 23/2008/QH12 - QCVN 26:2010/BTNMT – National technical regulation on noise; - TCVN 7878-1:2008 (ISO 1996-1:2003) – Acoustics. Noise generated by road traffic vehicles when increasing speed. Maximum allowable noise;	- IFC Environmental, Health, and Safety (EHS) Guidelines (General EHS Guidelines, Wind Energy Sector EHS Guidelines)
Responsible	Developer/Investor	
Time line	At the end of the project lifetime, within 1 year after stop of operation	
Comments /Recommendations		

4.5.2 Stakeholder activities

Descriptions	In this phase, the on-going reporting is to pronounce the the decommissioning of project to stakeholder, regarding to associated activities and related issues and to inform them about potential resulting impacts and mitigation procedure as well as the grievance mechanism implemented.
Requirements	The developers shall provide a reports on - The project activities (transportation, removing the infrastructure, site-rehabilitation), - Environmental and social aspects of their actions
Responsible	The Project Developers
Regulation	2012 IFC Performance Standards (PS) Guidance Notes
Stage	Project Development Phase to Decommissioning Phase
Comment/ Recommendation	

5. Conclusion

The inclusion and guidance of international standards for the implementation of an ESIA for the development of a wind farm in Vietnam do not contradict the national regulations but rather more complement them. International standards take into consideration technology specificities of wind energy and ensure a sustainable project development, construction and operation. This sustainability will enforce the long term financial performance of the project. Therefore, even if these international standards are yet not legally binding in Vietnam, their application is strongly recommended.

Currently more than 90% of financing in emerging and developing countries apply international standards. The additional cost or time necessary for the implementation of international standards from the project preparation will have a long term positive impact on the lifecycle of the project and ensure project residual value and revenues.

The biggest challenges in the implementation of an ESIA according to international standards in Vietnam are mainly linked to wind technology specific issues (such as noise, flicker shadow, visual impacts, birds and bats), to ecology & biodiversity as well as to social impacts which shall be addressed more into detail (especially indigenous people, strategy and action for stakeholder engagement plan and activities, grievance mechanism and land compensation). To address these issues in a satisfactory manner, it is strongly recommended to commission a team of Consultant who are experienced with international and national standards. In case specialists on international standards are not available in Vietnam yet a consortium between national and international specialists should be envisaged to both fulfill the local content and international standards.

6. Annex

6.1 National regulations

The following are key regulations for environmental assessment and protection in Vietnam

Legal foundations on environment protection

- Law on environmental protection No. 55/2014/QH13, passed by the National Assembly on June 23, 2014, in effect on January 01, 2015;
- Law on water resources No. 17/2012/QH13, passed by the National Assembly on June 21, 2012, in effect on January 01, 2013;
- Law on forest protection and development No. 29/2004/QH11, passed by the National Assembly on December 03, 2004, in effect on April 01, 2005;
- Law on Biodiversity No. 20/2008/QH12 dated November 13, 2008;
- Decree No. 18/2015/ND-CP, dated February 14, 2015 of the Government on environmental protection planning, regulating Strategic Environmental Assessment, Environmental Impact Assessment and Environmental Protection Commitment;
- Decree No. 179/2013/ND-CP dated November 14, 2013 of the Government on the sanction of administrative violations in the domain of environmental protection;
- Decree No. 32/2006/ND-CP dated March 30, 2006 of the Government on management of endangered, precious and rare forest plants and animals;
- Decree No. 23/2006/ND-CP dated March 03, 2006 of the Government on the implementation of the law on forest protection and development;
- Decree No. 59/2007/ND-CP dated April 09, 2007 of the Government on solid waste management;
- Decree No. 99/2010/ND-CP dated September 24, 2010 of the Government on the policy on payment for forest environment services;
- Circular No. 27/2015/TT-BTNMT dated May 29, 2015 of the MONRE on Strategic Environmental Assessment, Environmental Impact Assessment, and Environmental Protection Plans;
- Circular No. 12/2011/TT-BTNMT dated April 14, 2011 of the MONRE stipulating hazardous waste management.
- Decision No.15/2008/QĐ-BTNMT provide general regulations on protection of water sources
- Circular No. 56/2018/TT-BTC dated June 25, 2018 of the MOF regulating on the rate of collection, regime for collection, payment, management and use of fee for appraisal of the environmental impact assessment report by the central regulatory body.

Legal foundations on land

- Land Law No. 45/2013/QH13, passed by the National Assembly on November 29, 2013, in effect on July 01, 2014;
- Decree No. 43/2014/ND-CP dated May 15, 2014 of the Government, detailing implementation some articles of Land Law in effect on July 01, 2014;
- Decree No. 47/2014/ND-CP dated May 15, 2014 of the Government, providing on compensation, support, resettlement when the State acquires land, in effect on July 01, 2014;
- Circular No. 37/2014/TT-BTNMT dated June 30, 2014 of the MONRE, providing details on compensation, support and resettlement when the State acquires land;
- Decree No. 42/2012/ND-CP dated May 11, 2012 on management and protection of paddy land
- Circular No. 24/2013/TT-BNNPTNT dated May 06, 2013 of the MARD on provisions on replacement afforestation upon conversion of forest use purpose to other purposes;
- Decree No. 44/2014/NĐ-CP dated May 15, 2014 of the Government regulating the land prices
- Decree No. 01/2017/NĐ-CP dated January 6, 2017 of the Government on amendments to the decrees on the implementation of the land law

Legal foundation on health and safety

- 1992 Constitution and Civil Code
- Law on occupational safety and health No. 84/2015/QH13
- Labour Law No. 10/2012/QH13

Legal foundations on electricity

- Electricity Law No. 28/2004/QH11 dated December 3, 2004;
- Amended Electricity Law No. 24/2012/QH13, passed by the National Assembly dated November 20, 2012, in effect on July 01, 2013;
- Decree No. 14/2014/ND-CP dated February 26, 2014 of the Government, providing details on implementing the Electricity Law on power safety, in effect on April 15, 2014;
- Decree No. 134/2013/ND-CP dated October 17, 2013 of the Government, providing penalty on administrative violations in electricity sector, hydropower dam safety, using energy economically and effectively;
- Circular No. 31/2014/TT-BCT dated October 02, 2014 of the MOIT, providing details on a number of content on Electricity safety.

Legal foundation on wind power projects

- Circular No. 32/2012/TT-BCT guiding development procedure and standardized PPA for grid connected wind power projects

Environmental Standards and Regulations

- Labour hygiene standards issued via Decision No. 3833/2002/QD-BYT dated October 10, 2002 of the MOH;
- QCVN 05:2013/BTNMT – National technical regulation on quality of ambient air;
- QCVN 24:2016/BYT – National Technical Regulation on Noise - Permissible Exposure Levels of Noise in the Workplace
- QCVN 26:2010/BTNMT – National technical regulation on noise;
- QCVN 27:2010/BTNMT – National technical regulation on vibration;
- QCVN 03:2008/BTNMT – National technical regulation on heavy metals concentration in soil;
- QCVN 08:2008/BTNMT – National technical regulation on quality of surface water;
- QCVN 09:2008/BTNMT – National technical regulation on quality of ground water;
- QCVN 14:2008/BTNMT – National technical regulation on quality of domestic waste water;
- QCVN 40:2011/BTNMT – National technical regulation on quality of industrial waste water;
- QCVN 26:2010/BTNMT về tiếng ồn do Bộ trưởng Bộ Tài nguyên và Môi trường ban hành
- TCVN 7878-1:2008 (ISO 1996-1:2003) về âm học - Mô tả, đo và đánh giá tiếng ồn môi trường - Phần 1: Các đại lượng cơ bản và phương pháp đánh giá
- TCVN 6438:2001 – Maximum permitted emission limits of exhausted gases from vehicles;
- QCVN 01:2008/BCT – National technical regulation on electricity safety.
- QCVN 18:2014/BTTTT– National technical regulation on general electromagnetic compatibility for radio communication equipment
- QCVN 14:2014/TT-BXD – National technical regulation on safety in construction
- QCVN 20:2015/BGTVT – National technical regulation on aids to navigation

