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KEY PROJECT INFORMATION & PROJECT DESIGN DOCUMENT (PDD)

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VERSION **v. 1.2**

This document contains the following Sections

Key Project Information

Section A – Description of project

Section B - Application of approved Gold Standard Methodology (ies) and/or demonstration of SDG Contributions

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KEY PROJECT INFORMATION

GS ID of Project	<u>GS 10975</u> Not available
Title of Project	Hoa Binh 1 - Phase 2 Wind Power Project
Time of First Submission Date	<u>14/01/Jan</u> 2021
Date of Design Certification	Not available
Version number of the PDD	1. <u>10</u>
Completion date of version	<u>0812/041</u> 2021
Project Developer	Cong ty TNHH Dien Gio Hoa Binh 1 Giai Doan 2
Project Representative	Swiss Carbon Value Ltd.
Project Participants and any communities involved	Cong ty TNHH Dien Gio Hoa Binh 1 Giai Doan 2 (Project Owner) Swiss Carbon Value Ltd. (Project Participant) Energy and Environment Consultancy Joint Stock Company (GS-VER Consultant)
Host Country (ies)	Viet Nam
Activity Requirements applied	☐ Community Services Activities ☒ Renewable Energy Activities ☐ Land Use and Forestry Activities/Risks & Capacities ☐ N/A
Scale of the project activity	☐ Micro scale ☐ Small Scale ☒ Large Scale
Other Requirements applied	GS4GG
Methodology (ies) applied and version number	ACM0002 - Grid-connected electricity generation from renewable sources (version 20.0)
Product Requirements applied	GS-VER ☒ GHG Emissions Reduction & Sequestration ☐ Renewable Energy Label ☐ N/A
Project Cycle:	☐ Regular ☒ Retroactive

Table 1 – Estimated Sustainable Development Contributions

Sustainable Development Goals Targeted	SDG Impact (defined in Error! Reference source not found.)	Estimated Annual Average	Units or Products
SDG 13: Climate Action (mandatory)	Emissions Reductions	141,213	VERs
SDG 8: Decent Work and Economic Growth	Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all (100% of the employees have access to training, healthcare, insurances and better income)	38	Employee
SDG 7: Affordable and Clean Energy	Ensure access to affordable, reliable, sustainable and modern energy for all (MWh of renewable energy generated)	157,560 ¹	MWh

SECTION A. DESCRIPTION OF PROJECT

A.1. Purpose and general description of project

The Hoa Binh 1 - Phase 2 wind power project activity involves the construction of an off-shore wind power plant in Vinh Hau and Vinh Hau A communes, Hoa Binh district, Bac Lieu province, Viet Nam with a total capacity of 50 MW. The project involves the installation of 13 wind turbines with 10 turbines at 3.8 MW and 3 turbines at 4 MW,

¹ Feasibility Study Report (FSR).

22kV underground cable line, a 63 MVA transformer station and 110 kV transmission line².

Prior to the implementation of the project activity, electricity in Vietnam is generated mainly from fossil fuel sources and is solely distributed to consumers by Vietnam Electricity (EVN) via the unique national electricity grid.

The baseline scenario of the project activity is the same as the scenario existing prior to the start of implementation of the project activity.

The purpose of the project activity is to generate power using renewable energy source and export to the national grid by utilizing wind energy. The electricity generated with an estimated annual volume of 157.560 GWh will be supplied to the national grid via a newly constructed transmission line from the plant to a transformer station.

The project will reduce the emission of greenhouse gases by replacing electricity generated from fossil fuel-fired power plants with zero emissions electricity from a wind power plant. It is expected that the power plant when in full operation, will result in a reduction of 141,213 tCO₂ on average per year and 706,064 tCO₂ over the first crediting period of 5 years.

The key implementation of the project is listed in below table.

Table 2: The list of key events of Hoa Binh 1 – Phase 2 Wind Power Project

<u>Date</u>	<u>Key events</u>
<u>29/07/2020</u>	<u>Start of construction</u>
<u>14/01/2021</u>	<u>First submission for GS4GG preliminary review</u>
<u>01/10/2021</u>	<u>Expected commercial operation date</u>
<u>01/10/2021</u> – <u>30/09/2016</u>	<u>The first crediting period</u>

A.1.1. Eligibility of the project under Gold Standard

The project activity meets the eligibility criteria as per section 3.1.1 of GS4GG Principles

² FSR.

& Requirements, version 1.2 as described below.

- (a) Type of Project: The project activity includes construction and operation of a wind power plant to generate renewable electricity to supply the national grid. Wind power project activity is an eligible project type according to section 2 of GS4GG Renewable energy activity requirements, version 1.2.
- (b) Location of Project: The project is located in Vinh Hau and Vinh Hau A communes, Hoa Binh district, Bac Lieu province, Viet Nam.
- (c) Project Area, Project Boundary and Scale: The project area is 13.4 hectares³. According to the applied CDM methodology ACM0002, version 20.0, the spatial extent of the project boundary includes the Hoa Binh 1 - Phase 2 wind power plant and all power plants connected physically to the national electricity grid which the proposed project is also connected. The detailed on the project boundary is presented in Section B.3 of this PDD. The installed capacity of the project activity is 50 MW so it is large scale project.
- (d) Host Country Requirements: The project's contribution to the sustainable development of the local area as well as the host country are as follows:

General contributions towards national sustainable development:

- In recent years, Vietnam has suffered a critical electricity shortage as a consequence of rapidly increasing demand and insufficient supply, thereby imposing negative impacts on economic growth as well as on daily lives of people. This project activity will be a contribution towards balancing the supply and demand gap. By exporting electricity directly to the national grid, it will help to reduce electricity losses across the national grid and to lessen the risks of cascading national grid collapse due to overload.
- Reducing reliance on exhaustible fossil fuel based power sources and also reducing the import of fuels for the purpose of power generation.

³ The Project Investment License was issued by Bac Lieu Provincial People's Committee.

- Modern and highly efficient turbines and generators are being used in the project and the power transmission will be at high voltage to ensure low losses. The project will accelerate the deployment of renewable energy technologies in Vietnam.

Contributions towards local sustainable development:

- Economic well-being

Once commissioning, this proposed project will increase the industrial share in the economic structure of Bac Lieu province. This proposed project will have a significant contribution to the state budget via annual taxes (i.e. corporate income tax⁴, resources tax⁵).

By supplying a stable electricity output, this project will facilitate the industrialisation process of the province and support economic development of local villages through fostering tourism, trade and services inside the province.

After commissioning, this project will supply electricity to speed up the commissioning of other large infrastructure projects in the region.

- Social well-being

The project improves existing roads, which will facilitate the transportation and travel. Thus, the project creates convenience for the transfer and trade in the area, thereby improves minorities' living standard and contribute to fill the gap in development between different ethnic groups in Viet Nam.

By supplying a stable electricity output, this project will facilitate the industrialisation process of the province and support economic development of local villages through fostering tourism, trade and services inside the province. This project will contribute directly to improve the low-quality infrastructure systems of the mountainous commune.

The project will construct a new transmission line together with the wind power plant, which will reduce electricity losses and improve the quality of electricity supply in the region.

⁴ Law on Corporate Income Tax No.14/2008/QH12 dated 03/06/2008.

⁵ Investment Law and Law on resources tax.

The communication system and clean water treatment serving for workers of the project during the both construction and operation phases will be shared with local people. Besides, the project activity could result in the employment of the local people for the construction and operation later. Therefore, this project activity will contribute directly to alleviate poverty in the region.

In conclusion the project activity will contribute positively towards sustainable development of Viet Nam.

- (e) Contact Details: The project participants include Cong ty TNHH Dien Gio Hoa Binh 1 Giai Doan 2, and Swiss Carbon Value Ltd. Contact details of all the Project Participants are presented in Appendix 1 of this GS PDD.
- (f) Legal Ownership and Other Rights: The project owner has full legal right to control and operate the project activity. They have got all the required permits which granted by the government like as Business Certificate, Investment Licence of the Project, Power Purchase Agreement.
- (g) Official Development Assistance (ODA) Declaration: No public funds or ODA is involved in this project activity.

The project activity meets the additional requirements as per section 2 and 3 of "Renewable Energy Activity Requirements", version 1.3 as described below.

- (h) ~~The project complies with the renewable energy activity requirements as follows~~Eligible project type:
 - The project is located in Viet Nam - a Lower Middle-Income country⁶.
 - The penetration level - the ratio of installed capacity of the wind power (350 MW⁷) to the total grid installed capacity (48,573 MW⁸) is 0.72%, which is less

⁶ <https://datahelpdesk.worldbank.org/knowledgebase/articles/906519>.

⁷ Report on supplemental planning of wind power projects - No. 1931/BCT-DL issued by Ministry of Industry and Trade on 19/03/2020.

⁸ EVN Annual Report 2018 – available at: <https://www.evn.com.vn/d6/news/EVN-Annual-Report-2018-2-50-24114.aspx>.

than 5% as required by Paragraph 2.1.3 Section 2 of Renewable Energy Activity Requirements/ version 1.3.

- Moreover, this project activity is a grid-connected off-shore wind power plant, according to Paragraph 2.1.4 of Renewable Energy Activity Requirements/ version 1.3, grid-connected off-shore will projects is automatic eligible.
- (i) Suppressed demand: This project activity does not use Certain Impact Quantification as well as a Suppressed Demand scenario when establishing the baseline.
- (j) Stacking: The project activity claims for GS VERs only. According to Section 3.5 of Renewable Energy Activity Requirements/ version 1.3, GS VERs with REC labels (if any) shall not be claimed for the same MWh.

A.1.2. Legal ownership of products generated by the project and legal rights to alter use of resources required to service the project

The project owner – Cong ty Co Phan Dien Gio Hoa Binh 1 Giai Doan 2 has the legal ownership of the products that generated under Gold Standard Certification and has legal rights concerning changes in the use of resources required to service the project for land use, construction, selling electricity license and so on, which is documented in Investment License, Power Purchase Agreement.

