

MONITORING REPORT

PUBLICATION DATE 14.10.2020

VERSION v. 1.1

RELATED SUPPORT - TEMPLATE GUIDE Monitoring Report v. 1.1

This document contains the following Sections

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0 - Description of project

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KEY PROJECT INFORMATION

Key Project Information

GS ID (s) of Project (s)	GS 3969
Title of the project (s) covered by monitoring report	100.5 MW Wind Power Project in Madhya Pradesh, India
Version number of the PDD/VPA-DD (s) applicable to this monitoring report	02 (For 1 st CP) 04 (For 2 nd CP)
Version number of the monitoring report	05
Completion date of the monitoring report	20/05/2024
Date of project design certification	21/12/2015 (For 1 st CP) 26/07/2022 (For 2 nd CP)
Date of Last Annual Report	20/09/2023
Monitoring period number	06 (For 1 st CP) 01 (For 2 nd CP)
Duration of this monitoring period	01/01/2021 – 31/12/2022 (inclusive of both dates) 01/01/2021 – 31/12/2021 (inclusive of both dates) (For 1 st CP) 01/01/2022 – 31/12/2022 (inclusive of both dates) (For 2 nd CP)
Project Representative	Orange Mamatkhedha Wind Private Limited (OMWPL)
Host Country	India
Activity Requirements applied	☐ Community Services Activities ☒ Renewable Energy Activities ☐ Land Use and Forestry Activities/Risks & Capacities ☐ N/A
Methodology (ies) applied and version number	ACM0002 "Grid-connected electricity generation from renewable sources" Version 16.0 (For 1 st CP)

	ACM0002 "Grid-connected electricity generation from renewable sources" Version 20.0 (For 2 nd CP)
Product Requirements applied	☒ GHG Emissions Reduction & Sequestration ☐ Renewable Energy Label ☐ N/A

Table 1 - Sustainable Development Contributions Achieved

Sustainable Development Goals Targeted	SDG Impact	Amount Achieved	Units/ Products
SDG 7 Ensure access to affordable, reliable, sustainable and modern energy for all	Renewable Electricity Generated	191,132.01 (For 1 st CP) 182,582 (For 2 nd CP) Total 373,714.01	MWh
SDG 8 Decent Work and economic growth	Trainings provided to O&M staff	41 (For 1 st CP) 39 (For 2 nd CP) Total 80	Nos
	Income generation	125.70 (For 1 st CP) 131.98 (For 2 nd CP) Total 257.68	Lakh INR
	Number of Jobs generated	83 (For 1 st CP) 83 (For 2 nd CP) Total 83	Nos
SDG 13 Climate Action (mandatory)	Emission Reduction	186,735 (For 1 st CP) 169,892 (For 2 nd CP) Total 356,627	VERs

Table 2 – Product Vintages

		Amount Achieved		
Start Dates	End Dates	SDG 13: Climate Action (VERs) tCO ₂	SDG 8: Decent Work and Economic Growth	SDG 7: Affordable and Clean Energy MWh
01/01/2021	31/12/2021	186,735 (For 1 st CP)	41 Training (For 1 st CP) 83 employees (For 1 st CP) Income generation 125.70 lakhs (For 1 st CP)	191,132.01 MWh (For 1 st CP)
01/01/2022	31/12/2022	169,892 (For 2 nd CP)	39 Training (For 2 nd CP) 83 employees (For 2 nd CP) Income generation 131.98 lakhs (For 2 nd CP)	182,582 MWh (For 2 nd CP)

SECTION A. DESCRIPTION OF PROJECT

A.1. General description of project

The project activity is a 100.5 MW wind power project, promoted by Orange Mamatkhedha Wind Private Limited (OMWPL). The purpose of the project activity is to generate clean electricity with utilization of wind energy. The project consists of 67 Wind Turbine Generators (WTGs) of 1.5 MW class ReGenV87 make.

The electricity generated by the project is exported to the electricity grid. The project activity is therefore displacing an equivalent amount of electricity which would have otherwise been generated by fossil fuel dominant electricity grid and thereby reduces the associated CO₂ emissions.

Commissioning Dates of the WTGs are 20/08/2014, 25/08/2014, 07/11/2014, 05/04/2015 and 28/04/2015. The project activity is not registered with any other compliance or voluntary market-based mechanism and the GHG emissions reductions from the project activity are not accounted for within the relevant system of the host country/regional regulator. The VERs for the same vintage will not be claimed in another standard other than GS and there is no double accounting with national policies. Also, self-declaration for no double counting has been provided by the Project Developer.

Project Contribution to Sustainable development:

Ministry of Environment and Forests, Govt. of India has stipulated the following indicators for sustainable development¹ in the interim approval guidelines for CDM project.

- a) Social well-being
- b) Economic well-being
- c) Environmental well-being
- d) Technological well-being

These project activity contributions towards the sustainable development are as follows.

Economic well-being:

- The project activity helps in alleviation of poverty in the area as it creates employment opportunities to the local people.
- The project activity brings in additional investment to the region which would have not been possible in the absence of project activity. The development of project activity would contribute significantly towards infrastructure development of the region which ultimately leads to rural area development.
- The project activity evacuating power to the nearest regional grid leads to improvement of electricity availability as the electricity is fed into a deficit grid.

Economic well-being:

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- The project activity brings in additional investment to the region which would have not been possible in the absence of project activity. The development of project activity contributes significantly towards infrastructure development of the region which ultimately leads to rural area development.
- The project activity evacuating power to the nearest regional grid leads to improvement of electricity availability as the electricity is fed into a deficit grid

Environmental well-being:

- Wind is one of the cleanest form of renewable energy and power generation does not involve any fossil fuels.
- The project activity by replacing electricity generated from fossil fuels would result in reduction of both GHG emissions and air borne pollutants, such as oxides of nitrogen, oxides of sulphur, carbon monoxide and particulates.
- Produces electricity without any GHG emissions.

