Gold Standard
for the Global Goals

TEMPLATE

KEY PROJECT INFORMATION & PROJECT DESIGN DOCUMENT (PDD)

PUBLICATION DATE **14.10.2020**

VERSION **v. 1.2**

RELATED SUPPORT

– **TEMPLATE GUIDE Key Project Information & Project Design Document v.1.2**

This document contains the following Sections

KEY PROJECT INFORMATION

GS ID of Project	GS7746
Title of Project	West Huaybong 3 wind farm project
Time of First Submission Date	22/01/2020
Date of Design Certification	NA
Version number of the PDD	05~~4~~
Completion date of version	15/05~~2~~/2021
Project Developer	First Korat Wind Company Limited
Project Representative	Kosher Climate India Private Limited
Project Participants and any communities involved	First Korat Wind Company Limited
Host Country (ies)	Thailand
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	NA
Methodology (ies) applied and version number	ACM0002: Consolidated baseline methodology for grid-connected electricity generation from renewable sources, Version 20
Product Requirements applied	☒ GHG Emissions Reduction & Sequestration ☐ Renewable Energy Label ☐ N/A
Project Cycle:	☐ Regular ☒ Retroactive

Land-use & Forest Key Project Information[1]

Not applicable

Table 1 – Estimated Sustainable Development Contributions

Sustainable Development Goals Targeted	SDG Impact (defined in B.6)	Estimated Units or Products Annual Average
13 Climate Action (mandatory)	GHG Emission Reduction	132,339 tCO_2e
3 Good Health and Well Being	Community development activities undertaken	1 Activity
7 Affordable and Clean Energy	Quantity of net electricity supplied to the grid~~Clean Electricity supplied to grid~~	232,500 MWh
8 Decent Work and Economic Growth	Jobs created	40 number
	Trainings conducted	2 Trainings

SECTION A. DESCRIPTION OF PROJECT

A.1. Purpose and general description of project

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The purpose of the First Korat Wind Company with this project activity is to construct a large scale commercial wind farm in Thailand to supply clean renewable electricity to the Thailand grid. The scenario existing prior to the start of the project, which is the same as the baseline scenario, is the supply of electricity from power plants connected to the grid. The project consists of 45 turbines 2.3 MW capacity with the total installed capacity of 103.5 MW. A wind resource and energy yield assessment performed at the project site predicts that it will yield an annual electricity production of 232.5 GWh. The project has been commissioned on 14th November 2012

It shall be noted that the project is already registered under CDM and the registration details are given below:

[1] Please refer to 0 for detailed information on LUF projects

Project title: West Huaybong 3 wind farm project

Reference number: 7474

Registration Date: 29/10/2012

1st Crediting period: 01/12/2012 – 30/11/2019

We blink: https://cdm.unfccc.int/Projects/DB/RWTUV1348727249.16/view

Now PP is applying same for Gold Standard registration.

Location:

The West Huaybong 3 wind farm project is located in Nakhon Ratchasima Province in the northeast of Thailand.

Project Milestone:

Start date of the project: 15th August 2011

CDM Stakeholder consultation: 15th September 2011

CDM Registration: 29th October 2012

Commissioning of project: 14th November 2012

Listing of the project in GS: 22nd June 2020

Online SFR: 6th July 2020 to 5th September 2020

How the proposed activity reduces GHG emissions

The project generates electrical energy through sustainable means without causing any negative impact on environment. Use of renewable sources for power generation contributes to mitigation of greenhouse gases emissions. Since wind power is Greenhouse Gas (GHG) emissions free, the power generated will prevent the anthropogenic gas emissions generated by fossil fuel based thermal power stations comprising coal, diesel, furnace oil and gas. Hence, the generation by the proposed activity is non-GHG source and thus reduces the proportion of fossil fuel based generation in the grid leading to lesser carbon intensive grid.

Scenario existing prior to the implementation of project activity:

There was no activity at the site prior to implementation of the project activity. Hence the scenario existing prior to the project activity is same as baseline scenario which is continual use of highly carbon intensive electricity in the Thailand national grid.

Baseline Scenario:

As the project activity is the installation of a new grid-connected renewable power plant/unit, the baseline scenario is the following as per applied methodology:

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 (CM) calculations described in the "Tool to calculate the emission factor for an electricity system". Hence, pre-project scenario and baseline scenario are the same.

Estimated emission reduction:

The project is already registered under CDM (UNFCCC Ref No: 7474[2]). As per the CDM registered PDD, the estimation of GHG reductions by this project is limited to carbon dioxide (CO_2) only. Thus the project activity leads to an emission reduction of 926,373 **tCO_2e** for the chosen crediting period with the annual average emission reduction of **132,339 tCO_2e**.

Sustainable Development

The project activity will contribute to the sustainable development of Thailand by producing clean renewable electricity for use in the Thailand grid. The project will create jobs associated with site construction of the turbine towers, site facilities and access roads. At the time of submission there were no examples of large scale wind farms functioning in Thailand. The project will be an example of technology transfer because it will utilise imported wind turbines purchased from Siemens Wind Power A/S, a company incorporated in Denmark. The wind turbine supplier will provide training in concepts relevant to the equipment, systems and maintenance. The project is committed to engagement with all local stakeholders and as such a local stakeholder consultation meeting was organised to enable stakeholders concerns to be addressed.

A.1.1. Eligibility of the project under Gold Standard

The project activity is a wind power project and hence is automatically eligible for Gold Standard Certification as per the approved Gold Standard Activity Requirements.

GS eligibility		**Justification**

[2] https://cdm.unfccc.int/Projects/DB/RWTUV1348727249.16/view

3.1.1.1 A Project type is automatically eligible for Gold Standard Certification if there are Gold Standard published Activity Requirements and/or Gold Standard Approved Methodologies associated with it or as referenced in Gold Standard Product Requirements. These are published to the Gold Standard website and shall be followed where provided for a given Project type.	**OK**	The project is a wind power generation activity which is automatically eligible under the project type category (b) of Renewable energy activity requirement[3]: "*(b) Project shall comprise of renewable energy generation units, such as photovoltaic, tidal/wave, wind, hydro, geothermal, waste to energy and renewable biomass:* • *Supplying energy to a national or a regional grid; or* • *Supplying energy to an identified consumer facility via national/regional grid through a contractual agreement such as wheeling*" The CDM approved methodology ACM0002, Version 20, is applied to the project activity.
3.1.1.2 For Project types not currently published to the Gold Standard website, the Project Developer may submit to Gold Standard for approval. This shall be done at minimum as part of the Preliminary Review, though it is	***NA***	The project type is approved and published on the GS website.

[3] https://globalgoals.goldstandard.org/wp-content/uploads/2017/06/200-GS4GG-Renewable-Energy-Activity-Requirements-v1.1.pdf

recommended to engage with Gold Standard earlier to establish the criteria and requirements for approval.		
3.1.1.3 Project types applying for Gold Standard approval are referred to the Gold Standard Vision and Mission. The Project Developer shall demonstrate how the Project would contribute to these and how the Gold Standard for the Global Goals Requirements would be met in their application for approval.	***OK***	The project activity is implementation wind power plant in Thailand. The project avoids CO_2 emissions that would have occurred in the absence of the project at the grid connected fossil fuel power plants. Hence the project avoids the GHG emission that is responsible for climate change. The monitoring process required to achieve the Global Goals, are also explained in the project document. Therefore, the project activity is in line with the GS vision of "Climate security and sustainable development for all" and GS mission, "To catalyse more ambitious climate action to achieve the Global Goals through robust standards and verified impacts".
3.1.1.4 In reviewing a new Project type for approval, Gold Standard may establish new Requirements to be met by the Project in order to achieve Gold Standard Design Certification and ongoing Project Certification. Where required, Gold Standard shall engage expert peer reviewers to establish these Requirements, at the Project Developer's expense.	***NA***	*Non-Applicable*
3.1.1.5 Gold Standard does not	***NA***	*Non-Applicable*

support Project types associated with geo-engineering or energy generated from fossil fuel or nuclear, fossil fuel switch, or any project that supports, enhances or prolongs such energy generation. In certain cases, concerning energy efficiency involving fossil fuels (for example, LPG stoves), an exception is made. This is captured in the relevant Activity Requirements, Gold Standard Approved Methodologies and/or Product Requirements.		

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

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The Project proponent has complete rights on the environmental attributes and other products detailed in the report. The project has not pledged any of the aforesaid products to any party and does not involve any double counting.

The legal ownership of the project with the respective project proponent which can be confirmed via the following documents:

1. Commissioning Certificate

A.2. Location of project

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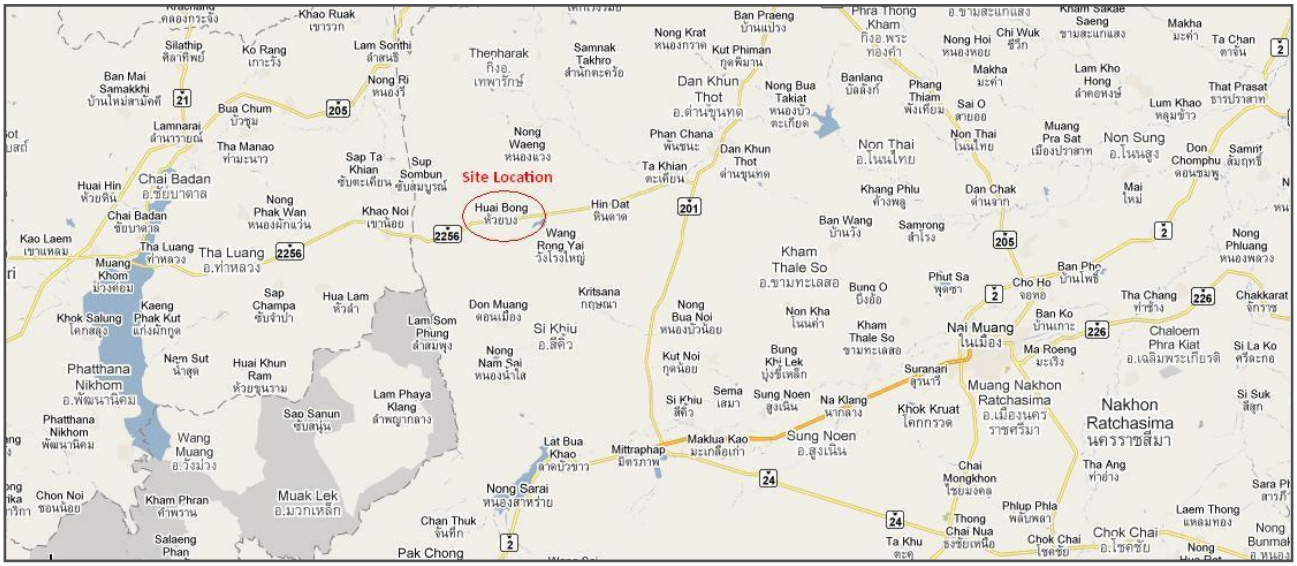
Tambol Huaybong of Amphur Dan Khun Thot and Tambol Nong Wang of Amphur Teparak, Nakhon Ratchasima Province, Thailand

The physical location of the wind farm is located within Tambol Huaybong of Amphur Dan Khun Thot and Tambol Nong Wang of Amphur Teparak, of Nakhon Ratchasima Province. Please refer to figure given below for more detail.

