

TEMPLATE

KEY PROJECT INFORMATION & PROJECT DESIGN DOCUMENT (PDD)

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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

0 – Description of project

0 – Application of approved Gold Standard Methodology (ies) and/or demonstration of SDG Contributions

0 – Duration and crediting period

0 – Summary of Safeguarding Principles and Gender Sensitive Assessment

0 – Outcome of Stakeholder Consultations

Appendix 1 – Safeguarding Principles Assessment (mandatory)

0 – Contact information of Project participants (mandatory)

0 – LUF Additional Information (project specific)

0 – Summary of Approved Design Changes (project specific)

KEY PROJECT INFORMATION

GS ID of Project	GS11404
Title of Project	Lingasugur Wind Power Project in Karnataka
Time of First Submission Date	15/09/2021
Date of Design Certification	-
Version number of the PDD	06
Completion date of version	22/07/2023
Project Developer	ReNew Wind Energy (AP) Private Limited
Project Representative	EKI Energy Services Limited
Project Participants and any communities involved	Project Participant: ReNew Wind Energy (AP) Private Limited Communities Involved: Not Applicable
Host Country (ies)	India
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	Not applicable
Methodology (ies) applied and version number	ACM0002 Version 20.0, Grid-connected electricity generation from renewable sources
Product Requirements applied	☒ GHG Emissions Reduction & Sequestration ☐ Renewable Energy Label ☐ N/A
Project Cycle:	☐ Regular ☒ Retroactive

Land-use & Forest Key Project Information¹

Not applicable.

Table 1 – Estimated Sustainable Development Contributions

Sustainable Development Goals Targeted	SDG Impact (defined in B.6.)	Estimated Annual Average	Units or Products
SDG 13- Take urgent action to combat climate change and its impact	Emission reductions	For 1 st Crediting Period – 72,784 tCO ₂ e. For 2 nd Crediting Period - 75,502 tCO ₂ e	GSVER
SDG 7– Ensure access to affordable, reliable and modern energy for all	MWh of renewable energy generated	For 1 st Crediting Period- 81,142 MWh For 2 nd Crediting Period -81,142 MWh	MWh
SDG 8 – Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all	Number of trainings and hiring through project	For 1 st Crediting Period – 1 training/annum and employment to 10 persons For 2 nd Crediting Period -1 training/annum and employment to 10 persons	Number of trainings and Employment generated through project

¹ Please refer to 0 for detailed information on LUF projects

SECTION A. DESCRIPTION OF PROJECT

A.1 Purpose and general description of project

Purpose of the Project activity

The project activity generates power using renewable energy source (wind energy) and sell the power generated to the Third Party through National grid. The project activity generates electricity using wind energy. The generated electricity is exported to the Indian grid system which is under the purview of the INDIAN electricity grid of India and the third party buyer draws power from Indian Grid. Currently the project is applying for transition from UNFCCC CDM mechanism to GS4GG and renewal for second crediting period.

The project activity replaces anthropogenic emissions of greenhouse gases estimated to be approximately 72,784 tCO₂e per year for First Crediting Period(05/08/2016 to 04/08/2021) and 75,502 tCO₂e per year for Second Crediting Period(05/08/2021 to 04/08/2026), thereon displacing 81,142 MWh/year amount of electricity from the generation-mix of power plants connected to the INDIAN GRID(previously connected to Southern Grid), which is mainly dominated by thermal/ fossil fuel based power plant.

The total installed capacity of the current project activity is 40 MW; which involves operation of 20 WTGs of 2 MW capacity each, in the state of Karnataka in India.

Project Investor	Project Type	Total Project Capacity	State	Usage
ReNew Wind Energy (AP) Private Limited	Wind	40 MW	Karnataka	Sale to Third Party through power supply to Grid

The project activity start date is 30/06/2015, which is date of signing of supply contract with Gamesa Wind Turbines Private Limited.

The project activity is a new facility (Greenfield) and the project activity generates electricity by the utilization of renewable wind energy and further selling the generated energy to the third party through Indian Grid. In this process there is no consumption of any fossil fuel and hence the project does not lead to any greenhouse gas emissions. Thus, electricity would be generated through sustainable means without causing any negative impact on the environment.

In the Pre-project scenario, the entire electricity delivered to the third party buyer 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.

Contribution to sustainable development

Ministry of Environment, Forest and Climate Change (MoEFCC), has stipulated economic, social, environment and technological well-being as the four indicators of

sustainable development. The project contributes to sustainable development using the following ways.

Social well-being: The project has resulted in the investment in the rural sector of India thereby creating employment opportunities to local population (skilled and unskilled manpower) available in and around project facility for building infrastructure, installation and maintenance and managing the wind farm thus enabling improvement in the quality of life of the people.

Economic well-being: The land prices in the neighboring area have gone up thereby benefiting the villagers. It will help to improve the availability of electricity as the electricity generated will be fed into the grid thereby curtailing the supply demand gap. This will provide new opportunities for industries and economic activities to be setup in the area thereby increasing employment opportunities.

Technological well-being: The project activity is an energy diversification measure where renewable energy is harnessed for generation of power in order to meet the increasing energy demand of the state. The associated technology for power generation does not have any associated GHG emission. These turbines deploy the advanced technology for generation as well as for grid interaction. Hence, the project would utilize environmentally safe and sound technologies in wind power sector. Further the project demonstrates harnessing wind potential and encourages others for setting up more such projects in future.

Environmental well-being: The project activity is a cleaner means for power generation which avoids fossil fuel based thermal power generation. Therefore it positively contributes towards the reduction in demand for India's carbon intensive energy resources thereby conserving the non-renewable natural resources like coal, gas, oil. By substituting and hence decreasing the need for fossil fuel based power generation in the grid, the project activity will reduce GHG emissions from the country's electricity sector. Moreover wind power projects produce no end products in the form of solid and liquid wastes. Power generation from renewable energy sources in the project activity creates global as well as local environmental benefits.

A.1.1. Eligibility of the project under Gold Standard

The project activity meets the eligibility criteria as per section 3.1.1 of GS4GG Principles & Requirements document, V1.2², as described below:

- (a) **Project Type:** Wind power is an approved project type and does not require any specific approval from Gold Standard. The project applies methodology ACM0002, Version 20³ Sectoral Scope: 01, which is an approved methodology under Gold Standard.
- (b) **Project Location:** The project is located in India. The project is therefore eligible. The geo-coordinates of the project can be referred section A.2.

² https://globalgoals.goldstandard.org/standards/101_V1.2_PAR_Principles-Requirements.pdf

³ <https://cdm.unfccc.int/methodologies/DB/XP2LKUSA61DKUQC0PIWPGWDN8ED5PG>

- (c) **Project Area, Boundary and Scale:** The project activity follows the UNFCCC approved methodology and project Area and Boundary is defined in line with methodological requirement. The project activity is a 40 MW wind power project and thus qualifies under large scale projects (Non Micro Scale). This Renewable project estimates issuing emission reductions greater than 10,000 tCO₂e, thus the project falls under Non Micro Scale categories.
- (d) **Host Country Requirements:** The projects has obtained all the requirement for the commissioning of the project from the Government of India.
- (e) **Contact Details:** Please refer Appendix 2 for the contact details. ReNew Wind Energy (AP) Private Limited is acting as project proponent (PP) of project activity.
- (f) **Legal ownership:** please refer section A.1.2 for the legal ownership details.
- (g) **Other Rights:** The legal ownership of the project lies with the PP and the same has been demonstrated in section A.1.2. There are no any disputes in regard to this project activity.
- (h) **Official Development Assistance (ODA) Declaration:** Refer Section A.5 for the information of funding sources of projects.

The project activity meets the criteria for eligible project types as per Para 2 of Renewable Energy Activity Requirements, Version 1.4⁴

- i. This project activity generates electricity from wind power which is a non-fossil fuel and renewable energy source hence criteria under sub-para 2.1.2(a) is fulfilled.
- ii. This wind project activity supplies electricity to the Indian Grid, hence criteria under sub-para 2.1.2(b) is fulfilled.
- iii. This wind project activity is seeking transition from UNFCCC CDM mechanism to Gold Standard(CPA 15 under PoA 9416⁵. The start date of First Crediting Period of the project is 05/08/2016, which is later than 01/01/2016 but before 24/01/2020. So the criteria as per sub-para 2.1.3 are not applicable for this project activity (As per sub-para 2.1.5(e)) which requires the project location must be in Least Developed Country (LDC), Small Island Developing State (SIDS) or a Land Locked Developing Country (LLDC) or Low Income and Low Middle-income country (where the penetration level of the proposed Renewable Energy Technology type is less than 5% of the total grid installed capacity, at the time of the first submission to preliminary review).
- iv. This project contributes to three SDG – SDG 13, SDG 7 and SDG 8. Hence as per Para 4.1, **Principle 1 - Contribution to Climate Security & Sustainable Development** has ben fulfilled.
- v. Safeguarding Principles Assessment has been conducted by Project Developer and the same has been provided in Appendix 1 of PDD. Hence, as per Para 4.2, **Principle 2 – Safeguarding Principles** has been fulfilled.
- vi. Stakeholder Consultation has been conducted for this project activity. Also stakeholders can provide their feedback anytime to the Project Developer. Hence as per Para 4.3, **Principle 3 – Stakeholder Inclusivity** has been fulfilled.

⁴ <https://globalgoals.goldstandard.org/202-ar-renewable-energy-activity-requirements/>

⁵ https://cdm.unfccc.int/ProgrammeOfActivities/poa_db/H8ZL9NPDCF0B76JQM5XVTGKI1YU4AO/view?cp=1

- vii. The project start date is as per paragraph 4.1.39 of Principles & Requirements which is the Purchase Order Date of WTGs. Hence, **Principle 4 – Demonstration of Real Outcomes** has been fulfilled.
- viii. The ongoing financial need of this project activity has been described in CPA DD of the project in UNFCCC CDM mechanism. Hence, **Principle 5 – Financial Additionality & Ongoing Financial Need** has been fulfilled.

Also this project activity meets the criteria as per Para 2 of Annex B of GHG Emissions Reduction & Sequestration Product Requirements:

- i. The project is a registered CPA (CPA 15) under PoA 9416⁶ - Promotion of renewable energy generation in India- Programme of Activities. Also it is a renewable energy generation(Wind) project, which is a GS4GG eligible project type.
- ii. The project is already registered in UNFCCC CDM project activity as a CPA(CPA 15 of PoA 9416) and has a valid crediting period(05/08/2016 to 04/08/2023) under UNFCCC CDM mechanism.
- iii. The start date of crediting period of the CPA is 05/08/2016 which is after 01/01/2016.
- iv. The project is not viable without carbon revenue and the additionality of this project activity is described in registered CPA DD⁷.
- v. This project was registered as a CPA in POA 9416. During that time, this project activity was not in a position to complete the CDM verification due to financial instability and also, due to low prices in the carbon market and high VVB charges, it was financially not viable for PP to complete the CDM verification. Currently, one CDM verification of the project has been completed while its transition into GS mechanism is ongoing.

This project activity meets the criteria as per Para 6 of Annex B of GHG Emissions Reduction & Sequestration Product Requirements:

The maximum crediting period of this project activity is 15 years (3×5 Years) as per GS4GG total crediting period which is less than the total crediting period of CPA (21 years).

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

ReNew Wind Energy (AP) Private Limited is the project proponent (PP) of project activity and have the legal right to control and operate the project activities.

The project ownership has been demonstrated through below supporting documents:

1. **Commissioning certificates** – The letter from respective State Nodal Agency to ReNew Wind Energy (AP) Private Limited for commissioning of generation facility (WTGs) indicates that, ReNew Wind Energy (AP) Private Limited (PP) have the legal right to control and operate the project activities.

⁶ https://cdm.unfccc.int/ProgrammeOfActivities/poa_db/H8ZL9NPDCF0B76JQM5XVTGKI1YU4AO/viewCPAs

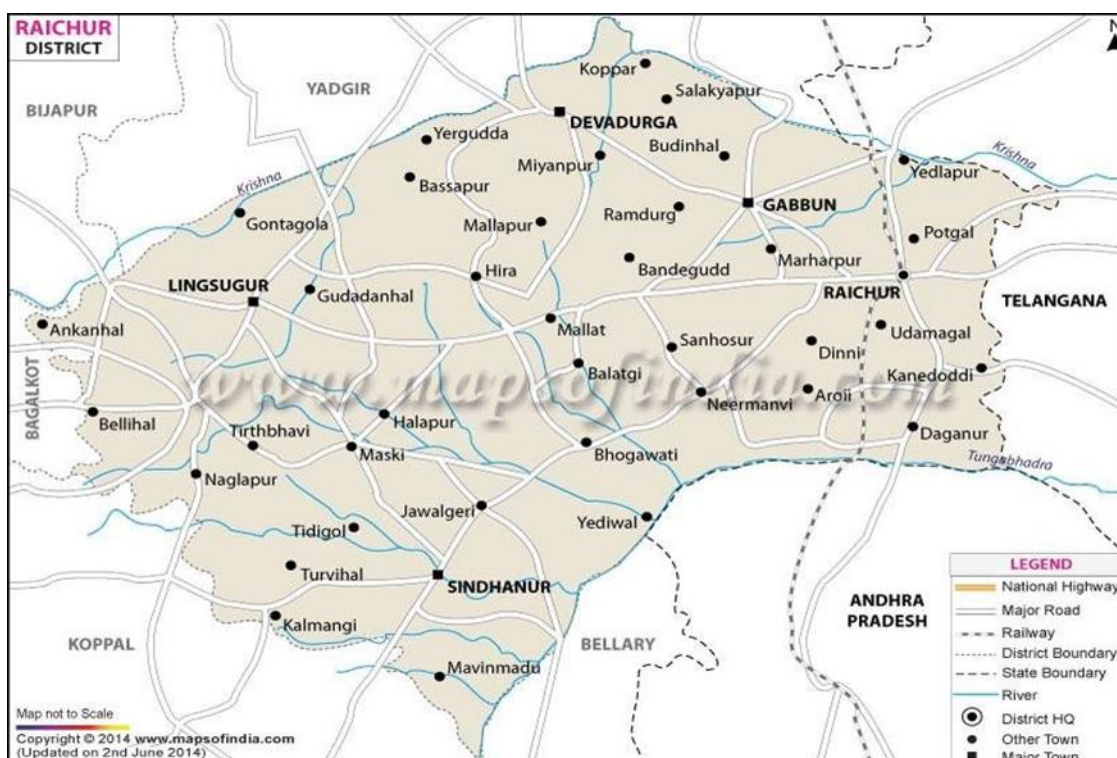
⁷ https://cdm.unfccc.int/ProgrammeOfActivities/cpa_db/GWOZ1XYMI984UEK7BQVJS5A6P2TLNC/view

2. **Contract with EPC contractor** – The purchase order on the name of ReNew Wind Energy (AP) Private Limited indicates that PP have the legal right to control and operate the project activities.