Other related legal foundations

- Law on Civil Aviation No. 66/2006/QH11
- Law on road transport No. 23/2008/QH12
- Law on Cultural Heritage No. 28/2001/QH10 and Decree No. 109/2017/NĐ-CP

- Law on maritime No. 95/2015/QH13 passed by the National Assembly dated November 25, 2015, in effect on July 01, 2017;
- Decision No. 07/2010/TT-BGTVT by the Ministry of Transport dated February 11 2010
- Decree No. 32/2016/NĐ-CP dated 06May 2016 on Regulations on the management of air obstacle obstacles and the battlefields to manage and protect the airspace in Vietnam

International Environmental Management Conventions

Vietnam is signatory to the following relevant international conventions:

- 2009, Stockholm Convention on Protection of Human Health and the Environment from Persistent Organic Chemical (including PCBs);
- 1971, Convention on Wetlands of International Importance, especially as Waterfowl Habitat (Ramsar);
- 1982, Protocol to Amend the Convention on Wetlands of International Importance, especially as Waterfowl Habitat, Paris;
- 1972 Convention concerning the Protection of the World Cultural and Natural Heritage October 1987
- 1973, Convention on International Trade in Endangered Species Wild Fauna and Flora;
- 1985 FAO international Code of Conduct on the Distribution and Use of Pesticides;
- 1985 Vienna Convention for the Protection of the Ozone Layer;
- 1987 Montreal Protocol on Substances that Deplete the Ozone Layer;
- 1992, Copenhagen Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer, Copenhagen;
- 1989, Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal;
- 1992, United Nations Framework Convention on Climate Change
- 1992, Convention on Biological Diversity
- 2015, Paris Agreement on Climate Change.

6.2 ESIA requirements

6.2.1 Scoping Report (or Preliminary ESIA Report)

The report should cover the following aspects at a minimum:

- Brief description of the Project and its associated facilities, project phases and related activities;
- Brief description of the size of the Project and its layout in the project area; outline of Project Area of Influence;
- Brief description of the applicable legal framework and standards; initial gap analysis of national legal framework vs applicable international standards;
- Brief description of the physical environment and socio-economic setting;
- Identification of the key environmental and social risk and potential impacts, i.e. aspects/areas that could potentially be impacted by the project, including identification of potentially affected local communities;
- Brief description of the alternatives to be considered in the ESIA;
- Brief stakeholder analysis/stakeholder mapping to identify the stakeholder groups who may be affected by and/or may have an interest in/influence on the Project, including initial consultation of local communities;
- Outline of methodology and approach for community engagement to be applied during ESIA, including national legal provisions for public information and disclosure;
- Detailed work plan for the ESIA, including timeline of activities and other necessary studies as required;
- Terms of Reference for any additional baseline studies needed, which will be implemented through the next ESIA tasks;

Attention shall focus on (but not be limited to) issues related to:

- Physical environment: topography, geology, soils, meteorology and climate/climate change, surface and underground water resources (hydrology, water quality and drainage patterns); ambient air quality and noise levels, land use and land cover, landscape and visual amenity;
- Biological environment: fauna, flora, rare or endangered species, ecosystem services, protected areas and critical habitats;
- Social, economic and cultural environment: urban and rural livelihoods, land use (including seasonal land use), land tenure, agriculture/livestock farming, demographics, employment, socio-cultural institutions and cultural norms, community health and safety, education, infrastructure, waste management, landscape aesthetics, cultural heritage;

If potential effects of the Project on these receptors (and any additionally identified receptors) are not considered as relevant, a reasonable explanation must be provided; these items are then considered to be "scoped out".

6.2.2 The Environmental and Social Impact Management Programs

In project developments phase, the developers will establish ESIA Management program, which include Action Plans that describe mitigation and performance improvement measures and actions addressing the identified environmental and social risks and impacts of the project, in compliance with applicable national laws and regulations, as well as Performance Standards requirement (e.g., Resettlement Action Plans, Biodiversity Action Plans, Water Resources Management Plans, Ecosystem Restoration Plans, Community Safety Plans, Community Development Plans or Indigenous People Plans).

The program should cover the following main aspects:

- Description of the project and its associated facilities: a concise and comprehensive description of the proposed project options through maps, plans, graphs and charts providing an easy and structured overview. The description shall be based on the information on ESIA Preliminary Report.
- Description of the baseline environment: the baseline information on the natural (biological and physical) and human environments (social, cultural and economic) of the study area. This baseline description shall be derived from both secondary sources and fieldwork to collect primary data where required and should include but not be limited to:
    - Physical environment (hydrographic network, geology, ground topography, climate, air quality, fauna and flora, aquatic environment, ecological system);
    - Biological environment (i.e., flora and fauna types and diversity, endangered species, sensitive habitats, ecosystem services etc.);
    - Social and cultural environment, including present and projected (i.e., population, land use, planned development activities, community social structure, employment and labour market, sources and distribution of income, cultural/religious sites and properties, vulnerable groups and indigenous populations etc., infrastructure and basic social services.);
    - Economic activities (agriculture, livestock, fisheries, small scale industries); Data gaps or uncertainties inherent in the baseline description shall be stated and explained. Data presented within the baseline description shall be sufficient to describe the key aspects of the Area of Influence (AoI) and be focused on identified determinants such as project location, design or operational controls. Baseline description shall also indicate the accuracy, reliability and sources of the data presented.

- Description of the legislative and regulatory framework: The developer shall provide a comprehensive and appropriately detailed description of the host-country legislative framework relevant to the Project (i.e. describing the key laws, regulations or ordinances etc. in the area of environment, social aspects, labour conditions and occupational health and safety), the context of environmental and social programs and regional development or sector development frameworks in place. The legislative framework should identify the relevant environmental and socio-economic standards and guidelines applicable to the assessment and to be adhered to within project implementation (e.g. related to air emissions, wastewater discharge, noise, etc.). Additionally, the Developer shall describe the relevant international environmental and social obligations of the country (conventions etc.) as well as details of the international environmental and social standards which are referenced for the Project in chapter 3.
- Description of gaps between the national legislation and international requirements: The Developer shall develop a structured gap analysis to present the gaps between the national legislation and the international requirement. Based on the analysis the Developer will provide measures and recommendations in the Project context to bridge the gaps between the policies.
- Determination of impacts of project and mitigation measures: The Developer will identify the positive and negative environmental and social impacts (direct, indirect and cumulative, temporary and permanent) potentially stemming from the Project and assess their significance (major, moderate, minor and negligible) during the construction, operation and maintenance phases. To do so, the Developer will make use of a robust and consistent qualitative or semi-qualitative methodology. The assessment will also compare the identified impacts with the "without project"-scenario impacts. The Management Program shall be presented in a logical and clear format and include an assessment of the impacts and following by the implementation of mitigation measures. Also, a cumulative impact assessment shall be undertaken in line with the IFC Good Practice Handbook: Cumulative Impact Assessment and Management: Guidance for the Private Sector in Emerging Markets Handbook. In order to complete this, the Developer takes current and proposed development activities within the Project area into account.

6.2.3 Emergencies Preparedness and Response

An emergency preparedness and response system will be established and maintain so that the developers, will be prepared to respond to accidental and emergency situations associated with the project in a manner appropriate to prevent and mitigate any harm to people and/or the environment.