A.2. Location of project

The wind power plant is located in Vinh Hau and Vinh Hau A communes, Hoa Binh district, Bac Lieu province of Viet Nam.

The geo-coordinates of the power house (same with Hoa Binh 1 power house) are as follow:

- Northern latitude: 9°11'43.09"
- Eastern longitude: 105°41'35"

The geo-coordinates of turbines are as follow⁹:

Table 3 - Geo-coordinates of the turbines

Turbine	Northern latitude	Eastern longitude
WT-14	09°08'39.8202"	105°43'42.9801"
WT-15	09°08'30.7288"	105°43'46.5984"
WT-16	09°08'21.6699"	105°43'50.2166"
WT-17	09°08'12.5785"	105°43'53.8348"
WT-18	09°08'03.5197"	105°43'57.4529"
WT-19	09°07'54.4283"	105°44'01.0170"
WT-20	09°08'01.7175"	105°41'50.9857"
WT-21	09°07'52.6264"	105°41'54.6047"
WT-22	09°07'43.5678"	105°41'58.2236"
WT-23	09°07'34.4766"	105°42'01.8425"
WT-24	09°07'25.4180"	105°42'05.4614"
WT-25	09°07'16.3269"	105°42'09.0801"
WT-26	09°07'07.2357"	105°42'12.6989"

The location of the project's site including wind turbines and the administrative office is shown in Figure 1 below:

⁹ Equipment supply agreement.

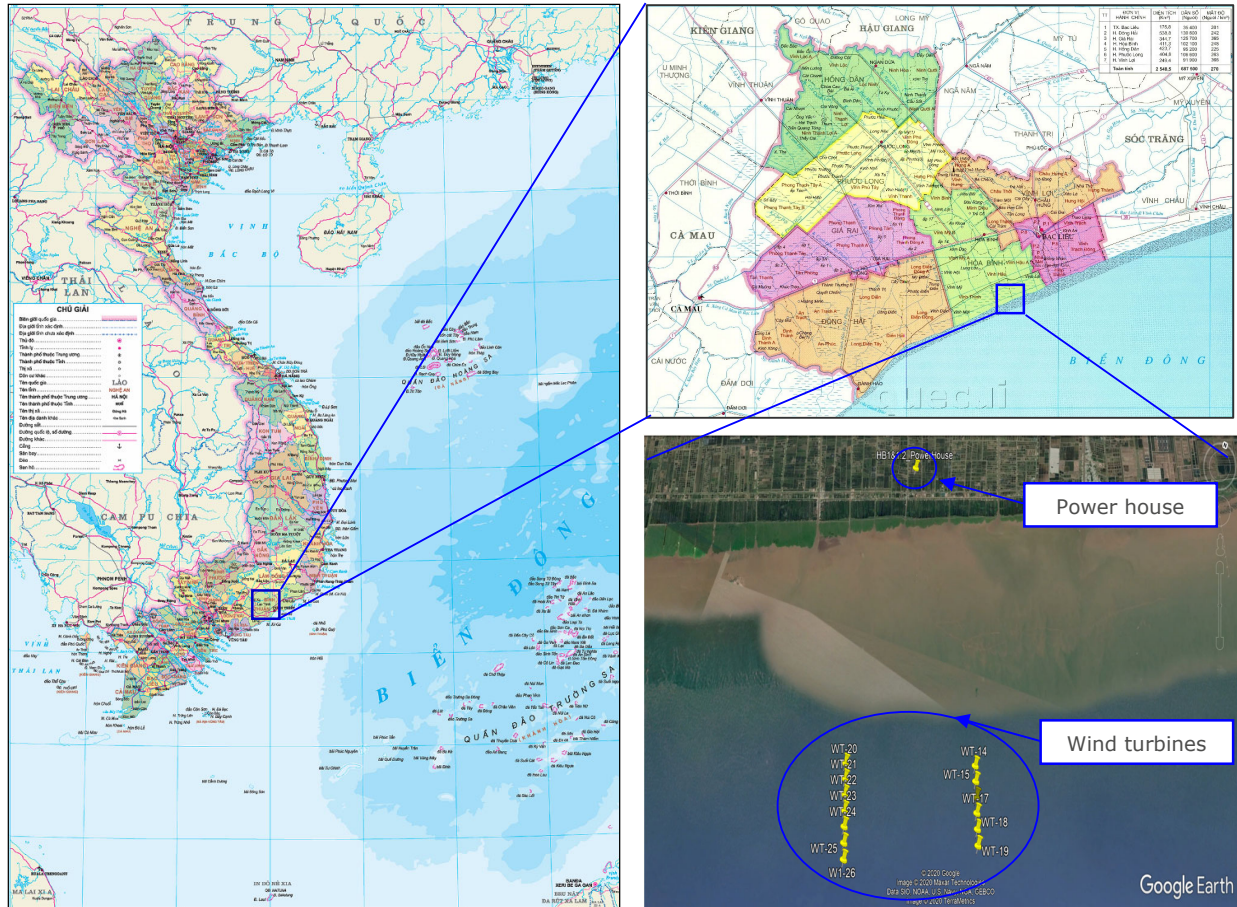


Figure 1 - Project's location

A.3. Technologies and/or measures

The project involves the construction of a 50 MW grid-connected wind power plant with 13 wind turbines and generators to convert kinetic power of the wind to electrical energy, which will be supplied to the national grid at the connection point through the transmission line. At the connection point, the electricity meter systems will be installed. They are digital and bi-directional type to measure the export and import of electricity of Hoa Binh 1 - Phase 2 Wind Power Plant.

The main technical parameters of the project are shown in Table below.

Table 4 - Main technical parameters of Hoa Binh 1 - Phase 2 Wind Power Plant

Main parameter	Unit	Value
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1. Turbine¹⁰			
• Type		Vestas V150 – 3.8 MW	Vestas V150 – 4.0 MW
• Number of turbines	set	10	3
• Rated power	kW	3,800	4,000
2. Generator¹¹			
• Type		Three-phase synchronous induction generator with cage rotor	
• Voltage	kV	3 x 0.8	
• Frequency	Hz	50	
3. Main transformer¹²			
• Type		Three phases	
• Rated capacity	MVA	63	
• Voltage	kV	22/110	
4. Technical lifetime of the plant¹³	year	20	

A.4. Scale of the project

Large project.

A.5. Funding sources of project

The proposed project is not using any ODA funding as mentioned in ODA Declaration.

SECTION B. APPLICATION OF APPROVED GOLD STANDARD METHODOLOGY (IES) AND/OR DEMONSTRATION OF SDG CONTRIBUTIONS

B.1. Reference of approved methodology (ies)

Applied methodology:

- Version 20.0 of ACM0002: "Grid-connected electricity generation from renewable sources";

¹⁰ FSR.

¹¹ FSR.

¹² FSR.

¹³ Tool10 – Tool to determine the remaining lifetime of equipment, EB50, Annex 15.

(<https://cdm.unfccc.int/methodologies/DB/XP2LKUSA61DKUQC0PIWPGWDN8ED5PG>)

Related tools:

- Version 07.0 of the Tool07: “Tool to calculate the emission factor for an electricity system”; and

(<https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v7.0.pdf>)

- Version 07.0.0 of the Tool01: “Tool for the demonstration and assessment of additionality”.

(<https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-01-v7.0.0.pdf>)

B.2. Applicability of methodology (ies)

This proposed project is a grid-connected renewable power generation that is then eligible to apply Version 20.0 of ACM0002. More details of the comparison of the project’s characteristics and the applicability criteria as specified in, Version 20.0 of ACM0002 is given in Table below.

Table 5 - Comparison of project’s characteristics and eligibility criteria of ACM0002

No.	Applicability conditions in Version 20.0 of ACM0002	Characteristics of the project activity	Applicability criterion met?
1	This methodology is applicable to grid-connected renewable energy power generation project activities that: a) Install a Greenfield power plant; b) Involve a capacity addition to (an) existing plant(s); c) Involve a retrofit of (an) existing operating plant(s)/unit(s); d) Involve a rehabilitation of (an) existing plant(s)/unit(s); or e) Involve a replacement of (an) existing plant(s)/unit(s).	The project activity consists of the installation of a new grid connected renewable power plants at a site where no renewable power plant was operated prior to the implementation of the project activity (green field plant)	Yes

2	The methodology is applicable under the following conditions: a) The project activity may include renewable energy power plant/unit of one of the following types: hydro power plant/unit with or without reservoir, wind power plant/unit, geothermal power plant/unit, solar power plant/unit, wave power plant/unit or tidal power plant/unit;	The project activity is the installation of new wind power plant	Yes
	b) In the case of capacity additions, retrofits, rehabilitations or replacements (except for wind, solar, wave or tidal power capacity addition projects) the existing plant/unit started commercial operation prior to the start of a minimum historical reference period of five years, used for the calculation of baseline emissions and defined in the baseline emission section, and no capacity expansion, retrofit, or rehabilitation of the plant/unit has been undertaken between the start of this minimum historical reference period and the implementation of the project activity.	The project activity is the installation of a new wind power plant	Not applicable
3	In case of hydro power plants, one of the following conditions shall apply:		
	a) The project activity is implemented in an existing single or multiple reservoir, with no change in the volume of any of the reservoir or	The project activity is the installation of new wind power plant	Not applicable

b) The project activity is implemented in existing single or multiple reservoirs, where the volume of the reservoir(s) is increased and the power density, calculated using equation (7), is greater than 4 W/m ² ; or	The project activity is the installation of new wind power plant	Not applicable
c) The project activity results in new single or multiple reservoirs and the power density, calculated using equation (7), is greater than 4 W/m ²	The project activity is the installation of new wind power plant	Not applicable
d) The project activity is an integrated hydro power project involving multiple reservoirs, where the power density for any of the reservoirs, calculated using equation (7), is lower than or equal to 4 W/m ² , all of the following conditions shall apply: i. The power density calculated using the total installed capacity of the integrated project, as per equation (8), is greater than 4 W/m²; ii. Water flow between reservoirs is not used by any other hydropower unit which is not a part of the project activity; iii. Installed capacity of the power plant(s) with power density lower than or equal to 4 W/m² shall be: iv. Lower than or equal to 15 MW; and v. Less than 10 percent of the installed capacity of integrated hydro power project.	The project activity is the installation of new wind power plant	Not applicable