Nominal GPS co-ordinates for the project site are: N 15°12“ 24.18”, E 101°27“ 38.71”.



The coordinates of individual WTGs are given below:

No	WTG	Latitude (°N)	Longitude (°E)
1	01B	15.1798	101.4406
2	02B	15.1820	101.4398
3	03B	15.1850	101.4407
4	04B	15.1808	101.4478
5	05B	15.1782	101.4580
6	06B	15.1804	101.4567
7	07B	15.1831	101.4557
8	08B	15.1860	101.4539
9	09B	15.1885	101.4532
10	10B	15.1906	101.4525
11	11B	15.1934	101.4529
12	12B	15.2034	101.4297
13	13B	15.2034	101.4353
14	14B	15.2061	101.4361
15	15B	15.2079	101.4339
16	16B	15.2106	101.4287
17	17B	15.2106	101.4341
18	18B	15.2140	101.4320
19	19B	15.2172	101.4334
20	20B	15.2195	101.4327
21	21B	15.2215	101.4393
22	22B	15.2240	101.4342
23	23B	15.2244	101.4388

24	24B	15.2282	101.4372
25	25B	15.2059	101.4675
26	26B	15.2079	101.4663
27	27B	15.2097	101.4639
28	28B	15.2304	101.4488
29	29B	15.2321	101.4470
30	30B	15.2348	101.4479
31	31B	15.2006	101.4832
32	32B	15.2033	101.4829
33	33B	15.2068	101.4840
34	34B	15.2110	101.4867
35	35B	15.2118	101.4826
36	36B	15.2135	101.4808
37	37B	15.2159	101.4801
38	38B	15.2189	101.4815
39	39B	15.2221	101.4823
40	40B	15.2242	101.4800
41	41B	15.2266	101.4791
42	42B	15.2286	101.4773
43	43B	15.2312	101.4772
44	44B	15.2329	101.4761
45	45B	15.2353	101.4743

A.3. Technologies and/or measures

The West Huaybong 3 wind farm project produces renewable electricity for the Thailand national grid. Renewable electricity is generated by wind turbines exported to Thailand and installed in the North West of Nakhon Ratchasima Province. Prior to the project activity there was no equipment for generating electricity at the project site and the Thailand grid was comprised of a mixture of generation units which included fossil fuel fired power units. In the absence of the project activity, the Thailand grid would receive electricity from the existing grid-connected power plants and by the addition of new generation sources. The baseline scenario is the same as the scenario described above which existed prior to implementation of the project activity. The production of electricity in this way creates CO2 through the combustion of fossil fuels as reflected in the combined margin (CM) calculations described in the "Tool to calculate the emission factor for an electricity system". The CO_2 emissions from these

baseline power plants is the only baseline emission source identified in section B.3 of the PDD. According to data published by the Thailand Greenhouse Gas Management Organisation (TGO), the Thailand grid produces 0.5692 tCO_2e per MWh of electricity produced

The wind farm is constructed on land administered by the Agricultural Land Reform Office. The project installed 45 individual 2.3MW Siemens SWT-2.3-101 turbines, which are based on a three blade horizontal axis turbine design and have a peak co-efficient of power (cp) of 0.46. The Design Operational Life of the turbines is 20-years based on the design power curve. The planned operational life of the project is 23 years based on the assumption that the turbines will be operated beyond the technical lifetime of 20 years. A wind resource and energy yield assessment was performed at the project site which forecasts an annual electricity production of 232.5 GWh and a combined loss factor of 15.6% and a plant load factor of 25.64%. The quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the project activity will be monitored with electricity meters located at the point of connection to the grid. The electricity meters are installed and operated in accordance with the Power Purchase Agreement (PPA) signed with the Energy Generating Authority of Thailand (EGAT). In accordance with the PPA, primary and backup export meters will be installed and the error specified by the meter manufacturer will not exceed +/- 0.2%. More details of the metering equipment are provided in section B.7. In accordance with section B.3 of the PDD, there are no project emissions associates with the project activity.

A.4. Scale of the project

The project is seeking emission reduction certification from 103.5 MW Wind Power Project. Since the project capacity is more than 15 MW, the project falls under "large scale" category as per the section 3.3.2 of Renewable energy activity requirement, v1.3

A.5. Funding sources of project

The project activity is funded by debt and equity. Debt for this project is sourced from private Bank. No public funding is involved in this project

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

B.1. Reference of approved methodology (ies)

Title: Grid-connected electricity generation from renewable sources

References: Approved Large Scale Consolidated Methodology: ACM0002 "Grid-connected electricity generation from renewable sources" (Version 20)[4]

ACM0002 draws upon the following tools which have been used in the PDD:

- Methodological Tool: Tool to calculate the emission factor for an electricity system - Version 7[5].

B.2. Applicability of methodology (ies)

Large scale methodology ACM0002 "Consolidated baseline methodology for grid-connected electricity generation from renewable sources" version 20 is applicable to project activities that include retrofitting, rehabilitation (or refurbishment), replacement or capacity addition of an existing power plant or construction and operation of a Greenfield power plant.

The proposed project activity is a large scale grid-connected renewable power generation project that installs a new power plant at a site where no renewable power plant was operated prior to the implementation of the project activity (i.e. a Greenfield plant) and it meets each of the applicability conditions of the methodology as follows:

Applicability Criteria	Applicability status
This methodology is applicable to grid-connected renewable power generation project activities that: (a) install Greenfield power plant; (b) involve a capacity addition to (an) existing plant(s); (c) involve a retrofit of (an) existing plant(s)/unit(s); (d) involve	The proposed project activity is a Green field, Thailand national grid connected renewable power plant.

[4] https://cdm.unfccc.int/methodologies/DB/XP2LKUSA61DKUQC0PIWPGWDN8ED5PG

[5] http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v7.0.pdf/history_view

a rehabilitation of (an) existing plant(s)/unit(s); or (e) involve a replacement of (an) existing plant(s)/unit(s)	Therefore, it confirms to the said criteria
The methodology is applicable under the following conditions: 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 a new grid connected renewable wind power project. Thus, it meets the first applicability condition
In the case of capacity additions, retrofits, rehabilitations or replacements (except for wind, solar, wave or tidal power capacity addition projects the existing plant/unit started commercial operation prior to the start of a minimum historical reference period of five years, used for the calculation of baseline emissions and defined in the baseline emission section, and no capacity expansion or retrofit or rehabilitation of the plant/unit has been undertaken between the start of this minimum historical reference period and the implementation of the project activity	The proposed project activity is the installation of new wind power plants/units. Therefore, the said criteria is not applicable
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 reservoirs, with no change in the volume of any of reservoirs; or (b) The project activity is implemented in an existing single or multiple reservoirs, where the volume of the reservoir(s) is increased and the power density calculated using equation (3) is greater than 4 W/m2; or (c) The project activity results in new single or	The proposed project activity is the installation of a new wind power plant/units. Therefore, the said criteria is not applicable

multiple reservoirs and the power density calculate equation (3), is greater than 4 W/m2. (d) The project activity is an integrated hydro power project involving multiple reservoirs, where the power density of any of the reservoirs, calculated using equation (3), is lower than or equal to 4 W/m2, all of the following conditions shall apply. (i) The power density calculated using the total installed capacity of the integrated project, as per equation (4) is greater than 4W/m2; (ii) Water flow between reservoirs is not used by any other hydropower unit which is not a part of the project activity; (iii) Installed capacity of the power plant(s) with power density lower than or equal to 4 W/m2shall be: (a) Lower than or equal to 15 MW; and (b) Less than 10% of the total installed capacity of integrated hydro power project	
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	The proposed project activity is the installation of wind power plant/units. Therefore, the said criteria is not applicable

requirement of specific combination of reservoirs constructed under CDM project activity for the optimization of power output. This demonstration has to be carried out in the specific scenario of water availability indifferent 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.	
The methodology is not applicable to: (a) Project activities that involve switching from fossil fuels to renewable energy sources 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;	The proposed project activity is the installation of wind power plant/units. Therefore, the said criteria is not applicable
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 proposed project activity is the installation of wind power plant/unit. Therefore, the said criteria is not applicable
In addition, the above applicability conditions of the methodology, the Tool to calculate emission factor of electricity system (version 7) referred in the methodology has been justified here under:	
This tool may be applied to estimate the OM, BM and/or CM when calculating baseline emissions for a project activity that substitutes grid electricity that is where a project activity supplies electricity to a grid or a project activity that results in savings of	This condition is applicable. OM, BM and CM are estimated using the tool for calculating baseline emissions.

electricity that would have been provided by the grid(e.g. demand-side energy efficiency projects).	
Under this tool, the emission factor for the project electricity system can be calculated either for grid power plants only or, as an option, can include off-grid power plants. In the latter case, the conditions specified in "Appendix 2: Procedures related to off-grid power generation" should be met. Namely, the total capacity of off-grid power plants (in MW) should be at least 10 per cent of the total capacity of grid power plants in the electricity system; or the total electricity generation by off-grid power plants (in MWh) should be at least 10 per cent of the total electricity generation by grid power plants in the electricity system; and that factors which negatively affect the reliability and stability of the grid are primarily due to constraints in generation and not to other aspects such as transmission capacity.	Since the project activity is grid connected, this condition is applicable and the emission factor has been calculated accordingly.
In case of CDM projects the tool is not applicable if the project electricity system is located partially or totally in an Annex I country.	The project activity is located in Thailand, a non-Annex I country. Therefore, this criterion is not applicable for the project activity
Under this tool, the value applied to the CO_2 emission factor of bio fuels is zero	The project activity is a grid connected wind power project and therefore, this criterion is not applicable for the project activity