The emergency preparedness and response plans help developers prepare for the worst scenario. They should define clearly assigned responsibilities for the assessment of the degree of risk to life, property and environment, with procedures on who and with whom to communicate regarding different types of emergencies.

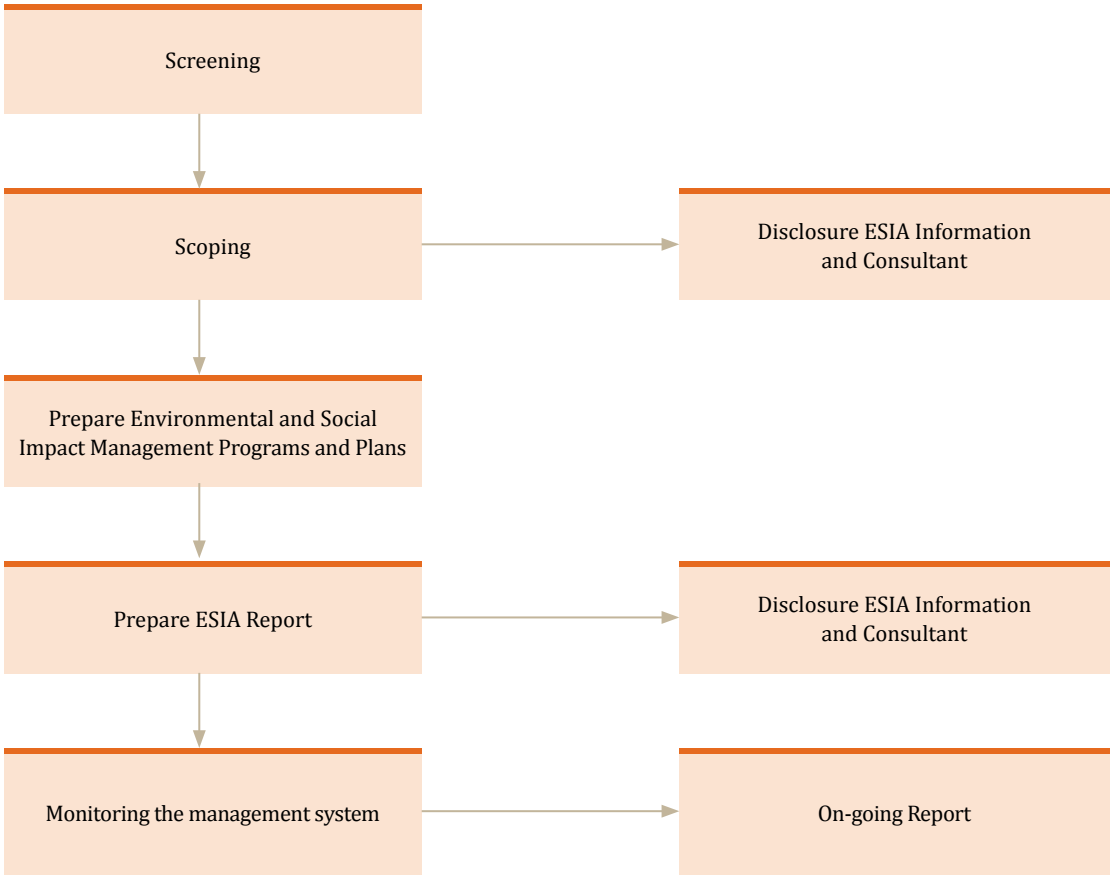
The level of planning and communication should be commensurate with the potential impacts. These plans should define specific procedures designed based on the emergency level classification (emergency tiers).

Procedures for shutting down equipment and production processes and for evacuations, including a designated meeting place (i.e., muster point) outside the project site, should be part of the emergency preparedness and response plans. Additionally, effective emergency plans should include specific training and practice (i.e., simulations and drills) schedules and equipment requirements for employees who are responsible for rescue operations, medical duties, threat and incident responses (e.g., hazardous material spill response), fire-fighting and other responses specific to the project sites, facilities and activities. In summary, emergency plans should address the following aspects of emergency preparedness and response:

- Identification of the emergency scenarios
- Specific emergency response procedures
- Trained emergency response team
- Emergency contacts and communication systems/protocols (including communication with Affected Communities when necessary)
- Procedures for interaction with government authorities (emergency, health, environmental authorities)
- Permanently stationed emergency equipment and facilities (e.g., first aid stations, firefighting equipment, spill response equipment, personal protection equipment for the emergency response teams)
- Protocols for the use of the emergency equipment and facilities
- Clear identification of evacuation routes and muster points
- Emergency drills and their periodicity based on assigned emergency levels or tiers
- Decontamination procedures and means to proceed with urgent remedial measures to contain, limit and reduce pollution within the physical boundaries of the project property and assets to the extent possible.

Where applicable, the developers will also assist and collaborate with the potentially Affected Communities and the local government agencies in their preparations to respond effectively to emergency situations, especially when their participation and collaboration are necessary to ensure effective response. If local government agencies have little or no capacity to respond effectively, the developers will play an active role in preparing for and responding to emergencies associated with the project. The developers will document its emergency preparedness and response activities, resources, and responsibilities, and will provide appropriate information to potentially Affected Community and relevant government agencies.

6.3 ESIA Process according to IFC Standard



Initial Site Screening

The initial screening of the project against the Performance Standards should indicate whether the project may pose social or environmental risks that need to be further analyzed through additional steps

Through the screening process, any activities that could affect environment (or the communities dependent on these goods and services) are designated for more detailed analysis in the full impact assessment. In areas where biodiversity information is scarce or absent, some companies undertake short-term rapid assessments of biodiversity resources, to identify major issues early in the planning process, so that they can be more fully addressed in subsequent stages of the S&EA.

Initial Screening involves in site-study, including:

- The determination of the location, scale and duration of project activities, including those of associated facilities, and impacts arising through supply chains or other third party relationships
- The presence of significant affected value (such as endangered species and proximity to protected areas or critical natural habitats) or potential impacts to ecosystem
- The types of technology that will be used

6.3.1 Scoping the Assessment Process

Scoping determines which impacts are likely to be significant and should become the main focus of the ESIA.

The scoping process determines the appropriate spatial and temporal scopes for the assessment and suggests suitable survey and research methodologies. It shall cover the physical, biological, socioeconomic and cultural environments within the proposed project scope and identify the key issues relevant to the Project to be considered in the full ESIA. It will also define the focus and work plan of the required baseline studies, ongoing stakeholder engagement and assessment.

At this stage, consultation with government officials, conservation organizations and local communities is important to help identify key biodiversity impacts, including those with linkages to local livelihoods and social issues, and to gather feedback that will be used to produce a final assessment plan.

The results of the scoping shall be summarized and presented within a concise Scoping Report.

6.3.2 Prepare the environmental and Social Impacts Management Program and Plans

The management programs, in sum, describe mitigation and performance improvement measures and actions that address the identified environmental and social risks and impacts of the project.

Depending on scale of the project, these programs may consist of some documented combination of operational procedures, practices, plans, and related supporting documents (including legal agreements) that are managed in a systematic way.

The level of detail and complexity of the management program should be commensurate with the anticipated impacts and risks of the project. Furthermore, these need to be consistent throughout the project lifetime.

The environmental and Social Impact Management Program and Plans consists of:

- Environment and Social Impact Action Plan
- The Emergencies Preparedness and Response
- The Monitoring Plan
- Stakeholder Engagement Plan

6.3.3 ESIA Report Preparation

The ESIA report is the physical report on the S&EA process and findings, covering the Project Management Program and Plans as requirement from both national and international regulation.

