WIND POWER PROJECT IN TAMIL NADU BY GREEN INFRA RENEWABLE ENERGY LIMITED

Project title	Wind Power Project in Tamil Nadu by Green Infra Renewable Energy Limited
Project ID	1904
Monitoring period	01-September-2024 to 28-February-2025 (inclusive of both dates)
Original date of issue	06-January-2025
Most recent date of issue	24-April-2025
Version	02
VCS Standard Version	4.7
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PROJECT DETAILS

1.1 Summary Description of the Implementation Status of the Project

The main purpose of this project activity is to generate clean form of electricity through renewable wind energy source. The project involves installation of 249.9 MW wind power project at Village-Chandragiri, Taluka-Ottapidaram, District-Tuticorin in Tamil Nadu state of India. The wind power project of 249.9 MW capacity consists of 119 Wind Turbine Generators of 2.1 MW capacity each supplied by Suzlon.

Over the 10 years of the first crediting period, the project will replace anthropogenic emissions of greenhouse gases (GHG's) estimated to be approximately 707,515 tCO2e per year, there on displacing 755,246.58 MWh/year amount to electricity from the generation-mix of power plants connected to the Indian grid, which is mainly dominated by thermal/fossil fuel-based power plant.

The details of Wind power project commissioning and their location of installation are mentioned in the table below:

Name of Investor	Capacity (MW)	Commissioning Date	Connection with Grid	State	Usage
Green Infra Renewable Energy Limited	249.9MW	08-October-2018	Indian Grid	Tamil Nadu	Sale to state discom

During the current monitoring period from 01-September-2024 to 28-February-2025 (first and last date included) the project activity has supplied 316,999, MWh of electricity, and thus contributing to the GHG reductions 296,965 tCO_{2e}.

1.2 Audit History

Audit type	Period	Program	Validation/verification body name	Number of years
Joint Validation and Verification	08-October-2018 to 30- November-2019	VCS	LGAI Technological Center, S.A. (Applus+ Certification)	1 year, 1 month, 23 days
Verification	01-December-2019 to 31-January 2021	VCS	TUV SUD South Asia Pvt. Ltd.	1 year 2 months
Verification	01-February -2021 to 31-January-2022	VCS	TUV SUD South Asia Pvt. Ltd.	1 year 0 months
Verification	01-February-2022 to 31-August-2023	VCS	LGAI Technological Center, S.A. (Applus+ Certification)	1 year 7 months

Verification	01-September-2023 to 30- November 2023	VCS	LGAI Technological Center, S.A. (Applus+ Certification)	3 months
Verification	01-December-2023 to 30-April-2024	VCS	Carbon Check India Pvt.Ltd.	5 months
Verification	01-May-2024 to 31-August-2024	VCS	Carbon Check India Pvt.Ltd.	4 months
Verification	01-September-2024 to 28-February-2025	VCS	Ecolance Private Limited	6 months
Total	08-October-2018 to 28-February-2025	-	-	6 years, 4 months, 23 days

1.3 Sectoral Scope and Project Type

Sectoral scope	01-Energy Industries (renewable/non-renewable sources)
Project activity type	Type I – Renewable Energy Projects

Sectoral scope	Not applicable
AFOLU project category	Not applicable
Project activity type	Not applicable

1.4 Project Proponent

Organization name	Green Infra Renewable Energy Limited
Contact person	Ms. Shivanjali Anubhuti Mishra
Title	Assistant Manager
Address	5th Floor, Tower C, Building No. 8, DLF Cybercity, Gurgaon-122002, Haryana, India
Telephone	-
Email	netzero@sembcorp.com

1.5 Other Entities Involved in the Project

At present, Green Infra Renewable Energy Limited is the sole entity involved in the project.

Organization name	NA

Role in the project	NA
Contact person	NA
Title	NA
Address	NA
Telephone	NA
Email	NA

1.6 Project Start Date

Project start date	08-October-2018
Justification	As per the Section 3.8 of the VCS Standard v.4.7, "The project start date of a non-AFOLU project is the date on which the project began generating GHG emission reductions or removals". The project is a non-AFOLU project and the earliest date of interconnection with the grid is 08-October-2018. Hence, the start date of the project is 08-October-2018.

1.7 Project Crediting Period

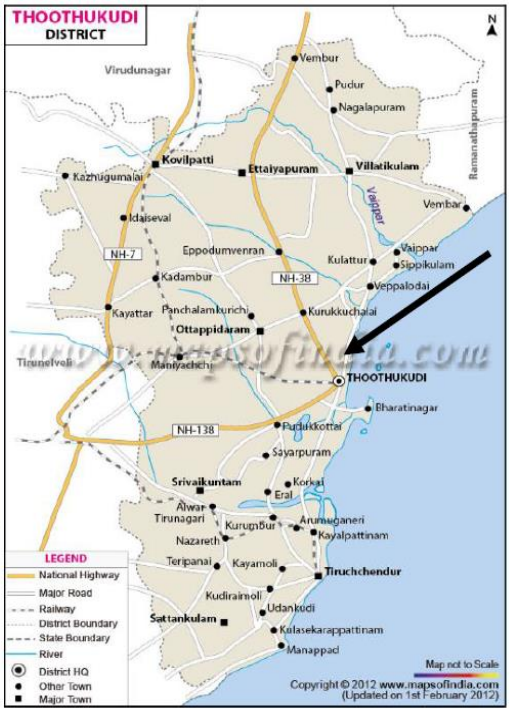
Crediting period	☐ Seven years, twice renewable ☐ Ten years, fixed ☒Other (The crediting period is for 10 years and it can be renewed 2 times. This is as per the registered PD, Section 1.6)
Start and end date of first or fixed crediting period	08-October-2018 to 07-October-2028