B.3. Project boundary

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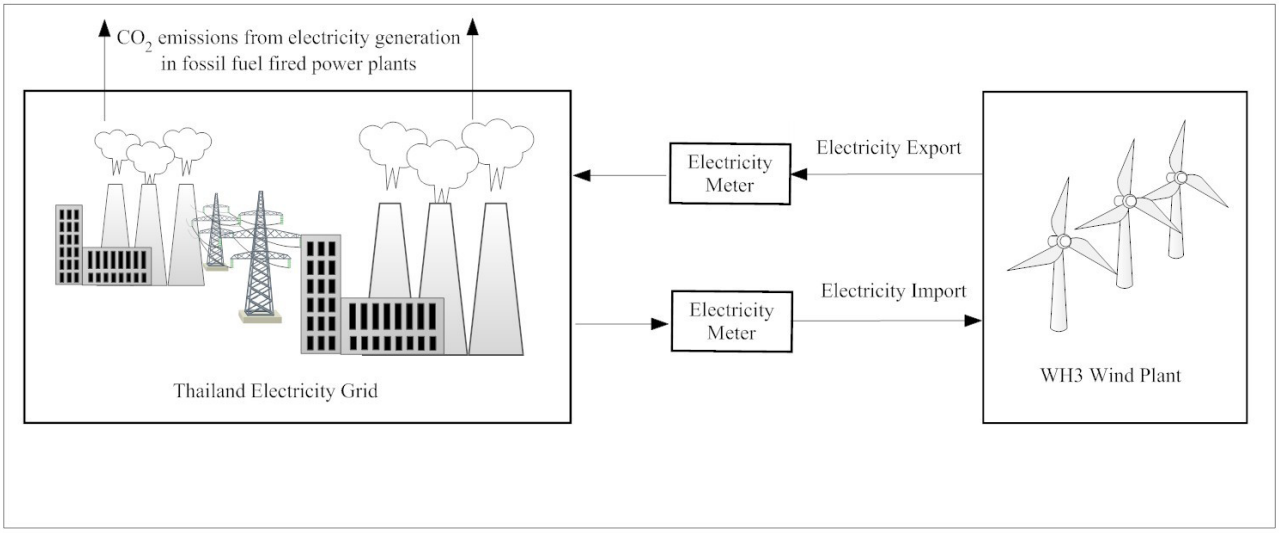
As per the applied baseline and monitoring methodology ACM0002, the spatial extent of the project boundary includes the project power plant and all power plants connected physically to the electricity system that the project power plant is connected to.

The project boundary for the purpose of calculating project and baseline emissions consists of the physical wind farm site and the Thailand electrical grid. The only relevant emission source is the CO2 emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity. For more details refer to the table below.

Source		GHGs	Included?	Justification/Explanation
Baseline scenario	Emission from grid connected fossil fuel power plants	CO_2	Yes	Main emission source.
		CH_4	No	Minor emission source.
		N_2O	No	Minor emission source.
Project scenario	NA	CO_2	No	The project is a wind power project. Project emissions are not applicable according to ACM0002.
		CH_4	No	
		N_2O	No	



Project boundary & emission source

B.4. Establishment and description of baseline scenario

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The baseline scenario is specified in ACM0002 section II. For project activities which involve the installation of a new grid-connected renewable power plant/unit, the baseline scenario is the following:

If the project activity is the installation of a Greenfield power plant, the baseline scenario is 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 (CM) calculations described in the "Tool to calculate the emission factor for an electricity system",

The combined margin for the Thailand grid is published by the Thailand Greenhouse Gas Management Organization which is the DNA of Thailand.

ACM0002 also specifies a step-wise approach for identifying the baseline for project activities which involve the retrofit or replacement of existing grid-connected renewable power plant/unit(s) at the project site. The project activity is a new renewable power plant; therefore the step-wise approach is not applicable.

The "Tool for the demonstration and assessment of additionality" requires the consideration of EB guidance on national/local/sectoral policies in the calculation of financial indicators utilized for the assessment of additionality. EB22, Annex 3, specifies that national policies or regulations that give comparative advantage to less emissions-intensive technologies (E- policies) may be excluded if the national policy or regulation was implemented after 11 November 2001. Wind power projects are eligible to receive an adder tariff in accordance with the National Energy Policy Council (NEPC) policy for „adder payments" which was approved by the NEPC in the third resolution of its 106th meeting (3/2006) on 4 September 2006. The Thailand adder tariff is specifically for renewable energy projects which are less carbon intensive than conventional sources of electricity and the tariff can be fully attributed to policy changes at the national level. As such, the adder tariff can be excluded.

The combined margin ($EF_{grid,CM,y}$) is the result of a weighted average of two emission factor pertaining to the electricity system: the operating margin (OM) and build margin (BM). Calculations for this combined margin must be based on data from an official source (where available) and made publically available.

The combined margin of the Thailand national grid used for the project activity is as follows:

Parameter	Value	Nomenclature	Source
$EF_{grid,CM,y}$	0.5692 tCO_2/MWh	Combined margin CO_2 emission factor for the project electricity	Calculated as the weighted average of the operating margin (0.75) & build margin (0.25) values, sourced from Report 'Thailand Grid Emission Factor for GHG Reduction Project/Activity' dated 28/09/2017 Published by

		system in year y	Thailand Greenhouse Gas Management Organisation (Public Organisation)[6]
$EF_{grid,OM,y}$	0.5719 tCO_2/MWh	Operating margin CO_2emission factor for the project electricity system in year y	Calculated as the last 3 year (2014, 2015 & 2016) generation-weighted average, sourced from Report 'Thailand Grid Emission Factor for GHG Reduction Project/Activity' dated 28/09/2017 Published by Thailand Greenhouse Gas Management Organisation (Public Organisation)
$EF_{grid,BM,y}$	0.5609 tCO_2/MWh	Build margin CO_2emission factor for the project electricity system in year y	Report 'Thailand Grid Emission Factor for GHG Reduction Project/Activity' dated 28/09/2017 Published by Thailand Greenhouse Gas Management Organisation (Public Organisation)

The baseline case is in compliance with all applicable legal and regulatory requirements references.

B.5. Demonstration of additionality

The project is already registered with UNFCCC. Please refer section B.5 of the CDM PDD for additionality justification.

B.5.1. Prior Consideration

The project is a CDM registered project. Hence the prior consideration is not applicable.

B.5.2. Ongoing Financial Need

Not Applicable

B.6. Sustainable Development Goals (SDG) outcomes

Relevant Target/Indicator for each of the three SDGs

Sustainable Development Goals	Most relevant SDG Target	SDG Impact

[6] http://ghgreduction.tgo.or.th/images/Grid_Emission_Factor_2559_-_Finalised.pdf

Targeted		Indicator (Proposed or SDG Indicator)
13 Climate Action (mandatory)	13.2: Integrate climate change measures into national policies, strategies and planning	Amount of GHG Emission reduction
3 Good health and Well being	3.8 Achieve universal health coverage, including financial risk protection, access to quality essential health-care services and access to safe, effective, quality and affordable essential medicines and vaccines for all.	Number of community development activities undertaken
7 Affordable and Clean Energy	7.2: By 2030, increase substantially the share of renewable energy in the global energy mix	Quantity of net electricity supplied to the grid~~Amount of Clean Electricity supplied to the grid in MWh~~
8 Decent Work and Economic growth	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	1) Number of Jobs generated due to project activity 2) Number of trainings provided to employees

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

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SDG 3– Ensure healthy lives and promote well-being for all at all ages

The project region is one of the least developed regions. As a part of CSR activities the project proponent undertakes many community development activities such as conducting health camps, providing various infrastructures to schools and villages etc. that will improve health and well being of the local people. As and when a community development activity is undertaken the same is recorded.

Monitoring	Number of community development activities

parameter	
Baseline estimation approach	Since the community development activities are undertaken with the help of project revenue, there won't be any community development activity undertaken by the project proponent in the baseline scenario
Project Estimation approach	As and when a community development activity is undertaken, the same will be recorded.
Net estimation approach	Net benefit = Project estimate – Baseline estimate

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

The project produces electricity from wind which is clean electricity that is supplied to grid that improve renewable energy share in the grid. The clean energy supplied by the project is measured using the energy meter.

Monitoring parameter	Quantity of net electricity supplied to the grid~~Amount of Clean electricity supplied to grid~~
Baseline estimation approach	In the baseline scenario no wind power plant has been installed in the project area. Hence no clean electricity is generated and supplied to grid
Project Estimation approach	The clean electricity generated from the project and supplied to grid is monitored though calibrated energy meter. The meter reading will be recorded every month in the joint meter reading
Net estimation approach	Net benefit = Project estimate – Baseline estimate

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

The wind energy technology is relatively new technology in Thailand. The project is one of the first project wind project in Thailand. This project created new job opportunities to local people in construction and operation and maintenance of the power plant. Also the employees will be trained in various aspects of wind energy power plant operation and maintenance that will help to explore new upcoming job opportunities

Monitoring parameter	Number of jobs created Number of training conducted
Baseline estimation approach	In the baseline scenario there won't be any wind project. Hence, in the baseline scenario no new jobs would have been created and no training would have been conducted.
Project Estimation approach	The number jobs created will be recorded in the employment records. As and when a training is conducted to O&M staff, the same will be recorded into the training records.
Net estimation approach	Net benefit = Project estimate – Baseline estimate

For the SDG 13, the emission reduction calculations were carried out as per the applied CDM methodology ACM0002, v20.

activities including hydro, wind, geothermal, solar, wave and tidal power. Some project activities such as hydro and geothermal projects may involve project emissions that should be accounted for using the following equation:

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

Where:

PEy = Project emissions in year *y* (tCO_2e/yr)

$PE_{FF,y}$ = Project emissions from fossil fuel consumption in year *y* (tCO_2/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)

$PE_{FF,y}$ is required to be calculated for geothermal and solar thermal projects which also use fossil fuel for electricity generation. The project activity is not a geothermal or solar thermal project therefore this emissions source is not relevant.

$PE_{GP,y}$ is required to be calculated for geothermal project activities where fugitive emissions of carbon dioxide and methane occur due to release of non-condensable gases from produced steam. The project activity is not a geothermal or solar thermal project therefore this emissions source is not relevant.

$PE_{HP,y}$ is required to be calculated for hydro power projects that result in new reservoirs and projects that result in increase of existing reservoirs. The project activity is not a hydro project therefore this emissions source is not relevant.