Technological well-being:

- The project uses the environmentally safe and sound technologies in small scale hydroelectric power sector.
- It improved the power quality and the improvement of transmission and distribution congestion.

The Emission Reductions achieved for the monitoring period (01/01/2021–31/12/2021) covering 1st CP (01/01/2015 -31/12/2021) is 186,735 tCO₂e and the Net

generation is 191,132.01 MWh. Similarly, the emission reductions achieved for the monitoring period (01/01/2022 – 31/12/2022) covering the 2nd CP (01/01/2022 – 31/12/2026) is 169,892 tCO₂e and the Net generation is 182,582 MWh. Therefore, the total emission reductions achieved from 01/01/2021– 31/12/2022 (including both Crediting Period) is 356,627 tCO₂e and the total net generation achieved is 373,714.01 MWh. The O&M team maintains a Bird strike register. As per the record, there are no observed carcasses in vicinity of the WTGs.

The emission reductions as per vintage break-up (2021 and 2022) in the monitoring in the following format:

01/01/2021 to 31/12/2021: 186,735 tCO₂e

01/01/2022 to 31/12/2022: 169,892 tCO₂e

A.2. Location of project

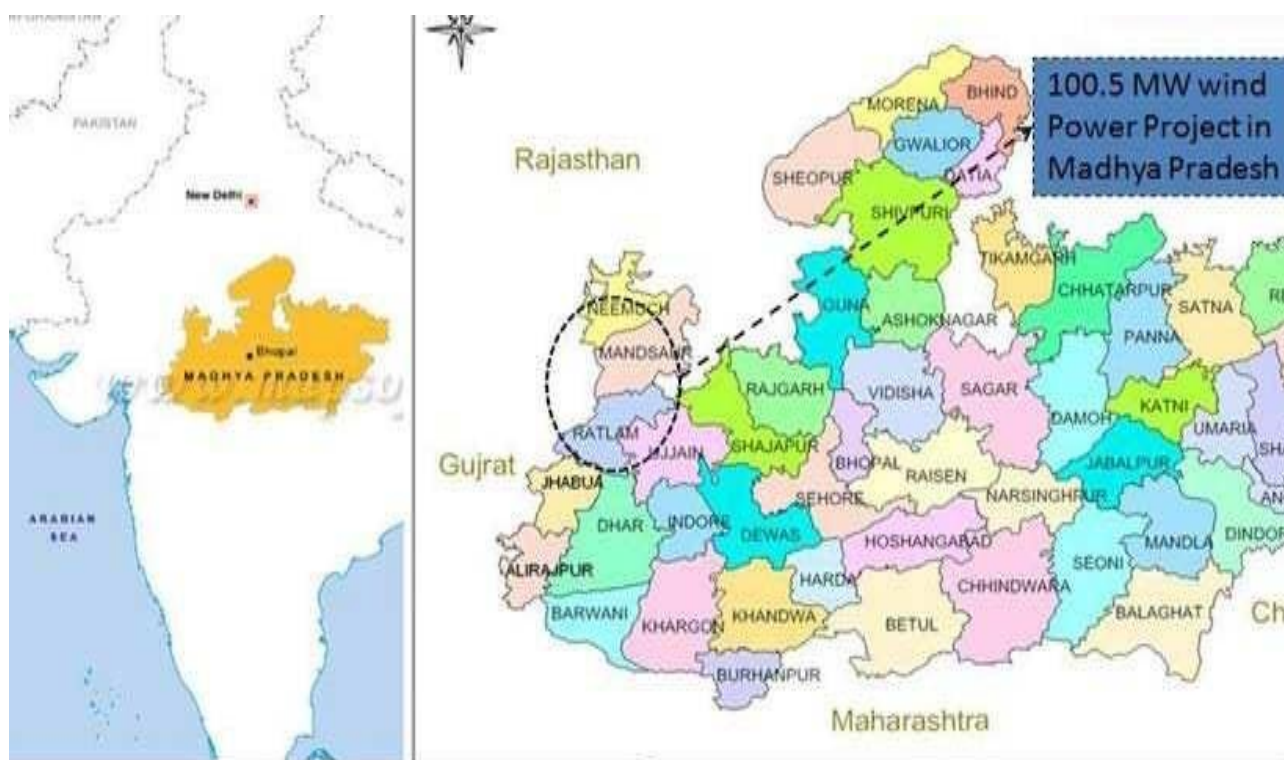
OMWPL has installed WTGs at Bagiya, Kansar, Mawta, Nandwell, Ranigaon, Thikriya, Bhandariya, Bhepur, Chandakhedi, Dehari, Dhandhoda, Garoda, Karju and Sagwali, villages of Ratlam & Mandsaur districts of Madhya Pradesh in India. Geographical coordinates of the all WTGs are given below:

S. No	WTG ID	Commissioning date	Latitude (N)	Longitude (E)
1	RM_01	28/04/2015	23° 44' 28.075"	74° 58' 17.419"
2	RM_02	05/04/2015	23° 46' 2.550"	74° 57' 0.942"
3	RM_03	05/04/2015	23° 45' 50.778"	74° 56' 56.742"
4	RM_04	05/04/2015	23° 45' 44.175"	74° 56' 52.646"
5	RM_05	05/04/2015	23° 45' 31.851"	74° 56' 53.004"
6	RM_06	05/04/2015	23° 45' 20.438"	74° 56' 52.126"
7	RM_07	05/04/2015	23° 45' 13.024"	74° 56' 51.705"
8	RM_08	05/04/2015	23° 45' 5.869"	74° 56' 50.400"
9	RM_09	05/04/2015	23° 44' 48.409"	74° 56' 53.869"
10	RM_10	05/04/2015	23° 44' 40.539"	74° 56' 51.258"
11	RM_11	05/04/2015	23° 44' 33.286"	74° 56' 47.552"
12	RM_12	05/04/2015	23° 45' 41.015"	74° 58' 44.783"
13	RM_13	05/04/2015	23° 45' 29.701"	74° 59' 0.506"
14	RM_16	05/04/2015	23° 45' 0.957"	74° 59' 7.999"