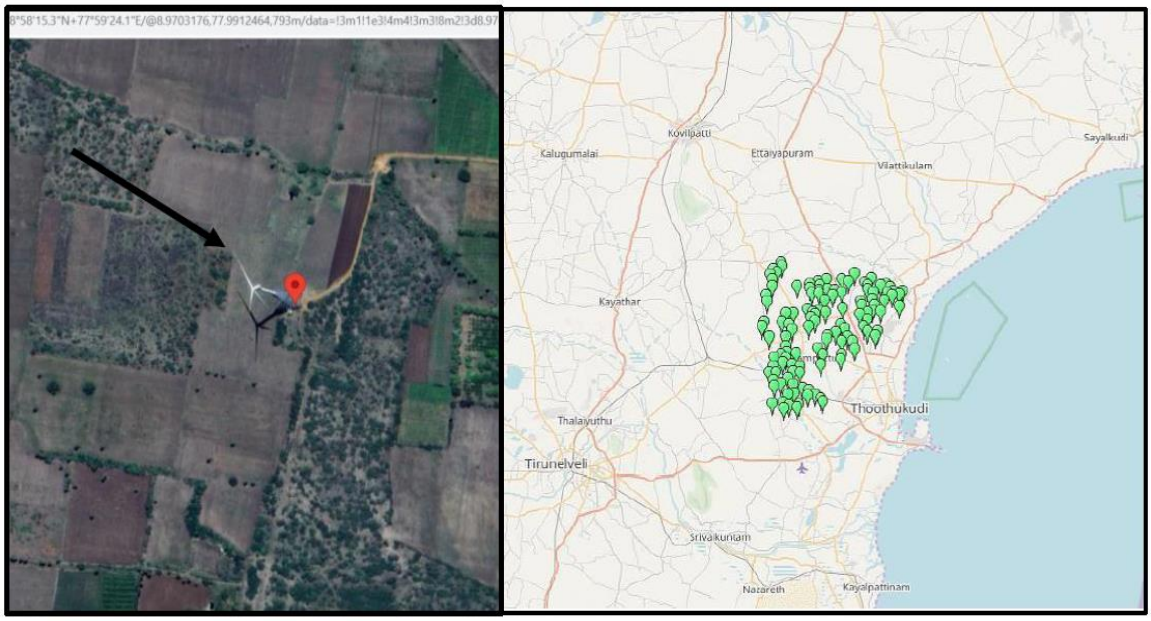
1.8 Project Location

The details of the project locations are mentioned in the table below:

Name of Investor	Project Capacity	State	District	Tehsil/Taluka	Village
Green Infra Renewable Energy Limited	249.9 MW	Tamil Nadu	Tuticorin	Ottapidaram	Chandragiri

The Project locations are shown below:





S.No.	Turbine ID	Latitude N	Longitude E
1	KME011	8° 58’15.31”	77° 59’ 24.10”
2	KME029	8° 59’ 03.20”	77° 59’ 46.18”
3	KUM102	8° 58’ 03.63”	77° 58’ 47.67”

4	KUM104	8° 58’ 43.08”	77° 59’ 47.98”
5	KUM267	8° 58’ 28.14”	77° 59" 01.82”
6	MAN106	8° 50’ 11.63”	77° 59’ 17.99”
7	MAN108	8° 50’ 38.04”	77° 59’ 05.65”
8	MNS076	8° 51’ 00.39”	77° 59’ 53.46”
9	MNS086	8° 49’ 18.40”	77° 59’ 42.85”
10	MNS090	8° 51’ 36.58”	77° 59’ 42.80”
11	MNS095	8° 51’ 25.17”	77° 59’ 11.02”
12	MNS097	8° 50’ 12.85”	77° 58’ 43.42”
13	MNS099	8° 49’ 32.77”	77° 59’ 01.99”
14	MNS100	8° 49’ 03.33”	77° 59’ 07.86”
15	MNS103	8° 47’ 43.39”	77° 59’ 52.87”
16	MNS105	8° 47’ 38.79”	77° 59’ 01.64”
17	MNS120	8° 47’ 15.50”	77° 59’ 57.60”
18	OTA031	8° 53’ 03.28”	77° 58’ 43.08”
19	OTA038	8° 53’ 50.31”	77° 58’ 08.26”
20	OTA067	8° 55’ 51.51”	77° 58’ 32.50”
21	OTA112	8° 57’ 06.12”	77° 59’ 00.90”
22	OTA114	8° 57’ 42.21”	77° 58’ 57.10”
23	OTA120	8° 54’ 11.14”	77° 58’ 58.19”
24	OTA121	8° 54’ 12.12”	77° 59’ 47.16”
25	OTA132	8° 56’ 23.64”	77° 58’ 28.22”
26	KME044	8° 56’ 55.44”	77° 02’ 08.45”
27	KUM128	8° 57’ 05.92”	78° 01’ 00.63”
28	KUM159	8° 57’ 17.60”	78° 02’ 06.15”
29	KUM162	8° 55’ 56.68”	78° 03’ 23.14”
30	KUM164	8° 56’ 47.66”	78° 02’ 52.31”
31	KUM165	8° 57’ 12.98”	78° 02’ 55.51”
32	KUM166	8° 57’ 29.15”	78° 02’ 47.79”
33	KUM211	8° 57’ 42.11”	78° 03’ 30.17”
34	KUM212	8° 56’ 36.86”	78° 04’ 43.40”
35	KUM214	8° 56’ 51.57”	78° 03’ 38.33”
36	KUM215	8° 56’ 21.71”	78° 04’ 02.61”
37	KUM216	8° 56’ 46.77”	78° 04’ 12.51”
38	KUM218	8° 57’ 38.28”	78° 04’ 45.04”
39	KUM249	8° 58’ 09.48”	78° 05’ 48.41”
40	KUM250	8° 57’ 31.54”	78° 05’ 22.18”
41	MAN113	8° 48’ 24.99”	78° 00’ 17.31”
42	MNS041	8° 48’ 24.99”	78° 00’ 30.48”
43	MNS042	8° 48’ 41.57”	78° 02’ 03.46”
44	MNS052	8° 51’ 42.92”	78° 01’ 00.38”
45	MNS054	8° 50’ 12.27”	78° 01’ 18.11”
46	MNS056	8° 50’ 38.03”	78° 01’ 18.98”
47	MNS060	8° 48’ 52.30”	78° 01’ 34.80”
48	MNS061	8° 48’ 05.85”	78° 03’ 00.34”

49	MNS062	8° 48’ 19.66”	78° 01’ 57.07”
50	MNS065	8° 48’ 30.51”	78° 00’ 49.27”
51	MNS067	8° 49’ 12.16”	78° 00’ 44.20”
52	MNS070	8° 50’ 16.07”	78° 00’ 41.36”
53	MNS071	8° 50’ 50.66”	78° 00’ 40.00”
54	MNS073	8° 47’ 49.58”	78° 03’ 10.64”
55	MNS075	8° 51’ 18.96”	78° 00’ 08.16”
56	MNS082	8° 47’ 30.43”	78° 00’ 22.46”
57	MNS085	8° 47’ 34.29”	78° 01’ 11.01”
58	MNS106	8° 49’ 42.79”	78° 00’ 19.20”
59	MNS111	8° 47’ 17.83”	78° 01’ 01.72”
60	OTA020	8° 56’ 29.86”	78° 02’ 51.90”
61	OTA026	8° 55’ 01.46”	78° 02’ 22.36”
62	OTA027	8° 54’ 58.93”	78° 03’ 27.53”
63	OTA046	8° 54’ 14.91”	78° 02’ 32.54”
64	OTA050	8° 54’ 32.46”	78° 02’ 14.19”
65	OTA052	8° 55’ 14.21”	78° 01’ 57.60”
66	OTA053	8° 55’ 47.24”	78° 02’ 33.20”
67	OTA055	8° 56’ 34.17”	78° 02’ 17.36”
68	OTA064	8° 55’ 09.64”	78° 02’ 52.09”
69	OTA069	8° 53’ 51.50”	78° 02’ 00.65”
70	OTA075	8° 54’ 55.49”	78° 00’ 45.44”
71	OTA092	8° 54’ 02.36”	78° 00’ 23.15”
72	OTA093	8° 53’ 36.66”	78° 00’ 37.42”
73	OTA095	8° 51’ 49.15”	78° 00’ 13.41”
74	OTA099	8° 52’ 20.10”	78° 00’ 08.64”
75	OTA100	8° 53’ 03.66”	78° 00’ 10.09”
76	OTA106	8° 54’ 52.06”	78° 00’ 08.03”
77	OTE011	8° 50‟ 48.54”	78° 03‟ 02.78”
78	OTE019	8° 52’ 06.30”	78° 02’ 46.39”
79	OTE021	8° 51’ 38.16”	78° 03’ 09.61”
80	OTE037	8° 52’ 49.71”	78° 03’ 30.01”
81	OTE041	8° 53’ 08.90”	78° 03’ 34.65”
82	OTE047	8° 51’ 16.05”	78° 04‟ 41.90”
83	OTE059	8° 51’ 36.88”	78° 04’ 47.09”
84	OTE061	8° 52’ 37.51”	78° 04’ 43.93”
85	OTE064	8° 53’ 20.02”	78° 04’ 16.09”
86	OTE075	8° 53’ 58.22”	78° 04’ 39.40”
87	OTE076	8° 53’ 42.89”	78° 04’ 57.93”
88	OTE077	8° 53’ 02.86”	78° 05’ 15.45”
89	OTE081	8° 52’ 36.62”	78° 05’ 41.10”
90	OTE082	8° 52’ 04.65”	78° 05’ 50.25”
91	OTE099	8° 55’ 20.34”	78° 04’ 52.06”
92	OTE101	8° 55’ 58.58”	78° 06’ 55.86”
93	OTE102	8° 53’ 51.10”	78° 06’ 31.79”