As such, there are no project emissions for the wind power project and PEy = 0.

Baseline Emissions

Baseline emissions include only CO2 emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity. The methodology assumes that all project electricity generation above baseline levels would have been generated by existing grid-connected power plants and the addition of new grid-connected power plants. The baseline emissions are to be calculated as follows:

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

Where:

BE_y = Baseline emissions in year y (tCO2/yr)

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

$EF_{grid,CM,y}$ = Combined margin CO2 emission factor for grid connected power generation in year *y* calculated using the latest version of the "Tool to calculate the emission factor for an electricity system" (tCO_2/MWh)

In accordance with the *Tool to calculate the emission factor for an electricity system*, *version 2.2.1 (EB63 Annex 19)* the emissions factor EFgrid,CM,y can be calculated using either an *ex ante* option at the validation stage or *ex post* for the year in which the project activity displaces electricity. The *ex ante* option is chosen and the combined margin published by the DNA of Thailand for years 2007, 2008, 2009 will be used to calculate emission reductions throughout the first crediting period. A description of the data used to calculate the combined margin is provided in Annex 3 and the step-wise approach used by the DNA of Thailand to calculate the emissions factor of the electricity system is described as follows:

STEP 1: Identify the relevant electricity systems

STEP 2: Choose whether to include off-grid power plants in the project electricity system (optional)

STEP 3: Select a method to determine the operating margin (OM)

STEP 4: Calculate the operating margin emission factor according to the selected method

STEP 5: Calculate the build margin (BM) emission factor

STEP 6: Calculate the combined margin (CM) emissions factor

STEP 1: Identify the relevant electricity systems

For the purpose of determining the electricity emission factor, the project electricity system is defined as the electricity transmission system of Thailand which is a single system connected by transmission lines throughout the country[7] and owned by the Electricity Generating Authority of Thailand (EGAT). Electricity imports from a connected electricity system are included and as per Tool to calculate emission factor of an electricity system, for the purpose of determining the operating margin emission factor, 0 tCO_2/MWh is applied.

STEP 2: Choose whether to include off-grid power plants in the project electricity system (optional)

The inclusion of off-grid power plants is an optional step. For the purpose of the Thailand grid, Option I is applied and only grid power plants are included in the calculation.

STEP 3: Select a method to determine the operating margin (OM)

The calculation of the operating margin emission factor ($EF_{grid,OM,y}$) is based on one of the following methods, which are described under Step 4:

a) Simple OM; or

b) Simple adjusted OM; or

c) Dispatch data analysis OM; or

d) Average OM.

The simple OM method (Option a) is used for this study as the low-cost/must-run resources (LC/MR) constitute less than 50% of total electricity production. The share of low-cost/must run power plants in the last five years are in the range of 4.55% to 6.69% as shown in the below table.

Year	Total Electricity Production (GWh)	LC/MR Analysis			
		Hydro (GWh)	RE (GWh)	Total LC/MR (GWh)	% of LC/MR
2012	166,446	8,431	2,701	11,132	6.69
2013	164,826	5,412	3,427	8,839	5.36

[7] The study of emission factor for an electricity system in Thailand 2009, DNA of Thailand, page 2

2014	168,685	5,164	3,993	9,157	5.43
2015	169,040	3,724	4,230	7,954	4.71
2016	169,168	3,019	4,685	7,704	4.55

Source: EGAT(2017)

As per tool to calculate emission factor for an electricity system (Version 07), The simple OM method (option a) can only be used if low-cost/must-run resources constitute less than 50% of total grid generation in: 1) average of the five most recent years, or 2) based on long-term averages for hydroelectricity production. Since the low cost/must run resources constitute less than 50% of total grid generation as seen from the average of five most recent years, the Simple OM method can be used to calculate the Operating Margin Emission factor.

PP has chosen ex ante option, thus, no monitoring and recalculation of the emissions factor during the crediting period is required. PP has considered a data vintage of 3-year generation-weighted average, based on the most recent data available at the time of submission of the PDD to the DOE for validation.

STEP 4: Calculate the operating margin emission factor according to the selected method

The simple OM emission factor for Option B is calculated as the generation-weighted average CO2 emissions per unit net electricity generation (tCO2/MWh) of all generating power plants serving the system, not including low-cost/must-run power plants/units

The simple OM may be calculated:

Option A: Based on the net electricity generation and a CO2 emission factor of each power unit; or

Option B: Based on the total net electricity generation of all power plants serving the system and the fuel types and total fuel consumption of the project electricity system.

Thailand Greenhouse Gas Management Organisation (Public Organisation) has published the Thailand Grid Emission Factor for GHG Reduction Project/Activity on 28/09/2017 based on detailed authenticated information obtained from EGAT. This provides information about the Combined Margin Emission Factor of Thailand national grid. The Combined Margin is calculated ex ante using the guidelines provided by the UNFCCC in the "Tool to calculate the emission factor for an electricity system, Version 07". We have, therefore, used the Combined Margin data published in the Grid Emission Factor for GHG Reduction Project/Activity, for calculating the Baseline Emission Factor.

As per "Tool to calculate the emission factor for an electricity system", Option B ("Calculation based on total fuel consumption and electricity generation of the system") is used to calculate simple OM emission factor. Where Option B is used, the simple OM emission factor is calculated based on the net electricity supplied to the

grid by all power plants serving the system, not including low cost/must-run power plants/units, and based on the fuel type(s) and total fuel consumption of the project electricity system as follows:

$$EF_{grid,OMsimple,y} = \frac{\sum_i FC_{i,y} \times NCV_{i,y} \times EF_{CO2,i,y}}{EG_y}$$

Where,

$EF_{grid,OMsimple,y}$ = Simple operating margin CO2 emission factor in year y (tCO2/MWh)

$FC_{i,y}$ = Amount of fossil fuel type i consumed in the project electricity system in year y (mass or volume unit)

$NCV_{i,y}$ = Net calorific value of fossil fuel type i in year y (GJ/mass or volume unit)

$EF_{CO2,i,y}$ = CO2 emission factor of fossil fuel type i in year y (tCO2y/GJ)

EG_y = Net electricity generated & delivered to the grid by all power units serving the system, not including LC/MR power plants/units in year y (MWh)

i = All fossil fuel types combusted in power sources in the project electricity system in year y

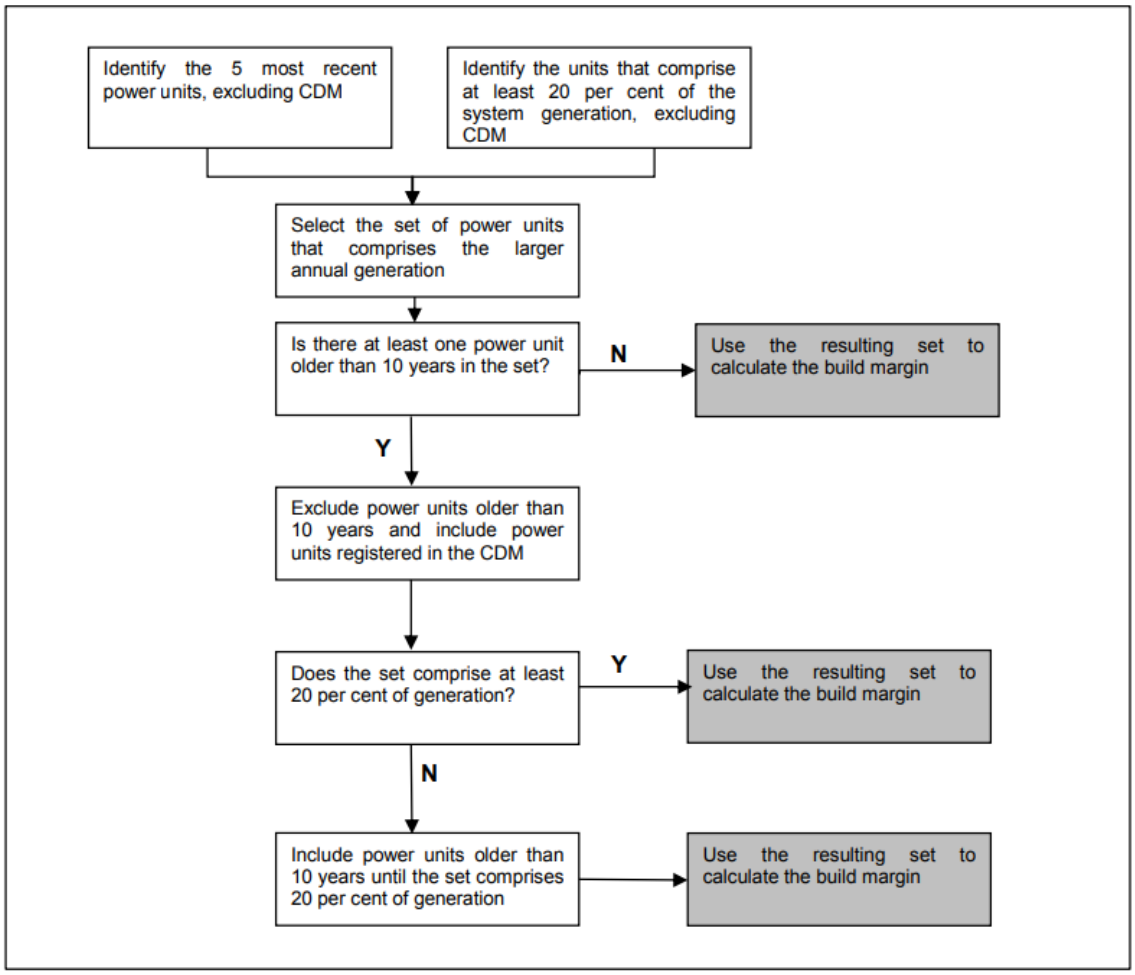
y = The three most recent years for which data is available at the time of submission of the CDM-PDD to the DOE for validation (ex ante option)

As per the Thailand emission factor database published on 28th September 2017 weighted average operating margin is as below:

$EF_{OM,y}$ = 0.5719 tCO_2/MWh

STEP 5: Calculate the build margin (BM) emission factor

The build margin emission factor is calculated ex-ante for the first crediting period as per Option 1. The build margin emissions factor is the generation-weighted average emission factor (tCO2/MWh) of a sample group of power units, during the most recent year *y* for which power generation data is available. The Sample group of power units *m* used to calculate the build margin should be determined via the procedure summarised in the diagram of the Tool:



Following this procedure, AEGSET >/20% is larger than AEGSET 5-units and all of these power units started supplying electricity to the grid less than 10 years ago, therefore AEGSET >/20% is applied as power units *m* for the Build Margin.

