KEY PROJECT INFORMATION & PROJECT DESIGN DOCUMENT (PDD)

PUBLICATION DATE **14.10.2020**

VERSION **v. 1.2**

This document contains the following Sections

KEY PROJECT INFORMATION

GS ID of Project	GS 11251
Title of Project	Thai Hoa Wind Power Project
Time of First Submission Date	08/07/2021
Date of Design Certification	07/12/2022
Version number of the PDD	2.6
Completion date of version	26/07/2023
Project Developer	Swiss Carbon Value Ltd.
Project Representative	Swiss Carbon Value Ltd.
Project Participants and any communities involved	Pacific - Binh Thuan Energy Joint Stock Company (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	N/A
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 B.6)	Estimated Annual Average	Units or Products
13 Climate Action (mandatory)	Emissions Reductions	214,728	GS-VER
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)	35[1]	Employee
SDG 7. Affordable and Clean Energy	Ensure access to affordable, reliable, sustainable and modern energy for all (MWh of renewable energy generated)	248,500[2]	MWh

SECTION A. DESCRIPTION OF PROJECT

A.1. Purpose and general description of project

The Thai Hoa Wind Power Project activity involves the construction of an on-shore wind power plant in Hoa Thang commune, Bac Binh district, Binh Thuan province, Viet Nam with a total capacity of 90 MW. The project involves the installation of 18 wind turbines – generators at 5 MW, 22kV underground cable line, 2x50 MVA transformer station and 220 kV transmission line[3].

[1] Feasibility Study Report. (The FSR is made by the third party and has also been approved by the national authority).
[2] FSR
[3] FSR.

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 248.5 GWh will be supplied to the national grid via a newly constructed transmission line from the plant to the 2x50 MVA 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 214,728 tCO_2 on average per year and 1,073,640 tCO_2 over the first crediting period of 5 years.

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

Table 2: The list of key events of Thai Hoa Wind Power Project

Date	Key events
06/2019	Finalizing the Feasibility Study Report (FSR) of Thai Hoa WPP by the third party – Power Engineering Consulting JSC (PECC2).
03/06/2019	Issuing the Investment Certificate for the project activity by People's Committee of Binh Thuan Province.
09/2019	Finalizing the Environmental Impact Assessment Report (EIAR) by the third party – PECC2.
09/10/2019	Approving the FSR by the national authority – People's Committee of Binh Thuan province.
24/10/2019	Approving the Feasibility Study Report of Thai Hoa Wind Power Plant by Ministry of Industry and Trade – Electricity and Renewable Energy Authority.

31/10/2019	Approving the project investment by the Management Board of Pacific – Binh Thuan Energy JSC (the date of making investment decision).
14/07/2020	Signing the equipment supply contract with Siemens Gamesa Consortium.
08/07/2021	Submission date for Preliminary Review under GS4GG.
31/10/2021	Commercial operation date.

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 & 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 gird. Wind power project activity is an eligible project type according to section 2 of GS4GG Renewable energy activity requirements, version 1.3.

(b) Location of Project: The project is located in Hoa Thang commune, Bac Binh district, Binh Thuan province, Viet Nam.

(c) Project Area, Project Boundary and Scale: The project area is 29.2 hectares[4]. According to the applied CDM methodology ACM0002, version 20.0, the spatial extent of the project boundary includes the Thai Hoa 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 90 MW so it is large scale project.

Thai Hoa wind power project is seeking registration only in GS4GG program. The proposed project activity is not participated in other emissions trading programs,

[4] Environment Impact Assessment Report (The EIAR is made by the third party and has also been approved by the national authority)

other binding limits, other forms of environmental credits or other GHG programs. This project is not rejected by any other GHG programs. Therefore, no double counting of impacts is potentially in this project activity. This information is confirmed in the no-double counting declaration by the project owner.

The host country – Vietnam and Binh Thuan province (the project's location) do not either:

- Have an emission reduction cap enforced; or
- Have the possibility to trade emission that include the scope of the proposed project.

Moreover, the proposed project is constructed, operated and owned by a private company, without any state budget or ODA support. Therefore, the project owner has full legal right to own any GS-VERs generated by the project activity.

In case of any risk of double counting exists, the project developer commits to retiring eligible units equal to the quantity of GS VERs.

(d) Host Country Requirements: The proposed project activity is in compliance with applicable Vietnam's laws and environmental, ecological and society regulations including the law on investment, the law on environmental protection, the electricity law, the labour code, the law on gender equality, the land law… which are documented in the project investment issued Binh Thuan Provincial People's Committee (Binh Thuan PPC), the approval of environment impact assessment report issued by Binh Thuan PPC, the business license for the project owner issued by Binh Thuan PPC, the approval of feasibility study report issued by Ministry of Industry and Trade, the power purchase agreement signed with Vietnam Electricity (EVN).

The project's contribution to the sustainable development of the local area as well as the host country are as follows:

<u>General contributions towards national sustainable development:</u>

- 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.
- 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 Binh Thuan province. This proposed project will have a significant contribution to the state budget via annual taxes (i.e. corporate income tax[5], resources tax[6]).
By supplying a stable electricity output, this project will facilitate the industrialization 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 industrialization process of the province and support economic development of local villages through

[5] Law on Corporate Income Tax No.14/2008/QH12 dated 03/06/2008.
[6] Investment Law and Law on resources tax.

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.

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 Pacific - Binh Thuan Energy Joint Stock Company, 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.

(h) The project complies with the renewable energy activity requirements as follows:

- The project is located in Viet Nam - a Lower Middle-Income country[7].

[7] https://datahelpdesk.worldbank.org/knowledgebase/articles/906519.

- The penetration level - the ratio of installed capacity of the wind power[8] (350 MW[9]) to the total grid installed capacity (48,573 MW[10]) is 0.72%, which is much less than 5%.

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 - Pacific - Binh Thuan Energy Joint Stock Company 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 Business License, Project Investment License, Power Purchase Agreement, Land Lease Contract.

A.2. Location of project

The wind power plant is located in Hoa Thang commune, Bac Binh district, Binh Thuan province of Viet Nam.

The geo-coordinates of the project's site are as follow:

Northern latitude: 11^0 04' 16"

Eastern longitude: 108^0 21' 52"

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

[8] The project activity is an on-shore wind power plant. However, there are no publicly available sources that disclose detailed information on COD wind power plants by type (e.g. on-shore or off-shore). Therefore, the calculation of penetration level is based on the total installed capacity of wind power plants. It is a conservative approach because the total installed capacity of wind power plants is always higher than the installed capacity of on-shore wind power plants only.

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

[10] EVN Annual Report 2018 – available at: https://www.evn.com.vn/d6/news/EVN-Annual-Report-2018-2-50-24114.aspx.