4	In the case of integrated hydro power projects, project proponent shall: a) Demonstrate that water flow from upstream power plants/units spill directly to the downstream reservoir and that collectively constitute to the generation capacity of the integrated hydro power project; or b) Provide an analysis of the water balance covering the water fed to power units, with all possible combinations of reservoirs and without the construction of reservoirs. The purpose of water balance is to demonstrate the requirement of specific combination of reservoirs constructed under CDM project activity for the optimization of power output. This demonstration has to be carried out in the specific scenario of water availability in different seasons to optimize the water flow at the inlet of power units. Therefore, this water balance will take into account seasonal flows from river, tributaries (if any), and rainfall for minimum five years prior to implementation of CDM project activity	This project activity is not an integrated hydropower plant	Not applicable
5	This methodology is not applicable to: a) Project activities that involve switching from fossil fuels to renewable energy at the site of the project activity, since in this case the baseline may be the continued use of fossil fuels at the site b) Biomass fired power plants/units	It is a renewable energy project with no fuel-switch involved	Yes Not applicable

6	In the case of retrofits, rehabilitations, replacements, or capacity additions, this methodology is only applicable if the most plausible baseline scenario, as a result of the identification of baseline scenario, is “the continuation of the current situation, that is to use the power generation equipment that was already in use prior to the implementation of the project activity and undertaking business as usual maintenance”.	The project activity is the installation of new wind power plant	Not applicable
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B.3. Project boundary

According to Version 20.0 of ACM0002, the spatial extent of the project boundary includes the Hoa Binh 1 - Phase 2 Wind Power Plant and all power plants connected physically to the national electricity grid to which the proposed project is also connected. The flow diagram of the project boundary is shown in Figure below.

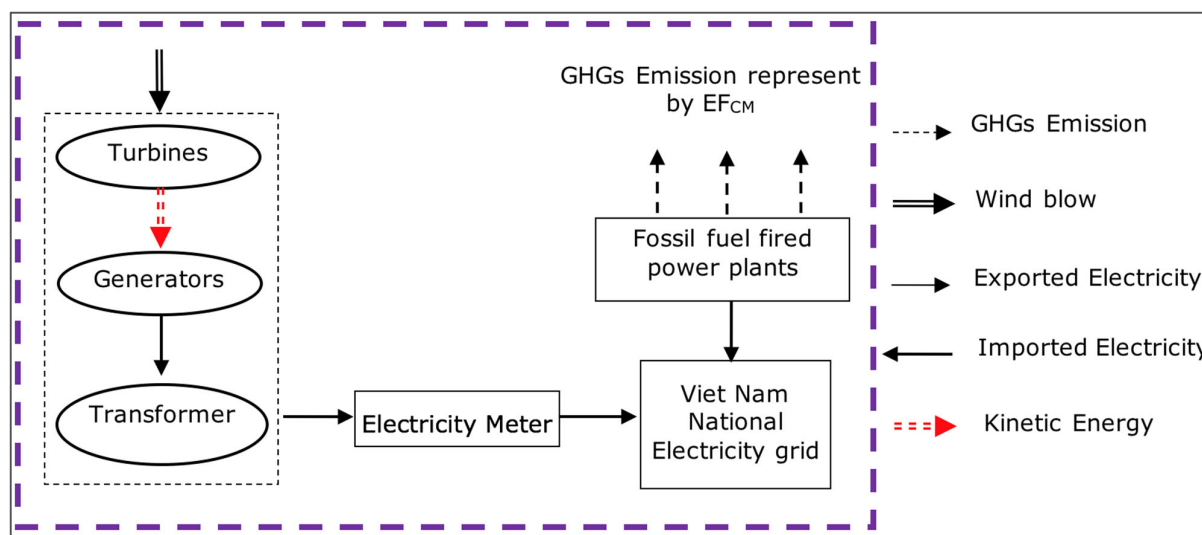


Figure 2 - Project boundary

The GHGs and emission sources included in the project boundary are shown in the table below:

Table 6 - Sources and gases included in or excluded from the project boundary

Source	GHGs	Included?	Justification/Explanation
Baseline scenario	CO ₂	Yes	Main emission source
	CH ₄	No	Minor emission source
	N ₂ O	No	Minor emission source
Project scenario	CO ₂	No	According to ACM0002, the project emission of wind energy project activity is zero.
	CH ₄	No	
	N ₂ O	No	

B.4. Establishment and description of baseline scenario

According to version 20.0 of ACM0002, for the project activity including the installation of a Greenfield grid-connected renewable power plant, the baseline scenario is the following:

“Electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin calculations described in the “Tool to calculate the emission factor for an electricity system”.

The Hoa Binh 1 - Phase 2 wind power plant involves the installation and operation of a Greenfield wind power plant to generate and supply electricity to the national grid. The Viet Nam national electricity grid is operated and monopolized by the EVN and is the unique transmission and distribution line, to which all power plants in Viet Nam are physically connected to and the proposed project activity is not outside that system. Therefore, the baseline scenario of the project is to provide an equal amount of electricity provided by the national grid where the proposed project is also connected.

The combined margin emission factor of the national grid ($EF_{grid,CM,y}$) is calculated according to Tool 07 - "Tool to calculate the emission factor for an electricity system", version 07.0, will be used to calculate baseline emissions from the project activity. Data to calculate $EF_{grid,CM,y}$ for specific wind power projects is published by Department of Climate Change - Ministry of Natural Resources and Environment, Official Letter No.

263/BDKH dated 12/03/2020 on "Viet Nam grid emission factor 2018". For further details on $EF_{grid,CM,y}$ see Section B.6.2.

B.5. Demonstration of additionality

According to version 20.0 of ACM0002, the latest version of the “Tool for the demonstration and assessment of additionality” – version 07.0.0 shall be used to demonstrate the additionality of the proposed project activity. The demonstration of additionality includes the following steps:

Step 0: Demonstration whether the proposed project activity is the first-of its-kind

This step is not applied to the project activity since it is not first-of-its-kind, hence the additionality of the project will be demonstrated in next steps below.

Step 1: Identification of alternatives to the project activity consistent with current laws and regulations

Sub-step 1a: Define alternatives to the project activity:

Paragraph 8 of version 07.0.0 of the additionality tool states: “Project activities that apply this tool in context of approved consolidated methodology ACM0002, only need to identify that there is at least one credible and feasible alternative that would be more attractive than the proposed project activity.”

We will therefore consider the two scenarios in the following analysis:

- Alternative 1: The proposed project undertaken without the GS; and
- Alternative 2: Continuation of the current situation. In this case, the proposed project will not be constructed and the power will be solely supplied from the Vietnam national grid.

Sub-step 1b: Consistency with mandatory laws and regulations:

The alternative 2 “the continuation of the current situation” does not face with any barrier from the current law and regulation in Viet Nam because it is the “do-nothing” alternative. The project owner of a proposed project has no obligation to build or invest in the power plant to supply electricity for the local area. Hence this alternative is consistent with mandatory laws and regulations

The alternative 1 is consistent with mandatory laws and regulations of Viet Nam as it was issued the Investment Certificate by People's Committee of Bac Lieu Province.

Both the alternatives enlisted above are found to comply with the mandatory laws and regulations taking into account the enforcement of the legislations in the region or country and EB decisions on national and/or sectoral policies and regulations. Since wind projects are categorised as white category, no any consent to operate required from pollution control board. However alternative 2 has been selected as the appropriate baseline alternative for this project activity in line with the methodology.

Step 2: Investment analysis

Determine whether the proposed project activity is not:

- a) The most economically or financially attractive; or
- b) Economically or financially feasible, without the revenue from the sale of emission reductions.

To conduct the investment analysis, the following sub-steps are applied:

Sub-step 2a: Determine appropriate analysis method

Tool07 - "Tool for the demonstration and assessment of additionality", Version 7.0.0 provides three methods of investment analysis: simple cost analysis (Option I), investment comparison analysis (Option II) and benchmark analysis (Option III).

The proposed project activity generates financial and economic benefits from sale of the generated electricity other than GS-VER revenues, so the simple cost analysis (Option I) is not applicable. Out of the two remaining options, Option II is also not applicable as there are no other credible and realistic baseline scenario alternatives other than electricity supply from the grid. Thus, the benchmark analysis (Option III) is chosen to prove additionality.

Sub-step 2b (Option III): Apply benchmark analysis

The investment analysis using Benchmark analysis approach (Option III) has been chosen. In the following, Project IRR is used to demonstrate the additionality of the project.

As indicated in paragraph 15, Tool27 – “Investment analysis”, Version 10.0, “Local commercial lending rates or weighted average costs of capital (WACC) are appropriate benchmarks for a project IRR”, the project participant applies the local commercial lending rates as a benchmark for this project IRR. This benchmark is derived from the average long-term lending rates available from the beginning of calculated year up to the date of decision making. All data is sourced from weekly reports published by the State Bank of Vietnam on its official website (<https://www.sbv.gov.vn/>).

The benchmark is 11% at the date of making the investment decision on 22/07/2020¹⁴.