94	OTE103	8° 53’ 25.35”	78° 06’ 53.58”
95	OTE112	8° 53’ 07.12”	78° 07’ 33.62”
96	OTE113	8° 53’ 25.30”	78° 07’ 42.18”
97	OTE115	8° 54’ 25.20”	78° 06’ 55.30”
98	OTE118	8° 54’ 49.74”	78° 06’ 15.24”
99	OTE120	8° 55’ 33.93”	78° 06’ 22.32”
100	OTE121	8° 55’ 52.05”	78° 06’ 19.17”
101	OTE135	8° 57’ 25.98”	78° 06’ 40.50”
102	OTE136	8° 57’ 11.87”	78° 06’ 53.50”
103	OTE137	8° 56’ 49.55”	78° 06’ 52.20”
104	OTE138	8° 56’ 01.68”	78° 07’ 18.22”
105	OTE140	8° 55’ 31.48”	78° 07’ 28.73”
106	OTE141	8° 55’ 10.22”	78° 07’ 16.50”
107	OTE142	8° 55’ 05.97”	78° 07’ 56.01”
108	OTE151	8° 56’ 43.08”	78° 09’ 03.09”
109	OTE153	8° 55’ 58.45”	78° 08’ 19.87”
110	OTE155	8° 56’ 37.34”	78° 07’ 24.13”
111	OTE157	8° 57’ 08.58”	78° 07’ 56.23”
112	OTE158	8° 57’ 44.31”	78° 07’ 12.67”
113	OTE163	8° 57’ 15.35”	78° 08’ 29.93”
114	OTE164	8° 57’ 02.20”	78° 08’ 49.79”
115	OTE165	8° 56’ 21.97”	78° 08’ 58.28”
116	OTE166	8° 55’ 28.72”	78° 09’ 30.72”
117	OTE172	8° 56’ 26.94”	78° 09’ 32.13”
118	OTE173	8° 56’ 36.76”	78° 08’ 31.97”
119	OTE174	8° 56’ 42.84”	78° 09’ 47.84”

1.9 Title and Reference of Methodology

Type (methodology, tool or module).	Reference ID, if applicable	Title	Version
Methodology	ACM0002	Grid-connected electricity generation from renewable sources	19.0
Tool	Tool 07	Tool to calculate the emission factor for an electricity system	7.0
Tool	Tool 01	Tool for the demonstration and assessment of additionality	7.0

1.10 Double Counting and Participation under Other GHG Programs

1.10.1 No Double Issuance

Is the project receiving or seeking credit for reductions and removals from a project activity under another GHG program?

☐ Yes ☒ No

1.10.2 Registration in Other GHG Programs

Was the project registered or seeking registration under any other GHG programs?

☐ Yes ☒ No

1.11 Double Claiming, Other Forms of Credit, and Scope 3 Emissions

1.11.1 No Double Claiming with Emissions Trading Programs or Binding Emission Limits

Are project reductions and removals or project activities also included in an emissions trading program or binding emission limit? See the *VCS Program Definitions* for definitions of emissions trading program and binding emission limit.

☐ Yes ☒ No

1.11.2 No Double Claiming with Other Forms of Environmental Credit

Has the project activity sought, received, or is planning to receive credit from another GHG-related environmental credit system? See the *VCS Program Definitions* for definition of GHG-related environmental credit system.

☐ Yes ☒ No

1.11.3 Supply Chain (Scope 3) Emissions

Do the project activities affect the emissions footprint of any product(s) (goods or services) that are part of a supply chain?

☐ Yes ☒ No

If yes:

Is the project proponent(s) or authorized representative a buyer or seller of the product(s) (goods or services) that are part of a supply chain?

☐ Yes ☐ No

If yes:

Has the project proponent(s) or authorized representative posted a public statement on their website saying, "Carbon credits may be issued through the Verified Carbon Standard project [project ID] for the greenhouse gas emission reductions or removals associated with [project proponent or authorized representative organization name(s)] [name of product(s) whose emissions footprint is changed by the project activities]."

☐ Yes ☐ No

The Project Activity is a wind power project and does not involve any supply chain involved in the project such as manufacturers, wholesalers, distributers and retailers. So, no indirect upstream and downstream GHG emissions are not involved in the project activity. Thus, the Scope 3 emissions are not applicable in this project activity.

1.12 Sustainable Development Contributions

Ministry of Environment and Forests, 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 activity has generated employment opportunities for the local population in different phases of the project. Manpower requirement is there in erection and operational phase of the renewable energy project. This would result in upliftment of the living standards of the local community.
- Economic well-being: The project is a clean technology investment in the region, which would not have been taken place in the absence of the VCS benefits the project activity will also help to reduce the demand supply gap in the state.
- Technological well-being: The successful operation of project activity would lead to promotion of wind-based power generation and would encourage other entrepreneurs to participate in similar projects.
- Environmental well-being: Wind being a renewable source of energy, it reduces the dependence on fossil fuels and conserves natural resources, which are on the verge of depletion. Due to its zero emission the Project, activity also helps in avoiding significant amount of GHG emissions.

The project activity will generate power using zero emissions. Wind based power generation that helps to reduce GHG emissions and specific pollutants like SOx, NOx, and SPM associated with the conventional thermal power generation facilities.