The EIS should provide a clear, jargon-free review of potential impacts and how they have been and will be mitigated. The report often forms the basis of public consultation activities and is the document that is presented to regulatory authorities and others, including IFC, as the basis for decision making.

6.3.4 Disclosure ESIA Information and Consultant

Public disclosure helps affected communities understand risks, impacts and opportunities related to potential projects, by providing Affected Communities the ability to access relevant information, including:

- The project background,
- Relevant activities, risks and potential impacts and mitigations,
- The envisaged stakeholder engagement process
- Grievance mechanism.

The information disclosure ensure the ability of stakeholder to access project up-to-date information and is considered as the basis of consultant activities.

The timing, content and methods of disclosure depend on national regulations, request from local communities, or the project phase. If the projects continuously generate adverse impacts, the developers

should consider to provide information during project lifetime, but the balance between the need for transparency and the the need to protect confidential information should be considered.

After the information is provided to affected communities, the local people will have the opportunity to express their point of view about project risk, mitigation measure, and allow the developer to response.

The extent and degree of engagement between stakeholder required by the consultation process should be commensurate with the project's risks and adverse impacts and with the concerns raised by the Affected Communities.

The effective consultant process should begin at the early stage of project development phase.

6.3.5 Monitoring

Monitoring of environmental conditions and management program, is a fundamental part of an adequate management systems. For an effective monitoring, the developers need to establish a procedures and measures to assess the effective of program.

The factors to be considered in establishing an environmental monitoring program typically include (but are not limited to) engineering estimates, environmental modeling, pollutant source (e.g., emissions to atmosphere, wastewater effluents, solid and hazardous waste), noise, ambient water quality and quantity (both surface and groundwater), air quality, and workplace contaminant measurements.

Monitoring results should be documented, and the necessary corrective and preventive actions identified. Clients should also ensure that these corrective and preventive actions have been implemented and that there is a systematic follow-up to ensure their effectiveness. The client should normally carry out the monitoring using competent professionals or other external experts, as part of its management system and programs.

Mitigation aims to eliminate or reduce negative impacts. Mitigation options should generally be considered in the following order of preference:

- An emerging mitigation option is biodiversity offsets which are conservation activities that are undertaken to compensate for the residual, unavoidable harm of a given project once all other mitigation options have been explored. Offsets, which generally take place in a different area from where the impact occurs, are increasingly integrated into national legislation and can help secure a "no net loss" outcome
- Avoidance of impacts altogether
- Reduction of impacts where unavoidable
- Restoration of habitats to their original state

- Relocation of affected species or habitats
- Compensation for any residual, unavoidable damage.

6.3.6 On-going report

The developers will provide periodic reports to the Affected Communities that describe progress of the project Programs and Plans on mitigating project issues.

As appropriate, where amendments and updates to the management programs materially change risks and impacts to Affected Communities, the client should also disclose these to communities. In addition, information should be made available to Affected Communities in response to community feedback or grievances and as a means to further involve the Affected Communities in the environmental and social performance of the project.

The developers is suggested to report on the financial, environmental and social aspects of their operations, including both positive impacts and unsuccessful outcome, as well as lesson learned.

6.4 IFC Performance Standards

IFC Presents 8 Standards as reference to conduct S&EA

Performance Standard 1: Assessment and Management of Environmental and Social Risks and Impacts

Performance Standard 1 underscores the importance of managing environmental and social performance throughout the life of a project. An effective Environmental and Social Management System (ESMS) is a dynamic and continuous process initiated and supported by management, and involves engagement between the client, its workers, local communities directly affected by the project (the Affected Communities) and, where appropriate, other stakeholders. Drawing on the elements of the established business management process of "plan, do, check, and act," the ESMS entails a methodological approach to managing environmental and social risks and impacts in a structured way on an ongoing basis. A good ESMS appropriate to the nature and scale of the project promotes sound and sustainable environmental and social performance, and can lead to improved financial, social, and environmental outcomes.

At times, the assessment and management of certain environmental and social risks and impacts may be the responsibility of the government or other third parties over which the client does not have control or influence. 4 Examples of where this may happen include: (i) when early planning decisions are made by the government or third parties which affect the project site selection and/or design; and/or (ii) when specific actions directly related to the project are carried out by the government or third parties such as providing

land for a project which may have previously involved the resettlement of communities or individuals and/or leading to loss of biodiversity. While the client cannot control these government or third-party actions, an effective ESMS should identify the different entities involved and the roles they play, the corresponding risks they present to the client, and opportunities to collaborate with these third parties in order to help achieve environmental and social outcomes that are consistent with the Performance Standards. In addition, this Performance Standard supports the use of an effective grievance mechanism that can facilitate early indication of, and prompt remediation for those who believe that they have been harmed by a client's actions.

Business should respect human rights, which means to avoid infringing on the human rights of others and address adverse human rights impacts business may cause or contribute to. Each of the Performance Standards has elements related to human rights dimensions that a project may face in the course of its operations. Due diligence against these Performance Standards will enable the client to address many relevant human rights issues in its project.

Performance Standard 2: Labour and Working Conditions

Performance Standard 2 recognizes that the pursuit of economic growth through employment creation and income generation should be accompanied by protection of the fundamental rights of workers. For any business, the workforce is a valuable asset, and a sound worker-management relationship is a key ingredient in the sustainability of a company. Failure to establish and foster a sound worker-management relationship can undermine worker commitment and retention and can jeopardize a project. Conversely, through a constructive worker-management relationship, and by treating the workers fairly and providing them with safe and healthy working conditions, clients may create tangible benefits, such as enhancement of the efficiency and productivity of their operations.

The requirements set out in this Performance Standard have been in part guided by a number of international conventions and instruments, including those of the International Labour Organization (ILO) and the United Nations (UN).

Performance Standard 3: Resource Efficiency and Pollution Prevention

Performance Standard 3 recognizes that increased economic activity and urbanization often generate increased levels of pollution to air, water, and land, and consume finite resources in a manner that may threaten people and the environment at the local, regional, and global levels. There is also a growing global consensus that the current and projected atmospheric concentration of greenhouse gases (GHG) threatens the public health and welfare of current and future generations. At the same time, more efficient and effective resource use and pollution prevention and GHG emission avoidance and mitigation technologies and practices have become more accessible and achievable in virtually all parts of the world. These are often implemented through continuous improvement methodologies similar to those used to enhance quality or productivity, which are generally well known to most industrial, agricultural, and service sector companies.

This Performance Standard outlines a project-level approach to resource efficiency and pollution prevention and control in line with internationally disseminated technologies and practices. In addition, this Performance Standard promotes the ability of private sector companies to adopt such technologies and practices as far as their use is feasible in the context of a project that relies on commercially available skills and resources.

Performance Standard 4: Community Health, Safety, and Security

Performance Standard 4 recognizes that project activities, equipment, and infrastructure can increase community exposure to risks and impacts. In addition, communities that are already subjected to impacts from climate change may also experience an acceleration and/or intensification of impacts due to project activities. While acknowledging the public authorities' role in promoting the health, safety, and security of the public, this Performance Standard addresses the client's responsibility to avoid or minimize the risks and impacts to community health, safety, and security that may arise from project related-activities, with particular attention to vulnerable groups.

In conflict and post-conflict areas, the level of risks and impacts described in this Performance Standard may be greater. The risks that a project could exacerbate an already sensitive local situation and stress scarce local resources should not be overlooked as it may lead to further conflict.