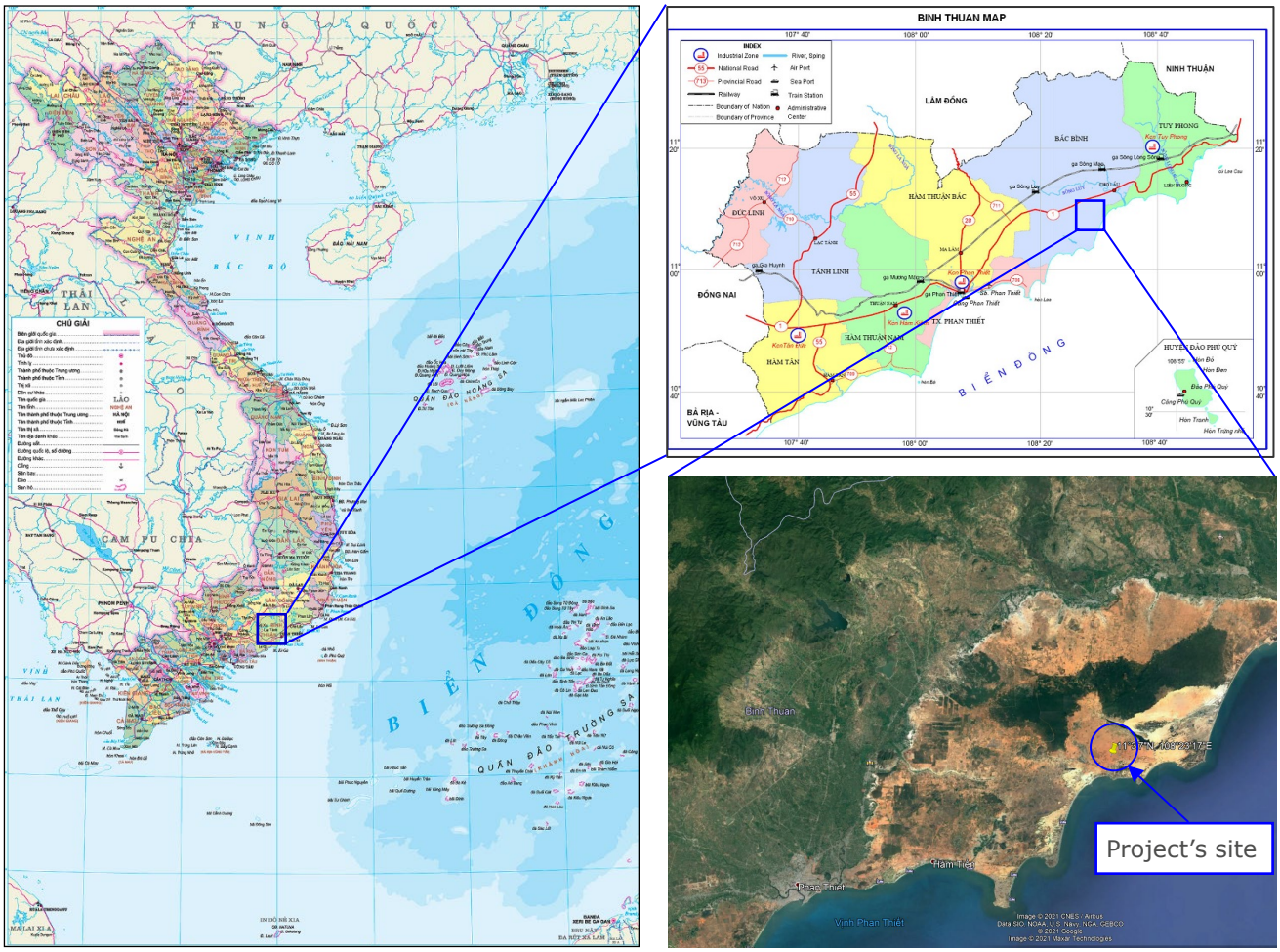
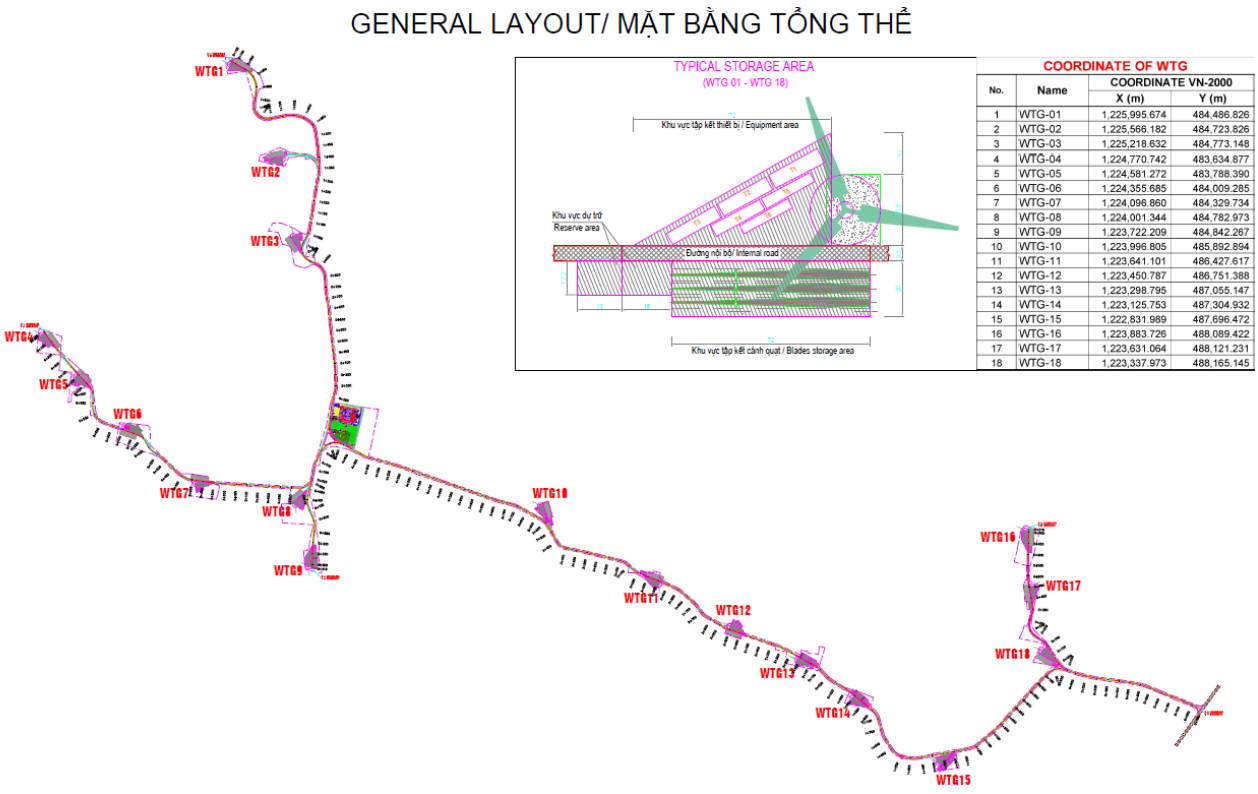


Figure 1 – Project's location

The project's layout is shown in the below figure:



COORDINATE OF WTG

No.	Name	COORDINATE VN-2000	
		X (m)	Y (m)
1	WTG-01	1,225,995.674	484,486.826
2	WTG-02	1,225,566.182	484,723.826
3	WTG-03	1,225,218.632	484,773.148
4	WTG-04	1,224,770.742	483,634.877
5	WTG-05	1,224,581.272	483,788.390
6	WTG-06	1,224,355.685	484,009.285
7	WTG-07	1,224,096.860	484,329.734
8	WTG-08	1,224,001.344	484,782.973
9	WTG-09	1,223,722.209	484,842.267
10	WTG-10	1,223,996.805	485,892.894
11	WTG-11	1,223,641.101	486,427.617
12	WTG-12	1,223,450.787	486,751.388
13	WTG-13	1,223,298.795	487,055.147
14	WTG-14	1,223,125.753	487,304.932
15	WTG-15	1,222,831.989	487,696.472
16	WTG-16	1,223,883.726	488,089.422
17	WTG-17	1,223,631.064	488,121.231
18	WTG-18	1,223,337.973	488,165.145

Figure 2: Project's layout

A.3. Technologies and/or measures

The project involves the construction of a 90 MW grid-connected wind power plant with 18 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 220kV electricity 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 Thai Hoa Wind Power Plant.