Table 1: Sustainable Development Contributions

Row number	SDG target	SDG indicator	Net impact on SDG indicator	Current project contributions	Contributions over project lifetime
1	4.3	Project specific indicator: Number of individuals who received any informal training	Implemented activities to increase	Vocational training and project related training with respect to successful implementation of a programme, appropriate methods of conducting monitoring, carrying out maintenance activities etc., was provided. During the current monitoring period 10 trainings were conducted.	The project has contributed to increasing the vocational and relevant skills of at least 50 individuals by providing training related to specific skill building in operations and maintenance activities
2	7.2	7.2.1: Renewable energy share in the total final energy consumption	Implemented activities to increase	About 316,999 MWh renewable electricity has been supplied to Central Grid to Indian Electricity grid during the current monitoring period that helps to increase the renewable energy share in the energy mix.	A total of 4,339,861 MWh renewable electricity will be supplied to the Indian grid by the project activity since commissioning.
3	8.5	8.5.2 Unemployment rate, by sex, age and persons with disabilities	Implemented activities to decrease	The project activity has generated jobs with currently 36 employees including local, non-local people and skilled personnel.	The project has created more than 50 jobs since commissioning,
4	13.0	Tonnes of greenhouse gas emissions avoided or removed	Implemented activities to increase	By generating 316,999 MWh renewable electricity the project has avoided emission of 296,965 tCO_{2e} in the atmosphere.	Since commissioning the project has avoided emission of 4,066,144 tCO_{2e} in the atmosphere.

1.13 Commercially Sensitive Information

No commercially sensitive information has been excluded from the public version of the monitoring report.

2 SAFEGUARDS AND STAKEHOLDER ENGAGEMENT

2.1 Stakeholder Engagement and Consultation

2.1.1 Stakeholder Identification

Stakeholder Identification

Stakeholders associated with the project activity throughout its lifetime are identified at different stages of project development. The stakeholders identified are generally grouped under two categories- directly affected parties, and indirectly affected parties as shown below:

S. No.	Stage	Stakeholder Group	Effect- Direct/Indirect
1	Project conceptualization	• Community representative • Potential end users	Indirect
2	Project Development	• Government representatives (such as village chief, block development officer, MLAs etc.) • Potential investors • Local people who can be employed	Indirect Direct Indirect
3	Project Implementation	• DISCOMs • Stakeholders facing electricity shortages	Direct Indirect

Furthermore, all the stakeholders mentioned above were identified at the project's validation. There has been no change in stakeholder makeup since validation.

Legal or customary tenure/access rights	Not applicable All legal or customary tenure/access rights are with PP. Furthermore, the project activity has no impact on any collective or conflicting rights held by the stakeholders, Indigenous people (IPs), local communities (LCs), or customary rights holders.
Stakeholder diversity and changes over time	Not applicable This is renewable energy project and does no impact on the diversity of the stakeholders.
Expected changes in well-being	There are no significant impacts due to implementation of project activity on air, water, soil quality and ambience are envisaged due to the project activity. Furthermore, wind projects in India have several positive socio-economic impacts: a) Job Creation: Wind energy projects create jobs in various sectors, contributing to local economic growth. b) Economic Growth: These projects contribute to economic growth and community investment. c) Reduced Electricity Rates: Wind energy can reduce electricity rates for project neighbours. d) Health Benefits: Wind turbines help reduce carbon footprints and improve air quality, leading to better health outcomes. e) Educational Opportunities: They provide educational and research opportunities, fostering innovation and knowledge exchange.
Location of stakeholders	No negative impact generated outside/inside of the project boundary. (All stakeholders who will be directly affected by the project activity are included within the project boundary. Further, this project activity does not require the relocation of any stakeholder, Indigenous people, or local communities.)
Location of resources	Not Applicable (In the project activity, neither any territories and resources are owned by the stakeholders, nor they have any customary access)

2.1.2 Stakeholder Consultation and Ongoing Communication

Ongoing consultation	PP follows the following three methods for continuous feedback and ongoing communications with stakeholders during project implementation. These are: a) Grievance box at regional office/project site b) Grievance register maintained at regional office/project site c) A digitized QR code.
Date(s) of stakeholder consultation	20-June-2017
Communication of monitored results	Monitored outcomes are conveyed to the stakeholders in two ways: 1.Through VERRA Website: - PP submits third-party (i.e., VVB) verified monitoring results to VERRA, and once approved, the project documentation is made publicly available on the VERRA webpage for each monitoring period. 2.Through PP regional office: - A copy of all the project related documents and monitoring data (e.g., grievance register) is available at regional offices of the PP, which is accessible to all the stakeholders associated with the project activity.
Consultation records	The LSC records were submitted to VVB at the time of validation and grievance register records for the current monitoring period are submitted to VVB.
Stakeholder input	Stakeholder input/feedback received during LSC and the LSC report for the same had been submitted to the VVB during validation. Furthermore, the stakeholder feedback/grievance received during the current MP, through ongoing consultation mechanism, has been taken care as per the standard procedure adopted by PP, provided in section 2.1.4 of the VCS-MR. There were no major comments from the stakeholders which could impact on the design of the project.

2.1.3 Free, Prior, and Informed Consent

Consent	Before the project commissioning PP had taken appropriate approvals from relevant authorities.
Outcome of FPIC	Not Applicable. The project activity does not affect any type of property rights, and there are no ongoing or unresolved conflicts over property rights, usage, or resources. This project activity does not involve any encroachment on land, people's relocation, or forced physical or economic displacement.

2.1.4 Grievance Redress Procedure

Grievances received	Resolution and outcome
No grievances were received during the current monitoring period	NA

2.1.5 Public Comments

The project was open for public comment from 10-July-2019 to 09-August-2019. No public comment was received during this period.

Summary of comments received	Actions taken
Not Applicable	Not Applicable

2.2 Risks to Stakeholders and the Environment

2.2.1 Management Experience

Green Infra Renewable Energy Limited is a SPV of Sembcorp Industries which has years of experience in implementing wind and solar energy projects. Some of the other projects implemented by Sembcorp industries are VCS1856, VCS1776, GS7152, GS7468. No entity has been newly involved in project design or implementation during the current monitoring period.

2.2.2 Risk assessment

	Risk identified	Mitigation or preventative measure(s) taken
Natural and human-induced risks to stakeholders' wellbeing	Visual and Aesthetics impacts	The layout for the wind turbines has been finalized based on a sitting exercise which has accounted for visual impacts. All the wind turbines have uniform visual characteristics such as colour, size, and design of turbine.
Risks to stakeholder participation	No risk identified	No agricultural activities are undertaken near the project site, The land is purchased through willing seller and willing buyer arrangement and no negative impacts on livelihood could be identified which may pose risk to stakeholders' participation.
Working conditions	Safety of employees at project site	PP has a health and safety policy, and procedure manual in place to ensure favorable working condition.
Safety of women and girls	No risk identified	The project is a wind power project and its day-to-day operations does not involve any interactions with the local community. Hence, there are no safety related concerns for women and girls.
Safety of minority and marginalized groups, including children	No risk identified	There are no marginalized group or minorities present in the local community. No vulnerable communities were identified as mentioned in the ESIA report.
Pollutants (air, noise, discharges to water, generation of waste, and release of hazardous materials and chemical pesticides and fertilizers)	Soil quality (waste/used oil can lead to contamination of soils at site)	The waste/used oil from the turbines and transformer oil is disposed of to an authorized vendor.
	Water Resources & Quality (excessive use of water resources in the	Water required for cleaning is sourced from authorized tankers suppliers during the dry months in order to eliminate dust and insect

	project vicinity leading to their depletion)	build up in the rotor blades. No waste water generation is envisaged from the process
	Noise from wind turbine operation	A noise modelling exercise was carried out for the proposed project using the WindPRO software available for the design and planning of wind farms. The modelling exercise indicates that there will be only a marginal increase in noise levels and there will be no significant impact on the noise levels due to the Project.