A.2 Location of project

Host Country: India
State: Karnataka
District: Raichur
Village: Khota, Hire Hesurur, Chikehesurur, Amaravathi, Basapur village/s

The location of the project activity has been highlighted in the map shown below:



Location details of the WTGs are mentioned below:

SL NO	LOCATION	Latitude	Longitude
1	GLG211	16°7'37"N	76°37'44"E
2	GLG55	16°7'21"N	76°37'37"E
3	GLG186	16°7'57"N	76°37'18"E
4	GLG113	16°8'27"N	76°37'23"E
5	GLG208	16°8'13"N	76°37'17"E
6	GLG112	16°8'37"N	76°37'22"E
7	GLG111	16°8'47"N	76°37'21 E
8	GLG110	16°8'56"N	76°37'25"E
9	GLG109	16°9'5"N	76°37'24"E
10	GLG227	16°9'15"N	76°37'24"E
11	GLG56	16°7'5"N	76°37'38 E
12	GLG169	16°6'47"N	76°37'31 E
13	GLG223	16°6'30"N	76°37'6" E

14	GLG148	16°6'21"N	76°37'5" E
15	GLG171	16°6'0"N	76°37'3" E
16	GLG165	16°5'46"N	76°37'6" E
17	GLG221	16°5'29"N	76°37'15 E
18	GLG160	16°5'16"N	76°37'10 E
19	GLG152	16°5'1"N	76°37'1" E
20	GLG207	16°4'52"N	76°36'59" E

A.3 Technologies and/or measures

The total installed capacity of the project is 40 MW, which comprises of 20 Wind Turbine Generators (WTGs) in Karnataka. The WTGs used in the project activity are of Gamesa Wind Turbines Private Limited.

Technical specifications of WTG model: Gamesa make G-97/2000 kW

Particulars	Details
WTG Make	Gamesa Wind Turbines Private Limited
Rated Power	2000 KW
Cut-in-wind speed	3 m/s
Cut-out wind speed	25 m/s
Rotor Diameter	97 m
Operational range of Rotor Speed	9.83 – 17.79 rpm
Turbine type	Horizontal axis turbine with variable rotor speed
Gear Box Type	Planetary helical gearbox
Hub Height	104 m
Orientation	Up-wind
No. of blades	3
Blade material	Fibre glass epoxy reinforced
Braking	Active Hydraulic Brake
Rated wind speed	~ 10.5 m/s
Tower	104 m

Technical lifetime of the WTGs is 25 years⁸.

Technology Transfer

No technology transfer from other countries is involved in the project.

The project activity is a Voluntary initiative by the PP and is contributing to the SDG goals set forth by GS as detailed below:

⁸ As per standard industry practice.

1- SDG 7– Ensure access to affordable, reliable and modern energy for all- 81,142 MWh/year

2- SDG 8– Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all- 1 training/annum and employment to 10 persons shall be provided.

3- SDG 13– Take urgent action to combat climate change and its impact- 72,784 tCO₂e/annum (for First Crediting Period) and 75,502 tCO₂e/annum for Second Crediting Period.

The commissioning dates of WTGs are shown below:

WTG ID	Date of Commissioning
GKL-11,12,13,14,15,16,17,18,19,20	31/12/2015
GKL-21,22,23,24,25,26,27,28,29,30	31/12/2015

A.4 Scale of the project

The project is a large scale project utilizing Wind Turbine Generators (WTGs) to generate electricity. The project activity is using UNFCCC methodology and the total installed capacity of the project is 40 MW, thus falls under large scale category.

As per section 3.1.3 of 202-GS4GG-Renewable-Energy-Activity-Requirements-v1.2, this renewable project estimates issuing emission reductions greater than 10,000 tCO₂eq, thus the project falls under Non Microscale categories.

A.5 Funding sources of project

There is no public funding from Annex 1 countries and no diversion of Official Development Assistance (ODA) involved in the project activity.

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

Reference: The project activity meets the eligibility criteria of large scale project as it is more than 15 MW

Methodology: ACM0002: Grid-connected electricity generation from renewable sources - Version 20.0⁹

Type I: Energy industries (renewable / non-renewable sources)

Category: Approved Consolidated Methodology (ACM0002)

Tools referred with above methodology and applicable for project activity are:

- Tool to calculate the emission factor for an electricity system¹⁰- Version 07.0 (EB 100, Annex 04)
- Tool for the demonstration and assessment of additionality¹¹- Version 07.0.0 (EB 70, Annex 08)
- Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period, Version 03.0.1¹²

The project is applying for combined transition and renewal for second crediting period.

B.2. Applicability of methodology (ies)

The project activity is Grid connected renewable power generation and meets the applicability conditions of the chosen methodology as follows:

The project activity involves generation of grid connected electricity from renewable wind energy. The project activity has an installed capacity of 40 MW which will qualify for a large GS4GG project activity under large scale methodologies. The project status is corresponding to the methodology ACM0002, version 20.0 and applicability of methodology are discussed below:

Applicability of ACM0002, Version 20.0

Applicability	Project activity vis-à-vis applicability Conditions
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⁹ <https://cdm.unfccc.int/methodologies/DB/XP2LKUSA61DKUQC0PIWPGWWDN8ED5PG>

¹⁰ <http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v7.0.pdf>

¹¹ <http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-01-v7.0.0.pdf>

¹² <https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-11-v3.0.1.pdf>

This methodology is applicable to grid-connected renewable power generation project activities that: - Install a Greenfield power plant; - Involve a capacity addition to (an) existing plant(s); - Involve a retrofit of (an) existing operating plants/units; - Involve a rehabilitation of (an) existing plant(s)/unit(s) or - Involve a replacement of (an) existing plant(s)/unit(s).	The project activity is a Renewable Energy Project i.e. Wind Power Project which falls under applicability criteria option 1 (a) i.e., "Install a Greenfield power plant". Hence the project activity meets the given applicability criterion.
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 an installation of a new grid connected renewable energy power plant and hence this condition is met.
In the case of capacity additions, retrofits, rehabilitations or replacements (except for wind, solar, wave or tidal power capacity addition projects the existing plant/unit started commercial operation prior to the start of a minimum historical reference period of five years, used for the calculation of baseline emissions and defined in the baseline emission section, and no capacity expansion, retrofit, or rehabilitation of the plant/unit has been undertaken between the start of this minimum historical reference period and the implementation of the project activity;	The project activity does not involve any capacity additions, retrofits or replacements and therefore this condition is not applicable.
In case of hydro power plants, one of the following conditions shall apply: - The project activity is implemented in existing single or multiple reservoirs, with no change in the volume of any of the reservoirs; or - The project activity is implemented in existing single or multiple reservoirs, where the volume of the reservoir(s) is increased and the power density calculated using equation (3), is greater than 4 W/m²; or - The project activity results in new single or multiple reservoirs and the power density, calculated	The project activity is a grid connected renewable wind energy project. This condition is applicable only for hydro power plants and not applicable for wind projects. Therefore this condition is not applicable for project activity.

using 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 for 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 4 W/m²; ii) Water flow between reservoirs is not used by any other hydropower unit which is not a part of the project activity; iii) Installed capacity of the power plant(s) with power density lower than or equal to 4 W/m² shall be; a. Lower than or equal to 15 MW; and b. Less than 10 per cent of the total installed capacity of integrated hydro power project.	
In the case of integrated hydro power projects, project participant shall: i) 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 ii) Provide an analysis of the water balance covering the water fed to power units, with all possible combinations of reservoirs and without the construction of reservoirs. The purpose of water balance is to demonstrate the requirement of specific combination of reservoirs constructed under GS4GG project activity for the optimization of power output. This demonstration has to be carried out in the specific scenario of water availability in different seasons to	The project activity is a grid connected renewable wind energy project. This condition is applicable only for hydro power plants and not applicable for wind projects. Therefore this condition is not applicable for project activity.

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 GS4GG project activity.	
Methodology is not applicable to the following: 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/units	The project activity is an installation of a new grid connected renewable energy project and does not involve switching from fossil fuel to renewable energy and hence this criterion is not relevant to the project activity.
In the case of retrofits, rehabilitations, replacements, or capacity additions, this methodology is only applicable if the most plausible baseline scenario, as a result of the identification of baseline scenario, is "the continuation of the current situation, that is to use the power generation equipment that was already in use prior to the implementation of the project activity and undertaking business as usual maintenance".	The project activity is a new grid connected renewable wind energy plant and not a retrofits, replacement or capacity additions and therefore this criterion is not applicable to the project activity.

Tool to calculate the emission factor for an electricity system¹³- Version 07.0 (EB 100, Annex 04)

The Applicability Criteria of the above methodological tool has been demonstrated in the additionality section below.

Applicability Criterion (with Para number reference)	Project Case
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	The project is a grid connected Greenfield Wind power project and thus the tool is applicable.

¹³ <http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v7.0.pdf>

Applicability Criterion (with Para number reference)	Project Case
that results in savings of 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, two sub-options under the step 2 of the tool are available to the project participants, i.e. option IIa and option IIb. If option IIa is chosen, 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.	Steps involved in calculation of Emission Factor is included in section B.4 of the PDD as per the requirement of the tool
In case of GS4GG projects the tool is not applicable if the project electricity system is located partially or totally in an Annex I country.	Project is located in non-Annex I country and hence the tool is applicable
Under this tool, the value applied to the CO ₂ emission factor of biofuels is zero.	The project is a Wind project and there is no involvement of biofuels.

The applicability criteria of Tool 11 - Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period" is shown below:

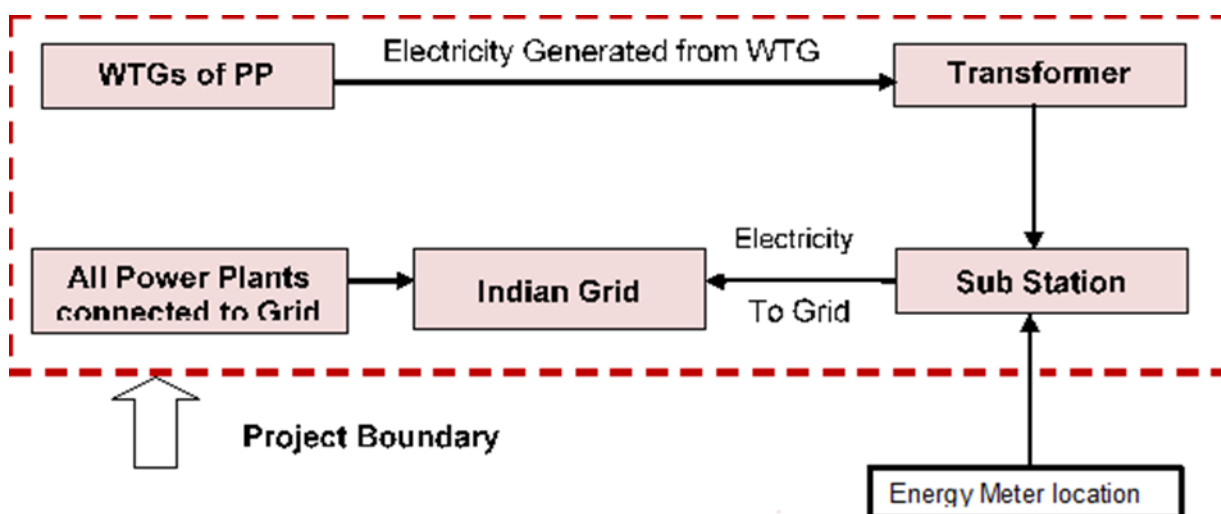
Applicability Criterion (with Para number reference)	Project Case
This tool provides a stepwise procedure to assess the continued validity of the baseline and to update the baseline at the renewal of a crediting period, as required by paragraph 49 (a) of the modalities and procedures of the clean development mechanism.	For this project activity, the baseline hasn't changed so the baseline of First Crediting Period is continued. Hence this criterion is applicable.

Applicability Criterion (with Para number reference)	Project Case
The tool consists of two steps. The first step provides an approach to evaluate whether the current baseline is still valid for the next crediting period. The second step provides an approach to update the baseline in case that the current baseline is not valid anymore for the next crediting period.	For this project activity the First Step is applied as the baseline of First Crediting Period is still valid. Hence this criterion is applicable.

B.3. Project boundary

As per para 20 of baseline methodology ACM0002, version 20.0 "The spatial extent of the project boundary includes the project power plant and all power plants connected physically to the electricity system that the GS4GG project power plant is connected to".

The project boundary includes the WTGs, sub-stations, grid and all power plants connected to grid. The project activity evacuates power to the Unified Indian grid¹⁴. Therefore the entire Unified Indian grid and all connected power plants have been considered in the project boundary for the project activity.