Performance Standard 5: Land Acquisition and Involuntary Resettlement

Performance Standard 5 recognizes that project-related land acquisition and restrictions on land use can have adverse impacts on communities and persons that use this land. Involuntary resettlement refers both to physical displacement (relocation or loss of shelter) and to economic displacement (loss of assets or access to assets that leads to loss of income sources or other means of livelihood as a result of project-related land acquisition and/or restrictions on land use. Resettlement is considered involuntary when affected persons or communities do not have the right to refuse land acquisition or restrictions on land use that result in physical or economic displacement. This occurs in cases of (i) lawful expropriation or temporary or permanent restrictions on land use and (ii) negotiated settlements in which the buyer can resort to expropriation or impose legal restrictions on land use if negotiations with the seller fail.

Unless properly managed, involuntary resettlement may result in long-term hardship and impoverishment for the Affected Communities and persons, as well as environmental damage and adverse socio-economic impacts in areas to which they have been displaced. For these reasons, involuntary resettlement should be avoided. However, where involuntary resettlement is unavoidable, it should be minimized and appropriate measures to mitigate adverse impacts on displaced persons and host communities should be carefully planned and implemented. The government often plays a central role in the land acquisition and resettlement process, including the determination of compensation, and is therefore an important third party in many situations. Experience demonstrates that the direct involvement of the client in resettlement

activities can result in more cost-effective, efficient, and timely implementation of those activities, as well as in the introduction of innovative approaches to improving the livelihoods of those affected by resettlement.

To help avoid expropriation and eliminate the need to use governmental authority to enforce relocation, clients are encouraged to use negotiated settlements meeting the requirements of this Performance Standard, even if they have the legal means to acquire land without the seller's consent.

Performance Standard 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources

Performance Standard 6 recognizes that protecting and conserving biodiversity, maintaining ecosystem services, and sustainably managing living natural resources are fundamental to sustainable development. The requirements set out in this Performance Standard have been guided by the Convention on Biological Diversity, which defines biodiversity as "the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are a part; this includes diversity within species, between species, and of ecosystems."

Ecosystem services are the benefits that people, including businesses, derive from ecosystems. Ecosystem services are organized into four types: (i) provisioning services, which are the products people obtain from ecosystems; (ii) regulating services, which are the benefits people obtain from the regulation of ecosystem processes; (iii) cultural services, which are the nonmaterial benefits people obtain from ecosystems; and (iv) supporting services, which are the natural processes that maintain the other services.

Ecosystem services valued by humans are often underpinned by biodiversity. Impacts on biodiversity can therefore often adversely affect the delivery of ecosystem services. This Performance Standard addresses how clients can sustainably manage and mitigate impacts on biodiversity and ecosystem services throughout the project's lifecycle.

Performance Standard 7: Indigenous Peoples

Performance Standard 7 recognizes that Indigenous Peoples, as social groups with identities that are distinct from mainstream groups in national societies, are often among the most marginalized and vulnerable segments of the population. In many cases, their economic, social, and legal status limits their capacity to defend their rights to, and interests in, lands and natural and cultural resources, and may restrict their ability to participate in and benefit from development. Indigenous Peoples are particularly vulnerable if their lands and resources are transformed, encroached upon, or significantly degraded. Their languages, cultures, religions, spiritual beliefs, and institutions may also come under threat. As a consequence, Indigenous Peoples may be more vulnerable to the adverse impacts associated with project development than non-indigenous communities. This vulnerability may include loss of identity, culture, and natural resource-based livelihoods, as well as exposure to impoverishment and diseases.

Private sector projects can create opportunities for Indigenous Peoples to participate in, and benefit from project-related activities that may help them fulfil their aspiration for economic and social development. Furthermore, Indigenous Peoples may play a role in sustainable development by promoting and managing activities and enterprises as partners in development. Government often plays a central role in the management of Indigenous Peoples' issues, and clients should collaborate with the responsible authorities in managing the risks and impacts of their activities.

Performance Standard 8: Cultural Heritage

Performance Standard 8 recognizes the importance of cultural heritage for current and future generations. Consistent with the Convention Concerning the Protection of the World Cultural and Natural Heritage, this Performance Standard aims to ensure that clients protect cultural heritage in the course of their project activities. In addition, the requirements of this Performance Standard on a project's use of cultural heritage are based in part on standards set by the Convention on Biological Diversity.

6.5 Specific Impact assessment for wind farm and mitigation measures

6.5.1 Noise impact assessment

Construction Noise

Onshore construction noise should be limited to protect people living nearby. Noise-producing activities include blasting, piling, construction of roads and turbine foundations, and the erection of the turbines themselves. Guidance on acceptable levels can be found in the General EHS Guidelines.

Underwater noise and vibration from offshore construction—e.g., from piling activity—may adversely impact marine life, including fish, marine mammals, and sea turtles. Environmental parameters that determine sound propagation in the sea are site-specific, and marine species could be impacted differently depending on their sensitivity to underwater sound frequencies. Assessments should be conducted to identify where and/or when underwater noise has the potential to impact marine life significantly and to identify appropriate mitigation measures.

Operational Noise

Wind turbines produce noise through a number of different mechanisms, which can be roughly grouped into mechanical and aerodynamic sources. The major mechanical components include the gearbox, generator, and yaw motors, each of which produce their own characteristic sounds. Other mechanical systems, such as fans and hydraulic motors, can also contribute to the overall acoustic emissions. Mechanical noise is radiated by the surface of the turbine and by openings in the nacelle housing. The interaction of air and the turbine blades produces aerodynamic noise through a variety of processes as air passes over and past the blades. Generally, wind turbines radiate more noise as the wind speed increases.

Preliminary modelling should be carried out to determine whether more detailed investigation is warranted. The preliminary modelling can be as simple as assuming hemispherical propagation (i.e., the radiation of sound, in all directions, from a source point). Preliminary modelling should focus on sensitive receptors within 2,000 meters (m) of any of the turbines in a wind energy facility. Receptors should be chosen according to their environmental sensitivity (human, livestock, or wildlife).

If the preliminary model suggests that turbine noise at all sensitive receptors is likely to be below an LA908 of 35 decibels (dB) (A) at a wind speed of 10 meters/second (m/s) at 10 m height during day and night times, then this preliminary modelling is likely to be sufficient to assess noise impact; otherwise it is recommended that more detailed modelling be carried out, which may include background ambient noise measurements.

All modelling should take account of the cumulative noise from all wind energy facilities in the vicinity having the potential to increase noise levels.

If noise criteria based on ambient noise are to be used, it is necessary to measure the background noise in the absence of any wind turbines. This should be done at one or more noise-sensitive receptors. Often the critical receptors will be those closest to the wind energy facility, but if the nearest receptor is also close to other significant noise sources, an alternative receptor may need to be chosen.

The background noise should be measured at 10 m height over a series of 10-minute intervals, using appropriate wind screens. At least five of these 10-minute measurements should be taken for each integer wind speed from cut-in speed to 12 m/s.

Noise Mitigation Measures

Measures to prevent and control noise are mainly related to engineering design standards and turbine siting. With modern turbines, mechanical noise is usually significantly lower than aerodynamic noise, and continuous improvement in airfoil design is reducing the latter. Additional recommended noise management measures might include:

- Operating turbines in reduced noise mode.
- Building walls/appropriate noise barriers around potentially affected buildings (only an option in hilly terrain, due to the height of turbines).
- Curtailing turbine operations above the wind speed at which turbine noise becomes unacceptable in the project-specific circumstances.

6.5.2 Landscape, Seascape and Visual Impacts

Depending on the location, a wind energy facility may have an impact on viewscapes, especially if visible from or located near residential areas or tourism sites. Visual impacts associated with wind energy projects typically concern the installed and operational turbines themselves (e.g., colour, height, and number of turbines).

Impacts may also arise in relation to operational wind facilities' interaction with the character of the surrounding landscape and/or seascape. Impacts on Legally Protected and Internationally Recognized Areas of importance to biodiversity and cultural heritage features are also a consideration. Preparing zone of visual influence maps and preparing wire-frame images and photomontages from key viewpoints is recommended to inform both the assessment and the consultation processes.