2.3 Respect for Human Rights and Equity

2.3.1 Labor and Work

	Risks identified[1]	Mitigation or preventative measure(s) taken
Discrimination	Discrimination on the basis of individual's race, gender, age, disability, ethnicity or cultural affiliation, sexual orientation, belief, educational background, or any other basis.	PP has code of conduct policy in place to prevent discrimination against anyone.
Sexual harassment	Unwelcome acts or behavior (whether directly or by implication)	PP has a prevention of sexual harassment policy in place which is applicable to both permanent and contractual employees.
Gender equity in labor and work	Biasness in hiring, promotions or terminations	PP has fair employment practice policy in place to prevent any such partiality.

[1] The identified risks and commensurate mitigation or preventative measure(s) for forced labor, child labor, and human trafficking, must be inclusive of staff and contracted workers employed by third parties.

Forced labor	No risk identified	PP complies with the core labour standards for the ADB financed portion of the Project by engaging those contractors and other providers of goods and services who do not employ forced labour
Child labor	No risk identified	PP complies with the core labour standards for the ADB financed portion of the Project by engaging those contractors and other providers of goods and services who do not employ child labour
Human trafficking	No risk identified	The PP works with ethical suppliers as per code of conduct policy and no such scenario is envisaged for the project activity.

2.3.2 Human Rights

Risks identified	Mitigation or preventative measure(s) taken
No risk identified	The land required for the project comprises of entirely private land and is purchased on willing seller- willing buyer basis and direct negotiations with the land owners. There are no resettlement and rehabilitation or involuntary resettlement issues related to the project; and no specific / vulnerable group of community is likely to be affected by the project., hence there are no risks to human rights violation identified.

2.3.3 Indigenous Peoples and Cultural Heritage

Risks identified	Mitigation(s) or preventative measure taken
No risk identified	The project does not affect the indigenous people and their cultural heritage as Indigenous communities like tribes, ethnic minorities, aboriginals etc. are not present in the area

2.3.4 Property Right

Risks identified	Mitigation or preventative measure(s) taken

No risk identified	This project does not infringe with property rights and resources. The land required for the project comprises of entirely private land and is purchased on willing seller- willing buyer basis and direct negotiations with the land owners. Hence, there is no need to implement any measures to protect and preserve the property rights of stakeholders, IPs, LCs, and customary rights holders.

2.3.5 Benefit Sharing

Summary of the benefit sharing plan	Not Applicable
Benefit sharing during the monitoring period	Not Applicable

2.4 Ecosystem Health

	Risk identified	Mitigation or preventative measure(s) taken during the monitoring period
Impacts on biodiversity and ecosystems	No risk identified	This project activity does not involve any activity which may negatively impact biodiversity and ecosystem. The locations identified for the WTG do not comprise of any trees or shrubs in the immediate vicinity. Provision of adequate spaces between each turbine for movement of birds which reduces the potential for accidental collision has been provided as per the project site layout plan.
Soil degradation and soil erosion	Dispersion of soil	Temporary paved areas are constructed to be used while refueling the machineries, in case of any accidental spill the soil will be cut and stored securely for disposal with hazardous waste.
Water consumption and stress	Contamination of pond, domestic water run off	Portable toilets are provided with septic tank followed by soak pit. Temporary paved areas are used while refueling the machineries Storage of oil is undertaken on paved impervious surface and secondary containment shall be provided for fuel storage tanks;

2.4.1 Rare, Threatened, and Endangered species

Species or habitat	Not Applicable
Areas needed for habitat connectivity	Not Applicable

	Risks identified	Mitigation or preventative measure(s) taken
Habitats for rare, threatened, and endangered species	Not Applicable	Not Applicable
Areas for habitat connectivity	Not Applicable	Not Applicable

2.4.2 Introduction of species

This project activity neither involve any planting activities nor introduction of species. Hence, not applicable.

Species introduced	Classification	Justification for use	Adverse effects and mitigation
Not Applicable	Not Applicable	Not Applicable	Not Applicable

This project activity does not involve introduction of any species which may be invasive in nature.

Existing invasive species	Mitigation measures to prevent the spread or continued existence of invasive species
Not Applicable	Not Applicable

	Risks identified	Mitigation or preventative measure(s) taken
Invasive species	Not Applicable	Not Applicable

2.4.3 Ecosystem conversion

This project activity does not involve ARR, ALM, WRC or ACoGS activities. Hence, not applicable.

	Risks identified	Mitigation or preventative measure(s) taken
Ecosystem conversion	NA	NA

3 IMPLEMENTATION STATUS

3.1 Implementation Status of the Project Activity

The project activity involves the installation of Wind project. The total installed capacity of the project is 249.9 MW of Wind power project located at Tamil Nadu state in India. Green Infra Renewable Energy Limited promotes the project.

The Project activity is a new facility (Greenfield) and the electricity generated by the project will be exported to the Indian electricity grid. The project will therefore displace an equivalent amount of electricity which would have otherwise been generated by fossil fuel dominant electricity grid. The Project Proponent plans to avail the VCS benefits for the project.

In the Pre-project scenario the entire 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.

The project shall result in replacing annual anthropogenic emissions of greenhouse gases (GHG's)estimated to be approximately 707,515 tCO2e per year, there on displacing 755,246.58 MWh/year amount of electricity from the grid over the 10 years crediting period.

The operational aspect of this project was very smooth during the monitoring period. There was no internal and external hindrance was observed or created by any stakeholders. Schedule maintenance was done properly to achieve the maximum generation.

Although it was observed that the overall plant generation was little lower than forecasted generation. This was mainly due to low wind density during the monitoring period. This also led to the reduction in GHG emissions with respect to estimated reduction (as per PD).

Technology Details –

The technical specification for 2.1 MW Suzlon[6] makes 119 WTG at project site Tamil Nadu is being provided:

WTG Make and Model No.	Suzlon S111-120 -2.1 MW
Generator Type & Rating	Doubly-Fed Induction generator, 2000 kW

Rotor Diameter	111.8m
Hub Height	90 m
Tower Type & Shape	Steel Tubular
Cut-in-wind speed	3.0m/s
Rated wind speed	12.5 m/s
Cut-out wind speed	30.0 m/s (3-second average) 21.0 m/s (10-minute average)

3.2 Deviations

3.2.1 Methodology Deviations

No methodology deviation is applied during the monitoring period.