Sub-step 2c: Calculation and comparison of financial indicators

The key assumptions used to calculate the Project IRR of the proposed project are presented in the table below:

Table 7 - Key assumption for investment analysis of Hoa Binh 1 - Phase 2 wind power plant

No	Parameter	Unit	Value	Source
1	Gross capacity	MW	50	Feasibility Study Report (FSR)
2	Annual electricity generation	GWh	157.560	FSR
3	Total investment cost	billion VND	2,755	Investment Certificate
4	Total annual O&M cost	billion VND	55.11	FSR
5	Preparation period	year	1	FSR
6	Construction period	year	2	FSR
7	Period of financial assessment	year	20	Technical lifetime of off-shore wind turbines according to the

¹⁴ Decision No.201008.01/QD-HB1.2 on approving investment of Hoa Binh 1 – Phase 2-2 Wind Power Plant dated 22/07/2020 issued by Cong ty TNHH Dien Gio Hoa Binh 1 Giai Doan 2.

				Tool to determine the remaining lifetime of equipment ¹⁵
8	Electricity price	VND/kWh	2,275.66 ¹⁶	According to Article 1, Item 7 of Prime Minister's Decision No. 39/2018/QĐ-TTg dated 10/09/2018 on amendment and adding some articles of Prime Minister's Decision No. 37/2011/QĐ-TTg on 29/06/2011 on promotion mechanism on wind power projects in Vietnam
		Cent/kWh	9.8	
9	Residual/ fair value	billion VND	0	According to Paragraph 6 of Tool²⁷ - "Investment Analysis", Version 10.0, "Both project internal rate of return (IRR) and equity IRR calculations should reflect the period of expected operation of the underlying project activity (technical lifetime) and if a shorter period than the technical lifetime is chosen, the investment analysis shall be conducted for at least 10 years and include the fair value of the project activity assets at the end of the assessment period". Since the technical lifetime of 20 years has been applied as the

¹⁵ <https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-10-v1.pdf>.

¹⁶ Based on VND exchange of commercial banks on date of making the investment decision (22/07/2020). Source: The State Bank of Vietnam (<https://sbv.gov.vn>).

				financial analysis period, full value of assets has been completely depreciated thus no residual value remains at the end of the assessment period.
10	Pre-tax project IRR	%	8.28	

The above table shows that Project IRR of the project was lower than the benchmark at the time of decision making which is defined as the date of issuing the decision to invest the project by the Management Board on 22/07/2020.

Sub-step 2d: Sensitivity Analysis

A sensitivity analysis of the project activity has been conducted to test the robustness of the above calculations. Although the O&M cost accounted less than 20% of total investment cost that could be disregarded in the sensitivity analysis as regulated under the guidance in Tool27 – “Investment analysis” – Version 10.0, paragraph 27, which states that “variables, including the initial investment cost, that constitute more than 20% of either total project costs or total project revenue should be subjected to reasonable variation”, this parameter is still considered in the analysis below. The following parameters are used in the sensitivity analysis of the project activity:

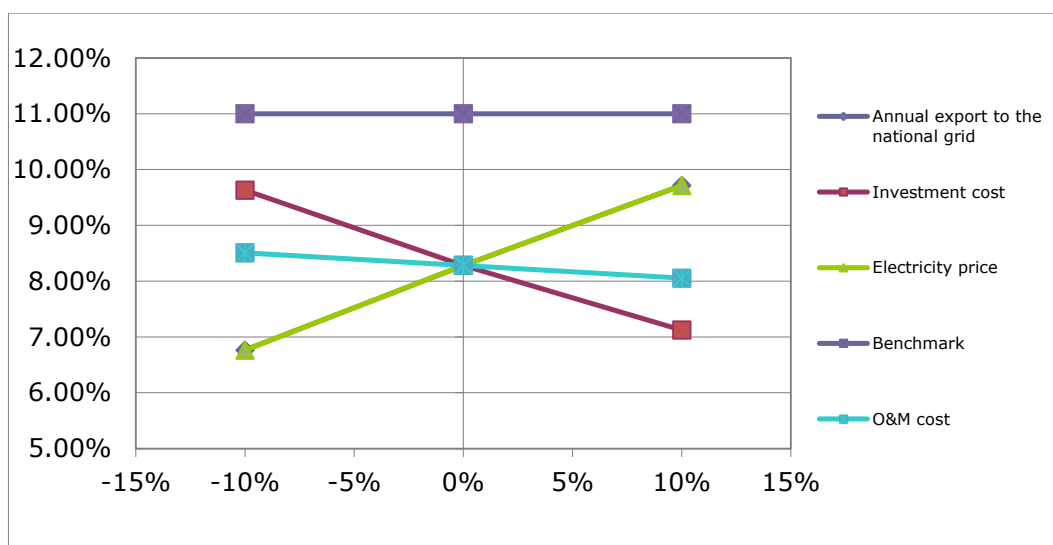
- Annual amount of electricity exported to the national grid;
- Total investment cost;
- Electricity price; and
- O & M cost.

The table below shows the impact of variations in key factors on the Project IRR considering a $\pm 10\%$ variation in the parameters.

Table 8 - Sensitivity analysis for Hoa Binh 1 - Phase 2 wind power plant

No	Parameter	Variation	Project IRR	Likelihoods to happen
1	Annual amount of electricity exported to the national grid	+10%	9.71	Lower than the benchmark of 11%
		-10%	6.76	Lower than the benchmark of 11%
2	Total investment cost	+10%	7.12	Lower than the benchmark of 11%
		-10%	9.63	Lower than the benchmark of 11%
3	Electricity price	+10%	9.71	Lower than the benchmark of 11%
		-10%	6.76	Lower than the benchmark of 11%
4	O & M cost	+10%	8.06	Lower than the benchmark of 11%
		-10%	8.51	Lower than the benchmark of 11%

The result of the project sensitivity analysis is shown in [Figure 3](#) below:


Figure 3 - Sensitivity analysis

The sensitivity analysis shows that there is unlikely to be happened any case in which the variation of a parameter can make the project IRR without GS-VERs revenues reach the benchmark.

In conclusion, the proposed GS project activity is unlikely to be financially attractive.

Step 3: Barrier analysis

Barrier analysis has not been applied.

Step 4: Common practice analysis

Stepwise approach for common practice analysis has been carried out as per Methodological Tool24 - “Common Practice”, Version 03.1.

Step (1): Calculate applicable capacity or output range as +/-50% of the total design capacity or output of the proposed project activity.

The proposed project activity has the installed capacity of 50 MW. So applicable output range as +/-50% of the capacity of the proposed project activity is 25 MW and 75 MW.

Step (2): Identify similar projects (both CDM/GS and non-CDM/GS) which fulfil all of the following conditions:

- a) The projects are located in the applicable geographical area;
- b) The projects apply the same measure as the proposed project activity;
- c) The projects use the same energy source/fuel and feedstock as the proposed project activity, if a technology switch measure is implemented by the proposed project activity;
- d) The plants in which the projects are implemented produce goods or services with comparable quality, properties and applications areas (e.g. clinker) as the proposed project plant;
- e) The capacity or output of the projects is within the applicable capacity or output range calculated in Step 1; and
- f) The projects started commercial operation before the project design document (CDM/GS-PDD) is published for global stakeholder consultation or before the start date of proposed project activity whichever is earlier for the proposed project activity.

Identification of the similar projects (CDM/GS and non-CDM/GS) is carried out as per sub-steps of Step (2) as follows:

- a) The proposed project is located in Viet Nam so the entire host country (Viet Nam) was chosen as the applicable geographical area;
- b) The proposed project activity is a greenfield wind power plant. Therefore, all the wind power plants (the same measure as the proposed project activity) are candidates for similar projects;

- c) The energy source used by the proposed project activity is wind. Hence, only wind power plants are candidates for similar projects;
- d) The propose project activity produces electricity from wind energy. Therefore, all the wind power plants are candidates for similar projects;
- e) The capacity range of the similar projects is within the applicable capacity range from 25 MW to 75 MW; and
- f) Since CDM Tools/Guidelines are followed for common practice analysis, the start date need to be considered as per CDM guidelines for common practice analysis. The start date of the project under the Methodological tool for common practice is the date on which the project participants commit to making expenditures for the construction or modification of the main equipment or facility (e.g. a wind turbine), or for the provision or modification of a service (e.g. distribution of energy-efficient light bulbs, change of transport management system). Where a contract is signed for such expenditures (e.g. for procurement of a wind turbine), it is the date on which the contract is signed. In other cases, it is the date on which such expenditures are incurred. If the project activity involves more than one of such contracts or incurred expenditures, it is the first of the respective dates. Activities incurring minor pre-project expenses (e.g. feasibility studies, preliminary surveys) are not considered in the determination of the start date.

The turbine supply contract between Vestas Asia Pacific A/S and Cong ty TNHH Dien Gio Hoa Binh 1 Giai Doan 2 was signed on 29/07/2020 is the first main contract for expenditures of the proposed project activity and it is considered as the start date of the project activity for common practice analysis. The wind power projects, which have started commercial operation before 29/07/2020 have been considered for analysis. In applicable geographical area, there are several wind power projects that are grid-connected and have started commercial operation before the start date of the project¹⁷.

¹⁷ <https://devi-renewable.com/>

Table 9 – Detail of wind power projects that have started commercial operation before 29/07/2020

No	Name	Capacity (MW)	Type	Elec. Output (GWh)	Construction on starting year	Commissioning year	Investor
0	The proposed project	50	Off-shore	156.57	2020	2021	Cong ty TNHH Dien Gio Hoa Binh 1 Giai Doan 2
1	Binh Thuan	30	On-shore	91.571	2008	5 turbines in 2009, 7 turbines in 2011	Vietnam Renewable Energy Joint Stock Company
2	Huong Linh 2	30	On-shore	122.34	2015	2017	Tan Hoan Cau Corporation JSC.
3	Dam Nai	37.8	On-shore	110	04/2017	Phase 1 in 01/2018, phase 2 in 09/2018	The Blue Circle (Singapore) and TSV Viet Nam
4	Mui Dinh	37.6	On-shore	105	8/2017	4/2019	EAB Newenergy GmbH (Germany)

Step (3): Within the projects identified in Step 2, identify those that are neither registered CDM project activity, project activity submitted for registration, nor project activity undergoing validation. Note their number N_{all} .