15	RM_18	05/04/2015	23° 44' 53.801"	74° 58' 49.207"
16	RM_19	05/04/2015	23° 44' 40.957"	74° 58' 53.907"
17	RM_20	05/04/2015	23° 44' 30.029"	74° 58' 36.282"
18	RM_21	05/04/2015	23° 44' 16.855"	74° 58' 12.264"
19	RM_22	05/04/2015	23° 44' 10.581"	74° 58' 20.178"
20	RM_25	05/04/2015	23° 44' 45.641"	75° 0' 49.350"
21	RM_26	05/04/2015	23° 45' 8.242"	74° 59' 40.994"
22	RM_28	05/04/2015	23° 44' 21.253"	75° 0' 46.839"
23	RM_29	05/04/2015	23° 44' 13.059"	75° 0' 50.582"
24	RM_33	05/04/2015	23° 45' 57.626"	74° 58' 12.594"
25	RM_34	05/04/2015	23° 45' 15.104"	74° 59' 42.831"
26	RM_36	05/04/2015	23° 45' 18.452"	74° 59' 29.123"
27	RM_37	05/04/2015	23° 45' 35.434"	74° 57' 10.526"
28	RM_38	05/04/2015	23° 45' 49.225"	74° 57' 22.745"
29	RM_39	05/04/2015	23° 45' 45.789"	74° 56' 18.906"
30	RM_41	05/04/2015	23° 45' 55.547"	74° 56' 25.826"
31	RM_42	05/04/2015	23° 45' 23.728"	74° 57' 10.318"
32	RM_43	28/04/2015	23° 47' 32.845"	74° 59' 21.058"
33	RM_44	05/04/2015	23° 47' 29.747"	74° 58' 12.750"
34	RM_45	05/04/2015	23° 47' 36.152"	74° 58' 6.070"
35	RM_48	05/04/2015	23° 47' 39.118"	74° 58' 44.623"
36	RM_49	05/04/2015	23° 47' 43.316"	74° 59' 23.990"
37	RM3_01	20/08/2014	23° 50' 29.519"	74° 57' 14.203"
38	RM3_02	20/08/2014	23° 50' 37.583"	74° 57' 11.973"
39	RM3_03	20/08/2014	23° 50' 45.583"	74° 57' 15.470"
40	RM3_08	20/08/2014	23° 50' 32.270"	74° 58' 39.328"
41	RM3_09	20/08/2014	23° 50' 21.832"	74° 58' 37.456"
42	RM3_10	20/08/2014	23° 50' 6.553"	74° 59' 14.328"
43	RM3_11	20/08/2014	23° 50' 25.804"	74° 59' 32.992"
44	RM3_12	25/08/2014	23° 50' 48.892"	74° 59' 48.864"
45	RM3_13	20/08/2014	23° 50' 46.517"	74° 59' 20.122"
46	RM3_14	20/08/2014	23° 51' 3.231"	74° 59' 30.267"
47	RM3_16	20/08/2014	23° 51' 6.901"	74° 58' 44.060"
48	RM3_17	20/08/2014	23° 51' 23.579"	74° 58' 21.783"

49	RM3_18	20/08/2014	23° 51' 31.349"	74° 58' 18.175"
50	RM3_19	20/08/2014	23° 51' 1.759"	74° 58' 16.979"
51	RM3_22	20/08/2014	23° 51' 51.604"	74° 58' 0.138"
52	RM3_23	20/08/2014	23° 51' 25.764"	74° 59' 13.401"
53	RM3_28	20/08/2014	23° 52' 5.757"	74° 58' 51.263"
54	RM3_30	20/08/2014	23° 52' 22.990"	74° 58' 41.855"
55	RM3_32	20/08/2014	23° 51' 59.161"	74° 59' 53.317"
56	RM3_33	20/08/2014	23° 52' 14.671"	75° 0' 15.699"
57	RM3_34	20/08/2014	23° 52' 24.199"	75° 0' 11.174"
58	RM3_35	20/08/2014	23° 50' 51.456"	74° 58' 50.107"
59	RM3_39	20/08/2014	23° 51' 51.292"	75° 0' 0.743"
60	RM3_40	25/08/2014	23° 51' 1.443"	74° 59' 57.136"
61	RM3_41	20/08/2014	23° 49' 57.904"	74° 59' 28.398"
62	RM3_42	20/08/2014	23° 49' 42.687"	74° 59' 32.712"
63	RM3_43	07/11/2014	23° 53' 28.641"	74° 58' 41.490"
64	RM3_44	07/11/2014	23° 53' 41.388"	74° 58' 41.630"
65	RM3_45	07/11/2014	23° 53' 52.021"	74° 58' 44.457"
66	RM3_46	07/11/2014	23° 54' 1.191"	74° 58' 44.809"
67	RM3_48	07/11/2014	23° 54' 27.171"	74° 58' 42.683"

The geographical location of the project site is as shown below:



A.3. Reference of applied methodology

Title: Consolidated baseline and monitoring methodology for “Grid-connected electricity generation from renewable sources”

References:

For 1st CP Approved consolidated baseline methodology ACM0002 “Grid-connected electricity generation from renewable sources” (Version 16.0, EB 811)²

For 2nd CP Approved consolidated baseline methodology ACM0002 “Grid-connected electricity generation from renewable sources” (Version 20.0)³

Tools:

For 1st CP covering MP of 01/01/2021– 31/12/2021 as per PDD version 2.0.

“Tool to Calculate the Emission Factor for an Electricity System” (Tool 7) – version 5.0⁴

“Tool for the demonstration and assessment of Additionality” (Tool 1) – version 07.0.0, EB 70, Annex 8⁵

¹ <http://cdm.unfccc.int/methodologies/DB/EY2CL7RTEHRC9V6YQHLAR6MJ6VEU83>

² <http://cdm.unfccc.int/methodologies/DB/EY2CL7RTEHRC9V6YQHLAR6MJ6VEU83>

³ CDM: Grid-connected electricity generation from renewable sources --- Version 20.0 (unfccc.int)

⁴ <https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v5.0.pdf>

⁵ <https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-01-v7.0.0.pdf>

For 2nd CP covering MP of 01/01/2022 – 31/12/2022 as per RCP PDD version 4.0.