Source	GHGs	Included?	Justification/Explanation
Baseline scenario	Grid	CO ₂ Yes	Main emission source
	Connected	CH ₄ No	Minor emission source
	Electricity	N ₂ O No	Minor emission source

¹⁴ During registration under UNFCCC CDM mechanism, the project activity was connected to Southern Grid of India. Later on all regional grids were synchronized and formed Unified Indian Grid.

Project scenario	Generation			
	Greenfield	CO ₂	No	No CO ₂ emissions are emitted from the project
	Wind	CH ₄	No	No CO ₂ emissions are emitted from the project
	Power			
Project Activity		N ₂ O	No	Project activity does not emit CH ₄

B.4. Establishment and description of baseline scenario

Baseline Scenario

For First Crediting Period:

As this is a Greenfield Project, as per baseline methodology ACM0002, Version 20.0 "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 TOOL07: Tool to calculate the emission factor for an electricity system". As the grid connected power plant are mostly fossil fuel driven, hence electricity generation from fossil fuel power plant would be happened in the absence of this project activity.

For Second Crediting Period:

Updated baseline for the second crediting period in line with the "Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period." Version 03.0.1.

This tool provides a stepwise procedure to assess the continued validity of the baseline and to update the baseline at the renewal of a crediting period, as required by paragraph 283 to 286 of Project Standard version 03.0.

The tool stipulates the following steps to be carried out.

Step 1: Assess the validity of the current baseline for the next crediting period

Step 1.1: Assess compliance of the current baseline with relevant mandatory national and/or sectoral policies

The baseline scenario remains unchanged and is in compliance with all the relevant mandatory national and/or sectoral policies.

Step 1.2: Assess the impact of circumstances

The baseline scenario identified at the validation of the project activity is the 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 into the grid. Thus this project activity was a voluntary investment which intends to replace equivalent amount of electricity at grid from renewable source. PP was not bound to incur this investment; hence absence of project activity (i.e. the investment) does not lead to any continued baseline practice for PP within their scope whereas the continued operation of the project activity continues to replace equivalent

amount of electricity at grid. The same baseline as identified in the first crediting period is still valid for renewal for second crediting period of the project.

Nevertheless, there is an impressive growth attained by the Indian Power Sector within the recent years, the installed capacity has grown from mere 1,713 MW in 1950 to 356,100.20 MW as on 31.03.2018, consisting of 226,279.34 MW Thermal, 77,641.63 MW Renew and 6,780 MW Nuclear. Sector-wise details of installed capacity are shown in Table 1. However, it is evident from table below that the installed capacity is predominantly coal based and therefore, is a major source of carbon dioxide emissions in India. Hence, there exists scope for reducing the CO₂ emissions in the country by increased use of renewable energy sources.

Furthermore, project participant has considered the latest available CO₂ Baseline Database (CEA database, version 17) at the time of requesting renewal of the crediting period for establishing the baseline emission factor, which itself considered all the new circumstances. Hence, the new circumstances do not have an impact on the baseline emission. As per below table, the fossil fuel based thermal power generation is dominant over the renewable based power generation, thus baseline scenario remains same as original.

Table 1: Sector- wise installed capacity (MW) as on 31/03/2021 (CEA Database version 17)

Sector	Thermal					Nuclear	Hydro	RES	Total
	Coal	Lignite	Gas	Diesel	Total				
State	65931.50	1150.00	7087.36	236.01	74404.86	0.00	27069.50	2395.27	103869.64
Central	62570.00	3640.00	7237.91	0.00	73447.91	6780.00	15646.72	1632.30	97506.93
Private	74173.00	1830.00	10598.74	273.70	86875.45	0.00	3493.00	90406.21	180774.66
All India	202674.50	6620.00	24924.01	509.71	234728.22	6780.00	46209.22	94433.79	382151.22

Thus, current baseline remain same and there is no impact if circumstances, existing at the time of requesting renewal of crediting period.

Step 1.3: Assess whether the continuation of the use of current baseline equipment(s) or an investment is the most likely scenario for the crediting period for which renewal is requested

As explained in step 1.2, the baseline scenario was the electricity import/generation from the power plants connected to the electricity grid. The project activity in green field project and there is no any baseline equipment or investment involved in project activity. Therefore this condition is not applicable to the project activity.

Step 1.4: Assessment of the validity of the data and parameters

This step stipulates that "Where emission factors, values or emission benchmarks are used and determined only once for the crediting period, they should be updated, except if the emission factors, values or emission benchmarks are based on the historical situation at the site of the project activity prior to the implementation of the project and cannot be updated because the historical situation does not exist anymore as a result of the CDM project activity."

In the context of the present project activity the emission factor has been updated along with the approach used to calculate the emission factor.

Step 2: Update the current baseline and the data and parameters

As evident from the explanation provided above the baseline scenario remains unchanged. Only the approach used to calculate the baseline emission factor is updated as per the latest version of CEA database available at the time of PDD submission for renewal.

In line with the project standard version 03.0, the impact of new relevant national and/or sectoral policies and circumstances on the baseline taking into account relevant EB guidance with regard to renewal of the crediting period at the time of requesting renewal of crediting period; and the correctness of the application of an approved baseline methodology for the determination of the continued validity of the baseline or its update, and the estimation of emission reductions for the applicable crediting period

Impact of the national and/or sectoral policies and circumstances upon the baseline scenario of the project activity

The Government of India enacted the Electricity Act in the year 2003 to harmonize and rationalize the provisions in the existing laws. The Act consolidated the laws relating to generation, transmission, distribution, trading and use of electricity. With the Enactment of the act, the then existing laws viz, The Indian Electricity Act 1910, The Electricity Supply Act, 1948 and The Electricity Regulatory Commissions Act, 1998 were repealed. The Electricity Act 2003 was in force at the time of the completion of the baseline study for the PDD.

Section 3 of the said act required the Central Government to prepare the national electricity policy and tariff policy, in consultation with the State Governments and the Authority for development of the power system based on optimal utilization of resources such as coal, natural gas, nuclear substances or materials, hydro and renewable sources of energy. In accordance with the section 3 of the Electricity Act 2003, the Central Government notified the National Electricity Policy on 12/02/2005 which was in force at the time of completion of the baseline study as stated in the PDD of the project activity. This policy has not been revised since then and is currently in force as well.

In addition to the above policies, State Electricity Regulatory Commissions (SERCs) have announced preferential tariffs and Indian Renewable Energy Development Agency (IREDA) provides term loan assistance towards establishing biomass power projects. All these fiscal and financial incentives were in force at the time of completion of the baseline study for the PDD of the project activity and still continue to exist.

The state electricity regulatory commission issues tariff order in respect of procurement of power generated from renewables and there is no mandatory national and/or sectoral policies have come into effect that would affect the compliance of the current baseline. Hence, it can be concluded the current baseline complies with all relevant mandatory national and/or sectoral policies that have come into effect after the submission of the project activity for validation and are applicable at the time of requesting renewal of the crediting period.

However, in spite of the financial incentives given by the government to renewable power projects in India the generation from the low cost must run resources connected to the Indian Grid has not increased to such an extent that this would lead to more than

50% contribution from the low cost must run resources towards the total generation from the Indian Grid.

The approved large scale methodology for Grid connected electricity generation from renewable sources, ACM0002 (Version 20), has been used to determine the baseline and the estimation of emission reductions for the applicable crediting period. As referred in the methodology "Tool to calculate the emission factor for an electricity system" (version 07.0) has been used to determine continued validity of the baseline based on combined margin (CM) calculations.

As per latest CEA database, the fossil fuel dominated electricity is more than renewable sector and is continuing with same pattern. In light of the above discussion it is to be concluded that in accordance with relevant guidelines stipulated in the Project Standard version 03.0, national and/or sectoral policies and circumstances had been considered towards formulating the OM & BM baseline scenario. Hence the baseline scenario as applied for the present project activity remains justified.

As per the approved large scale methodology for Grid connected electricity generation from renewable sources, ACM0002 (Version 20) Para 22 "If the project activity is the installation of a Greenfield power plant, the baseline scenario is that the 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 project activity involves setting up of wind project to produce electricity and supply to the grid. In the absence of the project activity, the equivalent amount of power would have been supplied by the Indian grid, which is fed mainly by fossil fuel fired plants.

In the absence of the project activity, the equivalent amount of power would have been drawn from the Indian grid. Hence, the baseline for the project activity is the equivalent amount of power from the Indian grid.

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 publicly available. The CEA database version 17 is the latest available data at the time of PDD submission to VVB for validation, hence same is considered for emission factor calculations for second crediting period. For, first crediting period, CEA Database 07.0 has been used to calculate combined margin emission factor since the same has been used for the same project registered in UNFCCC CDM mechanism.

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

1. 1st Crediting Period:

For First Crediting Period, the emission factor used in CDM Project has been used for this transition project and the emission factor is shown below:

Parameter	Value	Nomenclature	Source
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$EF_{grid,CM,y}$	0.8970 tCO ₂ /MWh	Combined margin CO ₂ emission factor for the project electricity system in year y.	Calculated as the weighted average of the operating margin (0.75) & build margin (0.25) values, sourced from Baseline CO ₂ Emission Database, Version 7.0, January 2012 published by Central Electricity Authority (CEA), Government of India.
$EF_{grid,OM,y}$	0.9515 tCO ₂ /MWh	Operating margin CO ₂ emission factor for the project electricity system in year y.	Calculated as the last 3 year (2008-19, 2009-10 & 2010-11) generation-weighted average, sourced from Baseline CO ₂ Emission Database, Version 7.0, January 2012 published by Central Electricity Authority (CEA), Government of India.
$EF_{grid,BM,y}$	0.7339 tCO ₂ /MWh	Build margin CO ₂ emission factor for the project electricity system in year y.	Baseline CO ₂ Emission Database, Version 7.0, January 2012 published by Central Electricity Authority (CEA), Government of India.

2. 2nd Crediting Period:

For Second Crediting Period, the emission factor as per CEA Database, Version 17. 0 has been used which was the latest database during submission of PDD to VVB. The same has been mentioned below:

Parameter	Value	Nomenclature	Source
$EF_{grid,CM,y}$	0.9305 tCO ₂ /MWh	Combined margin CO ₂ emission factor for the project electricity system in year y.	Calculated as the weighted average of the operating margin (0.75) & build margin (0.25) values, sourced from Baseline CO ₂ Emission Database, Version 17.0, October 2021 published by Central Electricity Authority (CEA), Government of India.
$EF_{grid,OM,y}$	0.9522 tCO ₂ /MWh	Operating margin CO ₂ emission factor for the project electricity system in year y.	Calculated as the last 3 year (2018-19, 2019-20 & 2020-21) generation-weighted average, sourced from Baseline CO ₂ Emission Database, Version 17.0, October 2021 published by Central Electricity Authority (CEA), Government of India.
$EF_{grid,BM,y}$	0.8653 tCO ₂ /MWh	Build margin CO ₂ emission factor for the project electricity system in year y.	Baseline CO ₂ Emission Database, Version 17.0, October 2021 published by Central Electricity Authority (CEA), Government of India.

			Authority (CEA), Government of India.
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B.5. Demonstration of additionality

This project has been registered as a CPA under POA 9416. Since, the same project is being transitioned to GS4GG, there is no change in the additionality of the project. So, the additionality of the project can be referred from the section D.5 of the CPA-DD¹⁵.

B.5.1 Prior Consideration

The Purchase Order date of the project activity is 30/06/2015. The project was submitted for preliminary review on 15/09/2021.

B.5.2 Ongoing Financial Need

The project is seeking transition from UNFCCC CDM mechanism and Design Certification renewal as the project was not financially lucrative considering the low IRR. The investment decision of the project was based on revenue from carbon financing that could boost lower rate of return from the project. The amount of generated electricity sold is the only source of company's income and is central to the project's cash flow.

The generation amount of the project activity since its operation was low compared to the estimated in the IRR of the project activity and the same can be checked with the previous verification of CDM project activity¹⁶. The O&M cost of the project activity has also been increased from the cost considered in the registration time, the CER revenue is the critical in the project activity for positive return and to continue the project, the price 3 euro considered during the registration time, however, the price of carbon credits reduced drastically in last several years¹⁷ and it is less than 1\$ in current market.

These incidents had forbidden the project proponent to realise revenue from sale of GSVER. Jeopardised with the burden of non-revenue realisation from carbon credit the project proponent was unable to cover up the financial requirement in proper schedule, nor could meet up the periodic cost of verification and certification cost.

Further, emergence of COVID further complicated the financial situation of the project proponent and imposed constraints over the project proponents.

The project described investment analysis during registration under UNFCCC CDM mechanism. As the investment analysis was conducted throughout the life cycle of

¹⁵ https://cdm.unfccc.int/ProgrammeOfActivities/cpa_db/GWOZ1XYMI984UEK7BQVJS5A6P2TLNC/view

¹⁶ https://cdm.unfccc.int/PoAIssuance/iss_db/poai328853777/view

¹⁷ <https://carboncredits.com/carbon-prices-today/>

project activity, the same investment analysis is applicable for GS Project Cycle. The summary of investment analysis is given below:

1. Selection of Benchmark:

The benchmark was calculated by adding target inflation rate to default IRR value(Default IRR value for Type 1 project was defined by UNFCCC) to convert nominal value to real value. Default IRR value is 11.10%.