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

Table 3 - Main technical parameters of Thai Hoa Wind Power Plant

Main parameter	Unit	Value
1. Turbine[11]		
• Type		SG 5.0–145
• Number of turbines	set	18
• Rated power	kW	5,000
2. Generator[12]		
• Type	-	Three-phase synchronous
• Voltage	V	690
• Frequency	Hz	50
3. Main transformer[13]		
• Type	-	Three phases
• Rated capacity	MVA	50
• Voltage	kV	22/220
4. Technical lifetime of the plant[14]	year	25

A.4. Scale of the project

Large scale project.

According to the CDM and GS rules, the renewable energy project with capacity more than 15 MW is listed as a large-scale project. Total installed capacity of the project is 90 MW which exceeds 15 MW, hence this project activity falls under Large Scale Project category.

A.5. Funding sources of project

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

[11] Equipment Supply Contract.
[12] Feasibility Study Report.
[13] Power Purchase Agreement.
[14] Tool10 – Tool to determine the remaining lifetime of equipment, EB50, Annex 15.

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"; (https://cdm.unfccc.int/methodologies/DB/XP2LKUSA61DKUQC0PIWPGWDN8ED5PG)

Related tools:

- Version 07.0 of 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 Tool01: "Tool for the demonstration and assessment of additionality". (https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-01-v7.0.0.pdf)
- Version 12.0 of Tool27: "Investment analysis" (https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-27-v12.pdf)
- Version 03.1 of Tool24: "Common Practice" (https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-24-v1.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 4 - 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	The project activity is the installation of a new wind power plant	Not applicable

	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.		
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	The project activity is the installation of new wind power plant	Not applicable

	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/m^2; 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/m^2 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.		
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 project activity is not an integrated hydropower plant	Not applicable

	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		
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

B.3. Project boundary

According to Version 20.0 of ACM0002, the spatial extent of the project boundary includes the Thai Hoa 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.

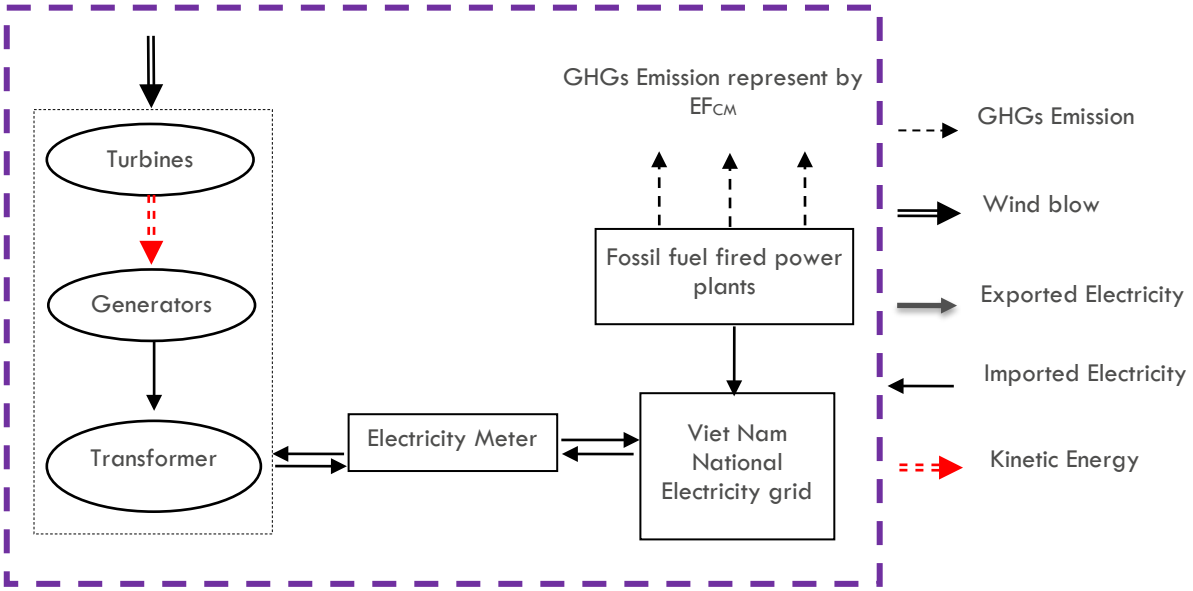


Figure 3 - Project boundary

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

Table 5 - Sources and gases included in or excluded from the project boundary

Source		GHGs	Included?	Justification/Explanation
Baseline scenario	CO_2 emission from electricity generation in fossil fuel fired power plants that is displaced due to the project activity	CO_2	Yes	Main emission source
		CH_4	No	Minor emission source
		N_2O	No	Minor emission source
Project scenario	Proposed project	CO_2	No	According to ACM0002, the project emission of wind energy project activity is zero.
		CH_4	No	
		N_2O	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 Thai Hoa 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.

Assess compliance of the baseline scenario with relevant mandatory national and/or sectoral policies

Electricity Law No. 28/2004/QH11 dated on 03/12/2004 and Law No. 50/2010/QH12 on "Economical and Efficient use of energy" dated on 17/06/2010 are the main laws that govern the electricity sector in Vietnam. Their implementation is regulated under Government Decree No. 14/2014/ND-CP on "Stipulating in detail the implementation of electricity law regarding electricity safety" dated on 26/02/2014. National policy and regulation do not mandate setting up renewable power plants from existing capacity. Thus, it can be concluded that the current baseline scenario is in compliance with relevant mandatory national and sectoral policies.

The most up-to-date combined margin emission factor of the national electricity grid ($EF_{grid,CM,y}$) is calculated by Department of Climate Change – Ministry of Natural Resources and Environment (DNA of Vietnam) based on 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. The calculation results of $EF_{grid,CM,y}$ - year 2020 is published by DNA of Vietnam on 03/01/2022 at http://www.dcc.gov.vn/van-ban-phap-luat/1081/Nghien-cuu,-xay-dung-he-so-phat-thai-(EF)-cua-luoi-dien-Viet-Nam-nam-2020-(k%C3%A8m-CV-1316/BDKH-TTBVTOD).html. 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 Binh Thuan 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 categorized 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/)[15].

The benchmark is 11% at the date of making the investment decision on 31/10/2019[16].

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 7:

Table 6 - Key assumption for investment analysis of Thai Hoa wind power plant

No	Parameter	Unit	Value	Source
1	Gross capacity	MW	90	Feasibility Study Report (FSR) is made by third party and has been approved by the national authority.
2	Annual electricity generation	GWh	248.5	FSR
3	Total investment cost	billion VND	4,303	FSR
4	Total annual O&M cost	billion VND	64.5	FSR
5	Preparation period	year	1	FSR
6	Construction period	year	2	FSR
7	Period of financial assessment	year	25	FSR and cross-checked by Technical lifetime of onshore wind turbines according to the Tool to determine the remaining lifetime of equipment[17]

[15] The link for each weekly report is included in "Benchmark" sheet of ER and project IRR spreadsheet.
[16] Decision No.220/QD-PBE on approving investment of Thai Hoa Wind Power Plant dated 31/10/2019 issued by Pacific – Binh Thuan Energy JSC.
[17] https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-10-v1.pdf.