Tool to calculate the emission factor for an electricity system (Tool 7) - Version 07.0⁶

Tool for the demonstration and assessment of additionality (Tool 1) - Version 07.0.0⁷

A.4. Crediting period of project

Type of Crediting Period: Renewable

Start date of the 1st crediting period: 01/01/2015 (Retroactive crediting start date)

End date of the 1st crediting period: 31/12/2021

Length of the Crediting period: 7 years

Type of Crediting Period: Renewable

Start date of the 2nd crediting period: 01/01/2022 (Retroactive crediting start date)

End date of the 2nd crediting period: 31/12/2026

Length of the current crediting period: 5 years

SECTION B. IMPLEMENTATION OF PROJECT

B.1. Description of implemented project

The project activity comprises of 67 WTGs of ReGen's V87model 1500kW thus the total capacity of the wind power project is 100.5 MW promoted by Orange Mamatkhedha Wind Private Limited (OMWPL). The purpose of the project activity is to generate clean electricity with utilization of wind energy. All the WTGs have been commissioned and are operational. The details are as follows:

S.No	WTG ID	Commissioning date
1	RM_02, RM_03, RM_04, RM_05, RM_06, RM_07, RM_08, RM_09, RM_10, RM_11, RM_12, RM_13, RM_16, RM_18, RM_19, RM_20, RM_21, RM_22, RM_25, RM_26, RM_28, RM_29, RM_33, RM_34, RM_36, RM_37, RM_38, RM_39, RM_41, RM_42, RM_44, RM_45, RM_48 and RM_49	05/04/2015
2	RM_01 and RM_43	28/04/2015
3	RM3_01, RM3_02, RM3_03, RM3_08, RM3_09, RM3_10, RM3_11, RM3_13, RM3_14, RM3_16, RM3_17, RM3_18, RM3_19, RM3_22, RM3_23,	20/08/2014

⁶ <https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v7.0.pdf>

⁷ <https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-01-v7.0.0.pdf>

	RM3_28, RM3_30, RM3_32, RM3_33, RM3_34, RM3_35, RM3_39, RM3_41 and RM3_42	
4	RM3_12 and RM3_40	25/08/2014
5	RM3_43, RM3_44, RM3_45, RM3_46 and RM3_48	07/11/2014

The technical details of the WTGs are given below:

POWER	
Rated power	1500 kW
Cut-in wind speed (10 min.	3 m/s
Rated Wind Speed (10 min.	Approx. 12.5 m/s
Cut-out wind speed (10 min.	22 m/s
Survival wind speed	52.5 m/s
Generator	Variable Speed, Multi-pole Synchronous with Permanent Magnet Excitation
ROTOR	
Diameter	86.7 m
Swept area	5325 m ²
Speed range (variable)	9 to 17.3 rpm
TOWER AND FOUNDATION	
Hub height	85 m
Design	Tubular, Four sections
Foundation type	Floating foundation
CONTROL AND SAFETY SYSTEMS	
Control of output	Pitch Regulation
Speed control	Variable, Micro-controller based
Low Voltage Ride Through	3 seconds
Primary brake system	Aerodynamic Brake, Single Pitch Control/triple redundant
Pitch System	Electromechanical, Maintenance Free Toothed Belt Drive (Patented)
Remote Monitoring	VPN, Visualization via web-browser

B.1.1 Forward Action Requests

No Forward Action Requests

B.2. Post-Design Certification changes

B.2.1. Temporary deviations from the approved Monitoring & Reporting Plan, methodology or standardized baseline

Deviation from GS4GG principles and requirement, section 5.1.39 "Transparent, annual update reports need to be provided for Projects that have achieved the Project Design Certification stage or have successfully transitioned to Gold Standard for the Global Goals. An annual report shall be submitted for each monitoring year by end of next calendar year for which verification is not completed. If a verification is in progress but not completed, then an Annual Report is still required by the end of calendar year" but it was missed therefore deviation applied for the monitoring period 01/01/2021 – 31/12/2022 and same is approved by Sustain Cert on 25/09/2023 which mentions "PD ensure that in future, the Annual Reports are submitted each year and latest by end of the following year of a monitoring period as stipulated in PRINCIPLES & REQUIREMENTS - Version 1.2 & 5.1.39 to 5.1.44".

B.2.2. Corrections

Not Applicable

B.2.3. Changes to start date of crediting period

Deviation from GS4GG principles and requirement, section 5.1.46 regarding delay in design certification renewal so as to obtain full credits for the 2nd crediting period of the project (01/01/2022 to 31/12/2026) is approved by Sustain Cert on 17/06/2022.

B.2.4. Permanent changes from the Design Certified monitoring plan, applied methodology or applied standardized baseline