The inflation rate forecast for the ten years is published in Reserve Bank of India (RBI) "Results of the Survey of Professional Forecasters on Macroeconomic Indicators – 33rd Round (7th April, 2015)". The ten year inflation forecast by RBI is 5.5%.

$$\begin{aligned}\text{Benchmark} &= (1+ \text{Expected return on equity (in real terms)}) * (1+\text{inflation rate}) - 1 \\ &= (1+ 11.1\%) * (1+5.5\%) - 1 \\ &= 17.21\%\end{aligned}$$

2. Equity IRR

The Equity IRR was calculated as 10.94% which is smaller than the benchmark value which suggest that the project is dependent on carbon revenue to sustain. Also the sensitivity analysis shows that even with a variation of +10% and -10% of Operation & Maintenance Cost(O&M Cost), Plant Load Factor, Tariff Rate, Project Cost, Interest Rate and Debt Equity Ratio, the equity IRR remains within Benchmark range. It is only with the expected revenue realisation of carbon finance the project financial viability could be attained.

The project is registered in UNFCCC CDM mechanism as a CPA(CPA 9416-P1-0015) under PoA 9416. It has completed verification for the Monitoring Period from 05/08/2016 to 30/09/2019 amounting to 270,883 tCO₂e.

The project is continuing the debt repayment for this project activity. Besides loan, the project was funded with equity also. The power is sold at fixed rate as per PPA. The income from GS certification will be used for loan repayment. Repayment of debt is required in order to sustain the project. Hence the financial need to sustain the project still remains same.

Realisation of carbon revenue is therefore essential to ensure the financial sustainability of the project towards ensuring contribution of sustainable development by the project.

The key development milestone for the project activity is given below:

Date (DD/MM/YYYY)	Activity
12/06/2015	Stakeholder Consultation for CPA inclusion in UNFCCC CDM Mechanism
30/06/2015	Date of Purchase Order
31/12/2015	Earliest date of WTG commissioning.
05/08/2016	Inclusion in UNFCCC CDM Mechanism as a CPA
05/08/2016	Start date of the first crediting period in UNFCCC and Gold Standard
05/08/2016	Start Date of First Monitoring Period in UNFCCC CDM

30/09/2019	End Date of First Monitoring Period in UNFCCC CDM
01/10/2019	Start Date of First Monitoring Period in Gold Standard
04/08/2021	End date of the first crediting period in Gold Standard
05/08/2021	Start date of the second crediting period in Gold Standard
15/09/2021	Submission for Preliminary Review in Gold Standard
02/11/2021	Stakeholder Consultation for GS4GG
30/06/2022	End Date of First Monitoring Period in Gold Standard

Though there are several barriers in front of the project proponent but project proponent has decided to continue the project activity with carbon revenue support as it is contributing clean power in the grid as well as creating job opportunity and provides other economic benefits to neighbouring communities.

It is clearly evident that there has been continuous progress in the project activity hence, carbon revenue is therefore essential to ensure the financial sustainability of the project.

B.6. Sustainable Development Goals (SDG) outcomes

Relevant Target/Indicator for each of the three SDGs

Sustainable Development Goals Targeted	Most relevant SDG Target	SDG Impact
		Indicator (Proposed or SDG Indicator)

Impact- Emission Reductions

Indicator: 13.2.1

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

13.2: Integrate climate change measures into national policies, strategies and planning

Number of countries that have communicated the establishment or operationalization of an integrated policy/strategy/plan which increases their ability to adapt to the adverse impacts of climate change, and foster climate resilience and low greenhouse gas emissions development in a manner that does not threaten food production (including a national adaptation plan, nationally determined contribution, national communication, biennial update report or other)

SDG 7– Ensure access to reliable, affordable, sustainable and modern energy for all	7.2: By 2030, increase substantially the share of renewable energy in the global energy mix	Impact- MWh of renewable energy generations Indicator: 7.2.1 Renewable energy share in the total final energy consumption
SDG 8 – Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all	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 8.6: By 2020, substantially reduce the proportion of youth not in employment, education or training	Impact- Employment generated through project Indicator: 8.5.1 Average hourly earnings of female and male employees, by occupation, age and persons with disabilities Impact- Number of trainings Indicator: 8.6.1 Proportion of youth (aged 15-24 years) not in education, employment or training.

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

SDG Goal	Methodological choices/approaches for estimating the SDG outcome
SDG 7 –Affordable and Clean Energy: Ensure access to affordable, reliable, sustainable and modern energy for all.	Measurement Method: Electricity produced and supplied to the grid is monitored through energy meter. Net electricity generated is obtained from the monthly Form B issued by state electricity board. The other parameters used for net electricity supplied to grid are mentioned in monitoring plan. QA/QC Process: This parameter is monitored monthly and value of parameter is cross checked with monthly invoices. The meters are calibrated on regular frequency.
SDG 8 – Decent Work and Economic Growth: Promote inclusive and sustainable economic growth, employment and decent work for all.	Measurement Method: Training and employment generation is monitored through training records, staff register or letter from O&M contractor for training and employment details or HSE/HR records. QA/QC Process: This parameter is based on records, data and no any QA/QC procedure required. The VVB can confirm this parameter with interview with PP or Site in charge or employees for training and employment generation.

SDG 13 – Climate Action: Take urgent action to combat climate change and its impacts.	Measurement Method: The emission reduction parameter is calculated as product of net electricity supplied to grid and grid emission factor. The grid emission factor is ex-ante parameter and determined based on data obtained from “CO₂ Baseline Database for Indian Power Sector” version 07.0 and CO₂ Baseline Database for Indian Power Sector” version 17.0, published by the Central Electricity Authority, Ministry of Power, Government of India. This is in line with “Tool to calculate the emission factor for an electricity system”, version 7.0. QA/QC Process: This parameter is calculated, and no any QA/QC procedure required.
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Calculation of Baseline Emission

As per the approved consolidated Methodology ACM0002 :

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:

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

Where:

BE_y= Baseline emissions in year y (t CO₂/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 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” (tCO₂/MWh)

As per methodology, combined grid emission factor as per the “Tool to calculate the emission factor for an electricity system” version 07 is used to calculate combined margin grid emission factor as below.

CO₂ Baseline Database for the Indian Power Sector, Version 7.0, January 2012¹⁸ published by Central Electricity Authority (CEA), Government of India has been used for the calculation of emission reduction for first crediting period and CO₂ Baseline Database for the Indian Power Sector, Version 17.0, October 2021¹⁹ published by Central

¹⁸ https://cea.nic.in/wp-content/uploads/baseline/2020/07/user_guide_ver7.pdf

¹⁹ https://cea.nic.in/wp-content/uploads/tpe_cc/2022/02/User_Guide_ver_17_2021.pdf

Electricity Authority (CEA), Government of India has been used for the calculation of emission reduction of Second Crediting Period.

As per Methodological tool: Tool to calculate the emission factor for an electricity system, following six steps have been followed:

- (a) **Step 1:** Identify the relevant electricity systems;
- (b) **Step 2:** Choose whether to include off-grid power plants in the project electricity system (optional);
- (c) **Step 3:** Select a method to determine the operating margin (OM);
- (d) **Step 4:** Calculate the operating margin emission factor according to the selected method;
- (e) **Step 5:** Calculate the build margin (BM) emission factor;
- (f) **Step 6:** Calculate the combined margin (CM) emission factor.

1. For First Crediting Period:

Step 1: Identify the relevant electricity systems

As described in tool "For determining the electricity emission factors, identify the relevant project electricity system. Similarly, identify any connected electricity systems". It also states that "If the DNA of the host country has published a delineation of the project electricity system and connected electricity systems, these delineations should be used". Keeping this into consideration, the Central Electricity Authority (CEA), Government of India has divided the Indian Power Sector into five regional grids viz. Northern, Eastern, Western, North-eastern and Southern.

However since August 2006, however, all regional grids except the Southern Grid had been integrated and were operating in synchronous mode, i.e. at same frequency. Consequently, the Northern, Eastern, Western and North-Eastern grids were treated as a single grid named as NEWNE grid from FY 2007-08 onwards for the purpose of this CO₂ Baseline Database. As of 31/12/2013, the Southern grid has also been synchronised with the NEWNE grid, hence forming one unified Indian Grid. Since the project took Southern grid during registration of UNFCCC CDM as baseline grid, emissions generated due to the electricity generated by the Southern grid as per CM calculations will serve as the baseline for this project for First Crediting Period.

Table: Geographical Scope of Indian Electricity Grid

Northern	Eastern	Western	North-Eastern	Southern
Chandigarh	Bihar	Chhattisgarh	Arunachal Pradesh	Andhra Pradesh
Delhi	Jharkhand	Gujarat	Assam	Karnataka
Haryana	Orissa	Daman & Diu	Manipur	Kerala
Himachal Pradesh	West Bengal	Dadar & Nagar Haveli	Meghalaya	Tamil Nadu
Jammu & Kashmir	Sikkim	Madhya Pradesh	Mizoram	Telangana
Punjab	Andaman & Nicobar	Maharashtra	Nagaland	Puducherry
Rajasthan		Goa	Tripura	Lakshadweep

Uttar Pradesh				
Uttarakhand				

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

Project participants may choose between the following two options to calculate the operating margin and build margin emission factor:

Option I: Only grid power plants are included in the calculation.

Option II: Both grid power plants and off-grid power plants are included in the calculation.

The Project Participant has chosen only grid power plants 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 data required to calculate Simple adjusted OM and Dispatch data analysis OM is not possible due to lack of availability of data to project developers. The choice of other two options for calculating operating margin emission factor depends on generation of electricity from low-cost/ must-run sources. In the context of the methodology low cost/must run resources typically include hydro, geothermal, wind, low cost biomass, nuclear and solar generation.

Share of Must-Run (Hydro/Nuclear) (% of Net Generation)

	2006-07	2007-08	2008-09	2009-10	2010-11
Southern	28.3%	27.1%	22.8%	20.6%	21.0%

Data Source: Central Electricity Authority (CEA) database Version 7.0, January 2012²⁰

The above data clearly shows that the percentage of total grid generation by low-cost/ must-run plants (on the basis of average of five most recent years) for the Southern grid is less than 50% of the total generation. Thus the Average OM method cannot be applied, as low cost/must run resources constitute less than 50% of total grid generation.

²⁰ <https://cea.nic.in/cdm-co2-baseline-database/?lang=en>

The simple OM emission factor 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.

For the simple OM, the simple adjusted OM and the average OM, the emissions factor can be calculated using either of the two following data vintages:

Ex-ante option: If the ex-ante option is chosen, the emission factor is determined once at the validation stage, thus no monitoring and recalculation of the emissions factor during the crediting period is required.

OR

Ex-post option: If the ex-post option is chosen, the emission factor is determined for the year in which the project activity displaces grid electricity, requiring the emissions factor to be updated annually during monitoring.

PP has chosen ex-ante option for calculation of Simple OM emission factor using a 3-year generation-weighted average, based on the most recent data available at the time of submission of the PDD to the VVB for validation.

OM determined at validation stage will be the same throughout the crediting period. There will be no requirement to monitor & recalculate the emission factor during the crediting period.

Step 4: Calculate the operating margin emission factor ($EF_{grid,OM,Simple,y}$) according to the selected method

The operating margin emission factor has been calculated using a 3 year data vintage:

Net Generation in Operating Margin (GWh) (incl. Imports)			
	2008-09	2009-10	2010-11
Southern Grid	127,797	135,774	145,076

Simple Operating Margin (tCO ₂ /MWh) (incl. Imports)			
	2018-19	2019-20	2020-21
Southern Grid	0.9729	0.9415	0.9419

Weighted Generation Operating Margin	
Southern Grid	0.9515

Step 5: Calculate the build margin (BM) emission factor ($EF_{grid,BM,y}$)

As per Methodological tool: "Tool to calculate the emission factor for an electricity system" (Version 07.0, EB 100, Annex 4) para 72:

In terms of vintage of data, project participants can choose between one of the following two options:

(a) Option 1- for the first crediting period, calculate the build margin emission factor ex ante based on the most recent information available on units already built for sample group m at the time of PDD submission to the VVB for validation. For the second crediting period, the build margin emission factor should be updated based on the most

recent information available on units already built at the time of submission of the request for renewal of the crediting period to the VVB. For the third crediting period, the build margin emission factor calculated for the second crediting period should be used. This option does not require monitoring the emission factor during the crediting period.

(b) Option 2- For the first crediting period, the build margin emission factor shall be updated annually, ex post, including those units built up to the year of registration of the project activity or, if information up to the year of registration is not yet available, including those units built up to the latest year for which information is available. For the second crediting period, the build margin emissions factor shall be calculated ex ante, as described in Option 1 above. For the third crediting period, the build margin emission factor calculated for the second crediting period should be used.

Option 1 as described above is chosen by PP to calculate the build margin emission factor for the project activity. BM is calculated ex-ante based on the most recent information available at the time of submission of PDD and is fixed for the entire crediting period.

Build Margin (tCO₂/MWh) (not adjusted for imports)	
	2010-11
Southern Grid	0.7339

Step 6: Calculate the combined margin (CM) emission factor ($EF_{grid,CM,y}$)

As per Methodological tool: "Tool to calculate the emission factor for an electricity system" (Version 07.0, EB 100, Annex 4) para 81:

The calculation of the combined margin (CM) emission factor ($EF_{grid,CM,y}$) is based on one of the following methods:

- (a) Weighted average CM; or
- (b) Simplified CM.

PP has chosen option (a) i.e weighted average CM to calculate the combined margin emission factor for the project activity.