In this project above, Binh Thuan has been registered as a CDM project¹⁸. Therefore, **$N_{all} = 3$.**

¹⁸ <https://cdm.unfccc.int/Projects/DB/KEMCO1219986182.6/view>

Step (4): Within similar projects identified in Step 3, identify those that apply technologies that are different to the technology applied in the proposed project activity. Note their number N_{diff} .

There is no similar project identified in Step 3. Therefore, $N_{diff} = 0$.

Step (5): Calculate factor $F=1-N_{diff}/N_{all}$ representing the share of similar projects (penetration rate of the measure/technology) using a measure/technology similar to the measure/technology used in the proposed project activity that deliver the same output or capacity as the proposed project activity.

Calculate factor: $F = 1 - N_{diff}/N_{all} = 0$

$$N_{all} - N_{diff} = 0$$

As per methodological tool “Common practice” - Version 03.1, the proposed project activity is a “common practice” within a sector in the applicable geographical area if the factor F is greater than 0.2 and $N_{all} - N_{diff}$ is greater than 3.

These above conditions are not fulfilled, $F = 0$ is smaller than 0.2 and $N_{all} - N_{diff} = 0$ is smaller than 3. Therefore, the project activity is not a “common practice” within a sector in the applicable geographical area, according to the guideline.

In conclusion, the proposed project is additional.

B.5.1. Prior Consideration

Not applicable.

B.5.2. Ongoing Financial Need

Not applicable.

B.6. Sustainable Development Goals (SDG) outcomes

Table 10 – SDG Impacts

Sustainable Development Goals Targeted	Most relevant SDG Target	SDG Impact
		Indicator (Proposed or SDG Indicator)
13 Climate Action (mandatory)	Target 13.2: Integrate climate change measures into national policies, strategies grid planning	Climate action – GHG emissions reductions
8 Decent Work and Economic Growth	Target 8.5: By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value	Indicator 8.5.1 – Average hourly earnings of female and male employees, by occupation, age and persons with disabilities
7 Affordable and Clean Energy	Target 7.2: By 2030, increase substantially the share of renewable energy in the global energy mix	Indicator 7.2.1 – Renewable energy share in the total final energy consumption (MWh of renewable energy generated)

B.6.1. Explanation of methodological choices/approaches for estimating the SDG Impact

SDG 7: Ensure access to affordable, reliable, sustainable and modern energy for all

This SDG outcome is measured in accordance with ACM 0002 “*Grid-connected electricity generation from renewable sources*” version 20.0 for the net electricity supplied to the national grid by the project, $EG_{\text{facility},y}$ (MWh).

Baseline:

Prior to the implementation of the project activity, electricity in Viet Nam is generated mainly from fossil fuel sources and is solely distributed to consumers via the unique

national electricity grid.

Project's outcome:

This project annually supplements 157,560 MWh of clean and sustainable electricity to the national grid, thereby contributing to the Target 7.2:

By 2030, increase substantially the share of renewable energy in the global energy mix.

SDG 8: Promote sustained, inclusive, and sustainable economic growth, full and productive employment and decent work for all

Baseline:

The project activity is located in Bac Lieu province. The average monthly income per capita of Bac Lieu province in 2019 is 2.965 million VND¹⁹.

Project's outcome:

The project leads to employment opportunities for the local community, which would not have been possible in the baseline scenario. The project provides sustainable energy resources contributing to the economic development of the region.

The project contributes to the Target 8.5:

- By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value.

SDG 13: Take urgent action to combat climate change and its impacts

For the climate combat action, this project directly reduces 141,213 tons of CO₂ equivalent/year, thereby the project contributes to the National SDG 13 - Target 13.2

- Integrate climate change measures into national policies, strategies and planning.

This SDG outcome is measured in accordance with ACM0002 "Grid-connected electricity generation from renewable sources" version 20.0 for the emission reductions generated by the project, ER_y (tCO₂e).

Baseline emissions (BE_y)

Baseline emissions include only CO₂ emissions from electricity generation from fossil fuel fired power plants that are displaced due to the project activity, calculated as follows:

¹⁹ General statistics office of Viet Nam.

$$BE_y = EG_{PJ,y} \times EF_{grid,CM,y}$$

Where:

- BE_y Baseline emissions in year y (tCO₂/yr).
- $EG_{PJ,y}$ Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CDM project activity in year y (MWh/yr)
- $EF_{grid,CM,y}$ Combined margin CO₂ emission factor for grid connected power generation in year y calculated using the latest version of the “Tool to calculate the emission factor for an electricity system”.

Calculation of EG_{PJ}

Because the project activity is the installation of a new grid-connected renewable power plant/unit at a site where no renewable power plant was operated prior to the implementation of the project activity, then:

$$EG_{PJ,y} = EG_{facility,y}$$

Where:

- $EG_{PJ,y}$ = Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CDM project activity in year y (MWh/yr)
- $EG_{facility,y}$ = Quantity of net electricity generation supplied by the project plant/unit to the grid in year y (MWh/yr)

Therefore, the baseline emissions are calculated as follows:

$$BE_y = EG_{facility,y} \times EF_{grid,CM,y}$$

Project emission (PE_y)

According to ACM0002, Version 20.0, the project emissions are calculated using the following equation:

$$PE_y = PE_{FF,y} + PE_{GP,y} + PE_{HP,y}$$

Where:

- PE_y Project emissions in year y (tCO₂e/yr)
- $PE_{FF,y}$ Project emissions from fossil fuel consumption in year y (tCO₂/yr)
- $PE_{GP,y}$ Project emissions from the operation of geothermal power plants due to the release of non-condensable gases in year y (tCO₂e/yr)
- $PE_{HP,y}$ Project emissions from water reservoirs of hydro power plants in year y (tCO₂e/yr)

The proposed project is a wind power plant that neither uses fossil fuel nor operates geothermal power plants or having water reservoirs (i.e. $PE_{FF,y} = 0$; $PE_{GP,y} = 0$; $PE_{HP,y} = 0$); therefore, the project emission is zero:

$$PE_y = 0$$

Leakage (L_y)

According to ACM0002, Version 20.0, no leakage emissions are considered. The main emissions potentially giving rise to leakage in the context of electric sector projects are emissions arising due to activities such as power plant construction and upstream emissions from fossil fuel use (e.g. extraction, processing, transport). These emissions sources are neglected.

Emission reductions (ER_y)

Emission reductions are calculated as follows:

$$ER_y = BE_y - PE_y$$

Where:

ER_y	Emission reductions in year y (t CO ₂ e/yr).
BE_y	Baseline emissions in year y (t CO ₂ e/yr)
PE_y	Project emissions in year y (t CO ₂ e/yr).

B.6.2. Data and parameters fixed ex ante

SDG13

Data/parameter	EF_{grid,OM,y}
Unit	tCO ₂ /MWh
Description	Operating margin CO ₂ emission factor for grid connected power generation in year y
Source of data	Data published by DNA Viet Nam (Ref. http://dcc.gov.vn/van-ban-phap-luat/1059/Nghien-cuu,-xay-dung-he-so-phat-thai-(EF)-cua-luoi-dien-Viet-Nam-(K%C3%A8m-CV-263/BDKH).html)
Value(s) applied	0.8795

Choice of data or Measurement methods and procedures	The latest $EF_{grid,OM,y}$ for 2018 was calculated and published by Ministry of Natural Resources and Environment, Department of Climate Change (DNA of Viet Nam) on 12/03/2020 as per “Tool to calculate the emission factor for an electricity system” – Version 07.0
Purpose of data	For calculation of the combined margin CO ₂ emission factor ($EF_{grid,CM,y}$)
Additional comment	N/A

SDG 13

Data/parameter	$EF_{grid,BM,y}$
Unit	tCO ₂ /MWh
Description	Build margin CO ₂ emission factor for grid connected power generation in year y
Source of data	Data published by DNA Viet Nam (Ref. http://dcc.gov.vn/van-ban-phap-luat/1059/Nghien-cuu,-xay-dung-he-so-phat-thai-(EF)-cua-luoi-dien-Viet-Nam-(K%C3%A8m-CV-263/BDKH).html)
Value(s) applied	0.9465
Choice of data or Measurement methods and procedures	The latest $EF_{grid,BM,y}$ for 2018 was calculated and published by Ministry of Natural Resources and Environment, Department of Climate Change (DNA of Viet Nam) on 12/03/2020 as per “Tool to calculate the emission factor for an electricity system” – Version 07.0
Purpose of data	For calculation of the combined margin CO ₂ emission factor ($EF_{grid,CM,y}$)
Additional comment	N/A

SDG 13

Data/parameter	$EF_{grid,CM,y}$
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Unit	tCO ₂ /MWh
Description	Combined margin CO ₂ emission factor for grid connected power generation in year y
Source of data	Data published by DNA Viet Nam (Ref. http://dcc.gov.vn/van-ban-phap-luat/1059/Nghien-cuu,-xay-dung-he-so-phat-thai-(EF)-cua-luoi-dien-Viet-Nam-(K%C3%A8m-CV-263/BDKH).html)
Value(s) applied	0.89625
Choice of data or Measurement methods and procedures	The EF _{grid,CM,y} is calculated using Operating margin CO ₂ emission factor - EF _{grid,OM,y} and Build margin CO ₂ emission factor - EF _{grid,BM,y} which were published by DNA of Viet Nam and weightings w _{OM} , w _{BM} of 0.75 and 0.25 for wind power plant project as per “Tool to calculate the emission factor for an electricity system” – Version 07.0
Purpose of data	For calculation of CO ₂ emission reductions
Additional comment	$EF_{grid,CM,y} = EF_{grid,OM,y} * 0.75 + EF_{grid,BM,y} * 0.25$

B.6.3. Ex ante estimation of SDG Impact

Project emissions (PE_y)

The emissions of this wind power project $PE_y = 0$

Baseline emissions (BE_y)

Baseline emissions include only CO₂ emissions from electricity generation by fossil fuel fired power plants that are displaced due to the project activity. It is calculated as follows:

$$BE_y = EG_{PJ,y} \times EF_{grid,CM,y}$$

Where:

BE_y Baseline emissions in year y (t CO₂e/yr).