Avoidance and minimization measures to address landscape, seascape, and visual impacts are largely associated with the siting and layout of wind turbines and associated infrastructure, such as meteorological towers, onshore access tracks, and substations.

Consideration should be given to turbine layout, size, and scale in relation to the surrounding landscape and seascape character and surrounding visual receptors (e.g., residential properties, users of recreational areas/routes).

Consideration should also be given to the proximity of turbines to settlements, residential areas, and other visual receptors to minimize visual impacts and impacts on residential amenity, where possible. All relevant viewing angles should be considered when considering turbine locations, including viewpoints from nearby settlements.

Other factors can be considered in relation to minimizing visual impacts:

- Incorporate community input into wind energy facility layout and siting.
- Maintain a uniform size and design of turbines (e.g., type of turbine and tower, as well as height).
- Adhere to country-specific standards for marking turbines, including aviation/navigational and environmental requirements (see Community Health and Safety section below), where available.
- Minimize presence of ancillary structures on the site by minimizing site infrastructure, including the number of roads, as well as by burying collector system power lines, avoiding stockpiling of excavated material or construction debris, and removing inoperative turbines.
- Erosion measures should be implemented and cleared land should be promptly re-vegetated with local seed stock of native species.

6.5.3 Biodiversity

Wind energy facilities have the potential for direct and indirect adverse impacts on both onshore and offshore biodiversity during construction, operation and maintenance, and decommissioning. Examples of impacts include bird and bat collision-related fatalities; bat fatalities due to the potential impact of pulmonary barotrauma; displacement of wildlife; habitat conversion/degradation; and noise to marine mammals with respect to offshore facilities. In offshore environments, benthic disturbance and new structures may also impact existing habitats and attract new habitat-forming species, such as shellfish, corals, and underwater vegetation. The location of operational turbines may disrupt the daily movements of bats and birds (e.g., from feeding to roosting or breeding grounds), and may potentially represent a barrier to the migratory patterns of certain wildlife. Adverse impacts can also result from associated infrastructure, particularly overhead transmission lines, meteorological masts, substations, underwater cables, roads, lighting, and boat-based maintenance traffic.

Site selection is critical to avoiding and minimizing potential adverse impacts on biodiversity. Site selection should include the following:

- Consideration of the proximity of the proposed wind energy facility to sites of high biodiversity value in the region (including those located across national boundaries). Early screening can improve macro-level

project site selection and the scoping of priorities for further assessment, thus reducing unnecessary biodiversity impacts and costs in the future. Sites of local, regional, and international importance may include: national and international protected areas (including marine protected areas), Important Bird Areas (IBA), Key Biodiversity Areas (KBAs), Alliance for Zero Extinction (AZE) sites, Ramsar sites (Wetlands of International Importance), known congregatory sites, and unique or threatened ecosystems. These sites may be known to be important migration routes, wetlands, or staging, foraging, or breeding areas; they may house bat hibernation areas and roosts; or they may contain important topographical features, including ridges, river valleys, shorelines, and riparian areas. Useful site selection tools can include: (i) strategic environmental assessments that compare the biodiversity and other environmental sensitivity of different wind resource areas; (ii) sensitivity (overlay) maps; (iii) digital resources that display areas of high biodiversity value; and (iv) zoning maps.

- With respect to offshore facilities, siting would include a review of areas of importance to the life history of marine life, notably fish, marine mammals, and sea turtles (e.g., feeding, breeding, calving, and spawning areas) or other habitats, such as juvenile/nursery habitats, mussel/oyster beds, reefs, or sea grass and kelp beds. Siting would also include a review of productive fishing areas.
- Consultation with relevant national and/or international conservation organizations also helps to inform site selection for both onshore and offshore facilities.

6.5.3.1 Pre-construction assessments

Following a scoping and desktop study, appropriate site-specific baseline biodiversity information may be needed to inform the Environmental & Social Impact Assessment (ESIA). Baseline biodiversity surveys, where required, should occur as early as possible (e.g., when wind meteorological masts are erected) and should consider seasonality. A tiered approach to biodiversity surveys could be useful in terms of designing a survey effort commensurate with the stage of project development, also considering the existing biodiversity value of the area.

Generic risk assessments and mitigation plans are unlikely to be useful or easily transferable between species and locations. Surveys should consider the following:

- Site-specific issues: consideration of habitats, geographical location, topography, and vicinity of the wind energy facility to sites of high biodiversity value.
- Species-specific issues: surveys should be targeted to species of flora and fauna of high biodiversity value, those with a special international or national conservation status, endemic species, and species that are at elevated risk of impact from wind energy facilities. For example, species with a relatively high collision risk include certain soaring, aerial-displaying, and/or migratory birds and flocking birds, as well as birds of prey; and migratory, tree-roosting, and insectivorous bats. Species with a relatively high risk of visual disturbance include open-country species that instinctively avoid tall structures. Some species may be attracted to wind energy facilities as perches or feeding areas, which could further increase potential for collision. Species at risk of collision with associated transmission lines include relatively heavy-bodied birds with limited maneuverability (e.g., vultures, bustards, waterfowl, cranes, storks, pelicans, herons,

flamingoes), as well as flocking bird species. Species at risk of electrocution from associated transmission lines include various raptors, vultures, owls, and certain storks and other birds with large wingspans, and with behavioural tendencies to perch frequently on power lines and associated structures. Species with a relatively high risk of disturbance from underwater noise (at offshore wind facilities) include marine mammals (especially cetaceans) and certain pelagic schooling fish species (e.g., herrings). These impacts and potential mitigation options should be assessed on a species-by-species basis.

- Season-specific issues: surveys should take into consideration certain periods during the year when the project site may have a greater or different ecological function or value (e.g., migration, breeding season, or winter seasons). Surveys should usually be conducted for at least one year when at-risk wildlife is identified. Longer surveys may sometimes be necessary in areas with exceptional aggregations of at-risk migratory birds and where existing biodiversity data are limited. This would be determined on a project-by-project basis.

Surveys should be designed and implemented to adequately guide the micro-siting of turbines (and turbine selection) to minimize collision risks to birds and bats. This is normally expected to entail gathering relatively precise information on the spatial patterns of site utilization by at-risk wildlife species, as well as consideration of the locations of certain topographic, ecological, or other landscape features that may attract or otherwise concentrate the activity of flying wildlife within the project area and its surrounding landscape.

Specific data-gathering methods and study designs should be selected based on site- and species-specific considerations, guided by technical experts, and may include vantage point surveys, point count surveys, ultrasound acoustic methods, remote-sensing data-gathering techniques, and/or other techniques to understand movement patterns, as appropriate. The extent of data collection should be commensurate with the biodiversity risk at the wind energy facility.

The use and effectiveness of radar and/or other remote-sensing technologies in pre-construction studies should be evaluated on a project-by-project basis and may be appropriate to supplement observer-based surveys, depending on the circumstances. Remote-sensing technologies are particularly useful at offshore wind facilities, as observer-based studies are more difficult and expensive in the offshore environment.

Surveys for bats could include an assessment of feeding and/or roosting habitats both within the project area and in its vicinity, activity surveys (transects) using hand-held ultrasound bat detectors, trapping and release surveys, and deployment of static ultrasound detectors (particularly at turbine locations). It is preferable for static detectors to be deployed at height and could be attached to meteorological masts.

Depending on the location of the wind energy facility and on species-specific considerations, Collision Risk Modeling (CRM) may be also appropriate, especially when wind energy facilities are located close to areas of high biodiversity value. The utility of CRM is to be evaluated on a project-by-project basis with qualified experts. CRM is particularly useful at offshore wind farm facilities where empirical tools are limited.