8	Electricity price	VND/kWh	1,967.33[18]	According to Article 1, Item 7 of Prime Minister's Decision No. 39/2018/QD-TTg dated 10/09/2018 on amendment and adding some articles of Prime Minister's Decision No. 37/2011/QD-TTg on 29/06/2011 on promotion mechanism on wind power projects in Vietnam
		Cent/kWh	8.5	
9	Residual/ fair value	billion VND	0	According to Paragraph 6 of Tool27 - "Investment Analysis", Version 12.0, "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***". Paragraph 7 of Tool27 - "Investment Analysis", Version 12.0, "The fair value should be calculated in accordance with local accounting regulations

[18] Based on VND exchange of commercial banks on date of making the investment decision (31/10/2019). Source: The State Bank of Vietnam (https://sbv.gov.vn), details at: https://www.sbv.gov.vn/TyGia/faces/Aiber.jspx?

				where available, or international best practice". Since the maximum depreciation period for wind power plants according to Circular No.45/2013/TT-BTC issued by Ministry of Finance dated 25/04/2013 regarding "Guiding regulation on management, use and depreciation of fixed assets" is 20 years, which is shorter than the financial analysis period of 25 years for this project activity; furthermore, the technical lifetime of 25 years has been applied as the 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	%	**7.88**	

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 31/10/2019.

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 12.0, 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.

Table 8 below shows the impact of variations in key factors on the Project IRR considering a ±10% variation in the parameters.

Table 7 - Sensitivity analysis for Thai Hoa wind power plant

No	Parameter	Variation	Project IRR	Likelihoods to happen
1	Annual amount of electricity exported to the national grid	+10%	9.08%	Lower than the benchmark of 11%
		-10%	6.61%	Lower than the benchmark of 11%
2	Total investment cost	+10%	6.89%	Lower than the benchmark of 11%
		-10%	9.04%	Lower than the benchmark of 11%
3	Electricity price	+10%	9.09%	Lower than the benchmark of 11%
		-10%	6.61%	Lower than the benchmark of 11%
4	O&M cost	+10%	7.72%	Lower than the benchmark of 11%
		-10%	8.04%	Lower than the benchmark of 11%

The result of the project sensitivity analysis is shown in the below Figure:

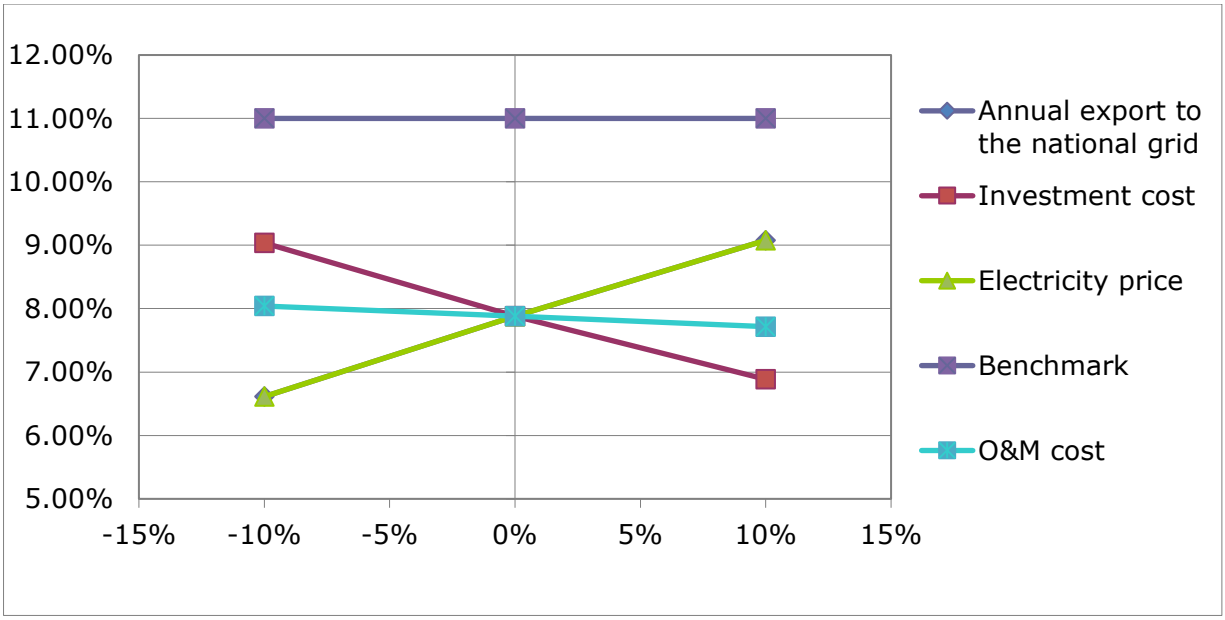


Figure 4 - Sensitivity analysis

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 90 MW. So applicable output range as +/-50% of the capacity of the proposed project activity is 45 MW and 135 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 the power generation based on renewable energy. Therefore, all the renewable energy power plants (the same measure as the proposed project activity) are candidates for similar projects;

c) The proposed project activity is the power generation based on renewable energy (not a technology switch measure). Therefore, all the renewable energy power plants are candidates for similar projects;

d) The propose project activity produces electricity from the renewable energy. Therefore, all the renewable energy power plants are candidates for similar projects;

e) The capacity range of the similar projects is within the applicable capacity range from 45 MW to 135 MW; and

f) Since CDM Tools/Guidelines are followed for common practice analysis, the start date needs 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 contract for turbine supply, installation and commissioning between Pacific – Binh Thuan Energy JSC and Siemens Gamesa Renewable Energy Technology (China) Co., LTD and Siemens Gamesa Renewable Energy LLC was signed on 14/07/2020 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 renewable energy power plants, which have started commercial operation before 14/07/2020 have been considered for analysis. List of these plants are summarized in the table below:

Table 8 – Detail of renewable energy power plants that have started commercial operation before 14/07/2020[19]

No	Name	Capacity (MW)	Type	Commissioning date	Credit mechanism
00	The proposed project	90	On-shore wind power	2021	GS (project 11251)
01	Ham Kiem	45.0	Solar power	16/05/2019	
02	Long Thanh 1	45.0	Solar power	25/05/2019	
03	Quang Minh	45.0	Solar power	31/01/2019	VCS (project 1964)
04	Srepok 1	45.0	Solar power	28/01/2019	VCS (project 1974)
05	Bac Me	45.0	Hydropower	14/09/2017	CDM (project 9148)
06	A Lin B1	46.0	Hydropower	27/11/2019	
07	Bao Lam 3	46.0	Hydropower	13/11/2017	
08	Da Bac	48.0	Solar power	14/05/2019	GCC (No. S00375)
09	Da Bac 2	48.0	Solar power	05/01/2019	
10	Chiem Hoa	48.0	Hydropower	12/04/2012	CDM (project 6118)
11	Ngoi Hut 2	48.0	Hydropower	30/01/2015	CDM (project 7081)
12	Nho Que 2	48.0	Hydropower	23/08/2016	
13	Nam Tha Group	48.5	Hydropower	07/2007	
14	Ninh Phuoc 6.1 & 6.2	49.0	Solar power	21/06/2019	

[19] List of grid-connected power plants in Viet Nam as of July 2023 are summarized from EVN's database 2020, the reports on Emission Factor of Vietnam National Gird, and other published sources. The list of 820 plants has been submitted to the VVB for review.