Not Applicable

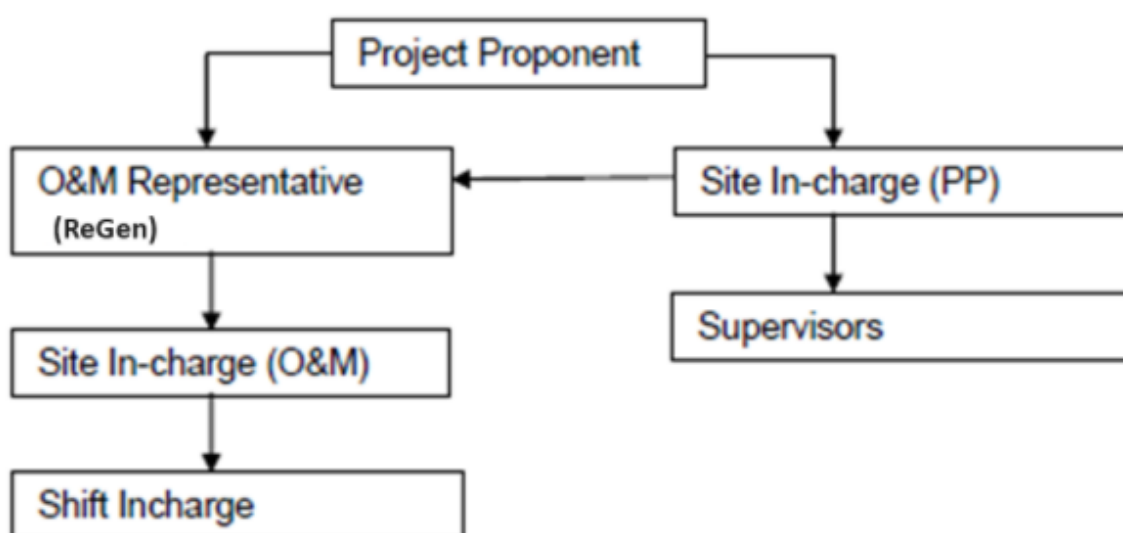
B.2.5. Changes to project design of approved project

Not Applicable

SECTION C. DESCRIPTION OF MONITORING SYSTEM APPLIED BY THE PROJECT

The monitoring plan is developed in accordance with the modalities and procedures for carbon project activities and is proposed for grid-connected wind power project/ unit being implemented in Madhya Pradesh, India. The monitoring plan implemented by the project participant describes about the monitoring organisation, 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. The following structure is proposed for data monitoring, data collection, data archiving and calibration of equipment for this project activity. The team comprises of the following members:



Responsibilities of Site Incharge (PP): Overall functioning and maintenance of the project activity, the Site incharge shall coordinate with the O&M operator as well as the site supervisors.

Responsibilities of O&M Representative: Co-ordination between Site incharge of the O&M operator as well as the project participant and further report to PP head office.

Responsibilities of Site In-charge (O&M Operator): Responsibility for maintaining the data records, ensures completeness of data, and reliability of data (calibration of equipment) as well as data recording for all the parameters.

Responsibilities of Shift In-charge: Responsibility for day-to-day data collection and maintains day to day monitored data.

The project proponent has entered into agreement with the WTG Suppliers (ReGen) for the operation and maintenance of WTGs. The WTG supplier has dedicated and technically well- equipped O&M team for day-to-day operations and maintenance of each WTG. O&M contractor is provided a monthly report, which includes generation data, major breakdown events, and machine availability.

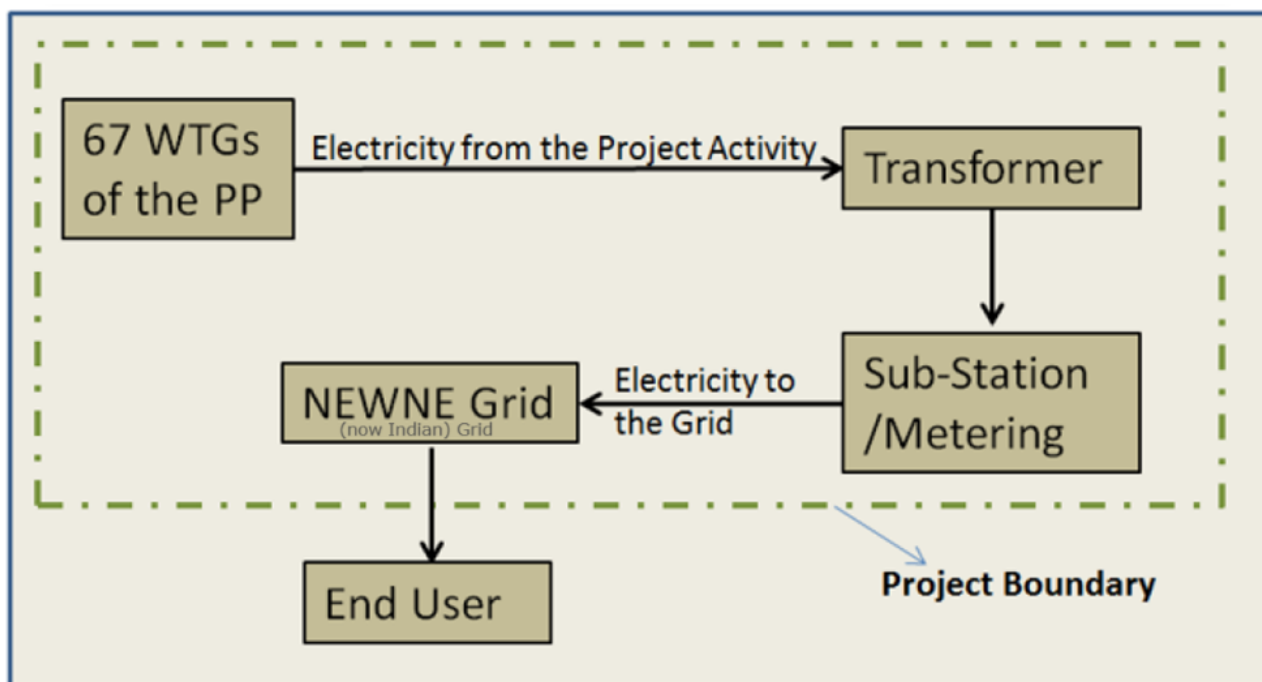


Figure 1 Project Layout

The project activity is having a power purchase agreement for a period of 25 years with the MP Power Management Company Limited (MPPMCL). The electricity is fed in the regional grid and monitored in the presence of MP Power Transmission Company Limited (MPPTCL). Monitoring consists of metering the net electricity supplied to the grid ($EG_{\text{facility},y}$). This parameter is based on the monthly JMRs (share certificates) undertaken by MPPTCL and ReGen which is continuously measured through energy meter. The PP has raised monthly electricity sales invoices to MPPMCL based on the JMR reading. All the meters used in the project activity is calibrated on an annual basis. MPPMCL is responsible for maintaining the QA/QC procedures (accuracy class and calibration frequency) MPPMCL/Discom officer are fully responsible for the maintenance of the meters.