3.2.2 Project Description Deviations

There is no new project deviation for the current monitoring period.

Previous Deviations:

Deviation #1:

During the previous 5th monitoring period (01-September-2023 to 30- November-2023) following project deviation was considered:

As per the registered PDD the energy meter needs to be calibrated once in 5 years. The energy Meter was calibrated on 25-September-2018 and the due date for the next calibration was 24-September-2023. However, calibration is not conducted till date, hence there is delay in calibration identified during this monitoring period. As per the clause 11.1.1 of the PPA," the metering system shall be tested, maintained and owned by the power producer". The power producer shall get approval from state utility for the calibration of meters, as the entire plant must be shut down for at least 3-4 hrs. The PP has already requested approval via SRDLC Portal, and meters will be calibrated on 27th -28th Feb 2024, if approval received. Since the calibration of meters is not completely under control of PP and hence considered this instance as project deviation during the current monitoring period. The PP addressed the calibration delay applying maximum error to the monitoring parameter for the delayed period in line with the requirements of para 366 (a) of VVS PAs v 03.

However, this project deviation doesn't have an adverse impact in the applicability of the methodology, additionally or the appropriateness of the baseline scenario.

Deviation #2:

During the 6th monitoring period (01-December-2023 to 30-April-2024) following project deviation was considered:

The main meter and check meter which were due to be calibrated on 24-September-2023 were finally calibrated on 27-February-2024. The PP addressed the calibration delay by applying maximum error to the monitoring parameter for the delayed period (01-December-2023 to 27-February-2024) in line with the requirements of para 366 (a) of VVS PAs v 03. Refer appendix 2 for more details.

However, this project deviation doesn't have an adverse impact in the applicability of the methodology, additionally or the appropriateness of the baseline scenario.

3.3 Grouped Projects

Not applicable, as the project is not a grouped project.

3.4 Baseline Reassessment

Did the project undergo baseline reassessment during the monitoring period?

☐ Yes ☒ No

4 DATA AND PARAMETERS

4.1 Data and Parameters Available at Validation

Data / Parameter	$EF_{grid,OM,y}$
Data unit	tCO2/MWh
Description	Operating margin CO2 emission factor for the project electricity system in year y
Source of data	Calculated from CEA database, Version 14, December 2018
Value applied	0.9610 tCO2/MWh
Justification of choice of data or description of measurement methods and procedures applied	Calculated as the last 3 years (2015-16, 2016-17,2017-18) generation-weighted average, sourced from Baseline CO2 Emission Database, Version 14.0, Dec 2018 published by Central Electricity Authority (CEA), Government of India.
Purpose of data	Calculation of baseline emissions

Comments	The above value is fixed and it is same for the entire crediting period.

Data / Parameter	$EF_{grid,BM,y}$
Data unit	tCO_2/MWh
Description	Build margin CO_2 emission factor for the project electricity system in year y
Source of data	Calculated from CEA database, Version 14, December 2018
Value applied	0.8644 tCO2/MWh
Justification of choice of data or description of measurement methods and procedures applied	Baseline CO2 Emission Database, Version 14.0, May 2018 published by Central Electricity Authority (CEA), Government of India.
Purpose of data	Calculation of baseline emissions
Comments	The above value is fixed and it is same for the entire crediting period.

Data / Parameter	$EF_{grid,CM,y}$
Data unit	tCO_2/MWh
Description	Combined margin CO2 emission factor for the project electricity system in year y
Source of data	Calculated as the weighted average of the operating margin (0.75) & build margin (0.25) values, sourced from Baseline CO2 Emission Database, Version 14.0, Dec 2018 published by Central Electricity Authority (CEA), Government of India
Value applied	0.9368 tCO_2/MWh
Justification of choice of data or description of measurement methods and procedures applied	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 (tCO_2/MWh) W_{OM} = Weighting of operating margin emissions factor (%) =75% W_{BM} = Weighting of build margin emissions factor (%) = 25%
Purpose of data	Calculation of baseline emissions
Comments	The above value is fixed and it is same for the entire crediting period.