The combined margin emissions factor is calculated as follows:

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

Where:

- $EF_{grid,BM,y}$ = Build margin CO₂ emission factor in year y (tCO₂/MWh)
- $EF_{grid,OM,y}$ = Operating margin CO₂ emission factor in year y (tCO₂/MWh)
- W_{OM} = Weighting of operating margin emissions factor (per cent)
- W_{BM} = Weighting of build margin emissions factor (per cent)

The following default values should be used for W_{OM} and W_{BM} :

Wind and solar power generation project activities: W_{OM} = 0.75 and W_{BM} = 0.25 (owing to their intermittent and non-dispatchable nature) for the first crediting period and for subsequent crediting periods. Since project activity is of Wind power generation, the above weightage has been considered for OM and BM.

$$\begin{aligned}\text{Therefore, } EF_{\text{grid,CM,y}} &= 0.9515 * 0.75 + 0.7339 * 0.25 \\ &= 0.8970 \text{ tCO}_2/\text{MWh}\end{aligned}$$

Baseline emission factor (EF_y)

The baseline emission factor is calculated using the combined margin approach as described in Step 6 above:

$$\text{Therefore, } EF_y = EF_{\text{grid,CM,y}} = 0.8970 \text{ tCO}_2/\text{MWh}.$$

$$\begin{aligned}BE_y &= 81,142 \text{ MWh} \times 0.8970 \text{ tCO}_2/\text{MWh} \\ &= 72,784 \text{ tCO}_2\text{e (Round Down Value)}\end{aligned}$$

2. Second Crediting Period

Step 1: Identify the relevant electricity systems

As described in tool "For determining the electricity emission factors, identify the relevant project electricity system. Similarly, identify any connected electricity systems". It also states that "If the DNA of the host country has published a delineation of the project electricity system and connected electricity systems, these delineations should be used". Keeping this into consideration, the Central Electricity Authority (CEA), Government of India has divided the Indian Power Sector into five regional grids viz. Northern, Eastern, Western, North-eastern and Southern.

However since August 2006, however, all regional grids except the Southern Grid had been integrated and were operating in synchronous mode, i.e. at same frequency. Consequently, the Northern, Eastern, Western and North-Eastern grids were treated as a single grid named as NEWNE grid from FY 2007-08 onwards for the purpose of this CO₂ Baseline Database. As of 31/12/2013, the Southern grid has also been synchronised with the NEWNE grid, hence forming one unified Indian Grid. Since the project supplies electricity to the Third Party buyer through the Indian grid, emissions generated due to the electricity generated by the Indian grid as per CM calculations will serve as the baseline for this project.

Table: Geographical Scope of Indian Electricity Grid

Northern	Eastern	Western	North-Eastern	Southern
Chandigarh	Bihar	Chhattisgarh	Arunachal Pradesh	Andhra Pradesh
Delhi	Jharkhand	Gujarat	Assam	Karnataka
Haryana	Orissa	Daman & Diu	Manipur	Kerala
Himachal Pradesh	West Bengal	Dadar & Nagar Haveli	Meghalaya	Tamil Nadu
Jammu & Kashmir	Sikkim	Madhya Pradesh	Mizoram	Telangana
Punjab	Andaman & Nicobar	Maharashtra	Nagaland	Puducherry
Rajasthan		Goa	Tripura	Lakshadweep
Uttar Pradesh				

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

Project participants may choose between the following two options to calculate the operating margin and build margin emission factor:

Option I: Only grid power plants are included in the calculation.

Option II: Both grid power plants and off-grid power plants are included in the calculation.

The Project Participant has chosen only grid power plants 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 data required to calculate Simple adjusted OM and Dispatch data analysis OM is not possible due to lack of availability of data to project developers. The choice of other two options for calculating operating margin emission factor depends on generation of electricity from low-cost/ must-run sources. In the context of the methodology low cost/must run resources typically include hydro, geothermal, wind, low cost biomass, nuclear and solar generation.

Share of Must-Run (Hydro/Nuclear) (% of Net Generation)

	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
India	15.1%	14.6%	14.3%	14.5%	17.0%	16.5%

Data Source: Central Electricity Authority (CEA) database Version 17.0, October 2021²¹

The above data clearly shows that the percentage of total grid generation by low-cost/ must-run plants (on the basis of average of five most recent years) for the Indian grid is less than 50% of the total generation. Thus the Average OM method cannot be applied, as low cost/must run resources constitute less than 50% of total grid generation.

²¹ https://cea.nic.in/wp-content/uploads/tpe_cc/2022/02/User_Guide_ver_17_2021.pdf

The simple OM emission factor 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.

For the simple OM, the simple adjusted OM and the average OM, the emissions factor can be calculated using either of the two following data vintages:

Ex-ante option: If the ex-ante option is chosen, the emission factor is determined once at the validation stage, thus no monitoring and recalculation of the emissions factor during the crediting period is required.

OR

Ex-post option: If the ex-post option is chosen, the emission factor is determined for the year in which the project activity displaces grid electricity, requiring the emissions factor to be updated annually during monitoring.

PP has chosen ex-ante option for calculation of Simple OM emission factor using a 3-year generation-weighted average, based on the most recent data available at the time of submission of the PDD to the VVB for validation.

OM determined at validation stage will be the same throughout the crediting period. There will be no requirement to monitor & recalculate the emission factor during the crediting period.

Step 4: Calculate the operating margin emission factor ($EF_{grid,OM,Simple,y}$) according to the selected method

The operating margin emission factor has been calculated using a 3 year data vintage:

Net Generation in Operating Margin (GWh) (incl. Imports)			
	2018-19	2019-20	2020-21
INDIAN Grid	995,957	965,009	958,218

Simple Operating Margin (tCO ₂ /MWh) (incl. Imports)			
	2018-19	2019-20	2020-21
INDIAN Grid	0.9603	0.9555	0.9405

Weighted Generation Operating Margin	
INDIAN Grid	0.9522

Step 5: Calculate the build margin (BM) emission factor ($EF_{grid,BM,y}$)

As per Methodological tool: "Tool to calculate the emission factor for an electricity system" (Version 07.0, EB 100, Annex 4) para 72:

In terms of vintage of data, project participants can choose between one of the following two options:

(a) Option 1- for the first crediting period, calculate the build margin emission factor ex ante based on the most recent information available on units already built for sample group m at the time of PDD submission to the VVB for validation. For the second crediting period, the build margin emission factor should be updated based on the most

recent information available on units already built at the time of submission of the request for renewal of the crediting period to the VVB. For the third crediting period, the build margin emission factor calculated for the second crediting period should be used. This option does not require monitoring the emission factor during the crediting period.

(b) Option 2- For the first crediting period, the build margin emission factor shall be updated annually, ex post, including those units built up to the year of registration of the project activity or, if information up to the year of registration is not yet available, including those units built up to the latest year for which information is available. For the second crediting period, the build margin emissions factor shall be calculated ex ante, as described in Option 1 above. For the third crediting period, the build margin emission factor calculated for the second crediting period should be used.

Option 1 as described above is chosen by PP to calculate the build margin emission factor for the project activity. BM is calculated ex-ante based on the most recent information available at the time of submission of PDD and is fixed for the entire crediting period.

Build Margin (tCO₂/MWh) (not adjusted for imports)	
	2020-21
INDIAN Grid	0.8653

Step 6: Calculate the combined margin (CM) emission factor (EF_{grid,CM,y})

As per Methodological tool: "Tool to calculate the emission factor for an electricity system" (Version 07.0, EB 100, Annex 4) para 81:

The calculation of the combined margin (CM) emission factor (EF_{grid,CM,y}) is based on one of the following methods:

- (a) Weighted average CM; or
- (b) Simplified CM.

PP has chosen option (a) i.e weighted average CM to calculate the combined margin emission factor for the project activity.

The combined margin emissions factor is calculated as follows:

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

Where:

- EF_{grid,BM,y} = Build margin CO₂ emission factor in year y (tCO₂/MWh)
- EF_{grid,OM,y} = Operating margin CO₂ emission factor in year y (tCO₂/MWh)
- W_{OM} = Weighting of operating margin emissions factor (per cent)
- W_{BM} = Weighting of build margin emissions factor (per cent)

The following default values should be used for W_{OM} and W_{BM}:

Wind and solar power generation project activities: W_{OM}= 0.75 and W_{BM}= 0.25 (owing to their intermittent and non-dispatchable nature) for the first crediting period and for subsequent crediting periods. Since project activity is of Wind power generation, the above weightage has been considered for OM and BM.

$$\begin{aligned}\text{Therefore, } EF_{\text{grid,CM},y} &= 0.9522 * 0.75 + 0.8653 * 0.25 \\ &= 0.9305 \text{ tCO}_2/\text{MWh}\end{aligned}$$

Baseline emission factor (EF_y)

The baseline emission factor is calculated using the combined margin approach as described in Step 6 above:

$$\text{Therefore, } EF_y = EF_{\text{grid,CM},y} = 0.9305 \text{ tCO}_2/\text{MWh}.$$

$$\begin{aligned}BE_y &= 81,142 \text{ MWh} \times 0.9305 \text{ tCO}_2/\text{MWh} \\ &= 75,502 \text{ tCO}_2\text{e (Round Down Value)}\end{aligned}$$

B.6.2 Data and parameters fixed ex ante

SDG13 (Indicators 13.2.1)

For First Crediting Period

Data/parameter	EF_{grid,OM,y}
Unit	tCO ₂ /MWh
Description	Operating Margin CO ₂ emission factor in year y
Source of data	Calculated from CEA database, Version 7, January 2012 ²²
Value(s) applied	0.9515
Choice of data or Measurement methods and procedures	Calculated as per "Tool to calculate the emission factor for an electricity system, version 07" as per the latest data available for the most three recent years 2008-09, 2009-10 and 2010-11 of Southern Grid. The data is obtained from "CO ₂ Baseline Database for Indian Power Sector" version 7, published by the Central Electricity Authority, Ministry of Power, Government of India.
Purpose of data	For the calculation of the Baseline Emission
Additional comment	This parameter is fixed ex-ante for the entire crediting period.

Data/parameter	EF_{grid,BM,y}
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²² <https://cea.nic.in/cdm-co2-baseline-database/?lang=en>

Unit	tCO ₂ /MWh
Description	Build Margin CO ₂ emission factor in year y
Source of data	Calculated from CEA database, Version 7, January 2012 ²³
Value(s) applied	0.7339
Choice of data or Measurement methods and procedures	Calculated as per "Tool to calculate the emission factor for an electricity system, version 07" as per the latest data available for the most recent year 2010-11 of Southern Grid. The data is obtained from "CO ₂ Baseline Database for Indian Power Sector" version 7, published by the Central Electricity Authority, Ministry of Power, Government of India.
Purpose of data	For the calculation of the Baseline Emission
Additional comment	This parameter is fixed ex-ante for the entire crediting period.

Data/parameter	EF_{grid,CM,y}
Unit	tCO ₂ /MWh
Description	Combined Margin CO ₂ emission factor in year y
Source of data	Calculated from CEA database, Version 7, October 2012 ²⁴
Value(s) applied	0.8970
Choice of data or Measurement methods and procedures	The combined margin emissions factor is calculated as follows: $EF_{grid,CM,y} = EF_{grid,OM,y} * W_{OM} + EF_{grid,BM,y} * W_{BM}$ Where: EF_{grid,BM,y}= Build margin CO₂ emission factor in year y (tCO₂/MWh) EF_{grid,OM,y}= Operating margin CO₂ emission factor in year y (tCO₂/MWh)

²³ <https://cea.nic.in/cdm-co2-baseline-database/?lang=en>

²⁴ <https://cea.nic.in/cdm-co2-baseline-database/?lang=en>

	W_{OM} = Weighting of operating margin emissions factor (%) = 75% W_{BM} = Weighting of build margin emissions factor (%) = 25%
Purpose of data	For the calculation of the Baseline Emission
Additional comment	This parameter is fixed ex-ante for the entire crediting period.

For Second Crediting Period

Data/parameter	EF_{grid,OM,y}
Unit	tCO ₂ /MWh
Description	Operating Margin CO ₂ emission factor in year y
Source of data	Calculated from CEA database, Version 17, October 2021 ²⁵
Value(s) applied	0.9522
Choice of data or Measurement methods and procedures	Calculated as per "Tool to calculate the emission factor for an electricity system, version 07" as per the latest data available for the most three recent years 2018-19, 2019-20 and 2020-21. The data is obtained from "CO ₂ Baseline Database for Indian Power Sector" version 17, published by the Central Electricity Authority, Ministry of Power, Government of India.
Purpose of data	For the calculation of the Baseline Emission
Additional comment	This parameter is fixed ex-ante for the entire crediting period.

Data/parameter	EF_{grid,BM,y}
Unit	tCO ₂ /MWh
Description	Build Margin CO ₂ emission factor in year y

²⁵ https://cea.nic.in/wp-content/uploads/tpe_cc/2022/02/User_Guide_ver_17_2021.pdf

Source of data	Calculated from CEA database, Version 17, October 2021 ²⁶
Value(s) applied	0.8653
Choice of data or Measurement methods and procedures	Calculated as per "Tool to calculate the emission factor for an electricity system, version 07" as per the latest data available for the most recent year 2020-21. The data is obtained from "CO ₂ Baseline Database for Indian Power Sector" version 17, published by the Central Electricity Authority, Ministry of Power, Government of India.
Purpose of data	For the calculation of the Baseline Emission
Additional comment	This parameter is fixed ex-ante for the entire crediting period.

Data/parameter	EF_{grid,CM,y}
Unit	tCO ₂ /MWh
Description	Combined Margin CO ₂ emission factor in year y
Source of data	Calculated from CEA database, Version 17, October 2021 ²⁷
Value(s) applied	0.9305
Choice of data or Measurement methods and procedures	The combined margin emissions factor is calculated as follows: $\mathbf{EF_{grid,CM,y} = EF_{grid,OM,y} * W_{OM} + EF_{grid,BM,y} * W_{BM}}$ Where: EF_{grid,BM,y}= Build margin CO₂ emission factor in year y (tCO₂/MWh) EF_{grid,OM,y}= Operating margin CO₂ emission factor in year y (tCO₂/MWh) W_{OM} = Weighting of operating margin emissions factor (%) = 75% W_{BM}= Weighting of build margin emissions factor (%) = 25%

²⁶ https://cea.nic.in/wp-content/uploads/tpe_cc/2022/02/User_Guide_ver_17_2021.pdf

²⁷ https://cea.nic.in/wp-content/uploads/tpe_cc/2022/02/User_Guide_ver_17_2021.pdf

Purpose of data	For the calculation of the Baseline Emission
Additional comment	This parameter is fixed ex-ante for the entire crediting period.