15	Thuan Nam 19	49.0	Solar power	20/06/2019	
16	TTC No. 1	49.0	Solar power	26/02/2019	
17	Krong Pa	49.0	Solar power	28/11/2018	
18	Krong Pa 1	49.0	Solar power	28/12/2018	
19	Krong Pa 2	49.0	Solar power	22/12/2018	
20	Bourbon	49.0	Biomass	2018	
21	Song Bung 4A	49.0	Hydropower	04/01/2015	CDM (project 6679)
22	Cu Jut	50.0	Solar power	20/04/2019	
23	Mien Trung Power	50.0	Solar power	13/06/2019	
24	Europlast Long An	50.0	Solar power	06/10/2019	
25	Europlast Phu Yen	50.0	Solar power	30/06/2019	
26	Ho Bau Ngu	50.0	Solar power	27/06/2019	GCC (No. S00333)
27	My Son 1	50.0	Solar power	25/06/2020	
28	Phuoc Huu	50.0	Solar power	20/06/2019	
29	Ha Tinh	50.0	Solar power	01/07/2019	
30	Srok Phu Mieng	51.0	Hydropower	22/10/2006	
31	KCN Chau Duc	57.0	Solar power	29/05/2019	
32	Song Bung 5	57.0	Hydropower	25/12/2012	CDM (project 5144)
33	Van Chan	57.0	Hydropower	10/03/2013	CDM (project 5191)
34	Nhan Hac	59.0	Hydropower	23/11/2018	
35	Viet Nam Sugar Plant	60.0	Biomass	2015	
36	KCP Phu Yen	60.0	Biomass	2017	
37	Ba Thuoc 1	60.0	Hydropower	23/03/2018	CDM (project 7400)
38	Son Tra 1A&B	60.0	Hydropower	30/07/2019	
39	Ta Thang	60.0	Hydropower	10/2013	CDM (project 5445)
40	Song Tranh 3	62.0	Hydropower	29/11/2018	CDM (project 4974)
41	Se San 4A	63.0	Hydropower	18/07/2011	CDM (project 9017)

42	Song Con 2	63.0	Hydropower	01/07/2012	CDM (project 4809)
43	Krong H'nang	64.0	Hydropower	25/06/2010	
44	Quang Tri	64.0	Hydropower	26/07/2009	
45	Srepok 4A	64.0	Hydropower	01/06/2014	CDM (project 6065)
46	Nam Na 2	66.0	Hydropower	29/09/2015	CDM (project 5885)
47	Vinh Son	66.0	Hydropower	12/04/1994	
48	Dong Nai 2	70.0	Hydropower	11/06/2014	CDM (project 7809)
49	Song Hinh	70.0	Hydropower	2001	
50	GAIA GD2	75.0	Solar power	24/06/2019	
51	Xuan Thien Thuan Bac GD2	75.0	Solar power	31/03/2020	
52	Da M'bri	75.0	Hydropower	31/12/2013	CDM (project 5870)
53	Thac Mo	75.0	Hydropower	11/07/2017	
54	Can Don	78.0	Hydropower	01/01/2004	
55	Ba Thuoc 2	80.0	Hydropower	12/04/2012	CDM (project 4823)
56	Srepok 4	80.0	Hydropower	07/03/2010	CDM (project 5115)
57	Huong Dien	81.0	Hydropower	14/10/2010	
58	Thai An	82.0	Hydropower	01/10/2011	CDM (project 3711)
59	Nam Na 3	84.0	Hydropower	2015	CDM (project 8804)
60	Ngoi Phat	84.0	Hydropower	04/09/2014	CDM (project 3872)
61	Buon Tua Srah	86.0	Hydropower	09/07/2009	
62	Bac Ha (Coc Ly)	90.0	Hydropower	21/05/2012	CDM (project 4921)
63	An Khe	95.0	Biomass	12/01/2018	
64	Cua Dat	97.0	Hydropower	18/05/2010	
65	Bac Lieu	99.2	Off-shore wind power	29/05/2013	CDM (project 7250)
66	Hong Phong 1B	100.0	Solar power	09/06/2019	
67	Nong Cong Sugar Plant	100.0	Biomass	07/10/2015	

68	Khe Bo	100.0	Hydropower	05/07/2013	CDM (project 9036)
69	Plei Krong	100.0	Hydropower	24/05/2009	
70	Song Bung 2	100.0	Hydropower	14/11/2018	CDM (project 6061)
71	Se San 3A	108.0	Hydropower	28/12/2006	
72	Nho Que 3	110.0	Hydropower	18/06/2012	CDM (project 5343)
73	Thac Ba	120.0	Hydropower	10/05/1971	
74	DakDrinh	125.0	Hydropower	26/05/2014	CDM (project 6184)

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}.

Characteristics of the power plants are also indicated in the Table 9 above in Step (2). There are 74 plants in total on the above list, of which 30 plants have been registered as credit projects. After excluding the registered credit projects, there exist 44 power plants left. Therefore, $\mathbf{N_{all} = 44}$.

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}.

44 plants left in Step (3) includes 20 solar power plants, 19 hydropower plants and 05 biomass power plants while the proposed project activity is an on-shore wind power plant. These 44 plants are different to the technology applied in the proposed project activity. Therefore, $\mathbf{N_{diff} = 44.}$

Step (5): Calculate factor F=1-Ndiff/Nall 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: $F = 1 - N_{diff}/N_{all} = 1 - 44/44 = 0$

$N_{all} - N_{diff} = 44 - 44 = 0$

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

This is a retroactive project. The time of first submission date for preliminary review was 08/07/2021, it is within one year of the project start date on 14/07/2020. According to the GS rule update, the proposed project activity is eligible for Gold Standard certification.

B.5.2. Ongoing Financial Need

Not applicable.

B.6. Sustainable Development Goals (SDG) outcomes

Table 9 – 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 ACM0002 "*Grid-connected electricity generation from renewable sources*" version 20.0 for the net electricity supplied to the national grid by the project, $EG_{facility,y}$ (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 248,500 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.

SDG7 Indicator 7.2.1 – Renewable energy share in the total final energy consumption will be monitored through the net electricity supplied by the Thai Hoa wind power plant to the national grid. The ex-ante estimation of SDG7 is sourced from the Feasibility Study Report of Thai Hoa WPP, which was designed by the third party and also been approved by the national authority. For the ex-post monitoring, this parameter is directly measured by the power meters at the project connection point (detailed in Section B.7.1).

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 Binh Thuan province. The average monthly income per capita of Binh Thuan province in 2019 is 3.718 million VND[20].

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 is expected to provide permanent employment to 35 people[21]. 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 8: Promote sustained, inclusive, and sustainable economic growth, full and productive employment and decent work for all will be monitored through number of jobs, income and number of trainings. In the ex-ante estimation, SDG 8 is determined from the Feasibility Study Report of Thai Hoa WPP, which was designed by the third party and also been approved by the national authority. For the ex-post monitoring, these parameters will be directly recorded and provided by the project participants.

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

For the climate combat action, this project directly reduces 214,728 tons of CO_2 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 (tCO_2e).

[20] General statistics office of Viet Nam.
[21] Feasibility Study Report.

Baseline emissions (BE_y)

Baseline emissions include only CO_2 emissions from electricity generation from fossil fuel fired power plants that are displaced due to the project activity, calculated as follows:

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

Where:

BE_y	Baseline emissions in year y (tCO_2/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 CO_2 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 (tCO_2e/yr)
$PE_{FF,y}$	Project emissions from fossil fuel consumption in year y (tCO_2e/yr)

$PE_{GP,y}$ Project emissions from the operation of geothermal power plants due to the release of non-condensable gases in year y (tCO_2e/yr)

$PE_{HP,y}$ Project emissions from water reservoirs of hydro power plants in year y (tCO_2e/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_2e/yr).