4.2 Data and Parameters Monitored

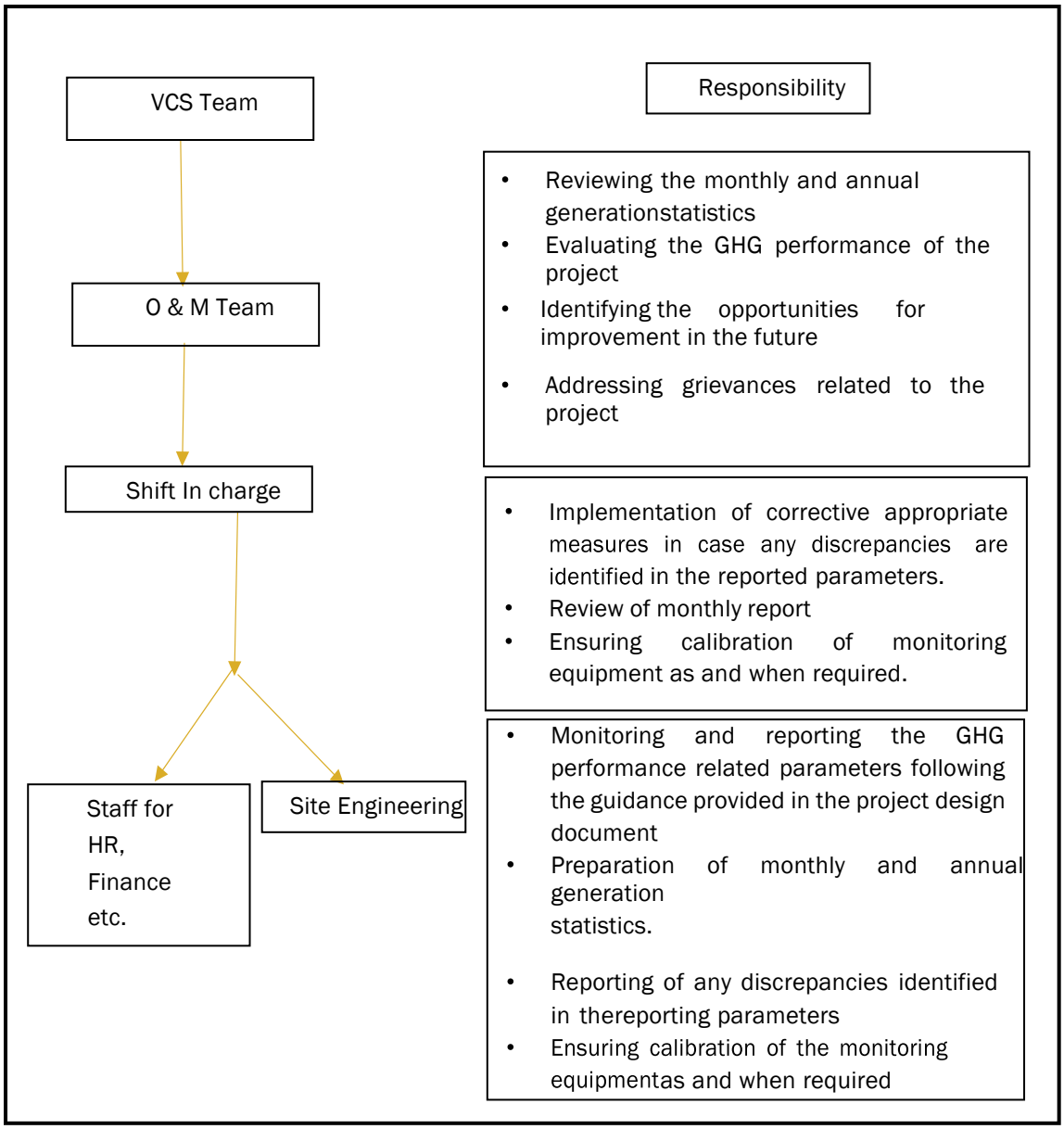
Data / Parameter	$EG_{PJ,y}$
Data unit	MWh
Description	Quantity of net electricity generation supplied by the project plant/unit to the grid in year y in MWh
Source of data	Deviation Settlement account statement issued by Southern Regional Power committee (SRPC)
Description of measurement methods and procedures to be applied	Data Type: Measured Monitoring equipment: Energy meters are used for monitoring. Recording Frequency: Continuous monitoring and monthly recording from energy meters, summarized annually. Archiving Policy: Paper & Electronic Class of meter: 0.2s Calibration frequency: Once in five years. Electricity exported by the project to the grid at project site switch yard is the actual generation recorded and monitored by the metering system installed at the project site switch yard. The metering system comprises of special energy meters (SEMs) installed at the power station, for each generating unit. These are connected via transmission lines of 230 kV, having their own SEM meter (main meter and check meter). In case, anyone transmission line in not in service than complete load will be shifted to other transmission line which is in operation. The energy meters are special energy meters, which are installed and sealed by the Power Grid Corporation of India Limited in the presence of the representatives of the power producer. The check meter shall be used during the period the main metering system is not in service. This can be crosschecked from the monthly invoices raised by the PP which is the scheduled power being feed into the grid. The crosscheck mechanism can be referred from the actual ER sheet. PP submits day ahead power scheduling to SRLDC for every 15 minutes block. Power distribution to consumer is organized by SRLDC. Based on actual energy supplied to grid, deviation settlement account is generated by Southern Region Power Committee (SRPC) every week and the monthly invoice is generated by Green Infra Renewable Energy Limited and it is settled as Deviation Settlement Mechanism issued by SRPC every week.

Frequency of monitoring/recording	Continuous measurement and monthly recording
Value monitored	316,999
Monitoring equipment	Special energy meters (SEMs) of 0.2s accuracy class. Details of the meters including calibration dates is provided under Appendix-1 of this MR.
QA/QC procedures to be applied	The meters are approved, tested & sealed by the State Utility. The meters are in the custody of State Utility. The frequency of calibration is once in 5 years. In the absence or delay in the meter calibration, appropriate guidelines will be applied appropriately to confirm the conservativeness of metering. The metering arrangement, accuracy class of meters, calibration frequency is under control of state electricity board and PP do not have any control on it. PP is getting value of net electricity supplied to grid and the same is considered the monitoring parameter. The billing is raised based on substation meters.
Purpose of the data	Calculation of baseline emissions
Calculation method	-
Comments	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.

4.3 Monitoring Plan

The monitoring plan is developed in accordance with the modalities and procedures for CDM project activities and is proposed for grid-connected wind power project being implemented. The monitoring plan, which will be implemented by the project participant describes about the monitoring organization, parameters to be monitored, monitoring practices, quality assurance, quality control procedures, data storage and archiving.

The authority and responsibility for registration, monitoring, measurement, reporting and reviewing of the data rests with the project participant. PP proposed the following structure for data monitoring, collection, data archiving and calibration of equipment's for this project activity. The team comprises of the following members:



Data Measurement:

The electricity supplied or transmitted is sourced from "Deviation Settlement Account document" and is cross checked from "Monthly Invoices" raised by the PP. "Deviation Settlement Account document" which are publicly available documents issued by the Southern Regional Power Committee. Readings of meters shall be taken on monthly basis by authorized officer of SEB in the presence of PP or representative of PP. Based on the Meter Reading Statement, invoices will be raised. These invoices can be used for cross checking the meter readings taken for the respective project activity.

Data collection and archiving:

The records are checked periodically by the Plant Manager and discussed thoroughly with the plant supervisor. The period of storage of the monitored data will be 2 years after the end of crediting period or till the last issuance of VERs for the project activity whichever occurs later.

Emergency preparedness:

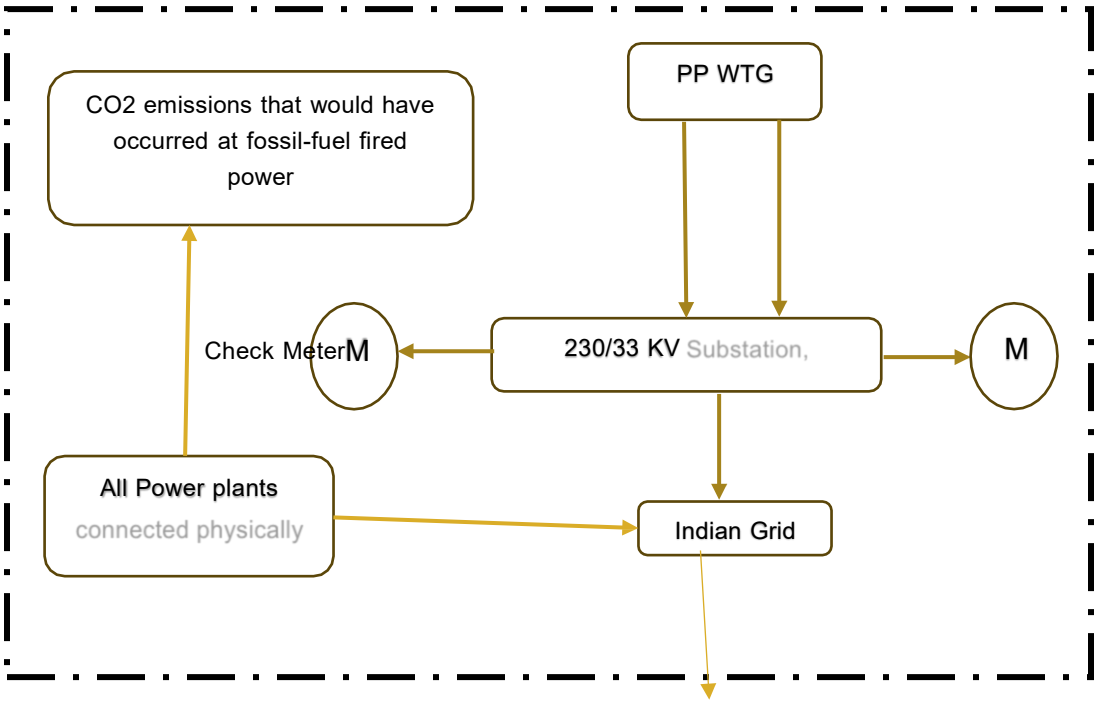
The project activity will not result in any unidentified activity that can result in substantial emissions from the project activity. No need for emergency preparedness in data monitoring is visualized.