Where multiple wind farm facilities are located in the same geographical area and near areas of high biodiversity value, wind project developers are encouraged to implement a coordinated approach to surveys and monitoring. This approach is cost-effective, as surveys could be jointly planned and implemented with costs shared between developers. A common survey methodology and approach also lends itself to cumulative impact assessment, as data collection methods and the level of effort could be standardized. Cumulative impact assessments should be undertaken in cases where multiple wind farms are located near areas of high biodiversity value.

6.5.3.2 Mitigation Measures (Onshore)

Careful site selection and layout should reduce adverse impacts on biodiversity. Any significant residual adverse impacts will need appropriate mitigation, which could include the following:

- Modify the number and size of turbines and their layout in accordance with site-, species-, and season-specific risks and impacts. Fewer taller towers may reduce the collision risk for most birds and reduce vegetation clearing for construction. The location of associated infrastructure—such as transmission lines, substations, and access roads—should also be accordingly informed by biodiversity risk and impact assessments.
- If the wind energy facility is located close to areas of high biodiversity value, active turbine management such as curtailment and shut-down on-demand procedures should be considered as part of the mitigation strategy and factored into financial modelling and sensitivities at an early stage. This method of mitigation should be adaptive and guided by a well-developed post-construction monitoring program. Curtailment and shut-down on-demand measures should be first conducted as an experiment, with control turbines that are not curtailed and with both sets carefully monitored, to determine whether or not the curtailment is producing the desired fatality reduction. Technology-led turbine shut-down should be considered in certain cases, although any such system should be subject to a period of observer-led ground truthing and evaluation through a process of adaptive management.
- Avoid artificially creating features in the environment that could attract birds and bats to the wind energy facility, such as water bodies, perching or nesting areas, novel feeding areas, and staging or roosting habitats. Capping or fixing any cavities in walls or buildings helps to remove potential bat roosting sites.
- Avoid attracting birds to predictable food sources, such as on-site or off-site waste disposal areas, or landfills; this is especially relevant when vultures or other carrion-eating birds are present. These types of mitigation measures may also need to be carried out in the surroundings of the wind energy facility in order to be effective.
- Consider adjustments of cut-in wind speeds to reduce potential bat collisions. The feasibility of this measure should be informed by species- and site-specific data. A slight increase in cut-in wind speed may have the potential to achieve significant reductions in bat fatalities with minimal reduction in generation or financial returns.

- Eliminate “free-wheeling” (free spinning of rotors under low wind conditions when turbines are not generating power).
- Avoid artificial light sources where possible. White, steady lights in particular attract prey (e.g., insects), which in turn attracts predators. If lights are used, red or white blinking or pulsing lights are best. Steady or slow blinking lights are to be avoided. Timers, motion sensors, or downward-hooded lights help to reduce light pollution.
- Bury on-site transmission lines.
- Install bird flight diverters on transmission lines and guy wires from meteorological masts to reduce bird collisions when located in or near areas of high biodiversity value and/or where birds of high biodiversity value are at risk of collision.
- Use “raptor safe” designs for power line poles to reduce electrocution risk.
- Assess the current state of the art of bird and bat deterrence technology and consider implementing any proven effective technologies where appropriate.

6.5.3.3 Mitigation Measures (Offshore)

Biodiversity-related mitigation measures for offshore facilities, including noise-related mitigation, may include the following:

- If species of high biodiversity value are associated with the site, plan construction activities to avoid sensitive times of the year (e.g., migration and breeding seasons) and to coincide with less productive times of year for fish.
- Employ a “soft start” procedure for pile-driving activities to help prevent exposure of marine life to damaging underwater noise and vibration levels and provide them with an opportunity to leave the area. The use of bubble curtains during pile driving is also recommended.
- Employ auger piling or other means of fixing wind turbine generators to reduce conventional pile-driving disturbance.
- Use a monopole turbine foundation in shallower water, which results in less seabed disturbance than other foundation types. In deeper water, alternative foundations such as jacket type may be more appropriate.
- Use acoustic deterrent devices that emit sounds to deter marine life from the area during construction activities.
- If species of high biodiversity value, such as marine mammals or sea turtles, are anticipated in the area, appoint observers prior to the commencement of construction. Construction should take place at least 500 meters away.

- Use hydraulic jet plowing technology or other less environmentally damaging technologies for the installation of cables.
- Where electrically or magnetically sensitive species are present within the study area, mitigation measures include appropriate choice of cable types, separation, and burial depths for the cables.

6.5.4 Shadow Flicker

Shadow flicker occurs when the sun passes behind the wind turbine and casts a shadow. As the rotor blades rotate, shadows pass over the same point causing an effect termed shadow flicker. Shadow flicker may become a problem when potentially sensitive receptors (e.g., residential properties, workplaces, learning and/or health care spaces/facilities) are located nearby, or have a specific orientation to the wind energy facility.

Shadow flicker is not typically considered to be a significant issue for offshore wind energy facilities, given the distances involved between wind turbines and potential receptors located onshore.

Potential shadow flicker issues are likely to be more important in higher latitudes, where the sun is lower in the sky and therefore casts longer shadows that will extend the radius within which potentially significant shadow flicker impact will be experienced.

Where there are nearby receptors, commercially available software can be used to model shadow flicker in order to identify the distance to which potential shadow flicker effects may extend. The same software can typically also be used to predict the duration and timing of shadow flicker occurrence under real weather conditions at specific receptors located within the zone of potential shadow flicker impact.

If it is not possible to locate the wind energy facility/turbines such that neighbouring receptors experience no shadow flicker effects, it is recommended that the predicted duration of shadow flicker effects experienced at a sensitive receptor not exceed 30 hours per year and 30 minutes per day on the worst affected day, based on a worst-case scenario

Prevention and control measures to avoid significant shadow flicker impacts include the following:

- Site wind turbines appropriately to avoid shadow flicker being experienced or to meet limits placed on the duration of shadow flicker occurrence, as set out in the paragraph above.
- Wind turbines can be programmed to shut down at times when shadow flicker limits are exceeded.
- Previously, blade or tower glint, which could occur when the sun reflects off a rotor blade or the tower at a particular orientation, was considered to have a potential impact on communities. However, provided that wind turbines are painted with a matt, non-reflective finish, as is typical with modern wind turbines, blade or tower glint is no longer considered to be a significant issue.

6.5.5 Impact on water quality

6.5.5.1 Onshore

The installation of turbine foundations, underground cables, access roads, and other ancillary infrastructure may result in increased erosion, soil compaction, increased run-off, and sedimentation of surface waters. Measures to prevent and control these issues are discussed in the General EHS Guidelines and in the Toll Roads EHS Guideline.

6.5.5.2 Offshore

The installation of the turbine foundations and subsurface cables may disturb the marine seabed and may temporarily increase suspended sediments in the water column, thereby decreasing water quality and potentially adversely affecting marine species and commercial or recreational fisheries. Furthermore, the installation of the offshore structures may result in localized seabed erosion due to changes in water movements. Additional guidance is provided in the Ports, Harbours, and Terminals EHS Guideline.

Other prevention and control measures to address the impacts on water quality include the following:

- Conduct a site selection process that considers the potential for interference of the project's structural components with commercial or recreational fisheries and marine species habitats.
- Plan the construction, installation, and removal of structural components, taking into account sensitive lifecycle periods.
- Control the use of jetting, bubble curtains, and sediment traps; undertake such activities in slack water (or on a tide that moves material away from the sensitive location).