The monitored data is reported by the PP on a monthly basis for the calculation and estimation of emission reductions. This data is checked against invoices raised.

There are two meters i.e., main and check which are installed at 220 kV pooling substation (PSS) at Mamatkhedha and invoicing is done on these meters. Additionally, there are 4 feeders in total and 67 WTGs are connected to those feeders. Each feeder (Feeder 1 and Feeder 4) has individual meters; however, these meters are not a part of monitoring plan. Moreover, a detailed information about the main and check meters, including their serial numbers and locations, is provided in Appendix 1 of the monitoring report. The meter details, the feeder details of the power plant and the single line diagram of the project activity have been provided below:

S.No.	Feeder No	No of WTGs	Capacity (MW _{AC})	Energy Meter Make and Serial No	Location of Meter
1	Feeder 1	RM3-34, RM3-33, RM3-32, RM3-39, RM3- 16, RM3-35, RM3-14, RM3-13, RM3-40, RM3-12, RM3-08, RM3-09, RM3-11, RM3- 10, RM3-41 & RM3-42	24 MW	Secure XB549144	PSS- Feeder Panel
2	Feeder 2	RM3-48, RM3-46, RM3-45, RM3-44, RM3- 43, RM3-30, RM3-28, RM3-22, RM3-18, RM3-17, RM3-23, RM3-19, RM3-03, RM3- 02, RM3-01	22.5 MW	Secure XB549141	PSS- Feeder Panel
3	Feeder 3	RM-49, RM-43, RM-33, RM-12, RM-13, RM-36, RM-34, RM-26, RM-16, RM-18, RM-19, RM-20, RM-21, RM-22, RM-25, RM-28, RM-29	25.5 MW	Secure XB549143	PSS- Feeder Panel
4	Feeder 4	RM-48, RM-45, RM-44, RM-01, RM-02, RM-03, RM-04, RM-41, RM-39, RM-05, RM-37, RM-06, RM-42, RM-07, RM-08, RM-09, RM-10, RM-11, RM-38	28.5 MW	Secure XB549142	PSS- Feeder Panel
Total		67	100.5 MW		

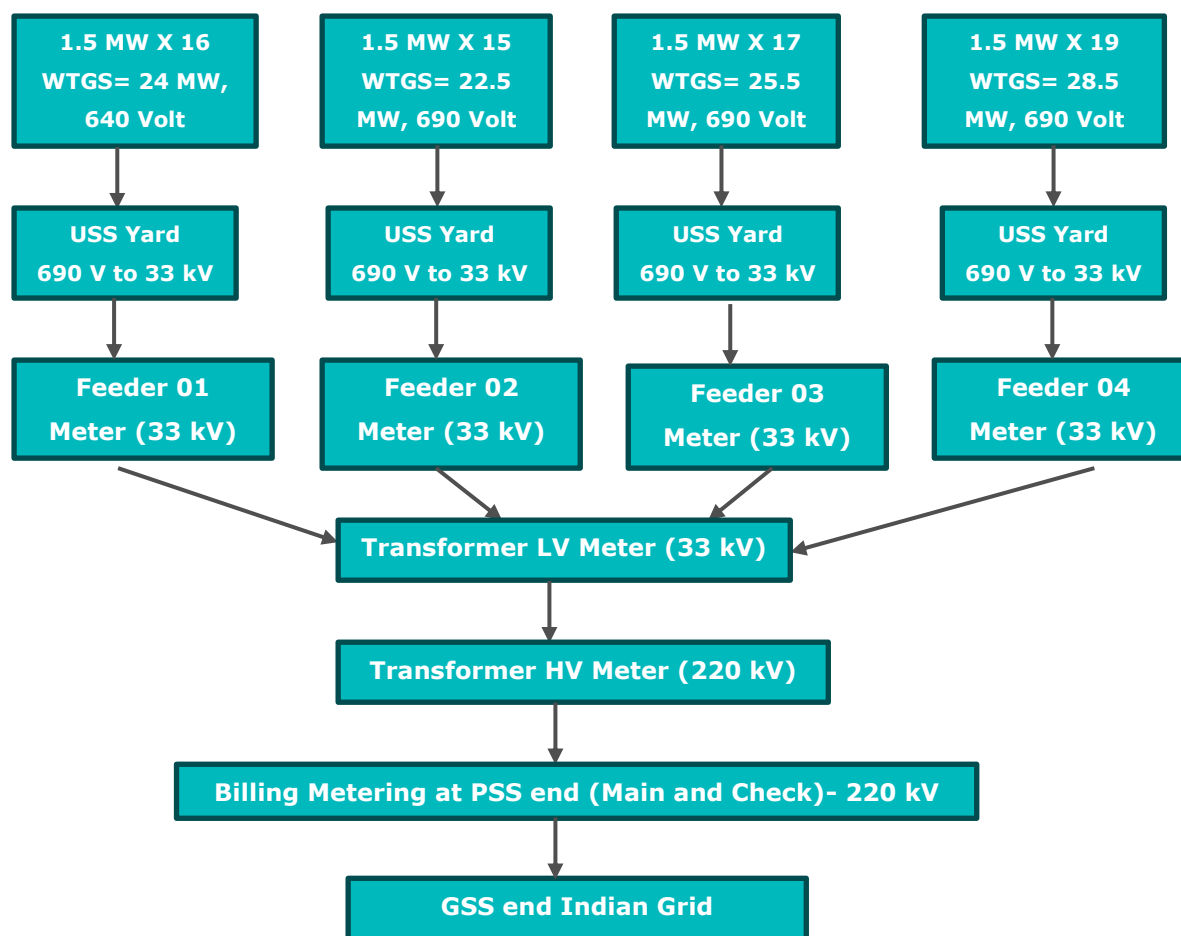


Figure 2 Single Line Diagram of the project activity

Data storage and Archiving

In accordance with the methodology all, the data collected during the crediting period is archived electronically and kept for at least two years after the end of crediting period. 100% of the data is monitored and the meters owned by DISCOM/PP are calibrated at regular intervals to ensure low uncertainty in the monitored.