$EG_{PJ,y}$ Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CDM project activity in year y (MWh/yr), and equal to 157,560 MWh/yr

$EF_{grid,CM,y} = 0.89625$ tCO₂/MWh

Calculation of the emission factor (EF) of the national electricity grid

For this crediting period, the emission factor is calculated using:

- Latest national data: The published data by the host country DNA of Viet Nam, Department of Climate Change, Ministry of Natural Resources and Environment of Viet Nam on 12/03/2020; and
- The Version 07.0 of “Tool to calculate the emission factor for an electricity system” valid from 31/08/2018 onward.

The Emission Factor of Viet Nam Electricity System for year 2018 was calculated and published by DNA of Viet Nam, Department of Climate Change, Ministry of Natural Resources and Environment of Viet Nam on 12/03/2020 using Version 07.0 of “Tool to calculate the emission factor for an electricity system”, including:

The operating margin emission factor: $EF_{grid,OM,y} = 0.8795 \text{ tCO}_2/\text{MWh}$

And build margin emission factor: $EF_{grid,BM,y} = 0.9465 \text{ tCO}_2/\text{MWh}$

The combined emission factor is calculated as follows:

$$EF_{grid,CM,y} = EF_{grid,OM,y} \times W_{OM} + EF_{grid,BM,y} \times W_{BM}$$

Where:

W_{OM} : Weighting of OM emission factor (%)

W_{BM} : Weighting of BM emission factor (%)

However, the DNA report applied the weighting factors of both OM and BM emission are 0.5, which is not applicable for wind power generation project activities.

According to the Version 07.0 of “Tool to calculate the emission factor for an electricity system”, the following default values are used in wind power generation project activities for the first crediting period and for subsequent crediting periods:

$W_{OM} = 0.75$ and $W_{BM} = 0.25$

So in the renewal crediting period, the CM emissions factor is derived as follows:

$$EF_{grid,CM,y} = 0.75 \times 0.8795 + 0.25 \times 0.9465 = 0.89625 \text{ tCO}_2/\text{MWh}$$

Therefore:

$$BE_y = 157,560 \times 0.89625 = 141,213 \text{ tCO}_2\text{e/yr}$$

Leakage (LE_y)

As it is stated in ACM0002 version 20.0, no leakage emission is considered. The main emissions potentially giving rise to leakage in the context of electric sector projects are emissions arising due to activities such as power plant construction and upstream emissions from fossil fuel use (e.g. extraction, processing, transport). These emission sources are neglected.

Emission Reductions (ER_y)

Emission reductions are calculated as follows:

$$ER_y = BE_y - PE_y = 141,213 \text{ tCO}_2/\text{yr}$$

B.6.4. Summary of ex ante estimates of each SDG Impact

SDG 7 – Ensure access to affordable, reliable, sustainable and modern energy for all

Table 11 - Net electricity supplied to national grid

Year	Baseline estimate	Project estimate (MWh)	Net benefit (MWh)
2021 (from 01/10 to 31/12)	0	39,714	39,714
2022	0	157,560	157,560
2023	0	157,560	157,560
2024	0	157,560	157,560
2025	0	157,560	157,560
2026 (from 01/01 to 30/09)	0	117,846	117,846
Total	0	787,800	787,800
Total number of crediting years	5		
Annual average over the crediting period	0	157,560	157,560

SDG 8 - Promote inclusive and sustainable economic growth, employment and decent work for all

The project leads to employment opportunities which would not have been possible in the baseline scenario. The project is expected to provide permanent employment to 38 people²⁰.

A wind project in general does not expose workers to unsafe or unhealthy work environments in terms of toxins or chemicals. In addition, the project follows national

²⁰ FSR.

safety rules under (Host Country) Law that covers work safety. The staffs will participate the operation training before completion of the wind power plant. After the course, the staffs passed the examination will get the certificate. Then internal trainings on plant operation will be conducted for plant staffs. The project proponent also creates good labor conditions for the plant staffs. Every year, all the employees are checked-up at the medical center for free using their health insurance via insurance card.

SDG 13 - Take urgent action to combat climate change and its impacts

Table 12 - Expected emission reduction in the 1st crediting period

Year	Baseline estimate (tCO ₂ e)	Project estimate (tCO ₂ e)	Net benefit (tCO ₂ e)
2021 (from 01/10 to 31/12)	35,593	0	35,593
2022	141,213	0	141,213
2023	141,213	0	141,213
2024	141,213	0	141,213
2025	141,213	0	141,213
2026 (from 01/01 to 30/09)	105,619	0	105,619
Total	706,064	0	706,064
Total number of crediting years	5		
Annual average over the crediting period	141,213	0	141,213

B.7. Monitoring plan

B.7.1. Data and parameters to be monitored

SDG 7 - Indicator 7.2.1: Renewable energy share in the total final energy consumption

Data / Parameter	EG _{facility,y} - Access to affordable and clean energy services
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Unit	MWh/year
Description	Net electricity supplied to the national grid by the proposed project
Source of data	Direct measurement at the connection point by power meters
Value(s) applied	157,560 MWh
Measurement methods and procedures	Calculating by subtracting $EG_{y,import}$ from $EG_{y,export}$. Two-way power meters will be installed at the grid-connected point to measure the amount of electricity supplied and consumed by the proposed project by the reverse direction. The readings of electricity meter will be continuously measured and monthly recorded. The recorded data will be confirmed by the joint balance sheet which will be signed by the representatives of EVN and the project owner. Electronic data will be archived within the crediting period and 2 years after the end of the crediting period.
Monitoring frequency	Continuous measurement and monthly recording
QA/QC procedures	The uncertainty level of this data is low. The measurement/monitoring equipment should be complied with national standard and technology. These equipment and systems should be calibrated and checked every 2 year.
Purpose of data	Contribution of clean and sustainable energy from the Project to the national grid and to the increase of the share of the renewable energy in the global energy mix.
Additional comment	N/A

SDG 13: Climate Action

Data / Parameter	ER_y - Annual emission reduction
Unit	tCO ₂ e/year
Description	The project will generate renewable power, which will displace part of the electricity otherwise supplied by fossil

	fuel fired power plants, thus GHG emission reductions are achieved via this project
Source of data	Electricity generated by Hoa Thang 1.2 Wind Power Plant and calculated combined margin (CM) emission factor will be used as reference in calculation of the emission reduction.
Value(s) applied	141,213 tCO ₂ e
Measurement methods and procedures	According to ACM0002 version 20.0
Monitoring frequency	Once per monitoring period
QA/QC procedures	Cross-checking with electricity data
Purpose of data	Direct emission reductions of the Project over the Baseline
Additional comment	N/A

SDG 8 - Indicator 8.5.1 – Average hourly earnings of female and male employees, by occupation, age and persons with disabilities

Data / Parameter	• Quality of employment; • Quantitative employment and income generation; and • Equal pay for work of equal value for both men and women.
Unit	• Number of employees (for data on quantitative employment); and • Income in USD and VND (for data on income generation). List of employees, functions and respective income (for data on equal pay for work of equal value for both men and women)
Description	The employees of the project are trained on technical aspects relating to the operation of the wind power plant and provided with labour contracts, medical insurance and regular health-check as well as social insurance and unemployment insurance. The employees of the project are paid higher than the average monthly income per

	capita of the province. Men and women are paid equally for work of equal value.
Source of data	Training records, labour contracts, salary records
Value(s) applied	100% of the employees will be trained on technical aspects relating to the operation of the wind power plant, 100% of the employees will be provided with labour contracts, social and medical insurance. Number of employees: 38 (expected when operating) Average income: 8 million VND per month (expected)
Measurement methods and procedures	Checking documents
Monitoring frequency	Once per monitoring period
QA/QC procedures	Cross-checking by interviews
Purpose of data	Contribution of the project to provide full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value
Additional comment	N/A

Safeguarding Principle Assessment

Safeguarding Principle	8.2 Erosion and/or water body stability
Data / Parameter	Cultivation of plant and afforestation for impacted areas
Unit	N/A
Description	The project owner will conduct plantation in the campus such as powerhouse, transformer station site, coastal area to restore the green cover, create nice scenery and improve the ecosystem as well as the landscape and soil conditions in the area. The project owner will pay money to the Government to plant new equivalent forest area to replace the area occupied by the project activity.
Source of data	Site observation
Value(s) applied	N/A

Measurement methods and procedures	Site observation and checking documents
Monitoring frequency	Once per monitoring period
QA/QC procedures	Cross-checking by interviews
Purpose of data	Improved environment and biodiversity in the project's area
Additional comment	N/A

Safeguarding Principle	9.5 Hazardous and Non-hazardous waste
Data / Parameter	- Hazardous waste (lubricant, grease, light bulb, accumulator, etc.); and - Non-hazardous waste (domestic waste).
Unit	N/A
Description	- Hazardous wastes are collected and treated by the third authorized party in accordance with local laws and related regulations; and - Non-hazardous wastes are collected and treated in accordance with local laws and related regulations.
Source of data	Site observation, registration book to hazardous waste source owner, contract for hazardous treatment with third authorized party, receipts of hazardous waste (if any)
Value(s) applied	N/A
Measurement methods and procedures	Site observation and checking documents
Monitoring frequency	Once per monitoring period
QA/QC procedures	Cross-checking by interviews
Purpose of data	Prevent the penetration of waste, lubricant and grease into soil and groundwater
Additional comment	N/A

B.7.2. Sampling plan

Not applicable.