Using the equation given in the step 5 for the OM calculation, the Built margin is calculated for the year 2016 is as below:

EF BM, y = 0.5609 tCO2/MWh

STEP 6: Calculate the combined margin (CM) emissions factor The combined margin emissions factor is calculated as follows:

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

where:

$EF_{grid,BM,y}$ = Build margin CO2 emissions factor in year y (tCO_2/MWh)

$EF_{grid,OM,y}$ = Operating margin CO2 emissions factor in year y (tCO_2/MWh)

w_{OM} = Weighting of operating margin emissions factor (%)

w_{BM} = Weighting of build margin emissions factor (%)

For wind power project, the default values for weightings are: wOM = 0.75 and wBM = 0.25 for the first crediting period and subsequent crediting periods.

Full details of the calculation of the above Steps 1-6 are outlined in the excel sheet provided with this PDD. The resulting calculation of the combined margin is as follows:

Parameter	**Value**	**Units**
Operating Margin: $EF_{grid,OM,y}$	0.5719	tCO_2e/MWh
Build Margin : $EF_{grid,BM,y}$	0.5609	
Combined Margin: $EF_{grid,CM,y}$	=0.5719*75%+0.5609*25%	
Combined Margin :$EF_{grid,CM,y}$	0.5692	

The calculation of $EG_{PJ,y}$ is defined for: (a) greenfield plants, (b) retrofits and replacements, and (c) capacity additions. If 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:

$EG_{facility,y}$ = Quantity of net electricity generation supplied by the project plant/unit to the grid in year *y* (MWh/yr)

Hence the annual baseline emission is calculated as below:

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

Leakage

No leakage emissions are considered. The potential sources 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

Emission reductions are calculated as follows:

ERy = BEy - PEy

Where:

ERy	=	Emission reductions in year *y* (t CO2e/yr)
BEy	=	Baseline emissions in year *y* (t CO2/yr)
PEy	=	Project emissions in year *y* (t CO2e/yr)

B.6.2. Data and parameters fixed ex ante

SDG13

Data/parameter	**$EF_{grid,CM,y}$**
Unit	tCO2/MWh
Description	Combined margin CO2 emission factor for grid connected power generation in year *y* calculated using the latest version of the "Tool to calculate the emission factor for an electricity system version 7
Source of data	Thailand Greenhouse Gas Management Organisation (TGO), the Designated National Authority (DNA) of Thailand for 2016. http://ghgreduction.tgo.or.th/images/Grid_Emission_Factor_2559_-_Finalised.pdf
Value(s) applied	0.5692
Choice of data or Measurement methods and procedures	The combined margin CO2 emission factor for the Thailand grid is published by the DNA of Thailand. The data has been considered in accordance to the Tool to calculate emission factor of an electricity system. The tool guides to take 75% weightage of $EF_{grid,OMsimple}$, & 25% weightage of $EF_{grid,BM,y}$
Purpose of data	Baseline Emission calculation
Additional comment	The combined margin is calculated ex-ante and fixed for the entire crediting period

Data/parameter	$EF_{grid,BM,y}$

Unit	tCO2/MWh
Description	B Build margin CO2 emission factor for grid connected power generation in year *y* calculated using the latest version of the "Tool to calculate the emission factor for an electricity system version 7"
Source of data	Thailand Greenhouse Gas Management Organisation (TGO), the Designated National Authority (DNA) of Thailand for 2016 http://ghgreduction.tgo.or.th/images/Grid_Emission_Factor_2559_-_Finalised.pdf
Value(s) applied	0.5609
Choice of data or Measurement methods and procedures	Calculated in Report 'Thailand Grid Emission Factor for GHG Reduction Project/Activity' dated 28/09/2017 Published by Thailand Greenhouse Gas Management Organisation (Public Organisation) in line with "Tool to calculate the emission factor for an electricity system".
Purpose of data	Baseline Emission calculation
Additional comment	The Build Margin would be calculated ex ante and fixed during the crediting period. For ex ante calculation the most recent data (2016) available has been used and the build margin is thus calculated.

Data/parameter	$EF_{grid,OM,y}$
Unit	tCO2/MWh
Description	Operating margin CO2 emission factor for grid connected power generation in year *y* calculated using the latest version of the "Tool to calculate the emission factor for an electricity system version 7"
Source of data	Thailand Greenhouse Gas Management Organisation (TGO), the Designated National Authority (DNA) of Thailand for 2016

	http://ghgreduction.tgo.or.th/images/Grid_Emission_Factor_2559_-_Finalised.pdf
Value(s) applied	0.5719
Choice of data or Measurement methods and procedures	Calculated in Report 'Thailand Grid Emission Factor for GHG Reduction Project/Activity' dated 28/09/2017 Published by Thailand Greenhouse Gas Management Organisation (Public Organisation) in line with "*Tool to calculate the emission factor for an electricity system*". The value used is calculated ex-ante as generation based weighted average of last three years of the operating margin provided in the Thailand Grid Emission Factor for GHG Reduction Project/Activity' Weighted average $= \sum_{i=1 \text{ to } n}$ (Net generation in operating margin in year i * Simple operating margin in year i)/$\sum_{i= 1 \text{ to } n}$ (Net generation in operating margin of year i)
Purpose of data	Baseline Emission calculation
Additional comment	The operating margin emission factor is a 3-year generation-weighted average (2014, 2015 & 2016). The operating Margin is calculated ex ante and fixed during the crediting period

B.6.3. Ex ante estimation of SDG Impact

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SDG	Parameter	Baseline impact	Project impact	Net impact (baseline – project)
SDG 3	Number of community development activities undertaken	0	1	1
SDG 7	Quantity of net electricity supplied to the grid ~~Amount of Clean electricity supplied~~ (MWh)	0	232,500	232,500

SDG 8	Number of Jobs created	0	40	40
	Number of training conducted	0	2	2
SDG 13	GHG Emission reduction (refer the detail calculation below)	0	132,339	132,339

13. GHG Emission Reduction

The methodology ACM0002 states that leakage emissions are not required to be considered, therefore the emission reductions are calculated as:

ERy = BEy - PEy

ERy = 132,339- 0 = 132,339tCO_2e

Paramete	Description of Value Applied	Value	Units
BEy	Calculated as per ACM0002 and shown below	132,339	tCO_2e
PEy	In accordance with equation (1) of ACM0002 the project emissions for wind power projects is zero	0	tCO_2e
ERy	Calculated as BEy - PEy	132,339	tCO_2e

Baseline Emissions

The total baseline emissions from existing grid connected power plants are calculated as:

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

$BE_y = 232,500 \times 0.5692 = 132,339\ tCO_2e$

Paramete	Description of Value Applied	Value	Units
$EG_{facility,y}$	Wind Farm Energy Yield Analysis Report	232,500	MWh
$EF_{grid,CM,y}$	Published by the Thailand Greenhouse Gas Management Organisation (TGO), the DNA of Thailand.	0.5692	tCO_2/MWh
BE_y	Calculated as $EG_{facility,y} \times EF_{grid,CM,y}$	132,339	tCO_2e

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

SDG 13: GHG Emission Reduction (tCO_2e)

Year	Baseline estimate	Project estimate	Net benefit
01/02/2018 - 31/01/2019~~Year~~	132,339	0	132,339

~~1~~			
01/02/2019 - 31/01/2020~~Year 2~~	132,339	0	132,339
01/02/2020 - 31/01/2021~~Year 2~~	132,339	0	132,339
01/02/2021 - 31/01/2022~~Year 4~~	132,339	0	132,339
01/02/2022 - 31/01/2023~~Year 5~~	132,339	0	132,339
01/02/2023 - 31/01/2024~~Year 6~~	132,339	0	132,339
01/02/2024 - 31/01/2025~~Year 7~~	132,339	0	132,339
Total	**926,373**	**0**	**926,373**
Total number of crediting years	7		
Annual average over the crediting period	132,339	0	132,339

SDG 3: Number of community development activities

Year	Baseline estimate	Project estimate	Net benefit
01/02/2018 - 31/01/2019~~Year 1~~	0	1	1
01/02/2019 - 31/01/2020~~Year 2~~	0	1	1
01/02/2020 - 31/01/2021~~Year 2~~	0	1	1
01/02/2021 - 31/01/2022~~Year 4~~	0	1	1
01/02/2022 - 31/01/2023~~Year 5~~	0	1	1
01/02/2023 - 31/01/2024~~Year 6~~	0	1	1
01/02/2024 - 31/01/2025~~Year 7~~	0	1	1
Total	**0**	**7**	**7**
Total number of crediting years	7		
Annual average over the crediting period	0	1	1

SDG 7: Quantity of net electricity supplied to the grid ~~Amount of Clean electricity supplied to grid~~ (MWh)

Year	Baseline estimate	Project estimate	Net benefit
01/02/2018 - 31/01/2019~~Year 1~~	0	232,500	232,500
01/02/2019 - 31/01/2020~~Year 2~~	0	232,500	232,500
01/02/2020 - 31/01/2021~~Year 2~~	0	232,500	232,500
01/02/2021 - 31/01/2022~~Year 4~~	0	232,500	232,500
01/02/2022 - 31/01/2023~~Year 5~~	0	232,500	232,500
01/02/2023 - 31/01/2024~~Year 6~~	0	232,500	232,500
01/02/2024 - 31/01/2025~~Year 7~~	0	232,500	232,500
Total	**0**	**1,627,500**	**1,627,500**
Total number of crediting years	7		
Annual average over the crediting period	0	232,500	232,500

SDG 8: Number of Jobs created & Number of Training conducted

Year	Baseline estimate	Project estimate	Net benefit
01/02/2018 - 31/01/2019~~Year 1~~	0	Jobs – 40 Training - 2	Jobs – 40 Training – 2
01/02/2019 - 31/01/2020~~Year 2~~	0	Jobs – 40 Training - 2	Jobs – 40 Training – 2
01/02/2020 - 31/01/2021~~Year 2~~	0	Jobs – 40 Training - 2	Jobs – 40 Training – 2
01/02/2021 - 31/01/2022~~Year 4~~	0	Jobs – 40 Training - 2	Jobs – 40 Training – 2
01/02/2022 - 31/01/2023~~Year 5~~	0	Jobs – 40 Training - 2	Jobs – 40 Training – 2