BE_y Baseline emissions in year y (t CO_2e/yr)

PE_y Project emissions in year y (t CO_2e/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://www.dcc.gov.vn/van-ban-phap-luat/1081/Nghien-cuu,-xay-dung-he-so-phat-thai-(EF)-cua-luoi-dien-Viet-Nam-nam-2020-(k%C3%A8m-CV-1316/BDKH-TTBVTOD).html)

Value(s) applied	0.9242
Choice of data or Measurement methods and procedures	The latest $EF_{grid,OM,y}$ for 2020 was calculated and published by Ministry of Natural Resources and Environment, Department of Climate Change (DNA of Viet Nam) on 03/01/2022. The calculation was based on "Tool to calculate the emission factor for an electricity system" – Version 07.0. The $EF_{grid,OM,y}$ shall be fixed in the first crediting period
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://www.dcc.gov.vn/van-ban-phap-luat/1081/Nghien-cuu,-xay-dung-he-so-phat-thai-(EF)-cua-luoi-dien-Viet-Nam-nam-2020-(k%C3%A8m-CV-1316/BDKH-TTBVTOD).html)
Value(s) applied	0.6840
Choice of data or Measurement methods and procedures	The latest $EF_{grid,BM,y}$ for 2020 was calculated and published by Ministry of Natural Resources and Environment, Department of Climate Change (DNA of Viet Nam) on 03/01/2022. The calculation was based on "Tool to calculate the emission factor for an electricity system" – Version 07.0. The $EF_{grid,BM,y}$ shall be fixed in the first crediting period.
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	**$EF_{grid,CM,y}$**
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://www.dcc.gov.vn/van-ban-phap-luat/1081/Nghien-cuu,-xay-dung-he-so-phat-thai-(EF)-cua-luoi-dien-Viet-Nam-nam-2020-(k%C3%A8m-CV-1316/BDKH-TTBVTOD).html)
Value(s) applied	0.8641
Choice of data or Measurement methods and procedures	The $EF_{grid,CM,y}$ was calculated and published by Ministry of Natural Resources and Environment, Department of Climate Change (DNA of Viet Nam) on 03/01/2022, using Operating margin CO_2 emission factor - $EF_{grid,OM,y}$ and Build margin CO_2 emission factor - $EF_{grid,BM,y}$ and weightings w_{OM}, w_{BM} of 0.75 and 0.25 for wind power plants as per "Tool to calculate the emission factor for an electricity system" – Version 07.0.
Purpose of data	For calculation of baseline 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 CO_2 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 CO_2e/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 248,500 MWh/yr
$EF_{grid,CM,y}$	= 0.8641 tCO_2/MWh

The emission factor (EF) of the national electricity grid

The applied EF for the first crediting period of the project activity is based on the most recent EF of the national electricity grid – year 2020, which was calculated and published by DNA of Vietnam on 03/01/2022 at http://www.dcc.gov.vn/van-ban-phap-luat/1081/Nghien-cuu,-xay-dung-he-so-phat-thai-(EF)-cua-luoi-dien-Viet-Nam-nam-2020-(k%C3%A8m-CV-1316/BDKH-TTBVTOD).html. The $EF_{grid,CM,y}$ year 2020 was calculated based on Tool 07 - "Tool to calculate the emission factor for an electricity system", version 07.0, including:

The operating margin emission factor: $EF_{grid,OM,y}$ = 0.9242 tCO_2/MWh

The build margin emission factor: $EF_{grid,BM,y}$ = 0.6842 tCO_2/MWh

and the combined emission factor is applied to wind power plants: $EF_{grid,CM,y}$ = 0.8641 tCO_2/MWh.

The above $EF_{grird,OM,y}$, $EF_{grid,BM,y}$ and $EF_{grid,CM,y}$ shall be fixed in the first crediting period. Therefore, baseline emissions are calculated as fllows:

$$BE_y = 248{,}500 \times 0.8641 = 214{,}728\ tCO_2e/yr \text{ (rounded-down)}$$

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:

$$ER_y = BE_y - PE_y = 214{,}728\ tCO_2/yr$$

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 10 - Net electricity supplied to national grid

Year	Baseline estimate	Project estimate (MWh)	Net benefit (MWh)
2021 (31/10/2021 – 31/12/2021)	0	42,211	42,211
2022	0	248,500	248,500
2023	0	248,500	248,500
2024	0	248,500	248,500
2025	0	248,500	248,500
2026 (01/01/2026 – 30/10/2026)	0	206,289	206,289
Total	**0**	**1,242,500**	**1,242,500**
Total number of crediting years	**5**		
Annual average over the crediting period	**0**	**248,500**	**248,500**

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 35 people[22].

Table 11 – Number of employees

Year	Baseline estimate	Project estimate (MWh)	Net benefit (MWh)
2021 (31/10/2021 – 31/12/2021)	0	35	35
2022	0	35	35
2023	0	35	35

[22] Feasibility Study Report.

2024	0	35	35
2025	0	35	35
2026 (01/01/2026 – 30/10/2026)	0	35	35
Total	**N/A**	**N/A**	**N/A**
Total number of crediting years	**5**		
Annual average over the crediting period	**0**	**35**	**35**

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 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_2e)	Project estimate (tCO_2e)	Net benefit (tCO_2e)
2021 (31/10/2021 – 31/12/2021)	36,474	0	36,474
2022	214,728	0	214,728
2023	214,728	0	214,728
2024	214,728	0	214,728
2025	214,728	0	214,728
2026 (01/01/2026 – 30/10/2026)	178,254	0	178,254
Total	**1,073,640**	**0**	**1,073,640**
Total number of crediting years	**5**		

Annual average over the crediting period	**214,728**	**0**	**214,728**

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
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	248,500 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 at least every 3 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_2e/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 Thai Hoa Wind Power Plant and calculated combined margin (CM) emission factor will be used as reference in calculation of the emission reduction.
Value(s) applied	214,728 tCO_2e
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: 35 (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

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:

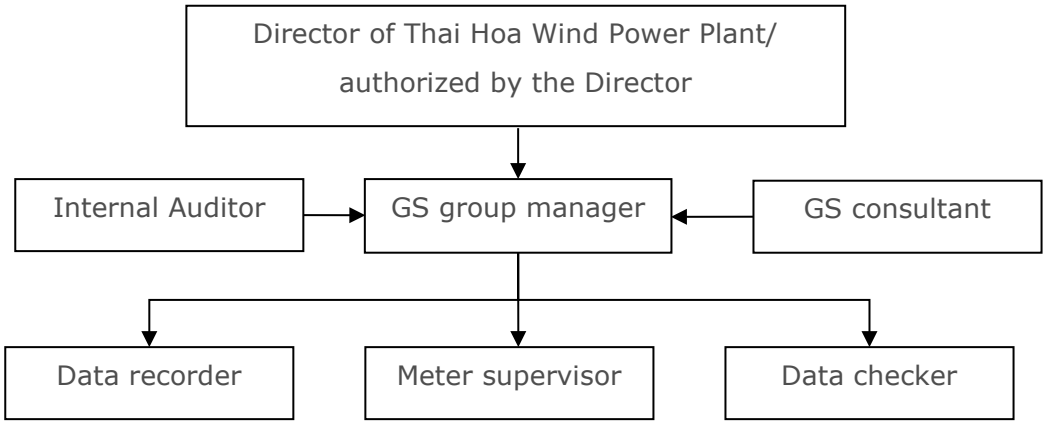


Figure 5 - Structure of the monitoring group

The responsibilities of each person involved are elaborated as follows:

Table 13 - Group members and their responsibilities

Person	Responsibility
Director of Thai Hoa Wind Power Plant / authorized by the Director	Check and sign the monitoring report annually.
GS group manager	Managing the whole GS business of Thai Hoa 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 monitoring system diagram of the proposed project activity is shown as Figure below:

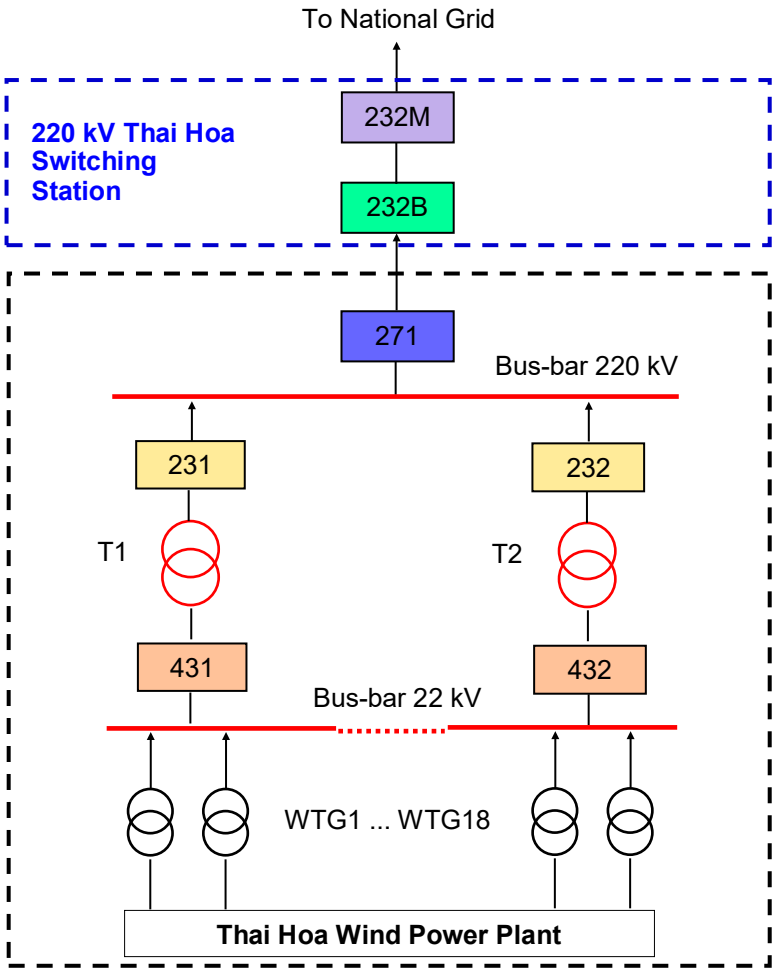


Figure 6: Monitoring system diagram

Where:

232M	: The main power meter
232B	: The first backup power meter
271, 231, 232	: The second backup power meters at 220kV
431, 432	: The second backup power meters at 22kV
T1, T2	: Main transformers
WTG1 … WTG18	: 18 wind turbines, generators and medium voltage transformers.

- The main and first backup power meters are installed at 220kV Thai Hoa Switching Station (about 9km far from the project site). Five second backup power meters are located at Thai Hoa Wind Power Plant. They are digital meters bi-directly with

allowed errors at least 0.2 and 0.5 for main and back-up meters, respectively. The meter type used is an electronic 3 phases[23].

Item	01 main meter (232M)	01 first backup meter (232B)	05 second backup meters (271, 231, 232, 431, 432)
Type	Three phases, 4 wires	Three phases, 4 wires	Three phases, 4 wires
Model	Elster – A1700	Elster – A1700	Elster – A1700
Manufacturer	UK	UK	UK
Accuracy	0.2s	0.5s	0.5s
Location	220kV Thai Hoa Switching Station		Thai Hoa Wind Power Plant

- The meters will be calibrated and verified pursuant to national standard. According to the Decision No. 2739/QD-TDC on "promulgating metrological technical standard of Viet Nam" issued by Directorate for Standards, Metrology and Quality under Ministry of Science and Technology of the Socialist Republic of Viet Nam on 23/12/2019, Article 2, the metrology standard – DLVN 39:2019 takes effect from 01/01/2020. Paragraph 8.3, DLVN 39:2019 – "Power meters – Verification/calibration procedure", the calibration and verification for 3 phase meters need to be conducted every three years by the third party once during project operation. After every calibration, the third party will seal the meters so that no illegal interference is possible.

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;

[23] Technical design agreement of power metering system and data measurement collection system of Thai Hoa Wind Power Plant.

- Persons in charge of data record and meter supervisor from Thai Hoa 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

14/07/2020 (the date that the equipment supply contract "Turbine Supply, Installation and Commissioning" was signed between Pacific - Binh Thuan Energy Joint Stock Company and Siemens Gamesa Renewable Energy Technology (China) Co., Ltd and Siemens Gamesa Renewable Energy LLC, is the first main contract for expenditures of the proposed project activity and it is considered as the start date of the project activity).

C.1.2. Expected operational lifetime of project

25 years[24] .

C.2. Crediting period of project

C.2.1. Start date of crediting period

[24] Tool10 – Tool to determine the remaining lifetime of equipment, EB50, Annex 15.

31/10/2021 (1st crediting period) that is the commercial operation date of the Thai Hoa wind power plant.[25]

C.2.2. Total length of crediting period

According to Renewable Energy Activity Requirements Version 1.3, the length of 1st crediting period is 5 years. With a maximum three Certification Cycles, the total length of crediting period applied to this project activity is 15 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
8.2 Erosion and/or water body stability	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.
9.5 Hazardous and Non-hazardous Waste	Hazardous waste (including waste oil, lubricant, grease, fluorescent lamp, battery, accumulator, electronic components, duster cloth and other oil contained material…) will be collected and stored separately. The project owner will contract the authorized third party to transport and treat hazardous waste according the related regulations. Non-hazardous waste: Domestic solid waste will be collected and treated by the local urban environment company. Domestic waste water will be collected and treated by the septic tank system at the project site.

[25] The start date of crediting period will be maximum two years prior to date of registration of the project under GS as per GS retroactive project rule.

Principle 9.10 High Conservation Value Areas and Critical Habitats/ Principle 9.11 Endangered Species	Number of birds and other animals are killed or injured when colliding with turbines.

8.2 Erosion and/or water body stability

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, access road to restore the green cover, create nice scenery and improve the ecosystem as well as the landscape and soil conditions in the area.
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

9.5 Hazardous and Non-hazardous Waste

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, contract for hazardous treatment with third authorized party (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

Principle 9.10 High Conservation Value Areas and Critical Habitats/

Principle 9.11 Endangered Species

Safeguarding Principle	Principle 9.10 High Conservation Value Areas and Critical Habitats/ Principle 9.11 Endangered Species
Data / Parameter	Number of birds and other animals are killed or injured
Unit	Number
Description	Number of birds and other animals are killed or injured when colliding with turbines.
Source of data	Records at the plant
Value(s) applied	N/A
Measurement methods and procedures	Checking documents
Monitoring frequency	Once per monitoring period
QA/QC procedures	Cross-checking by interviews
Purpose of data	Assessing the project's impacts on birds and other animals
Additional comment	N/A

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 does respect Gender Equality and shall not be complicit in violence or human right abuses of any kind. The project takes into account gender roles and the abilities of women and men to participate in the decisions/design of the project's activities. Besides, the project owner also ensures the contribution to generate livelihood benefits and enable women and men to equitably contribute to the local development through the project implementation. *Ref.: Policy statement by the project owner*
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. The project also ensures not to limit the access of women or men in accordance with Labour Code of Vietnam. *Ref.: Labour Code of Vietnam, Gender Equality Law of Vietnam and Policy statement by the project owner)*
Question 3 - Is an Expert required for the Gender Safeguarding Principles & Requirements?	Answer 3 – No gender expert is required for the Gender Safeguarding Principles & Requirements by the project activity because the Project Owner has its own internal regulations including their commitments to implement the gender equality according to the Gender Equality Law and related regulations of Vietnam Government. All the GS mandatory requirements of the gender equality and women's right are met properly. Moreover, this project does not seek gender certification - Gold standard Certified SDG Impacts under SDG 5 (and other relevant SDGs) the project performance stage, the project activity applies only to the first level – Gender sensitive certification.