B.7.3. Other elements of monitoring plan

The purpose of the monitoring plan is to define the organizational structure of the monitoring team, monitoring practices, QA/QC procedures and archiving procedures.

The monitoring plan will ensure that the emission reductions from the project activity are reported accurately and transparently.

The structure of the monitoring group is as follows:

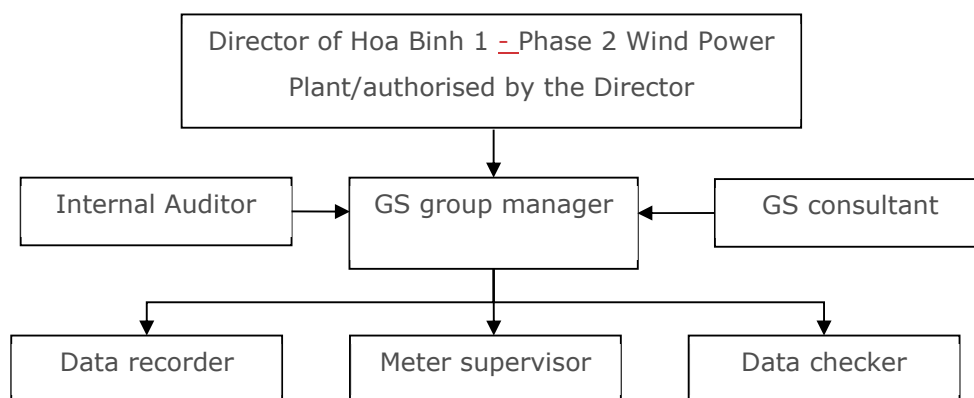


Figure 4 - Structure of the monitoring group

The responsibilities of each person involved are elaborated as follows:

Table 13 - Group members and their responsibilities

Person	Responsibility
Director of Hoa Binh 1 - Phase 2 Wind Power Plant /authorised by the Director	Check and sign the monitoring report annually.
GS group manager	Managing the whole GS business of Hoa Thang 1.2 Wind Power Plant, guiding and supervising data recorder after being trained by GS consultant.
GS consultant	Providing GS group manager training and technical support about GS monitoring plan.
Internal auditor	Checking the monitoring procedure at least once in a year
Data recorder	Collecting and recording data every month.
Meter supervisor	Checking power meter periodically according to relevant regulation.
Data checker	Double checking the collected data measured by power meter.

The steps of monitoring the electricity supplied to the grid and the electricity imported from grid and consumed by the proposed project are as follows:

- The electricity supplied by the project to the grid and electricity imported from the grid are measured automatically by the bi-directional meter systems (main and backup power meters). The data is measured continuously;
- Persons in charge of data record and meter supervisor from Hoa Binh 1 - Phase 2 Wind Power Plant together with staff from EVN shall read and collect data from main power meters on the first day of every month, the result (monthly electricity protocol) will be signed by both parties and kept respectively;
- The data from the backup power meters will be cross checked with the data from main power meter. The data from back-up system will be used in case of failing of the main meter;
- The project owner provides electricity sales invoice to EVN, and keeps the copy of invoices; and
- The power owner provides the electricity protocols and copy of invoices and other related documents to the verifier of VVB.

SECTION C. DURATION AND CREDITING PERIOD

C.1. Duration of project

C.1.1. Start date of project

29/07/2020 (the date that the equipment supply contract was signed).

C.1.2. Expected operational lifetime of project

20 years²¹.

C.2. Crediting period of project

C.2.1. Start date of crediting period

01/10/2021 (1st crediting period).

C.2.2. Total length of crediting period

²¹ Tool10 – Tool to determine the remaining lifetime of equipment, EB50, Annex 15.

5 years, 0 months.

SECTION D. SUMMARY OF SAFEGUARDING PRINCIPLES AND GENDER SENSITIVE ASSESSMENT

D.1. Safeguarding Principles that will be monitored

Table 14 – Summary of the Safeguarding Principles Assessment that will be monitored

Principles	Mitigation Measures added to the Monitoring Plan
Principle 8.2 Erosion and Water Body Instability	Refer to B7.1
Principle 9.5 Hazardous and Non-hazardous Waste	Refer to B7.1

D.2. Assessment that project complies with GS4GG Gender Sensitive requirements

According to the Gender equality requirements guidelines version 1.1, the gender sensitive requirements include three steps: basic context, apply gold standards safeguarding principles, and conduct stakeholder consultation, which are illustrated in the following table.

Table 15 – Gender sensitive assessment

Question 1 - Explain how the project reflects the key issues and requirements of Gender Sensitive design and implementation as outlined in the Gender Policy?	Answer 1 - Yes, it does. The project owner has prepared the project activity to ensure the contribution to generate livelihood benefits and enable women and men to equitably contribute to the local development through the project implementation.
Question 2 - Explain how the project aligns with existing country policies, strategies and best practices	Answer 2 - Yes, it does. The project activity totally complies with the Gender Equality Law approved by the National Assembly in 2006 and the Government's

	Decree No. 48/2009/ND-CP providing measures to assure gender equality.
Question 3 - Is an Expert required for the Gender Safeguarding Principles & Requirements?	Answer 3 - Yes, it does. The Project Owner has its own internal regulations including their commitments to implement the gender equality. All the GS mandatory requirements of the gender equality and women's right are met properly.
Question 4 - Is an Expert required to assist with Gender issues at the Stakeholder Consultation?	Answer 4 - No, it does not. There are not any Gender Issues raised at the Stakeholder Consultation. All the GS mandatory requirements of the gender equality and women's right are met properly.

SECTION E. SUMMARY OF LOCAL STAKEHOLDER CONSULTATION

E.1. Summary of stakeholder mitigation measures

During the stakeholder consultation meeting, all participants agreed that the project activity has no negative impacts on the environment, so no mitigation measures were added from the stakeholders.

E.2. Final continuous input / grievance mechanism

Method	Include all details of Chosen Method (s) so that they may be understood and, where relevant, used by readers.
Continuous Input / Grievance Expression Process Book (mandatory)	Grievance Expression Process Book
GS Contact (mandatory)	help@goldstandard.org
Other	

APPENDIX 1 - SAFEGUARDING PRINCIPLES ASSESSMENT

Assessment Questions/ Requirements	Justification of Relevance (Yes/potentially/no)	How Project will achieve Requirements through design, management or risk mitigation.	Mitigation Measures added to the Monitoring Plan (if required)
Principle 1. Human Right			
- The Project Developer and the Project shall respect internationally proclaimed human rights and shall not be complicit in violence or human rights abuses of any kind as defined in the Universal Declaration of Human Rights - The Project shall not discriminate with regards to participation and inclusion	- No - No	Viet Nam ratified "International Convention on the Elimination of all Form of Racial Discrimination" on 09/06/1981; "International Covenant on Civil and Political Rights" and "International Covenant on Economic, Social and Cultural Rights" on 24/09/1982; "Convention on the Elimination of all Forms of Discrimination against Women" on 27/11/1981. Therefore, the project developer	- N/A - N/A

		and the project do respect nationally and internationally proclaimed human rights and shall not be complicit in violence or human rights abuses of any kind 2. Viet Nam ratified “International Convention on the Elimination of all Form of Racial Discrimination” on 09/06/1981; “Convention on the Elimination of all Forms of Discrimination against Women” on 27/11/1981. Therefore, the project will not discriminate with regards to participation and inclusion.	
Principle 2. Gender Equality			
1. The Project shall not directly or indirectly lead to/contribute to adverse impacts on gender	1. No 2. No 3. No	1. The project does not adversely affect men and women in marginalized or vulnerable communities	1. N/A 2. N/A 3. N/A

equality and/or the situation of women 2. Projects shall apply the principles of nondiscrimination, equal treatment, and equal pay for equal work 3. The Project shall refer to the country's national gender strategy or equivalent national commitment to aid in assessing gender risks 4. (where required) Summary of opinions and recommendations of an Expert Stakeholder(s)	4. No	because it creates stable jobs and incomes for local men and women. The project does not reduce or put at risk women's access to or control of resources, entitlements and benefits because the project owner comply with the Labor Code (Chapter X – Separate provision for female employees). (Ref. Policy Statement and Labor Code). 2. The project owner complies with regulations of Viet Nam law. Therefore, the project will not discriminate with regards to participation. The employees of the project are paid higher than the average monthly income per capita of the province. Men and women are paid equally for work of equal value.	4. N/A
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		3. The project does not have any scope to apply gender strategy. Although the project positively contributes towards the national mission for empowerment of women through improvement of health and attaining vision for empowerment of women under Law on Gender Equality 2006 4. N/A	
Principle 3. Community Health, Safety and Working Conditions			
1. The Project shall avoid community exposure to increased health risks and shall not adversely affect the health of the workers and the community	1. No	1. The project leads to safe working condition and improvement in health as it will replace coal as fuel with wind which is clean and safe. Further, periodic maintenance by implementing agency ensure prevention of any unsafe working condition.	1. N/A
Principle 4.1 Sites of Cultural and Historical Heritage			