01/02/2023 - 31/01/2024~~Year 6~~	0	Jobs – 40 Training - 2	Jobs – 40 Training – 2
01/02/2024 - 31/01/2025~~Year 7~~	0	Jobs – 40 Training - 2	Jobs – 40 Training – 2
Total	**0**	**Jobs – 40** **Training - 14**	**Jobs – 40** **Training – 14**
Total number of crediting years	7		
Annual average over the crediting period	0	Jobs – 40 Training - 2	Jobs – 40 Training – 2

B.7. Monitoring plan

B.7.1. Data and parameters to be monitored

SDG 13:

Data / Parameter	Emission Reduction
Unit	tCO_2e
Description	GHG Emission reduction during the year y
Source of data	ER Calculation sheet
Value(s) applied	132,339
Measurement methods and procedures	The emission reduction will be calculated using as per the applied CDM methodology ACM0002, v20 Refer Section B.6.1 above for detailed calculation method
Monitoring frequency	Yearly Once
QA/QC procedures	This parameter is calculated, and no any QA/QC procedure required.
Purpose of data	To monitor the contribution to SDG 13 (Climate Action)
Additional comment	-

SDG 3:

Data / Parameter	Livelihood of the poor
Unit	Health Camps, Knowledge and information dissemination regarding natural disasters
Description	-

Source of data	Community Development Activity records and photographic evidence
Value(s) applied	PP conducted survey during construction phase of the project in the villages near project locations to check the requirement of facilities by the villages. From the survey, PP has identified several scope of developmental activities such as health camps, furniture, sports kits and toilet requirements in government schools, drinking water requirements etc. At least 1 community development activity will be undertaken
Measurement methods and procedures	The PP will survey in the nearby villages and implement the community development activities for scope identified during the monitoring period. As and when a community development activity is undertaken, the same will be recorded. –
Monitoring frequency	Yearly Once
QA/QC procedures	The records of the development activities such as photographs, appreciation letter, memos etc will be maintained by the PP. –
Purpose of data	To monitor the contribution to SDG 3 (Ensure healthy lives and promote well-being for all at all ages)
Additional comment	-

SDG 7 ~~& SDG 13~~

Data / Parameter	**$EG_{facility,y}$** **~~Clean energy supplied to grid~~**
Unit	MWh
Description	Quantity of net electricity generation supplied by the project plant to the grid in year *y* ~~Amount of clean electricity supplied to grid in MWh~~
Source of data	Monitored at the project activity site with electricity meters and calculated by subtracting imported electricity from exported electricity.
Value(s) applied	232,500 MWh (Estimation)
Measurement methods and procedures	The ~~net electricity~~electricity imported will be measured with ~~bi-directional~~ electricity meter installed at installed at export line. ~~s recording both the amount of electricity exported and imported to/from the grid by the project plant.~~ A backup ~~bi-directional~~energy meter ~~will be~~is installed and used to measure electricity exports ~~and~~

	~~imports~~ if the primary meter fails. Electricity will be measured continuously and recorded monthly. A separate grid connection ~~may be~~is installed to enable ~~backup~~ electricity to be imported from the PEA. An energy meter (import meter) is installed at import line to measure the electricity imported from grid. A backup meter ~~will~~ is not ~~be~~ installed on the import line. If the primary import meter on this ~~backup~~ import electricity line fails, the data for that month will be replaced with data from the month with the highest electricity consumption recorded during the monitoring period. Net electricity will be calculated by subtracting total imported electricity from total exported electricity. The details of the energy meters installed at site are given below:

Details	**Export meter**		**Import meter**
	Main	**Backup**	
Serial No	96499384	96499385	22069212
Make	Landis & Gyr	Landis & Gyr	Elster
Accuracy class	0.2s	0.2s	0.5s

Monitoring frequency	Measurement: Continuous Recording: Monthly
QA/QC procedures	Measurement results will be cross checked with records for sold electricity. In accordance with the PPA regarding the export meter, the error specified by the meter manufacturer will not exceed +/- 0.2%. In case of meter failure, and a replacement export meter is required, it may be installed and the error specified by the meter manufacturer will not exceed +/- 0.2%. For the ~~If a backup~~ import electricity meter, ~~supply is installed by the PEA then an import meter will be installed on the backup supply line. T~~the error specified by the meter manufacturer will not exceed +/- 0.5%. The PPA specifies that the meters shall be calibrated once during each calendar year (the maximum time between two calibration events is 24 months). The ~~backup~~ import line electricity meter is in the control of PEA. Hence, the calibration will be done as per PEA requirement. ~~will also be calibrated once per calendar year.~~
Purpose of data	Calculation of baseline emissions and

	To monitor the contribution to SDG 7 (Ensure access to affordable, reliable, sustainable and modern energy for all)
Additional comment	-

SDG 8:

Data / Parameter	• Number of jobs created • Number of Training conducted
Unit	-
Description	Total employment generated due to the implementation of project activity and number of training conducted
Source of data	Plant employment records & Training records
Value(s) applied	Jobs: 40 Training conducted: 2
Measurement methods and procedures	Employment records
Monitoring frequency	Yearly Once
QA/QC procedures	–The number of persons employed would be mentioned in the plant register.
Purpose of data	To monitor the contribution to SDG 8 (Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all)
Additional comment	-

Safeguarding Principle 8.2:

Data / Parameter	Soil Erosion mitigation measures
Unit	-
Description	Construction phase: • Fast-growing and earth-bounding plants such as vetiver grass should be planted in the construction area of the project's road in order to prevent the collapse of soil layers • Stone structure examination and soil test will be conducted in the project's construction area or wind turbine installation area in order to prevent the collapse of soil layers efficiently

	• Avoid the construction during the rain in order to prevent the soil washed down in the project area Operational phase: • Fast-growing and earth-bounding plants should be planted in the area of the project's road in order to prevent the collapse of soil layers
Source of data	Project O&M HSE logbook, or interview with maintenance staff.
Value(s) applied	-
Measurement methods and procedures	-
Monitoring frequency	Yearly Once
QA/QC procedures	-
Purpose of data	To monitor compliance to Safeguarding Principle 8.2 (Erosion and/or Water Body Instability
Additional comment	-

Safeguarding Principle 9.5:

Data / Parameter	Hazardous waste management
Unit	-
Description	The following management measures shall be followed: • Provision of proper temporary storage for hazardous waste • Waste segregation • Waste disposal by an appointed/accredited waste disposer company
Source of data	Project O&M HSE logbook, or interview with maintenance staff.
Value(s) applied	-
Measurement methods and procedures	-
Monitoring frequency	Yearly Once
QA/QC procedures	-
Purpose of data	To monitor compliance to Safeguarding Principle 9.5 (Hazardous and Non-hazardous Waste))
Additional comment	-

B.7.2. Sampling plan

>>

Not Applicable

B.7.3. Other elements of monitoring plan

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Details of Data to be Monitored:

The emission reductions achieved by the project will be monitored and calculated in accordance with the methodology ACM0002. The methodology defines the equations and monitoring parameters for calculating emission reductions. On-site data collection will involve metering the net electricity supplied by the project activity to the grid. Also other SDG parameters and safeguarding principle parameters will be monitored. The parameters to be monitored are:

- Emission Reduction (calculated)
- Net electricity supplied to grid
- Number of community development activities undertaken
- Number of jobs created
- Number of Training conducted
- Soil Erosion mitigation measures
- Hazardous waste management

~~Any auxiliary consumption imported to the West Huaybong 3 facilities from the grid will be metered to enable net electricity to be calculated~~

Monitoring Procedure

Electricity exported to the grid will be monitored continuously with the ~~bi-directional~~ electricity meters of the power authority. The electricity imported from grid will be measured through the import meter which owned by PEA.

~~In case any electricity is imported into the project facilities for auxiliary consumption (during plant shut down), this electricity will also be monitored continuously with the bidirectional meter of the power authority. In case a back-up line is brought to the site, this will also be monitored for auxiliary consumption.~~

Monthly records of export and import reading will be used to calculate the net electricity generation supplied by the project plant to the grid. Net electricity will be calculated as follows:

$EG_{facility,y} = EG_{facility,export,y} - EG_{facility,auxilaryimport,y}$

The monitoring procedures for all the parameters are provided in section B.7.1 above

~~$- EG_{backupline,auxilary,y}$~~

~~If no auxiliary electricity is imported to the project facilities then the auxiliary power consumption ($EG_{facility,auxilary,y}$) will be equal to zero.~~

Data Management

Monthly meter readings will be conducted by the power authority. After receiving the receipt of power sales from the power authority, the meter data will be input into an electronic data file. West Huaybong 3 operations personnel will check the data file for consistency and completeness. At the end of the monitoring period, the entire data file will be printed and reviewed by the Responsible Manager. An electronic copy of the data file will be backed up in the West Huaybong 3 head office at least once per month

All other parameter data will be monitored by site in-charge and it will be submitted to responsible manager every year for review. After the review of data, it will be submitted to consultant to prepare the monitoring report.

Data recording & archiving

All the data will be recorded in electronic format and/or in the form of hard copy. All data collected as part of the monitoring process will be retained for at least two years after the end of the crediting period during which the data was recorded.

Quality Assurance

The following quality assurance measures will be taken relating to the monitoring equipment and its installation and operation:

- Prior to operation, the Responsible Manager will validate that the monitoring equipment is calibrated according to the appropriate standards.
- All monitoring equipment will be located in secure locations to prevent accidental damage
- Routine calibration of all monitoring equipment will be performed to ensure that the data remains accurate.

To ensure the quality of the recorded data, all relevant personnel will be trained in accordance with this monitoring plan.

Quality Control Procedures

To ensure malfunction is identified promptly, the operations personnel will check the data records and report any data outages or inconsistencies in the data to the Responsible Manager. Any equipment faults or loss of data will be recorded in an operational log with details of the fault and length of time over which data was affected. All meter data will be checked against the official receipts

In accordance with the PPA, the error specified by the manufacturer of the export meter will not exceed +/-0.2%. In case of meter failure, replacement export meters may be installed and the error specified by the meter manufacturer will not exceed +/-0.2%. The meters will be calibrated once during each calendar year (the maximum time between two calibration events is 24 months).