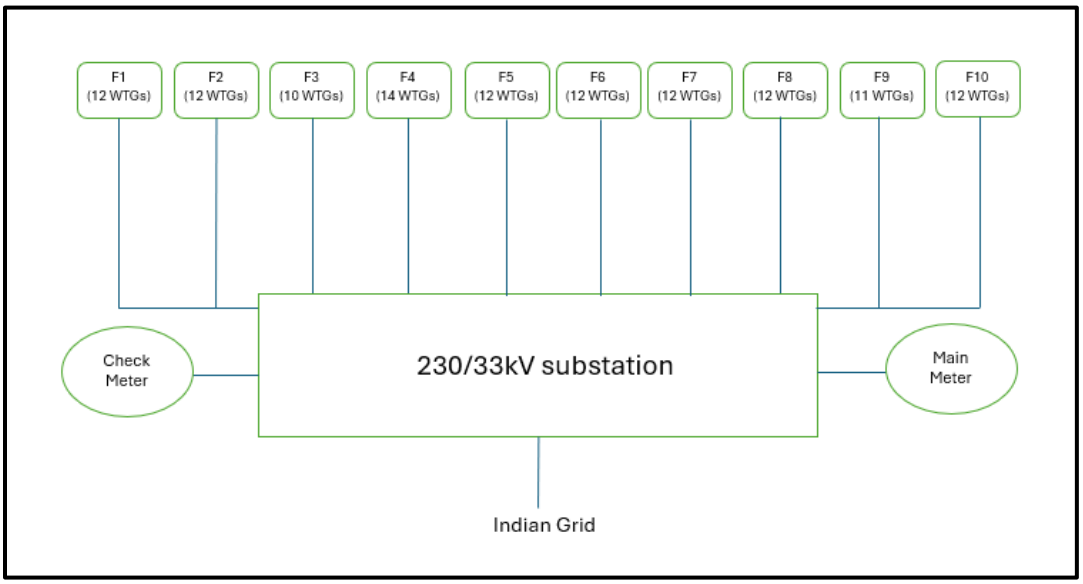
Personnel training:

In order to ensure a proper functioning of the project activity and a properly monitoring of emission reductions, the staff will be trained. The plant helpers will be trained in equipment operation, data recording, reports writing, operation and maintenance and emergency procedures in compliance with the monitoring plan.

Metering Arrangement:

Line diagram with metering arrangement for the wind project activity is shown below:





QA/QC procedures:

The energy meters at the feeders are maintained and owned by state electricity board. Neither the project proponent nor the site personnel have any control over it. The records will be crosschecked with the records of sold electricity to state electricity board. The meters are calibrated by state electricity board at-least once in five years.

The project owner does not conduct any internal audit but cross-checks the generation data, JMR data, and a few other parameters such as WTG downtime, etc internally from time to time. This is mainly to improve the data accuracy and integrity. No non-conformity or variation has been found during the current monitoring period.

5 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

5.1 Baseline Emissions

As per the approved consolidated Methodology ACM0002 (Version 19.0) para 42:

Baseline emissions include only CO_2 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:

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

Where:

BEy= Baseline emissions in year y (tCO_2/yr)

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

$EF_{grid,CM,y}$= Combined margin CO_2 emission factor for grid connected power generation in year y calculated using the latest version of the "Tool to calculate the emission factor for an electricity system" (tCO_2/MWh)

Grid Emission Factor

The grid emission factor is fixed ex-ante in the PD as given below:

Parameter	Value
OM	**0.9610**
BM	**0.8644**
CM	**0.9368**

Therefore,

BE_y = 316,999 MWh x 0.9368 tCO_2/MWh

= 296,965 tCO_{2e}

5.2 Project Emissions

The project emissions from the wind power project activity is zero as per the ACM0002, para 34.As the project activity is the installation of a new grid-connected Wind Power plant and does not involve any project emissions from fossil fuel, operation of dry, flash steam or binary geothermalpower plants, and from water reservoirs of hydro power plants.

Therefore $PE_{FF,y}$, $PE_{GP,y}$, $PE_{HP,y}$ are equal to zero and thus, PEy = 0.

5.3 Leakage Emissions

As per the para 56 in the ACM0002, no other leakage emissions are considered. The emission potentially arising due to activities such as power plant construction and upstream emissions from fossil fuel use are neglected.

LEy= 0

5.4 GHG Emission Reductions and Carbon Dioxide Removals

Emission reductions are calculated as follows:

$ER_y = BE_y - PE_y$

Where:

ER_y = Emission reductions in year y (tCO_{2e}/yr)

BE_y = Baseline emissions in year y (tCO_{2e}/yr)

PE_y = Project emissions in year y (tCO_{2e}/yr)

Vintage period	Baseline emissions (tCO_2e)	Project emissions (tCO_2e)	Leakage emissions (tCO_2e)	Reduction VCUs (tCO_2e)	Removal VCUs (tCO_2e)	Total VCUs (tCO_2e)
01-September-2024 to 31-December-2024	205,896	0	0	205,896	0	205,896
01-January-2025 to 28-February-2025	91,069			91,069		91,069
Total	296,965	0	0	296,965	0	296,965

Vintage period	Ex-ante estimated reductions/ removals	Achieved reductions/ removals	Percent difference	Explanation for the difference
01-September-2024 to 28-February-2025	350,850	296,965	15.4%	As per the registered PD estimated annual emission reduction from the project activity is 350,850 tCO_{2e}, whereas actual emission reductions achieved during the current monitoring period is 296,965 tCO_{2e}, which is 15.4% decrease than the estimated annual emission reductions. On the pro-rata basis ex-ante emission reduction for 6 months should be 350,850 tCO2e.
Total	350,850	296,965	15.4%	

APPENDIX 1: COMMERCIALLY SENSITIVE INFORMATION

Section	Information	Justification
NA	NA	NA

APPENDIX 2: METER AND CALIBRATION DETAILS

Metering arrangement at 220/33 KV Substation, Chandragiri, Tamil Nadu

Meter S.No.	Make	Class	Calibration Date	Next Calibration Due date[2]
NP 3285A (Main meter)	Secure	0.2s	27-February-2024	26-February-2029
NP 3286A (Check Meter)	Secure	0.2s	27-February-2024	26-February-2029

[2] https://cea.nic.in/wp-content/uploads/2020/02/meter_reg.pdf