6.5.6 Occupational Health and Safety

Occupational health and safety hazards during the construction, operation, and decommissioning of onshore and offshore wind energy facilities are generally similar to those of most large industrial facilities and infrastructure projects. They may include physical hazards, such as working at heights, working in confined spaces, working with rotating machinery, and falling objects. Prevention and control of these and other physical, chemical, biological, and radiological hazards are discussed in the General EHS Guidelines.

Occupational health and safety hazards specific to wind energy facilities and activities primarily include the following:

- Working at Height
- Working over Water

- Working in Remote Locations
- Lifting Operations

6.5.7 Community Health and Safety

Community health and safety hazards during the construction, operation, and decommissioning of onshore and offshore wind energy facilities are similar to those of most large industrial facilities and infrastructure projects. These hazards may apply to the structural safety of project infrastructure, life and fire safety, public accessibility, and emergency situations. Their management is discussed in the General EHS Guidelines.

Community health and safety hazards specific to wind energy facilities primarily include the following:

- Blade and Ice Throw
- Aviation
- Marine Navigation and Safety
- Electromagnetic Interference and Radiation
- Public Access
- Abnormal Load Transportation

6.5.7.1 Blade and Ice Throw

A failure of the rotor blade can result in the "throwing" of a rotor blade, or part thereof, which may affect public safety. The overall risk of blade throw is extremely low.

Turbines must be sited at an acceptable distance ("setback") between wind turbines and adjacent sensitive receptors to maintain public safety in the event of ice throw or blade failure.

Blade throw risk management strategies include:

- Establish setback distances between turbines and populated locations. The minimum setback distance is 1.5 x turbine height (tower + rotor radius), although modelling suggests that the theoretical blade throw distance can vary with the size, shape, weight, and speed of the blades, and the height of the turbine. It is therefore recommended that the minimum setback distances required to meet noise and shadow flicker limits be maintained with respect to sensitive residential receptors to provide further protection.
- Minimize the probability of a blade failure by selecting wind turbines that have been subject to independent design verification/certification (e.g., IEC 61400-1), and surveillance of manufacturing quality.
- Ensure that lightning protection systems are properly installed and maintained.

- Carry out periodic blade inspections and repair any defects that could affect blade integrity.
- Equip wind turbines with vibration sensors that can react to any imbalance in the rotor blades and shut down the turbine if necessary.

6.5.7.2 Aviation

Wind turbine blade tips, at their highest point, can reach up to 200 meters and in the future may exceed this height as the technology evolves. If located near airports, military low-flying areas, or known flight paths, a wind energy facility (including anemometer mast) may impact aircraft safety directly through potential collision or alteration of flight paths.

Prevention and control measures to address these impacts include the following:

- Consult with the relevant aviation authorities before installation, in accordance with air traffic safety regulations.
- When feasible, avoid siting wind energy facilities close to airports and within known low-flying areas or flight paths. Cumulative impacts associated with the number of existing wind energy facilities within, or in close proximity to, low-flying areas or flight paths should be a consideration in siting turbines.

Use anti-collision lighting and marking systems on towers and/or blades and consult with the relevant aviation authorities to determine appropriate lighting and marking requirements in line with national standards. In the absence of national standards, refer to good practice guidance.

Aviation Radar

Wind energy facilities located near radar may impact the operation of aviation radar by causing signal distortion, which may cause loss of signal, masking real targets and/or erroneous signals on the radar screen, creating flight safety issues. These effects are caused by the physical structures of the tower/turbine and the rotating blades. Proximity to existing energy facilities should also be considered in relation to cumulative impacts on radar. Prevention and control measures to address these impacts include the following:

- Consider wind energy facility design options, including geometric layout, location of turbines, and changes to air traffic routes.
- Consider radar design alterations, including relocation of the affected radar, radar blanking of the affected area, or use of alternative radar systems to cover the affected area.
- Consultation should be undertaken with the relevant aviation authorities to determine prevention and control measures.

6.5.7.3 Marine Safety

As with aviation safety, if located near ports, harbours, or known shipping lanes, an offshore wind turbine may impact shipping safety through collision or alteration of vessel traffic. Additional vessel traffic during construction can increase these risks. This may result in damage to turbines and/or vessels, as well as pollution risk associated with collisions.

Offshore turbines, cable routes, and other associated infrastructure require careful consideration in terms of siting to take into account factors such as anchorage areas, seabed conditions, archaeology sites, existing cable or pipeline routes, and fishing grounds, and to minimize impacts where possible.

Offshore wind turbine generators can interfere with radar operation used for shipping navigation, preventing vessels from being detected, with the potential to impact normal and shipping operations. Prevention and control measures to address these impacts include the following:

Consult with marine regulatory traffic authorities before installation, in accordance with marine traffic safety regulations.

- When feasible, avoid siting wind energy facilities close to ports and within known shipping lanes.
- Use anti-collision lighting and marking systems on turbines and all other hazards. Use of guard vessels should also be considered. Lighting and marking should be determined with relevant marine authorities.
- Safety zones can be established around each turbine and construction vessel during the construction phase in order to minimize disruption to other sea users.
- Use reference buoys to aid navigation.

6.5.7.4 Electromagnetic Interference

Wind turbines could potentially cause electromagnetic interference with telecommunication systems (e.g., microwave, television, and radio). This interference could be caused by path obstruction, shadowing, reflection, scattering, or re-radiation. The nature of the potential impacts depends primarily on the location of the wind turbine relative to the transmitter and receiver, characteristics of the rotor blades, signal frequency receiver characteristics, and radio wave propagation characteristics in the local atmosphere.

Telecommunication Systems

Impacts on telecommunications systems can include those on broadcast-type systems and those on point-to-point systems. Prevention and control measures to address impacts to telecommunications systems include the following:

- Modify placement of wind turbines to avoid direct physical interference of point-to-point communication systems; consultation with relevant operators can assist in establishing the location of telecommunication links and relevant buffers to be applied in order to minimize impacts.
- Install a directional antenna.
- Modify the existing aerial.
- Install an amplifier to boost the signal.

Television

Prevention and control measures to address impacts to television broadcast include the following:

- Site the turbine away from the line-of-sight of the broadcaster transmitter.
- If interference is detected during operation, install higher-quality or directional antenna.
- Direct the antenna toward an alternative broadcast transmitter
- Install digital television.
- Install an amplifier.
- Relocate the antenna.

6.5.7.5 Public Access

Safety issues may arise with public access to wind turbines (e.g., unauthorized climbing of the turbine) or to the wind energy facility substation. Any public rights of way located within and close to the wind energy facility site should be identified prior to construction in an effort to establish any measures that may be required to ensure the safety of their users. Prevention and control measures to manage public access issues include:

- Use gates on access roads.
- Where public access is not promoted to the site and/or there are no current rights of way across the site, consider fencing the wind energy facility site, or individual turbines, to prohibit public access to the turbines.
- Provide fencing of an appropriate standard around the substation with anti-climb paint and warning signs.
- Prevent access to turbine tower ladders.
- Post information boards about public safety hazards and emergency contact information.

6.5.7.6 Abnormal Load Transportation

Traffic and transportation issues to consider in siting wind energy facilities are largely covered within the General EHS Guidelines and the Toll Roads EHS Guideline. The main challenge with respect to wind energy facilities lies with the transportation of oversized or heavy wind turbine components (blades, turbine tower sections, nacelle, and transformers) and cranes to the site. The logistics, traffic, and transportation study should assess impacts on existing offsite roadways, bridges, crossings over culverts, overpasses/underpasses, turning radii, and utilities, as well as whether surface replacements, upgrades, or resettlements will be required. To reduce delays to other road users and the potential for other effects on local communities in the vicinity of the proposed route, schedule deliveries outside of peak hours, use only approved access routes, provide traffic management to stop other traffic where needed (for example, at pinch-point locations), and provide police escorts where required.

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