The project activity is applying for transition and renewal for second crediting period.

B.6.3 Ex ante estimation of SDG Impact

SDG 7: Affordable and Clean Energy

The project activity will generate Affordable and Clean Energy of 81,142 MWh per year. The yearly estimated generation will be same for First and Second Crediting Period.

SDG 8: Decent Work and Economic Growth

The project leads to employment opportunities and provides employment to around 10 persons.

Also, project activity improves the quality of employment by giving training to employee. Thus, 1 training per year will be conducted by the project activity. The number of annual employment and number of training provided will be same for First and Second Crediting Period.

SDG 13 – Climate Action

For a given year, the emission reductions contributed by the project activity (ER_y) is calculated as follows:

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

As it is a greenfield power plant, $EG_{PJ,y} = EG_{facility,y}$

Where:

BE_y	=	Baseline emissions in year y (t CO ₂)
$EG_{PJ,y}$	=	Quantity of net electricity generation supplied by the project plant/unit to the grid in year y in MWh
$EF_{grid,CM,y}$	=	Combined margin CO ₂ emission factor for grid connected power generation in year y

Baseline Emission for First Crediting Period

$$\begin{aligned} BE_y &= 81,142 \text{ MWh/annum} \times 0.8970 \text{ tCO}_2/\text{MWh} \\ &= 72,784 \text{ t CO}_2\text{e/annum} \end{aligned}$$

$$ER_y = BE_y - PE_y - LE_y$$

Where:

$$\begin{aligned} ER_y &= \text{Emission reductions in year y (tCO}_2\text{e)} \\ BE_y &= \text{Baseline emissions in year y (tCO}_2\text{e)} \\ PE_y &= \text{Project emissions in year y (tCO}_2\text{e)} \\ LE_y &= \text{Leakage emissions in year y (tCO}_2\text{e)} \end{aligned}$$

$$\text{Therefore, } ER_y = 72,784 - 0 - 0$$

= 72,784 tCO₂e/annum

Baseline Emission for Second Crediting Period

BE_y = 81,142 MWh/annum x 0.9305 tCO₂/MWh
= 75,502 t CO₂e/annum

$$ER_y = BE_y - PE_y - LE_y$$

Where:

ER_y = Emission reductions in year y (tCO₂e)

BE_y = Baseline emissions in year y (tCO₂e)

PE_y = Project emissions in year y (tCO₂e)

LE_y = Leakage emissions in year y (tCO₂e)

Therefore, ER_y = 75,502 – 0 – 0
= 75,502 tCO₂e/annum

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

SDG 7: Affordable and Clean Energy

For First Crediting Period

Year	Baseline estimate	Project estimate	Net benefit
Year 1	0	81,142	81,142
Year 2	0	81,142	81,142
Year 2	0	81,142	81,142
Year 4	0	81,142	81,142
Year 5	0	81,142	81,142
Total	0	405,710	405,710
Total number of crediting years	5		
Annual average over the crediting period	0	81,142	81,142

For Second Crediting Period

Year	Baseline estimate	Project estimate	Net benefit
Year 1	0	81,142	81,142
Year 2	0	81,142	81,142
Year 2	0	81,142	81,142

Year 4	0	81,142	81,142
Year 5	0	81,142	81,142
Total	0	405,710	405,710
Total number of crediting years	5		
Annual average over the crediting period	0	81,142	81,142

SDG 8: Decent Work and Economic Growth

The project leads to employment opportunities and will provide employment to around 10 persons.

Also, project activity improves the quality of employment by giving training to employee. Thus, 1 training per year will be conducted by the project activity.

SDG 13: Climate Action

The baseline emissions are the product of electrical energy baseline $EG_{PJ,y}$ expressed in MWh of electricity produced by the renewable generating unit multiplied by an emission factor.

For First Crediting Period

Year	Baseline estimate	Project estimate	Net benefit
Year 1	72,784	0	72,784
Year 2	72,784	0	72,784
Year 2	72,784	0	72,784
Year 4	72,784	0	72,784
Year 5	72,784	0	72,784
Total	363,920	0	363,920
Total number of crediting years	5		
Annual average over the crediting period	72,784	0	72,784

For Second Crediting Period

Year	Baseline estimate	Project estimate	Net benefit
Year 1	75,502	0	75,502

Year 2	75,502	0	75,502
Year 2	75,502	0	75,502
Year 4	75,502	0	75,502
Year 5	75,502	0	75,502
Total	377,510	0	377,510
Total number of crediting years	5		
Annual average over the crediting period	75,502	0	75,502

B.7. Monitoring plan

B.7.1 Data and parameters to be monitored

SDG 13 (Indicators 13.2.1)

Data / Parameter	ER_y
Unit	tCO ₂ e/year
Description	Emission reductions achieved per year
Source of data	As per Estimated ER sheet. During the verification, the results shall be obtained from the Actual ER sheet.
Value(s) applied	72,784 (estimated) – For First Crediting Period 75,502 (estimated) – For Second Crediting Period
Measurement methods and procedures	The baseline emissions are the product of electrical energy baseline $EG_{\text{facility},y}$ expressed in MWh of electricity produced by the renewable generating unit multiplied by an emission factor.
Monitoring frequency	As per monitoring period
QA/QC procedures	Not Applicable
Purpose of data	To Monitor the SDG 13 Indicator
Additional comment	Data will be archived in paper & electronic form for two years after the end of crediting period or of the last issuance of VEs for this project activity, whichever occurs later.

SDG 7 (Indicators 7.2.1)

Data / Parameter	EG_{facility, y}
Unit	MWh/year

Description	Quantity of net electricity generation supplied by the project plant/unit in year y in MWh
Source of data	Joint meter reading OR break up sheet provided by DISCOM (referred as 'Form B')
Value(s) applied	81,142 (estimated)– For First and Second Crediting Period both
Measurement methods and procedures	The JMR is usually taken once in month for the bulk/ revenue meter at the common substation as well as at feeder meters. Transmission losses are derived between feeders and substation. JMR gives electricity export, electricity import and losses till metering point at feeders. By using these data net export by the WTGs in the project will be calculated (as in some case net export is not explicitly reported in JMR). Measurement by: electricity meters at feeders Recording: Electronic and paper Recording Frequency: Continuous monitoring and monthly recording Responsibility: The operators/ O&M team will be responsible for measurement Calibration Testing Frequency: Annually Accuracy class of meters: 0.2s/ (as per state regulation) Archiving: Crediting Period + 2 years
Monitoring frequency	Continuous measurement & monthly recording
QA/QC procedures	Cross check measurement results with records for sold electricity – where electricity sale is applicable
Purpose of data	To Monitor the SDG 7 Indicator
Additional comment	Data will be archived in paper & electronic form for two years after the end of crediting period or of the last issuance of VERs for this project activity, whichever occurs later.

SDG 8 (Indicators 8.5.1)

Data / Parameter	Number of employment generation
Unit	Number
Description	Number of people employed directly due to the project activity
Source of data	Plant records or The training records for all the employees/Letter from O&M contractor for employment generation/ VVB interview with employees, local stakeholders etc
Value(s) applied	10 – For First and Second Crediting Period both
Measurement methods and procedures	The total number of persons working in the plant would be checked from the daily attendance sheet available at site.

	This parameter also monitor number of men/women employed by the project activity. The project activity ensures that "equal pay for work of equal value" for both men and women and there is no any discrimination against women. "The employment covers number of men and number of women employed by the project activity. The job is of type temporary/permanent or skilled/unskilled, etc. The actual breakup of the type of employment provided shall be provided at the time of verification. Also it is ensued that peoples will get equal payment for equal work. The payment will be based on work and no any gender inequality for payment for work of equal value". The average hourly earnings of a person is calculated by considering 8 hours per day working as per Indian standards and is depicted below. For e.g, a person is getting a monthly salary of INR 19,500; then his hourly earnings will be calculated as follows: Hourly Income = $19,500 / (30 * 8) = \text{INR } 81.25$. The hourly wages can be checked from the notification from the order published by the Chief Labour Commissioner (Central)²⁸. As per the notification from Chief Labour Commissioner, for semi-skilled workers working in B Category of cities, the daily wage is 625, and accordingly the average hourly earnings come out to be INR 78.12. Thus, it can be justified that, PP is providing the employees/workers with salary/wages higher than the minimum wages as determined by the minimum wages order published by Chief Labour Commissioner (Central). The same can be checked from the salary slips provided. Also, as India is a member of International Labour Organization(ILO), project developer maintains the standards set by ILO²⁹.
Monitoring frequency	Monthly monitoring and annual compilation
QA/QC procedures	The number of persons employed would be mentioned in the plant register, which can be crossed checked with attendance register.

²⁸ <https://clc.gov.in/clc/min-wages>

²⁹ <https://www.ilo.org/global/standards/introduction-to-international-labour-standards/lang--en/index.htm>

	Average hourly earnings of the employees/workers can be checked and calculated from the salary slips.
Purpose of data	To Monitor the SDG 8 Indicator
Additional comment	-

SDG 8 (Indicators 8.6.1)

Data / Parameter	Quality of Employment
Unit	-
Description	Number of trainings provided per year
Source of data	Plant records or the training records for all the employees / VVB interview with employees, etc.
Value(s) applied	Minimum 1 training per year– For First and Second Crediting Period both
Measurement methods and procedures	Together with the technology supplier, the Project organize training for the staff on the technology and the monitoring of the plant operation, and the emergency and safety procedures.
Monitoring frequency	Annual
QA/QC procedures	The training records for all the employees
Purpose of data	To Monitor the SDG 8 Indicator
Additional comment	-

B.7.2 Sampling plan

No sampling is required.

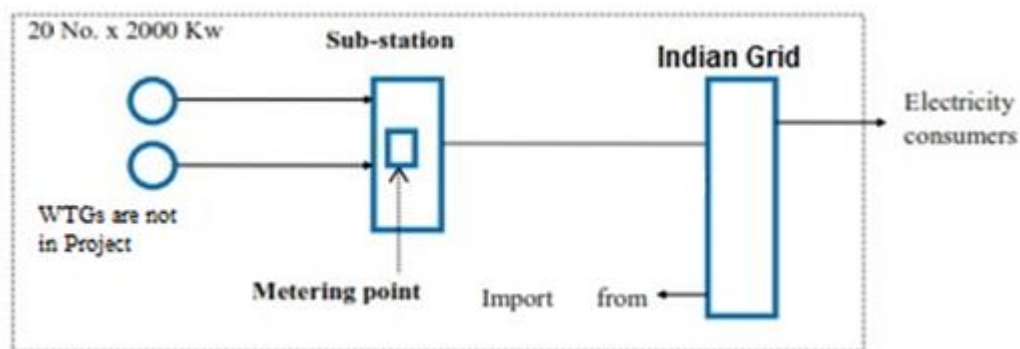
B.7.3 Other elements of monitoring plan

The monitoring team includes PP's employees and O&M contractor's representatives.

Net electricity supplied by the project activity to the grid is calculated from values of form B. Calculated results is cross-checked with records for sold electricity. The JMR is usually taken once in month for the bulk/ revenue meter at the common substation as well as at feeder meters. Transmission losses are derived between feeders and substation. JMR gives electricity export, electricity import and losses till metering point at feeders. By using these data net export by the WTGs in the project activity is calculated (as in some case net export is not explicitly reported in JMR).

The project adhere to all mandatory regulatory and statutory requirements at the state as well as national level. The energy meters installed are tri-vector meters of 0.2% accuracy class.

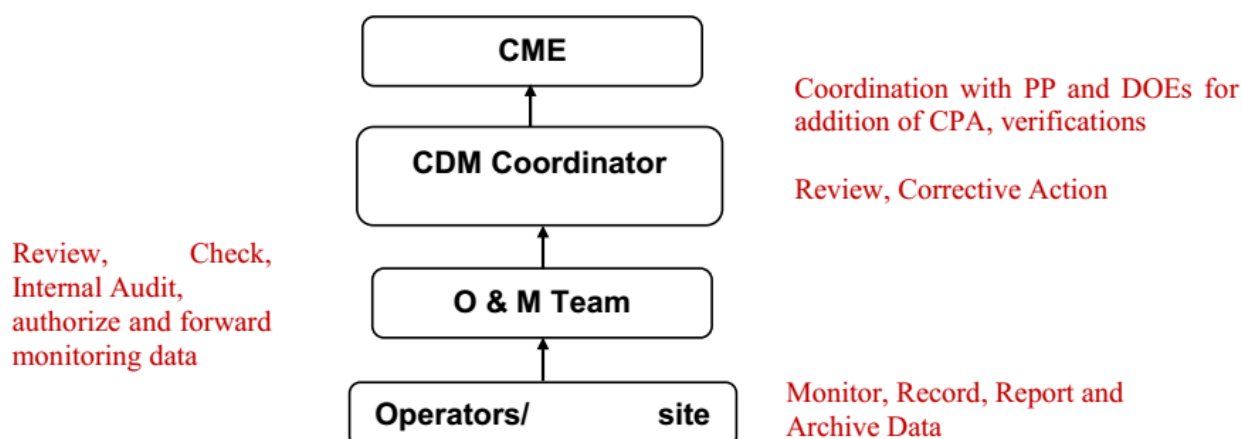
The metering location diagram of this project activity is shown below:



Metering: 10 WTGs are connected in one feeder (main and check meters) and 10 with other feeder (main and check meters) at 33 kV to monitor export and import values from WTG's, both are connected in KPTCL SS, where billing meters are installed for metering. Transmission losses are calculated between SS and feeders (as noted in form B) and net energy export is calculated by

=Export - Transmission loss -115% Import.