Question 4 - Is an Expert required to assist with Gender issues at the Stakeholder Consultation?	Answer 4 - No gender expert is required to assist with Gender issues at the Stakeholder Consultation. The project owner cooperates with the GS consultancy company to organize the stakeholder consultation meeting and address all the Gender issues (if any) during or after the meeting. The project participants will follow the GS4GG Gender Equality Requirement & Guidelines and Stakeholder Consultation and Engagement Requirements/ Guidelines, which includes gender guidelines, and specifies which social groups must be included in the consultation. Therefore, the project participants will be able and willing to address and assist any gender issues at the stakeholder consultation.

SECTION E. SUMMARY OF LOCAL STAKEHOLDER CONSULTATION

E.1. Summary of stakeholder mitigation measures

During the stakeholder consultation meeting was held on 02/11/2021 at Hoa Thang commune people's committee, all participants agreed that the project activity has no negative impacts on the environment, society as well as economy, 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 The process books have been located in People's Committee of Hoa Thang commune and Thai Hoa Wind Power Project office as the stakeholders' chosen places.

	All the sites are appropriate publicly accessible location where local stakeholders can provide their feedback about the project. Project Participant will check the comments in the book on a regular basis, and record responses. They will be respectful to the views of stakeholders and suggest alternative solutions or compromises wherever possible.
GS Contact (mandatory)	help@goldstandard.org
Telephone access	Pacific – Binh Thuan Energy JSC +84 24 3941 3268 Energy and Environment Consultancy JSC +84 24 6666 9753 Swiss Carbon Value Ltd. +41 435 013 550 The telephone contact details were explained and discussed at the Meeting, and also provided in the Continuous Input/Grievance Expression Process Book.
Internet/email access	tbd@thaibinhduong.vn eec@eec.vn registration@southpolecarbon.com The email address of the company was explained and discussed at the Meeting, and also provided in the Continuous Input/Grievance Expression Process Book.
Other	N/A

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			
1. 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 2. The Project shall not discriminate with regards to participation and inclusion	1. Yes 2. Yes	1. 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,	1. N/A 2. N/A

		the project developer 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 equality and/or the situation of women 2. Projects shall apply the principles of non-discrimination, 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)	1. Yes 2. Yes 3. Yes 4. Yes	1. The project does not adversely affect men and women in marginalized or vulnerable communities 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).	1. N/A 2. N/A 3. N/A 4. N/A

		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. 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. Expert stakeholder opinion: "The project owner must comply with the Law on Gender Equality of Viet Nam in 2006 and relevant sub-law regulations. The project owner is under the close supervision of competent state agencies on ensuring gender equality, adequate insurance and welfare benefits for employees including	

		female workers. In fact, gender equality is not a concern in Vietnam. Especially in the working environment at power plants, where workers are required certain qualifications, gender equality will be ensured".	
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. Yes	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 activity will occupy 29.2 ha of land for construction of the wind power plant. There are no sites, structures and/or objects with historical, cultural, artistic, traditional or religious values or intangible of forms of culture in the project area. *Ref. EIA Report*	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 vacant land. No house and other structure are affected by the project activity. The nearest residential area is Thien Ai hamlet, it is 1 km far from the project site. Total 5.26 ha agricultural land is occupied by the project activity. All areas occupied by the project activity will be adequately compensated in accordance with the Government regulations. Therefore, the project does not require or cause the physical	N/A

		or economic relocation of local people. *Ref.: Environmental Impact Assessment Report*	
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. The compensation process has been completed and confirmed in the land lease decisions issued by Binh Thuan PPC. The project owner has also signed the Land Lease Contract with Binh Thuan PPC. Therefore, the is no uncertainties related to land tenure arrangements and/or access rights, usage rights or land ownership.	N/A
Principle 4.4 Indigenous Peoples			
Does the Project directly or indirectly affect communities of Indigenous Peoples within the Project area	No	No indigenous community in the project area. The project is not involved in any activity that may affect any particular community.	N/A

Principle 5. Corruption			
1. The Project shall not involve, be complicit in or inadvertently contribute to or reinforce corruption or corrupt Projects	Yes	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. Yes 2. Yes 3. Yes 4. Yes 5. Yes	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 Decree No. 58/2014/ND-CP.	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)		3. The project owner follows regulations of Labour Code of Viet Nam. Thus they always ensures 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. Therefore, no child labour is involved.	

5. The Project Developer shall ensure the use of appropriate equipment, training of workers, documentation and reporting of accidents and incidents, and emergency preparedness and response measures		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. Expert stakeholder opinion: "The project does not cause negative economic consequences. The project creates more jobs for workers, increases revenue from tax for the province and the state, and promotes economic development in the region".	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 214,728 tCO_2e/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. Ref. GS-PDD, pages 2	N/A
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. The project activity may import electricity from the national grid in case the plant is temporarily shut down. The	N/A

		imported electricity from the national grid ($EG_{y,import}$) will be monitored and deducted from total electricity exported to the national grid ($EG_{y,export}$), only net electricity supplied to the national grid ($EG_{PJ,grid,y}$/ $EG_{facility,y} = EG_{y,export} – EG_{y,import}$) is used to calculate emission reductions. Ref. GS-PDD, Section B.7.1	
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

		Expert stakeholder opinion: "As the project is a wind power plant, it does not use surface water as well as groundwater, so it does not affect the water patterns or flows".	
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?	Yes	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.	The project owner will conduct plantation in the campus such as powerhouse, transformer station site, access road to restore the green cover, create nice scenery and improve the ecosystem as well as the landscape and soil conditions in the area.

		Expert stakeholder opinion: "The wind power plant's components including turbines – wind generators, operation buildings, substations and power transmission lines are built on a relatively flat terrain. The construction volume was not large, so the impact on soil erosion from the project is negligible. However, during the construction stage mitigation measures such as embankment with the talus, building rainwater collection channels, and planting trees were thoroughly applied to eliminate the risk of erosion. The project does not use surface water, or groundwater, so it does not affect the instability of the water area".	

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. 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. The project site is located partly on agricultural land of 5.26 ha. All the households who cultivated on the land are 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?	Potentially	**Construction phase:** The project is a wind power project, so the impact on air quality is only temporary during construction period and not significant. **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. The nearest residential area is Thien Ai hamlet, it is 1 km far from the project site so noise and shadow flickering effect to the nearest settlement is negligible.	The Project owner will apply 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. • 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.

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?	Potentially	This is a wind power plant. The Project's purpose is to supply clean energy from the wind power plant to the national grid. Therefore, the release and impacts of hazardous and non-hazardous waste are very limited. Hazardous wastes including lubricant, grease, light bulb, accumulator, etc. may release during the maintenance process of equipment; and Non-hazardous wastes including domestic solid waste and domestic wastewater are generated from worker's activities.	The following mitigation measures will be applied to the project activity. • 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.
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?	Potentially	The project activity will occupy total area of 29.2 ha including 22.97 ha of vacant land, 5.26 ha of agricultural land and 0.97 ha of forest land.	All areas occupied by the project activity will be adequately compensated in accordance with the Government regulations.
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. The nearest Kalon - Song Mao Nature Reserve is 50 km far from the project site. Therefore, the project activity does not affect or alter ecosystems, critical habitats, landscapes, key biodiversity areas or sites identified. Expert stakeholder opinion: "The project is not in or near any high conversational value area or critical habitat".	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. Expert stakeholder opinion: "The project affects only a small area of plantation forest (about 1 ha). There are no precious or endangered species of flora or fauna in the project construction area or the vicinity of the project. Therefore, the project does not affect endangered species".	1. N/A 2. N/A

APPENDIX 2- CONTACT INFORMATION OF PROJECT PARTICIPANTS

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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