Does the Project Area include sites, structures, or objects with historical, cultural, artistic, traditional or religious values or intangible forms of culture?	No	The project site is located in mostly unused land along the sea without any cultural or historical heritage.	N/A
Principle 4.2 Forced Eviction and Displacement			
Does the Project require or cause the physical or economic relocation of peoples (temporary or permanent, full or partial)?	No	Most of land area occupied by the project activity is poor forest land. Therefore, the project does not require or cause the physical or economic relocation of local people.	N/A
Principle 4.3 Land Tenure and Other Rights			
Does the Project require any change, or have any uncertainties related to land tenure arrangements and/or access rights, usage rights or land ownership?	No	The compensation plan and compensation expenditure were validated and approved by the Provincial People's Committee. Therefore, there is no uncertainties related to land tenure arrangements and/or access rights, usage rights or land ownership.	N/A

Principle 5. Corruption			
1. The Project shall not involve, be complicit in or inadvertently contribute to or reinforce corruption or corrupt Projects	No	There is no corruption provision in the project activity.	N/A
Principle 6.1 Labour Rights			
1. The Project Developer shall ensure that all employment is in compliance with national labour occupational health and safety laws and with the principles and standards embodied in the ILO fundamental conventions 2. Workers shall be able to establish and join labour organisations 3. Working agreements with all individual workers shall be documented and implemented and include:	1. No 2. No 3. No 4. No 5. No	1. The project does not require labour force for implementation of the project. Trained technicians are involved in construction and operation and maintenance of plants. Therefore, no forced labour is involved in the project. No child labour is involved. 2. Workers should have the right to establish and join the organization that they consider necessary in a climate of complete security based on	1. N/A 2. N/A 3. N/A 4. N/A 5. N/A

a) Working hours (must not exceed 48 hours per week on a regular basis), AND b) Duties and tasks, AND c) Remuneration (must include provision for payment of overtime), AND d) Modalities on health insurance, AND e) Modalities on termination of the contract with provision for voluntary resignation by employee, AND f) Provision for annual leave of not less than 10 days per year, not including sick and casual leave. 4. No child labour is allowed (Exceptions for children working on their families' property requires an Expert Stakeholder opinion) 5. The Project Developer shall ensure the use of		Decree No. 58/2014/ND-CP. 3. The project owner follows regulations of Labour Code of Viet Nam. Thus, they always ensure the participation of women and men in project activities and benefits. The employees of the project are trained on technical aspects relating to the operation of the wind power plant and provided with labour contracts, medical insurance and regular health-check as well as social insurance and unemployment insurance. (Ref. Labour Code). 4. The project does not require labour force for implementation of the project. Trained technicians are involved in construction and operation and maintenance of plants.	
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appropriate equipment, training of workers, documentation and reporting of accidents and incidents, and emergency preparedness and response measures		Therefore, no child labour is involved. 5. The project does not require labour force for implementation of the project. Trained technicians are involved in construction and operation and maintenance of plants.	
Principle 6.2 Negative Economic Consequences			
1. Does the project cause negative economic consequences during and after project implementation?	1. No	1. The project does not cause negative economic consequences during implementation process of the project.	1. N/A
Principle 7.1 Emissions			
Will the Project increase greenhouse gas emissions over the Baseline Scenario?	No	The Project will reduce the emission of 141,213 tCO ₂ e/year compared to the Baseline Scenario as it replaces electricity generated from fossil fuel fired power plants with zero emissions electricity from the wind power plant.	N/A

		<i>Ref. GS-PDD, pages 2</i>	
Principle 7.2 Energy Supply			
Will the Project use energy from a local grid or power supply (i.e., not connected to a national or regional grid) or fuel resource (such as wood, biomass) that provides for other local users?	No	The Project's purpose is to supply clean energy from the wind power plant to the national grid. It does not use energy from a local grid or power supply or fuel resource that provides for other local users. <i>Ref. GS-PDD, pages 3</i>	N/A
Principle 8.1 Impact on Natural Water Patterns/Flows			

Will the Project affect the natural or pre-existing pattern of watercourses, ground-water and/or the watershed(s) such as high seasonal flow variability, flooding potential, lack of aquatic connectivity or water scarcity?	No	The proposed project is located on the vacant land, where no population and crop lands from turbines to the powerhouse. It is concluded that the Project will not affect the natural or pre-existing pattern of watercourses, ground-water and/or the watershed(s).	N/A
Principle 8.2 Erosion and/or Water Body Instability			

Could the Project directly or indirectly cause additional erosion and/or water body instability or disrupt the natural pattern of erosion?	No	During the construction period, topsoil erosion may occur due to the excavation activities. However, proper mitigation measures will be applied including: • Embanks taluses to prevent from soil erosion and landslides. • Minimize the vegetable clearance in the project site and surrounding areas. • Conduct reforestation in the temporarily occupied areas and strengthen the slopes to avoid landslide and erosions, after accomplishing the construction of main works During the operational period, there are no excavation activities and the vegetation cover will be restored. Therefore, the soil erosion will be monitored and controlled.	N/A
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Principle 9.1 Landscape Modification and Soil			
Does the Project involve the use of land and soil for production of crops or other products?	No	The project activity is to generate electricity from wind. It does not involve the use of land and soil for production of crops or other products. Before the operation, the project site is located partly on agricultural land. All the households who cultivated on the land had been compensated satisfactorily	N/A
Principle 9.2 Vulnerability to Natural Disaster			
Will the Project be susceptible to or lead to increased vulnerability to wind, earthquakes, subsidence, landslides, erosion, flooding, drought or other extreme climatic conditions?	No	The Project's purpose is to supply clean energy from the wind power plant to the national grid. Therefore the Project is not susceptible to and does not lead to increased vulnerability to wind, earthquakes, subsidence, landslides, erosion, flooding, drought or other extreme climatic conditions.	N/A
Principle 9.3 Genetic Resources			

Could the Project be negatively impacted by or involve genetically modified organisms or GMOs (e.g., contamination, collection and/or harvesting, commercial development, or take place in facilities or farms that include GMOs in their processes and production)?	No	The Project's purpose is to supply clean energy from the wind power plant to the national grid. Therefore, the Project is not negatively impacted by the use of GMOs.	N/A
Principle 9.4 Release of pollutants			
Could the Project potentially result in the release of pollutants to the environment?	No	Construction phase: The project is a wind power project, so the impact on air quality is only temporary during construction period and not significant. Besides, the Project owner has applied the following measures: - Spraying water along the construction roads and construction site to mitigate dust dispersion. - All means/vehicles for transport of construction materials must be covered in order to minimize dust dispersion.	N/A

		- Trees will be planted to create a dust barrier. - Don't use very old machines to transport materials and construct. All transport equipment/vehicles and machines must have operational certifications issued by the Directorate for standards and Quality to reduce noise and waste gas during their operation. Operation phase: The proposed project operates using wind energy and does not use fossil fuels. Therefore, there is no gas pollutants emitted into the atmosphere during the operation.	
Principle 9.5 Hazardous and Non-hazardous Waste			

Will the Project involve the manufacture, trade, release, and/ or use of hazardous and non-hazardous chemicals and/or materials?	No	The Project's purpose is to supply clean energy from the wind power plant to the national grid. Therefore, the Project does not involve the manufacture, trade, release, and/or use of hazardous and non-hazardous chemicals and/or materials.	N/A
Principle 9.6 Pesticides & Fertilisers			
Will the Project involve the application of pesticides and/or fertilisers?	No	The Project's purpose is to supply clean energy from the wind power plant to the national grid. Therefore the Project does not involve the application of pesticides and/or fertilizers.	N/A
Principle 9.7 Harvesting of Forests			
Will the Project involve the harvesting of forests?	No	Most of land area occupied by the project activity is unused land along the sea, there is limited species settled prior to the project activity. Therefore, the project does not involve the harvesting of forests.	N/A

Principle 9.8 Food			
Does the Project modify the quantity or nutritional quality of food available such as through crop regime alteration or export or economic incentives?	No	The Project's purpose is to supply clean energy from the wind power plant to the national grid. Therefore the Project does not modify the quantity or nutritional quality of food available such as through crop regime alteration or export or economic incentives.	N/A
Principle 9.9 Animal husbandry			
Will the Project involve animal husbandry?	No	The Project's purpose is to supply clean energy from the wind power plant to the national grid. Therefore the Project does not involve animal husbandry.	N/A
Principle 9.10 High Conservation Value Areas and Critical Habitats			

Does the Project physically affect or alter largely intact or High Conservation Value (HCV) ecosystems, critical habitats, landscapes, key biodiversity areas or sites identified?	No	The project is not located in an area within a high conservation value area or within critical natural habitats.	N/A
Principle 9.11 Endangered Species			
Are there any endangered species identified as potentially being present within the Project boundary (including those that may route through the area)? AND/OR Does the Project potentially impact other areas where endangered species may be present through transboundary affects?	1. No 2. No	1. The physical location of the project is described in Section A.4. above. There are no endangered species identified as potentially being present the project boundary. 2. The project activity is not expected either potentially impact other areas where endangered species may be present through transboundary affects.	1. N/A 2. N/A

APPENDIX 2- CONTACT INFORMATION OF PROJECT PARTICIPANTS

Organization name	Cong ty TNHH Dien Gio Hoa Binh 1 Giai Doan 2
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APPENDIX 3- LUF ADDITIONAL INFORMATION

Not Applicable.

APPENDIX 4-SUMMARY OF APPROVED DESIGN CHANGES

Not Applicable.

Revision History

Version	Date	Remarks
1.2	14 October 2020	Hyperlinked section summary to enable quick access to key sections Improved clarity on Key Project Information Inclusion criteria table added Gender sensitive requirements added Prior consideration (1 yr rule) and Ongoing Financial Need added Safeguard Principles Assessment as annex and a new section to include applicable safeguards for clarity Improved Clarity on SDG contribution/SDG Impact term used throughout Clarity on Stakeholder Consultation information required Provision of an accompanying Guide to help the user understand detailed rules and requirements
1.1	24 August 2017	Updated to include section A.8 on 'gender sensitive' requirements
1.0	10 July 2017	Initial adoption