The operational and management structure implemented by PP and O&M contractor is as follows:



In some cases, if a particular feeder/ substation has other WTGs not part of this project activity connected through same electricity meter, apportioning is used. Even otherwise, to get WTG/ project owner wise electricity supplied to grid, apportioning is required and is carried out as below.

The meter technical specification are shown below:

Make	Larsen & Toubro Limited
Type	3 Phase 4 Wire
Model	ER300P
Voltage	3×63.5V
Current	-/1A
Meter Constant	135000
Class	0.2s
Pulse Rate	50000 Impulse/kWh & kVARh

Frequency	50 Hz
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Apportioning Procedure

1. In case the start/end dates of monitoring period do not match with the start/end dates of Joint Meter Reading Sheets / Generation reports, following apportioning procedure will be applied for the first and the last monitoring period within a particular crediting period:

Apportioning will be carried out based on ratio of generation data recorded using LCS installed at the each WTG. The emission reductions of that particular period (between the start/end date of monitoring period and the end/start of the billing period) will be calculated based on percentage generation of that particular period at WTG using LCS data multiplied with the total units generated in the month as per the Joint Meter Reading Sheets / Generation report issued. The calculation formula has been furnished below:

Generation from all project WTGs for the period $y1 = EG_{WTGcontroller,i,y1}$

Generation from all project WTGs for the period $y2 = EG_{WTGcontroller,i,y2}$

Net energy supplied used for calculation of emission reduction for the monitoring period $y1$, i.e $EG_{facility,y1} =$

$$N \sum_{i=1} ((EG_{export,i,y2} - EG_{import,i,y2}) * (EG_{WTGcontroller,i,y1} / EG_{WTGcontroller,i,y2}))$$

Where:

$y1$ = No. of days within a billing period up to which generation is considered for emission reduction calculation

$y2$ = No. of days in the billing period

N = No. of feeders to which project WTGs are connected to.

2. Apportioning is not required for meter reading in each month as the WTGs are connected through dedicated feeder. Non-project WTGs are not connected with the same feeder.

The same Monitoring System and Apportioning Procedure is continuing for second crediting period.

SECTION C. DURATION AND CREDITING PERIOD

C.1. Duration of project

C.1.1 Start date of project

30/06/2015. This date corresponds to the date of supply agreement for WTGs of the project activity.

C.1.2 Expected operational lifetime of project

25 Years 00 Months³⁰

C.2. Crediting period of project

C.2.1 Start date of crediting period

Start date of First Crediting Period is 05/08/2016 and start date of Second Crediting Period is 05/08/2021.

C.2.2 Total length of crediting period

5 Years 00 Months for First crediting period and 5 Years 00 Months for Second crediting period.

5 years Renewable cycle is adopted for project activity which can be renewed twice.

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 shown below:

Environmental Safeguard

Data / Parameter	Noise and Shadow Flickering
Unit	-
Description	The noise and shadow produced due to operation of wind power plant respect to nearest residential spot
Source of data	Grievance Register
Value(s) applied	-
Measurement methods and procedures	Manual
Monitoring frequency	Once in First Monitoring Period
QA/QC procedures	-
Purpose of data	Analysis of safeguarding principle
Additional comment	-

Data / Parameter	Waste Oil Disposal
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³⁰ <http://www.gcenergy.yolasite.com/resources/catalogue-gamesa-g9x-eng.pdf>

Unit	m ³
Description	Waste oil due to operation and Construction work of plant
Source of data	Plant Log Book
Value(s) applied	-
Measurement methods and procedures	Manual
Monitoring frequency	Once in a Monitoring Period
QA/QC procedures	-
Purpose of data	Analysis of safeguarding principle
Additional comment	-

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?	As per Gold Standard Gender Policy, para 4.2, point (i) "Foundational gender-sensitive requirement – This strengthens Gold Standard's 'do no harm' approach and addresses safeguards to prevent or mitigate adverse impacts on women or men and girls and boys. Such action is mandatory for all projects seeking Gold Standard certification and includes compliance with the gender 'do no harm' safeguards, gender gap analysis and gender sensitive stakeholder consultations." The project is a renewable energy wind project and it is not a gender sensitive project because the project does not adversely impact women or men. PP have HR policy which mention that, they do not differentiate between women and men. PP also conducted stakeholder meeting which was open for participation by all and both men and women had participated in the stakeholder meeting conducted. The HR policy of PP and the stakeholder meeting documents are submitted. Hence, it is established that, there is no gender discrimination by PP and that PP is strictly adhering with their policies.
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Question 2 - Explain how the project aligns with existing country policies, strategies and best practices	India is party to "Convention on the Elimination of All Forms of Discrimination against Women" and the project is aligned with the labour policy. PP have HR policies in place which demonstrate that there is no gender discrimination. Also, PP is following best practices by having anti sexual harassment policy, whistle blower policy and CSR policy in place.
Question 3 - Is an Expert required for the Gender Safeguarding Principles & Requirements?	Expert is not required for the gender safeguarding principles & requirements. As per Gender equality requirements and guidelines V.1.1 and Gender Policy of Gold Standard, the project completes the following gender assessment questions below: 1. Is there a possibility that the Project might reduce or put at risk women's access to or control of resources, entitlements and benefits? No, the project being a wind project does not reduce access to or control of resources for women. Also, the PP have HR policy which clearly mention that women are treated equally. 2. Is there a possibility that the Project can adversely affect men and women in marginalised or vulnerable communities (e.g., potential increased burden on women or social isolation of men)? No, the project does not adversely affect men and women in marginalised or vulnerable communities. Employment opportunities have been provided by the PP to the local people from the nearby villages around the project site which in turn has improved the livelihood and living standards of the local people. 3. Is there a possibility that the Project might not take into account gender roles and the abilities of women or men to participate in the decisions/designs of the project's activities (such as lack of time, child care duties, low literacy or educational levels, or societal discrimination)?

No, the HR policy of PP mentions that all employees are given equal opportunities for betterment irrespective of the gender. The HR policy of PP is submitted.

4. Does the Project take into account gender roles and the abilities of women or men to benefit from the Project's activities (e.g., Does the project criteria ensure that it includes minority groups or landless peoples)?

Yes, the project takes into account gender roles and abilities of women/men. PP has provided employment to both the genders without any discrimination. Also, the HR policy of PP mentions that all employees are given equal opportunities for betterment irrespective of the gender.

5. Does the Project design contribute to an increase in women's workload that adds to their care responsibilities or that prevents them from engaging in other activities?

No, the project activity does not contribute to increase in women's workload. The HR policy of PP mentions that all employees are given equal opportunities and also there is no discrimination. PP also have Anti sexual harassment policy for prevention of any sexual harassment and thus it can be justified that the project contributes towards increased participation of women workload and promotes their active participation.

6. Would the Project potentially reproduce or further deepen discrimination against women based on gender, for instance, regarding their full participation in design and implementation or access to opportunities and benefits?

No, the project will not potentially reproduce or it will not deepen discrimination against women based on gender. The HR policy of PP mentions that all employees are given equal

	opportunities for betterment irrespective of the gender. Thus it can be justified that, the project contributes towards increased participation of women workload and promotes their active participation. 7. Would the Project potentially limit women's ability to use, develop and protect natural resources, taking into account different roles and priorities of women and men in accessing and managing environmental goods and services? No, the project will not limit women's ability to use, develop and protect natural resources. The HR policy of PP mentions that all employees are given equal opportunities for betterment irrespective of the gender. 8. Is there a likelihood that the proposed Project would expose women and girls to further risks or hazards? No, the project activity will not expose women and girls to further risk or hazards. The project does not involve in generation of Hazardous and Non-hazardous Waste. Standard health & safety procedures are followed at site during operation and maintenance. PP follows the National Policy on Safety, Health and Environment at work³¹, published by Ministry of Labour and Employment, Government of India.
Question 4 - Is an Expert required to assist with Gender issues at the Stakeholder Consultation?	Expert was not required to assist with Gender issues at the stakeholder consultation. As per para 4.4 of the Gender Policy, the PP had organised a stakeholder consultation meeting for which the local people were invited irrespective of the gender and the locals were invited for the stakeholder meeting through public notice which was

³¹ <https://labour.gov.in/sites/default/files/SafetyHealthandEnvironmentatWorkPlace.pdf>

accessible for both the genders. The stakeholder consultation documents are provided from which it can be seen that there was participation from both the genders. In order to get continuous feedback from the local stakeholders, PP has also placed a grievance register at the site, which is accessible to all irrespective of gender, for recording any grievance/feedback about the project. The comments received in the grievance register, shall be resolved by the team of PP at the earliest.

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

The project is registered under CDM mechanism and a stakeholder consultation meeting for the project was held on 12/06/2015.

However, for developing the project under GS mechanism, the Local stakeholder meeting was conducted and the details of the meeting are provided below.

Date of invitation – 29/09/2021

Date of Meeting – 02/11/2021

Location of Meeting - Project site, Karnataka

In the introductory speech, the representative of ReNew Wind Energy (AP) Private Limited (Project Investor), welcomed the gathering and given a brief about the climate mitigation project activity. Subsequent to the introductory speech, stakeholders were explained about the electricity generation from wind project is an environmental friendly power generation technology contributing to reduction in GHG emissions. They were also explained about the benefits of the wind power projects like, increasing energy availability and improving quality of power and its assistance to the local population by providing employment opportunities to both skilled & unskilled labours.

The Minutes of meeting with commenting sheet from LSH, invitation letter receipt copy are to be submitted to the VVB during validation.

Meeting started with opening speech by representative of project participant. He introduced all guests on dais. The representative of project participant explained Technical aspects of project to stakeholders. He also explained about social, environmental & economic benefits of the project. He also elaborated about carbon mechanism & its requirement for the current project. After the detailed discussions, the session was open for questions from stakeholders.

Summary of comments received

Most of the questions were related to employment opportunities, economic development, benefits from project to villagers and other development activities. The question raised by the villagers are summarised below:

Q: Will the project provide employment opportunities or improve economic development of the area?

A: Yes, the project will provide economic development of the area and will provide employment opportunities to the local people depending upon their skill and qualification.

Q: Will the operation of the plant result in increased temperature in the surroundings?

A: There will be no impact on ambient temperature due to operation of the plant.

Q: How the project activity benefit the villages around the project site and their residents?

A: The project activity will benefit the nearby villagers by providing employment opportunities to local or nearby people and also provides immense opportunity for economic development of the area like increase in business opportunities, improvement in transportation; and various social activities shall help to uplift the standard of living.

Report on consideration of comments received

There were no further comments raised by the stakeholders and they were totally in support for setting up of these kinds of projects in the region. The local stakeholders expressed their support to the project.

The meeting was concluded by vote of thanks to all the participants.

Also, the stakeholder feedback round was initiated after the listing of the project activity at GS4GG.

Stakeholder feedback Round:

The SFR was planned for 60 days. The email was sent to relevant stakeholders like NGOs, DNA officials, Gold Standard officials along with project documents. As a result email had been sent to relevant stakeholders on 06/10/2021 wherein relevant stakeholders had been requested to give their feedback for the project which ended on 05/12/2021, however no any comments received during this period.

The process for the SFR is as follows;

- E mail and Invitations send to relevant stakeholders
- The non-technical summary of project activity along with draft GS4GG PDD submission to relevant stakeholders, GS Public view section web link.
- Grievance Mechanism Feedback/Questions from Stakeholders
- Answers for questions received from stakeholders during online SFR process.

Identification of Stakeholders:

The Stakeholder feedback round was conducted to consider and receive feedback from the possible stakeholders to the project, i.e. NGOs. Apart from these, the stakeholders as identified by Gold Standard Board, i.e. Gold Standard partnered NGOs in India and DNA of India (MoEFCC).

Invitations to Stakeholders:

The Stakeholder feedback round was done online method. Email invitations were sent to GS partnered NGO's and MoEFCC on 06/10/2021. The relevant documents of project activity like GS4GG PDD, project Technical summary were made available during Stakeholder feedback round.

As per GS toolkit, for SFR process physical meeting is not mandatory. Thus online e mail was sent to NGOs, Govt officials, GS personnel etc.

For local stakeholders, public notice has been put at project site on 29/09/2021. Also SFR process are mainly to cover the issues raised during local stakeholder consultation and there were no any negative comments raised during initial physical local stakeholder consultation.

Thus public notice put at project site village and requested the feedback for this project activity as a part of SFR was sufficient and meets the requirement as per GS4GG. This public notice covers all local stakeholders for feedback during SFR process. The public notice has mentioned different feedback methods like the grievance register, telephone access, internet access so that local stakeholders can give their feedback for the project activity.

Question/Comments session:

No comments/queries were received during the 60 days SFR round from 06/10/2021 to 05/12/2021. Also, there were no comments from the local people during the SFR round of 60 days.

Conclusion:

The SFR round of 60 days was completed and there were no comments received from the stakeholders. Also, there were no comments from the local people during the SFR round of 60 days. Hence, the project meets the requirement as per GS4GG guidelines.