SECTION D. DATA AND PARAMETERS

D.1. Data and parameters fixed ex ante or at renewal of crediting period

For the monitoring period (01/01/2021– 31/12/2021) covering 1st CP (01/01/2015 - 31/12/2021)

Data/parameter:	EF _{grid,OM,y} (For 1 st CP)
Unit	tCO ₂ e/MWh
Description	Operating Margin Emission Factor of NEWNE (now Indian) Grid
Source of data	Central Electricity Authority: "CO ₂ Emission Database CEA CO ₂ Baseline database Version 10" ⁸ published by Central Electricity Authority (CEA), Ministry of Power, Government of India.
Value(s) applied)	0.9862
Choice of data or measurement methods and procedures	Operating Margin Emission Factor has been calculated by the Central Electricity Authority using the Simple OM approach in accordance with the procedures prescribed in the approved Tool 07 "Tool to calculate the emission factor for an electricity system" version 5.0. ⁹
Purpose of data	The data is used to calculate baseline emission reductions.
Additional comments	The operating margin emission factor is a 3-year generation-weighted average (2011-14) Data calculated to be 0.9862. The operating Margin is calculated ex ante and fixed during the crediting period

Data/parameter:	EF _{grid,BM,y} (For 1 st CP)
Unit	tCO ₂ e/MWh
Description	Build Margin Emission Factor of NEWNE (now Indian) Grid
Source of data	Central Electricity Authority: "CO ₂ Emission Database CEA CO ₂ Baseline database Version 10" ¹⁰ published by Central Electricity Authority (CEA), Ministry of Power, Government of India.
Value(s) applied)	0.9495
Choice of data or measurement methods and procedures	Build Margin Emission Factor has been calculated by the Central Electricity Authority with the procedures prescribed in the approved Tool 07 "Tool to calculate the emission factor for an electricity system" version 5.0. ¹¹
Purpose of data	The data is used to calculate baseline emission reductions.
Additional comments	The Build Margin would be calculated ex ante and fixed during the crediting period. For ex ante calculation the most recent data (2013-14) available has been used and the build margin thus calculated is 0.9495.
Data/parameter:	EF _{grid,CM,y} (For 1 st CP)
Unit	tCO ₂ e/MWh
Description	Combined Margin Emission Factor of NEWNE (now Indian) Grid
Source of data	Central Electricity Authority: "CO ₂ Emission Database CEA CO ₂ Baseline database Version 10" ¹² published by Central Electricity Authority (CEA), Ministry of Power, Government of India.
Value(s) applied)	0.9770

⁸ https://cea.nic.in/wp-content/uploads/baseline/2020/07/user_guide_ver10.pdf

⁹ <https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v5.0.pdf>

¹⁰ https://cea.nic.in/wp-content/uploads/baseline/2020/07/user_guide_ver10.pdf

¹¹ <https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v5.0.pdf>

¹² https://cea.nic.in/wp-content/uploads/baseline/2020/07/user_guide_ver10.pdf

Choice of data or measurement methods and procedures	Combined Margin Emission Factor has been calculated with the approved Tool 07 "Tool to calculate the emission factor for an electricity system" version 5.0. as weighted average of 75% of OM (three years average) and 25% of BM for the latest year.
Purpose of data	The data is used to calculate baseline emission reductions.
Additional comments	The combined margin is calculated ex-ante and fixed for the entire crediting period and the combined margin thus calculated is 0.9770.

For the monitoring period (01/01/2022– 31/12/2022) covering 2nd CP (01/01/2022 – 31/12/2026)

Data/parameter:	EF _{grid, OM,y} (For 2 nd CP)
Unit	tCO ₂ /MWh
Description	Operating Margin Emission Factor of Indian Grid
Source of data	Calculated from CEA database, Version 17 ¹³ , March 2021
Value(s) applied)	0.9522
Choice of data or measurement methods and procedures	Calculated as per Tool 07 "Tool to calculate the emission factor for an electricity system, version 07 ¹⁴ " as per the latest data available for the three 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 comments	This parameter is fixed ex-ante for the entire crediting period

Data/parameter:	EF _{grid, BM,y} (For 2 nd CP)
Unit	tCO ₂ /MWh
Description	Build Margin Emission Factor of Indian Grid
Source of data	Calculated from CEA database, Version 17 ¹⁵ , March 2021
Value(s) applied)	0.8653
Choice of data or measurement methods and procedures	Calculated as per Tool 07 "Tool to calculate the emission factor for an electricity system, version 07" as per the latest data available for the three 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 comments	This parameter is fixed ex-ante for the entire crediting period.

¹³ https://cea.nic.in/wp-content/uploads/tpe_cc/2022/02/User_Guide_ver_17_2021.pdf

¹⁴ <https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v7.0.pdf>

¹⁵ https://cea.nic.in/wp-content/uploads/tpe_cc/2022/02/User_Guide_ver_17_2021.pdf

Data/parameter:	EF _{grid, CM,y} (For 2 nd CP)
Unit	tCO ₂ /MWh
Description	Combined Margin Emission Factor of Indian Grid
Source of data	Calculated from CEA database, Version 17 ¹⁶ , March 2021
Value(s) applied	0.9305
Choice of data or measurement methods and procedures	Calculated as per Tool 07 "Tool to calculate the emission factor for an electricity system, version 07" as per the latest data available for the three 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 comments	This parameter is fixed ex-ante for the entire crediting period.