SECTION C. DURATION AND CREDITING PERIOD

C.1. Duration of project

C.1.1. Start date of project

15/08/2011 (Date the company issued the Notice to Proceed to the turbine suppler Siemens Wind Power A/S)

C.1.2. Expected operational lifetime of project

>>

23 years 0 months

C.2. Crediting period of project

C.2.1. Start date of crediting period

>>

01/02/2018 ~~3/2019 or 2 years prior to date of design certification (whichever is later)~~

C.2.2. Total length of crediting period

>>

7 years

(The start date of 1st CDM crediting period is 01/12/2012. Hence, the total crediting period (CDM + GS4GG) within the maximum crediting period allowed for renewable energy project under GS4GG ie, 15 years)

SECTION D. SUMMARY OF SAFEGUARDING PRINCIPLES AND GENDER SENSITIVE ASSESSMENT

D.1. Safeguarding Principles that will be monitored

A completed Safeguarding Principles Assessment is in Appendix 1, ongoing monitoring is summarised below.

Principles	Mitigation Measures added to the Monitoring Plan
Principle 8.2	Construction phase: • Fast-growing and earth-bounding plants such as vetiver grass should be planted in the construction area of the project's road in order to prevent the collapse of soil layers • Stone structure examination and soil test will be conducted in the project's construction area or wind turbine installation area in order to prevent the collapse of soil layers efficiently • Avoid the construction during the rain in order to prevent the soil washed down in the project area Operational phase: • Fast-growing and earth-bounding plants should be planted in the area of the project's road in order to prevent the collapse of soil layers~~Refer Section B.7.1 above~~
Principle 9.5	The following management measures shall be followed: • Provision of proper temporary storage for hazardous waste • Waste segregation • Waste disposal by an appointed/accredited waste disposer company~~Refer Section B.7.1 above~~

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

Question 1 - Explain how the project reflects the key issues and requirements of Gender Sensitive design and implementation as outlined in the Gender Policy?	From the pre-feasibility study stage to the operation time, from the stakeholder investigation to the employment, fair chance and gender equality to access the source, information and to reflect their opinions as a main consideration is taken by the project owner. Further, even if the customers both including suppliers and power buyer are also investigated by the project owner for gender equality issues.
Question 2 - Explain how the project aligns with existing country policies, strategies and best practices	Thailand is one of the founding members of International Labour Organization (ILO), which formed in 1961. The country has ratified 15 ILO Conventions, one of which is the core convention related to gender inequality (C100 on equal remuneration)[8]. Also, Thailand has been a member of the Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW) since 1995. The implementation of the CEDAW and the Beijing Platform for Action (BPFA) have had a visible impact on the Thai's legislation in the aspects of women protection and the progress toward gender equality in the country. The legal changes that reflect gender sensitivity and women's human rights include the enactment of the Protection of Domestic Violence Victims Act (2007), the amendment made to the Penal Code to prevent women from being raped by their own spouse, and the indications of gender inequality are also implemented in the recent constitutions. In 2015, Thailand has implemented Gender

[8] ILO 2010

Equality Act, B.E. 2558 which Establishes the Gender Equality Promotion Committee and the Committee on Consideration of Unfair Gender Discrimination (WorLorPor). It defines the meaning of gender discrimination and sets out penalties and compensation.

Thailand is ranked 84 out of 189 countries in 2018 on its Gender Inequality Index (GII)[9]. Moreover, the Human Development Index (HDI) is for females (0.763) is on par with male (0.766), which shows the gender policies are effectively implemented in Thailand. Hence, the project implemented in Thailand complies with all the laws and policies of the gender equality as follows.

- The project activity promotes and encourages active participation of women and men during the stakeholder meetings, giving an equal opportunity to both genders.
- The project provides equal employment opportunities for men and women.
- Equal pay for equal work is followed. No discrimination is made in the salaries of men and women.

Hence, the project aligned with existing country policies, strategies and best practices.

[9] *2018 Human Development Report (HDR),* United Nations Development Program

Question 3 - Is an Expert required for the Gender Safeguarding Principles & Requirements?	The relevant questions raised in the Gold Standard Safeguarding Principles & Requirements assessment are provided in Principle 2 of Appendix 1. As per the GS preliminary review report, Gold Standard did not mention any requirement for an expert stakeholder opinion (with a specific emphasis on gender and environment expertise) to support the gender safeguards assessment process. ~~No~~
Question 4 - Is an Expert required to assist with Gender issues at the Stakeholder Consultation?	The project applies Gold Standard Stakeholder Consultation & Engagement Procedure, Requirements & Guidelines. However, PP has taken deviation from conducting physical stakeholder consultation which is require prior to design review. As per the approved deviation, the physical stakeholder consultation will be conducted after the design review but before the 1st verification. As per the GS preliminary review report, Gold Standard did not mention any requirement for an expert stakeholder opinion (with a specific emphasis on gender and environment expertise) to support the gender safeguards assessment process.~~No~~

SECTION E. SUMMARY OF LOCAL STAKEHOLDER CONSULTATION

The below is a summary of the 2 step GS4GG Consultation for monitoring purposes. Please refer to the separate Stakeholder Consultation Report for a complete report on the initial consultation and stakeholder feedback round.

E.1. Summary of stakeholder mitigation measures

>>

Since the project is CDM registered project, the project conducted stakeholder consultation meeting during the registration of CDM which is explained below:

A stakeholder consultation meeting was held on 15/09/2011 at Sima Thani Hotel to enable local stakeholders to comment on the project. Invitation letters were sent directly to the sub-district administrative organization who directly invited the relevant stakeholders to the consultation meeting. A wide range of stakeholders were invited from Dan khun Thot district, Huay Bong sub-district and Thepharak district, Nong Wang sub-district. Stakeholders who were directly invited include: representatives from relevant government offices, teachers from the local school and villager leaders. Public invitation notifications were also posted at Huaybong sub-district and Nong Wang sub-district administration offices. In accordance with local customs, the village leaders were engaged to ensure that all local landowners were aware of the consultation meeting. During the meeting there were a total of 125 participants from all sectors listed above.

During the consultation local stakeholders were given an opportunity to ask questions and give comment on the project. Relevant stakeholder comments & response provided by PP are summarised as follows:

Comments raised by stakeholders	**Response provided by PP**
Can we watch during installation of the turbine?	Communities can watch the turbine installation at a safety distance after requesting permission.
Please construct the road #3165 as soon as possible.	The project will start the road (#3165) construction within a few weeks.
How much experience of wind farms does the company has?	The company CEO and staff have appropriate experience in developing wind farms.
Regarding long term impact, what will happen after the project lifetime is finished?	It will depend on future government policy and ALRO policy as to whether the contracts can be renewed. Regards noise impact, Gerrad Hassan and SECOT were hired as international and local consultant

	to assist with the calculation of the impact and we will follow their recommendations to minimize the impact. We are confident that the impact will be minor.
The project should start community development plan at the same time of the project implementation and should not wait until the project is operating and receiving income.	At the moment we are drafting a corporate social responsibility (CSR) plan.
Teacher and students in the project area should be provided with more knowledge about wind energy than others.	We are happy to receive suggestions regarding knowledge transfer to the local schools and community about wind energy.
Will there be impact from vibration of the turbines, will there be any impact on cassava plantation? Can we still do agriculture (on ALRO land) and plant trees in the reforestation projects (on reserved forest land)?	The project does not object to tree plantation. The project installs turbines on ALRO land, not in the reserved forest. At the moment there are many cases of forest encroachment from farming which is unrelated to the wind project.
Apart from noise impact will there be impact on ecology, especially pollination?	Apart from noise impact there is no significant impact on ecology. This is according to IEE which we will submit to community leaders.
Some of the electricity posts block the entrance of some house.	The electricity posts belong to Provincial Electricity Authority (PEA).
Can you please confirm how much money the community will receive from the community development fund?	We expect that the community fund will be 200,000 Baht/MW for the first year.
(We) would like company to confirm that there is no impact to villagers.	To confirm how the impacts will be mitigated we will provide a copy of the IEE to community leaders.

The project developer provided answers to each question/comment during the meeting as per the details above. Stakeholders were also re-informed about the

company's public relation co-ordinator, who they can speak to regarding further questions or complaints.

Stakeholder feedback round

The project is applying for retroactive registration under Gold Standard. As per GS4GG requirement a stakeholder a physical stakeholder feedback meeting and an online stakeholder feedback round shall be conducted for retroactive projects.
Due to the COVID pandemic, the physical stakeholder feedback round could not be conducted. Hence, a deviation from para 6.1.4 of Stakeholder-Consultation-Requirements, v1.2 is applied.

Para 6.1.4 of Stakeholder-Consultation-Requirements, v1.2:
"For retroactive projects, project implementation is started without conducting the first round of stakeholder consultation following the Requirements. In such cases, the physical meeting shall be integrated with the stakeholder feedback round, if this has not taken place as part of previous stakeholder consultations."

The physical LSC feedback meeting will be conducted after the design review. Approval for the deviation has been obtained from Gold Standard and the same is submitted to VVB.

Online Stakeholder feedback round:

An online stakeholder feedback round has been conducted for 60 days from 6th July 2020 to 5th September 2020. An email with online link of all project documents (PDD, Non-technical summary & Stakeholder consultation report) were sent to all relevant stakeholders. The email was sent to the following stakeholders:

No	Organisation (if relevant)	Name of the person
1	Gold Standard	-
2	Global Offset Research	Mr. Siddharth Yadav
3	Lean Management Systems Promotion Society	Mr. Raave Jain
4	HIVOS	Mr. Harry Clemens
5	Redemption Research for Health and	Mr. Kennady Pulipati

	Educational Development Society	
6	Climate Works Australia	Mr. Dani Robertson
7	myclimate	Mr. Thomas Finsterwald
8	CAAP	Dr.Korhan Saglam
9	NCMA India	Mr. Bholendra Singh
10	Dhammanart Foundation	Mr. indhukarns@hotmail.com
11	Thailand DNA (TGO)	-

The link for the project documents that were shared with stakeholders are as below:

CDM registry link: https://cdm.unfccc.int/Projects/DB/RWTUV1348727249.16/view?cp=1

GS Registry link : https://registry.goldstandard.org/projects/details/2591

NTS: https://drive.google.com/file/d/1A1ky7D7ln869N1jduLicwk6Z46eCX9sa/view?usp=sharing

GS4GG PDD: https://impact.sustain-cert.com/public_projects/2262

However, no comments received from any stakeholder during the period.