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 placed at the site for the local stakeholders. Global stakeholders can log their grievances through the provided link: https://www.renewpower.in/contact-us . A dedicated committee is formulated to handle the grievances at top priority
GS Contact (mandatory)	help@goldstandard.org

APPENDIX 1 - SAFEGUARDING PRINCIPLES ASSESSMENT

Assessment Questions/ Requirements	Justification of Relevance (Yes/potentially/no)	How Project will achieve Requirements through design, management or risk mitigation.	Mitigation Measures added to the Monitoring Plan (if required)
Principle 1. Human 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		The Project is not in conflict with the economic livelihood of the local community. The Project does not cause any human rights abuse and respects internationally proclaimed human rights issue. Further, the Project meets the local labor law requirements thus does not cause any human rights abuse. India has ratified the United Nations Human Rights Rules and regulations. The India ratified the same as per web link³² given below.	Not applicable

³² http://tbinternet.ohchr.org/_layouts/TreatyBodyExternal/Treaty.aspx?CountryID=79&Lang=EN

participation and inclusion		The project adheres to the host country's commitment to: Universal Declaration of Human Rights (UDHR) International Covenant on Economic, Social and Cultural Rights, India Accession 10/04/79³³ International Covenant on Civil and Political Rights India Accession 10.04.79³⁴	
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		The project being a wind power project does not reduce access to or control of resources for women. Also, the PP have HR policy which clearly mention that women are treated equally. The project does not adversely affect men and women in marginalised or vulnerable communities. Employment opportunities have been provided by the PP to the local people from the nearby villages around the project site which in turn has improved the livelihood and living standards of the local people.	Not applicable

³³ <http://hrlibrary.umn.edu/research/ratification-india.html> and http://tbinternet.ohchr.org/_layouts/TreatyBodyExternal/Treaty.aspx?CountryID=79&Lang=EN

³⁴ <http://hrlibrary.umn.edu/research/ratification-india.html> and http://tbinternet.ohchr.org/_layouts/TreatyBodyExternal/Treaty.aspx?CountryID=79&Lang=EN

2. Projects shall apply the principles of nondiscrimination, equal treatment, and equal pay for equal work		The HR policy of PP mentions that all employees are given equal opportunities for betterment irrespective of the gender. Projects applies the principles of non-discrimination, equal treatment, and equal pay for equal work. The equitable participation of men and women is followed in the identified tasks/activities. The project activity ensures the participation of women or men in Project activities and they are getting benefits based on pregnancy, maternity/paternity leave, or marital status. These conditions do not limit the access of women or men, as the case may be, to Project participation and benefits. The project activity follows country's national gender strategy or equivalent national commitment to aid in assessing gender risks.	
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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)		Not applicable	
Principle 3. Community Health, Safety and Working Conditions			
1. The Project shall avoid community exposure to increased health risks	No	The project is renewable energy technology (wind power based power generation Technology) and does not have exposure to increased health risks	Not applicable

and shall not adversely affect the health of the workers and the community		and shall not adversely affect the health of the workers and the community. Necessary health and safety measures are taken during construction and operation phase, as well as throughout the operational lifetime of the project activity, also staffs are trained to be able to work with high voltages and occupational health and safety. PP follows the National Policy on Safety, Health and Environment at work ³⁵ , published by Ministry of Labour and Employment, Government of India.	
Principle 4.1 Sites of Cultural and Historical Heritage			
Does the Project Area include sites, structures, or objects with historical, cultural, artistic, traditional or religious values or intangible forms of culture?	No	No cultural heritage is observed on the project site, thus no harm observed. Compliance with India's commitment to International Covenant on Economic, Social and Cultural Rights 10.04.79 will ensure no damage to critical cultural heritage.	Not Applicable
>>			

³⁵ <https://labour.gov.in/sites/default/files/SafetyHealthandEnvironmentatWorkPlace.pdf>

		As per the list of cultural heritage sites in India ³⁶ by UNESCO, it is clear that the project site is not a cultural heritage site.	
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 has received the necessary approvals from the local authorities and does not lead to any resettlement.	Not Applicable
>>		India (the Ministry of Rural development have the "Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act", 2013 ³⁷	
Principle 4.3 Land Tenure and Other Rights			
a. 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	No Expropriation has been conducted on any private land involved in project activity. Land has been utilised by PP directly from the owner of the land through direct negotiation of commercial terms. There has not been involvement of any government agency in the	Not Applicable

³⁶ <http://whc.unesco.org/en/statesparties/in>

³⁷ <https://dolr.gov.in/sites/default/files/Right%20to%20Fair%20Compensation%20and%20Transparency%20in%20Land%20Acquisition%2C%20Rehabilitation%20and%20Resettlement%20Act%2C%202013.pdf>

b. For Projects involving land use tenure, are there any uncertainties with regards to land tenure, access rights, usage rights or land ownership?		acquiring the land. The land is acquired on mutual consent between private land owner and PP, thus there are no any issues of dissatisfaction of private land owner. The Project Developer hold uncontested land title for the entire Project Boundary to complete Project Design Certification. The land rights are with project developers.	
>>			
Principle 4.4 - Indigenous people			
Are indigenous peoples present in or within the area of influence of the Project and/or is the Project located on land/territory claimed by indigenous peoples?	No	The project activity is located is in a peaceful area and free from terrorist activity or threat from indigenous people.	Not Applicable
>>			
Principle 5. Corruption			
1. The Project shall not involve, be complicit in or inadvertently contribute to or reinforce corruption or corrupt Projects		The project is renewable energy technology (wind power based power generation Technology) and does not contribute to or reinforce corruption of any kind. Indulgence in corruption is an illegal activity in the host country and the local labour compliance takes into account of the same.	Not Applicable

		The project abides by the United Nations Convention Against Corruption. India ratification 09.05.11 ³⁸	
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:		Forced labour is an illegal activity in the host country and the local labour compliance takes into account of the same. Further, India is a party to ILO and forced labour is illegal in India. The project does not employ any form of forced or compulsory labour. Employees can quit their Services at any time. The project complies with the Factories Act in India that prohibits forced or compulsory labour³⁹. The project activity does not involve any child labour. There are number of trainings (soft and technical skills) planned for the employees. The agreements are in place for permanent employees.	Not Applicable

³⁸ <http://www.unodc.org/unodc/en/treaties/CAC/signatories.html>

³⁹ <http://www.ilo.org/dyn/natlex/docs/WEBTEXT/32063/64873/E87IND01.htm>

a) Working hours (must not exceed 48 hours per week on a regular basis), AND b) Duties and tasks, AND c) Remuneration (must include provision for payment of overtime), AND d) Modalities on health insurance, AND e) Modalities on termination of the contract with provision for voluntary resignation by employee, AND f) Provision for annual leave of not less than 10 days per year, not including sick and casual leave.		The project prefers the local employment and culture is maintained at project site. The country have strict prohibition for child labour⁴⁰. Thus project does not involve child labour during construction and operation of project activity.	
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⁴⁰ http://www.indianchild.com/child_labour_law_in_india.htm

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			
Principle 6.2 Negative Economic Consequences			
1. Does the project cause negative economic consequences during and after project implementation?	No	The project does not involve any negative impacts and no any potential risk to local economy.	Not Applicable
>>			
Principle 7.1 Emissions			

Will the Project increase greenhouse gas emissions over the Baseline Scenario?	No	The project is renewable energy technology (wind power based power generation Technology) and does not lead any increase in greenhouse gas emissions over the Baseline Scenario.	Not applicable
>>			
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 activity supplies energy to national grid and project activity displaces equivalent quantity of electricity which would have been generated by fossil fuel dominated grid connected power plants. In case project activity draws power from grid, the value is very less and the import power drawn is deducted from power export value and Net Export is considered for GHG emission reduction calculation purpose.	Not applicable
>>			
Principle 8.1 Impact on Natural Water Patterns/Flows			
Will the Project affect the natural or pre-existing pattern of watercourses, ground-water and/or the watershed(s) such as high seasonal flow variability, flooding potential, lack of aquatic connectivity or water scarcity?	No	The project is renewable energy technology (wind power based power generation Technology) and does not affect the natural or pre-existing pattern of watercourses, ground-water and/or the watershed(s).	Not applicable
>>			

Principle 8.2 Erosion and/or Water Body Instability			
a. Could the Project directly or indirectly cause additional erosion and/or water body instability or disrupt the natural pattern of erosion? b. Is the Project's area of influence susceptible to excessive erosion and/or water body instability?	No	The project is renewable energy technology (wind power based power generation Technology) and does not affect Erosion and/or water body stability.	Not applicable
>>			
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 proponent has implemented Environment Health Safety and Social guideline which takes into account the same. The technology supplier for the project also has the environment health safety and social guideline. The same can be referred from the weblink: https://www.siemensgamesa.com/en-int/sustainability/environment The project activity involves barren land and does not involve use of land and soil for production of crops or other products. The project does not involve any landscape modification or soil. Hence there is no any impact of this principle.	Not applicable
>>			

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 is renewable energy technology (wind power based power generation Technology). 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. Thus, this section is Not Applicable.	Not applicable
>>			
Principle 9.3 Genetic Resources			
Could the Project be negatively impacted by or involve genetically modified organisms or GMOs (e.g., contamination, collection and/or harvesting, commercial development, or take place in facilities or farms that include GMOs in their processes and production)?	No	The project is renewable energy technology (wind power based power generation Technology). The Project not be negatively impacted by the use of genetically modified organisms or GMOs. Thus this section is Not Applicable	Not applicable
>>			
Principle 9.4 Release of pollutants			
Could the Project potentially result in the release of pollutants to the environment?	No	The Power generation from wind project is considered in white category that need not required any consent from the	Not applicable

>>		Pollution Control Board⁴¹, as it having zero pollutant release to environment. Further the EHSS guidelines takes into account the same. The project does not lead to release of any hazardous substances that pose threat to the environment. Rather it aims at reducing the air pollution that is prevalent due to use of fossil fuel power plants. The project promotes environmental protection through the use of cleaner technology. The project abides by the stipulations of the Indian Environment Protection Act 1986⁴². There is no noise, no electromagnetic interference and radiation (not to affect transmission systems in the vicinity) and there is no shadow flickering with respect to nearest residential spot from this project activity. Also, as this safeguarding principle is not relevant to the project activity, hence, it is not added as mitigation measures.	
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⁴¹ http://chocmms.nic.in/SPCB_DOCUMENTS/Categorisation.pdf page 3

⁴² <http://envfor.nic.in/legis/env/env1.html>

Principle 9.5 Hazardous and Non-hazardous Waste			
Will the Project involve the manufacture, trade, release, and/ or use of hazardous and non-hazardous chemicals and/or materials?	No	The project is renewable energy technology wind power based power generation Technology). The project does not involve generation of Hazardous and Non-hazardous Waste. Standard procedure is followed at site during operation and maintenance.	Not applicable
>>			
Principle 9.6 Pesticides & Fertilisers			
Will the Project involve the application of pesticides and/or fertilisers?	No	The project is renewable energy technology (wind power based power generation Technology) power generation. There are no any involvement of pesticides and/or fertilisers. Thus this principle is Not Applicable.	Not applicable
>>			
Principle 9.7 Harvesting of Forests			
Will the Project involve the harvesting of forests?	No	The project is renewable energy technology (wind power based power generation Technology) power generation. The project activity developed on barren land and this is not forest area, thus project does not involve any harvesting of forests. Thus this principle is Not Applicable.	Not applicable
>>			
Principle 9.8 Food			
Does the Project modify the quantity or nutritional	No	The project is renewable energy technology (wind power based power	Not applicable

quality of food available such as through crop regime alteration or export or economic incentives?		generation Technology) power generation. The Project does not modify the quantity or nutritional quality of food available. Thus this principle is Not Applicable	
>>			
Principle 9.9 Animal husbandry			
Will the Project involve animal husbandry?	No	The project is renewable energy technology (wind power based power generation Technology) power generation. The Project does not involve animal husbandry. Thus Not Applicable	Not applicable
>>			
Principle 9.10 High Conservation Value Areas and Critical Habitats			
Does the Project physically affect or alter largely intact or High Conservation Value (HCV) ecosystems, critical habitats, landscapes, key biodiversity areas or sites identified?	No	The Project does not affect or alter largely intact or High Conservation Value (HCV) ecosystems, critical habitats, landscapes, key biodiversity areas or sites identified. The project is not located in any HCV areas as per the list of approved HCV areas of India ⁴³ .	Not applicable
>>			
Principle 9.11 Endangered Species			

⁴³ http://wiienvvis.nic.in/WriteReadData/UserFiles/image/PAs_Map_Database/images/karn_envis_2017.jpg

a. Are there any endangered species identified as potentially being present within the Project boundary (including those that may route through the area)? b. Does the Project potentially impact other areas where endangered species may be present through transboundary affects? >>	No	There are no any endangered species identified at project site and also no species have the route through area. The project activity does not impact other endangered species through transboundary affects. The project site is not on the migration route of migratory birds also. The project site is located in Karnataka. It is to be noted that there is no any migratory bird route over the project area. Same is evident from the attached figures of migratory bird route for India. Further, migratory birds fly on very high altitude while height of wind plant will not be more than 75 mtrs. Moreover, the area do not fall under any reserved forest and does not have rare or endangered species. Also, bird guard has been installed to protect bird from WTG. The blade tip of WTGs are painted to alert birds. Below is the link for scientific paper justifying the same. http://wgbis.ces.iisc.ernet.in/energy/water/paper/TR123/section6.htm	Not applicable
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APPENDIX 2- CONTACT INFORMATION OF PROJECT PARTICIPANTS

Organization name	ReNew Wind Energy (AP) Private Limited
Registration number with relevant authority	-
Street/P.O. Box	Golf Course Road, DLF City Phase -V
Building	ReNew Hub, Commercial Block-1
City	Gurugram
State/Region	Haryana
Postcode	122009
Country	India
Telephone	-
E-mail	ishan.nagpal@renew.com
Website	www.renew.com
Contact person	Mr. Ishan Nagpal
Title	General Manager
Salutation	Mr.
Last name	Nagpal
Middle name	-
First name	Ishan
Department	-
Mobile	+91 9560003515
Direct tel.	
Personal e-mail	-

APPENDIX 3- LUF ADDITIONAL INFORMATION

Not Applicable as this project is generating electricity by using wind energy.

APPENDIX 4-SUMMARY OF APPROVED DESIGN CHANGES

Please refer to Design Change [Requirements](#) for more information on procedures governing Design Changes

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