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 register is kept at site office. This will be most appropriate as the address provided is accessible to all the stakeholders and the grievances received be reviewed monthly and grievances (if any) will be addressed accordingly
GS Contact (mandatory)	help@goldstandard.org
Internet/email	Grievances shall also be sent to Head office:

access	Mr. Arvind Agarwal - arvind@windenergyholding.com

APPENDIX 1 - SAFEGUARDING PRINCIPLES ASSESSMENT

Complete the Assessment below and copy all Mitigation Measures for each Principle into SECTION D above. Please refer to the instructions in the Guide to Completing this Form below.

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 Rights			
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	No	1. During construction and operation of the project the project proponent respected all the human rights. The project is not in any kind of conflict with the livelihood of local people. Project proponent had conducted stakeholder's consultation and sought their opinion. 2. The project will not employ any personnel based on gender, race, religion, sexual orientation or any other basis. As the Constitution of the host country prohibits discrimination on the basis of a person's race, sex, religion, place of birth, or social	Not required

		status. Thailand, as the host country of the project, is a party to Universal Declaration of Human Rights[10]	
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)	No	1. Project does not directly or indirectly lead to/contribute to adverse impacts on gender equality and/or the situation of women. The PP's HR policy is framed in line with this. Participation in the project is 100% voluntary. The project proponent has a grievance cell which would look into complaints regarding any forms of violence against women - address the multiple risks of gender-based violence, including sexual exploitation or human trafficking. 2. The Project has equal opportunity for women and men to contribute both in volunteer and working positions. 1. The project proponent has a stipulated HR policy that takes into account participation by both men and women. Further, the CSR projects designed are implemented for	Not required

[10] http://www.thaiembassy.org/unmissionnewyork/en/relation/80917-Human-Rights.html

		equal participation of both men and women 3. The project is aligned to Thailand's strategy for elimination of all discrimination. Thailand is also party to Convention 100 (Equal remuneration) since 1999 and 111 on Discrimination in employment/occupation since 2017 to prevent any form of discrimination[11] 4. Not applicable	
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	No	The project is in compliance with all relevant local and national laws [12]. The Project does not threaten human health or environment and does not adversely affect the health of the workers and the community.	Not Required
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	No	PP has conducted Initial environmental examination and as per the study, the project does not alter, damage or remove any cultural heritage.	Not Required

[11] http://www.ilo.org/dyn/normlex/en/f?p=1000:11200:0::NO:11200:P11200_COUNTRY_ID:102843

[12] Safety, Occupational Hygiene and Workplace Environment Act B.E. 2554 [2011]

intangible forms of culture?			
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	The project does not involve and is not complicit in involuntary resettlement of peoples in any way. The Project Developer has also obtained all necessary clearances from nodal agencies and NOCs from all relevant authorities for establishing the project.	Not Required
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 project has all the legal, customary rights on the land and does not require any change to land tenure arrangements. The proponent has also obtained necessary clearances from relevant government agencies for establishing the plant.	Not required
Principle 5. Corruption			
1. The Project shall not involve, be complicit in or inadvertently contribute to or reinforce corruption or corrupt	No	The proponent confirms that there is no corruption involved in the project activity. The host country has strict laws and robust arrangements to prevent such activities.	Not Required

Projects		Thailand is a party to United Nation Convention against Corruption since 9 Dec 2003[13]. PP also have Code of Business Conduct, the Anti-Bribery and Corruption Policy in place.	
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: a) Working hours (must not exceed 48 hours per week on a regular basis),	No	1. The proponent assures that there will be no bonded or forced labor during construction and operation of the project activity. Uniform policy will be implemented for all employees. The host country has robust laws in place prohibiting forced and compulsory labor. Thailand is a party to ILO convention 29 (since 1969) and 105 (since 1999) on elimination of forced and compulsory labour[14]. 2. The proponent confirms that all the fundamental rights of the employees will be respected.	Not Required

[13] https://treaties.un.org/pages/viewdetails.aspx?src=ind&mtdsg_no=xviii-14&chapter=18&lang=en#EndDec

[14] http://www.ilo.org/dyn/normlex/en/f?p=1000:11200:0::NO:11200:P11200_COUNTRY_ID:102843

AND b) Duties and tasks, AND c) Remuneration (must include provision for payment of overtime), AND d) Modalities on health insurance, AND e) Modalities on termination of the contract with provision for voluntary resignation by employee, AND f) Provision for annual leave of not less than 10 days per year, not including sick and casual leave. 4. No child labour is allowed (Exceptions for children working on their families' property requires an Expert Stakeholder opinion) 5. The Project Developer shall ensure the use of appropriate equipment, training of workers, documentation and reporting of accidents and incidents, and emergency preparedness and response measures		3. Working agreements with all individual workers are documented and implemented. The company HR policy includes all the requirements mentioned. 4. Child labor is strictly prohibited in the country. The proponent assures that no child labor will be employed during construction and operation of the plant. The project proponent has a set mechanism to ensure the age of all the temporary/ permanent employees during the life time of the project. Thailand is also a party to convention 13815 on Minimum Age since 2004 and Convention 182 on Worst Forms of Child Labour since 2001. 5. The Project Developer has an active HSE team which ensures that all employees are given appropriate equipment and training. The	

[15] http://www.ilo.org/dyn/normlex/en/f?p=1000:11200:0::NO:11200:P11200_COUNTRY_ID:102843

		same is properly documented and appropriate measures taken in case of emergencies. PP has incorporated 'Employee Training and Development Policy' under the HR policy.	
Principle 6.2 Negative Economic Consequences			
1. Does the project cause negative economic consequences during and after project implementation?	**No**	There are no negative economic impacts or potential risks to the local economy due to the project activity during and after project implementation	Not required
Principle 7.1 Emissions			
Will the Project increase greenhouse gas emissions over the Baseline Scenario?	No	The project is a wind power project and does not lead to any greenhouse gas emissions in project scenario.	Not Required
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 is connected to the grid, as well as being a wind power project it will be a net provider of power to the local grid.	Not Required
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,	No	The project being a wind power project will not have any such impacts.	Not Required

lack of aquatic connectivity or water scarcity?			
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?	Potentially	1. The construction and operation of wind power plant will disturb the soil which will lead to soil erosion. PP has conducted Initial Environmental Examination (IEE) and based on the study the project activity has developed activities for prevention of soil erosion by various landscaping measures.	Construction phase: -Fast-growing and earth-bounding plants such as vetiver grass should be planted in the construction area of the project's road in order to prevent the collapse of soil layers -Stone structure examination and soil test will be conducted in the project's construction area or wind turbine installation area in order to prevent the collapse of soil layers efficiently -Avoid the construction during the rain in order to prevent the soil washed

			down in the project area Operational phase: -Fast-growing and earth-bounding plants should be planted in the area of the project's road in order to prevent the collapse of soil layers~~Refer monitoring parameter table in Section B.7.1~~
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 does not involve the use of land and soil for production of crops or other products.	Not Required
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 will not be susceptible to or lead to increased vulnerability to wind, earthquakes, subsidence, landslides, erosion, flooding, drought or other extreme climatic conditions.	Not Required
Principle 9.3 Genetic Resources			
Could the Project be negatively impacted by	No	The project does not have any impact by used	Not Required

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)?		of GMOs.	
Principle 9.4 Release of pollutants			
Could the Project potentially result in the release of pollutants to the environment?	No	The project being a wind power project does not lead to release of any pollutants. Prior to the implementation of the project activity, PP has conducted Initial Environmental Examination including shadow flickering and the noise assessment considering the distance to nearest residential area. No impact observed in the study. Also a study on the effect of the sound by simulating a noise contour has been conducted by PP. As per the study result, the increasing sound level is less than the ambient noise standard as per the Notification of the National Environment Board No. 15 (B.E. 2540), which specifies at 70 dB(A).	Not Required
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	The project during operational phase uses various type of oil/lubricants, grease which are classified as hazaordous. These waste are handled in line with hazardous waste management rules and are disposed off accordingly.	The following management measures shall be followed: - Provision of proper temporary storage for hazardous waste - Waste segregation - Waste disposal by an appointed/accredited waste disposer company~~Refer monitoring parameter table in section B.7.1 above~~
Principle 9.6 Pesticides & Fertilisers			
Will the Project involve the application of pesticides and/or fertilisers?	No	The project is a wind power project and hence not relevant to e application of pesticides and/or fertilizers.	Not Required
Principle 9.7 Harvesting of Forests			
Will the Project involve the harvesting of	No	The project is a wind power project and hence not relevant to the harvesting of	Not Required

forests?		forests.	
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 is a wind power project and hence not relevant to crop regime alteration or export or economic incentives.	Not Required
Principle 9.9 Animal husbandry			
Will the Project involve animal husbandry?	No	The Project is a wind power project and hence not relevant animal husbandry.	Not Required
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	PP has conducted Initial environmental examination and as per the study the Project does not affect or alter largely intact or HCV ecosystems, critical habitats, landscapes, key biodiversity areas or sites identified. Refer IEE report	Not Required
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	No	PP has conducted Initial environmental examination and as per the study there are no endangered species identified as potentially being present within the Project boundary. Also the Project does not impact other areas where endangered species may be present	Not Required

Does the Project potentially impact other areas where endangered species may be present through transboundary affects?		through transboundary affects.	

APPENDIX 2- CONTACT INFORMATION OF PROJECT PARTICIPANTS

Organization name	First Korat Wind Company Limited
Registration number with relevant authority	
Street/P.O. Box	All Seasons Place, 87/1, Wireless road, Lumpini, Patumwan
Building	25th Floor, Capital Tower
City	Bangkok
State/Region	Bangkok
Postcode	10330
Country	Thailand
Telephone	+66(0) 2106 8000
E-mail	kelly@windenergyholding.com
Website	
Contact person	
Title	Mr.
Salutation	
Last name	Dallas
Middle name	
First name	Kelley
Department	
Mobile	
Direct tel.	
Personal e-mail	kelly@windenergyholding.com

APPENDIX 3- LUF ADDITIONAL INFORMATION

Not applicable

Risk of change to the Project Area during Project Certification Period:	
Risk of change to the Project activities during Project Certification Period:	
Land-use history and current status of Project Area:	
Socio-Economic history:	
Forest management applied (past and future)	
Forest characteristics (including main tree species planted)	
Main social impacts (risks and benefits)	
Main environmental impacts (risks and benefits)	
Financial structure	
Infrastructure (roads/houses etc):	
Water bodies:	
Sites with special significance for indigenous people and local communities - resulting from the Stakeholder Consultation:	
Where indigenous people and local communities are situated:	
Where indigenous people and local communities have legal rights, customary rights or sites with special cultural, ecological, economic, religious or spiritual significance:	

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