D.2 Data and parameters monitored

Relevant SDG Indicator SDG 7.2.1: Affordable and Clean Energy

Data/parameter:	EG _{facility,y}
Unit	MWh
Description	Quantity of net electricity supplied to the grid during the year y.
Measured/calculated/default	Calculated (based on the measured values of electricity exported and imported)
Source of data	Share Certificate Issued by ReGen and JMR (Joint Meter Reading)
Value(s) of monitored parameter	373,714.01 MWh (Period: 01/01/2021 to 31/12/2022) Vintage date for 1 st CP: 191,132.01 MWh (Covering MP: 01/01/2021 to 31/12/2021) Vintage date for 2 nd CP: 182,582 MWh (Covering MP: 01/01/2022 to 31/12/2022)
Monitoring equipment	The electricity exported & imported are measured by Energy meter installed at 220 KV pooling substation, Mamatkhedha. The reading is recorded and the difference from last month reading gives the number of units imported/exported. Net electricity supplied is calculated based on the difference between calculated values of "export" (which already accounts for losses during transmission) and "import" on the EB energy meter at the Government substation. (Net Electricity = Export – Import) Two sets of energy meters (main & check) installed. The details of the meters are provided in Appendix 1 of the MR.
Measuring/reading/recording frequency:	Measuring Frequency: Continuous Recording Frequency: Monthly

¹⁶ https://cea.nic.in/wp-content/uploads/tpe_cc/2022/02/User_Guide_ver_17_2021.pdf

Calculation method(if applicable):	Net Electricity is calculated difference between export & import which is measured by energy meters.
QA/QC procedures:	The net electricity is cross-checked with the invoice copies and import with electricity bill.
Purpose of data:	Calculation of baseline emission
Additional comments:	-

Relevant SDG Indicator SDG 8: Decent work and Economic growth

Data/parameter:	Training provided to employees & O&M staff (Quality of Employment)		
Unit	Number of trainings		
Description	Trainings provided to employees & O&M staff		
Measured/calculated/default	Measured		
Source of data	Training Records		
Value(s) of monitored parameter	Total number of trainings is 80.		
	1 st CP	MP (01/01/2021 to 31/12/2021)	41 Trainings
	2 nd CP	MP (01/01/2022 to 31/12/2022)	39 Trainings
	Refer Appendix 2 of the MR for Training details.		
Monitoring equipment	The ReGen personnel observes and take records in Training Records once in a year; there is no equipment to monitor it.		
Measuring/reading/recording frequency:	Annually		
Calculation method(if applicable):	Manually by O & M Contractor		
QA/QC procedures:	Transparent data collection, analysis and reporting is done to identify and record the no. of trainings provided to the employees as well as employment generated due to project activity.		
Purpose of data:	To monitor the contribution to SDG 8 (Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all)		
Additional comments:	-		

Relevant SDG Indicator SDG 8: Decent work and Economic growth

Data/parameter:	Quantitative employment and income generation		
Unit	1. INR for income generation or salary given to the employees 2. Number of employees involved in the project		
Description	O & M Investment for the project activity for this monitoring period and number of people employed directly due to the project activity		
Measured/calculated/default	Measured		
Source of data	Salary of the project employees, Attendance sheet, O&M		

	Contract		
Value(s) of monitored parameter	The monitoring period for 1st CP is 01/01/2021 to 31/12/2021 and the income generation applicable for all 67 WTGs of the project for this period is 125.70 Lakh INR as per the O & M Contract signed with ReGen Powertech Pvt. Ltd. There are 83 staffs involved in the O&M including staffs from Greenko Mamtkheda (on roll), O&M team, Technicians (off roll) and Security Gaurds.		
	Vintage	Income generation (in Lakh INR)	Number of Employment generation
	01/01/2021 to 31/12/2021	125.70	83
	The monitoring period for 2nd CP is 01/01/2022 to 31/12/2022 and the income generation applicable for all 67 WTGs of the project for this period is 131.98 Lakh INR as per the O & M Contract signed with ReGen Powertech Pvt. Ltd. There are 83 staffs involved in the O&M including staffs from Greenko Mamtkheda (on roll), O&M team, Technicians (off roll) and Security Gaurds.		
	Vintage	Income generation (in Lakh INR)	Number of Employment generation
	01/01/2022 to 31/12/2022	131.98	83
	Therefore, the total income generation is 257.68 (in Lakh INR) and the total number of staffs employed for the Period 01/01/2021 to 31/12/2022 is 83.		
Monitoring equipment	-		
Measuring/reading/recording frequency:	Once in a Monitoring period		
Calculation method(if applicable):	Manually by O&M Contractor		
QA/QC procedures:	The number of persons employed would be mentioned in the plant register, which can be crossed checked with daily attendance register. Salary slip can be checked for earnings of employees.		
Purpose of data:	To monitor the contribution to SDG 8 (Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all)		
Additional comments:	-		

Relevant SDG Indicator SDG 13: Emission Reduction

Data/parameter:	ER _y
Unit	tCO ₂
Description	CO ₂ emission reduction due to implementation of the project activity
Measured/calculated/default	Calculated
Source of data	For 1 st CP it is calculated as per "Tool to calculate the emission factor for an electricity system,". The data are obtained from "CO ₂ Baseline Database for Indian Power Sector" version 10.0 ¹⁷ , published by the Central Electricity Authority, Ministry of Power, Government of India. Similarly for 2 nd CP it is calculated as per "Tool to calculate the emission factor for an electricity system,". The data are obtained from "CO ₂ Baseline Database for Indian Power Sector" version 17.0 ¹⁸ , published by the Central Electricity Authority, Ministry of Power, Government of India.
Value(s) of monitored parameter	Total 356,627 tCO ₂ (Period: 01/01/2021 to 31/12/2022) For 1 st CP: 186,735 tCO ₂ (Covering MP:01/01/2021 to 31/12/2021) For 2 nd CP: 169,892 tCO ₂ (Covering MP:01/01/2022 to 31/12/2022)
Monitoring equipment	Project logbook, O&M policy and interview with O&M team. The interview with the O&M team revealed that the project operation has minimalistic ground activities which does not result in any dust emissions.
Measuring/reading/recording frequency:	-
Calculation method(if applicable):	Calculated from CEA database and Energy Generation
QA/QC procedures:	This parameter is calculated, and no any QA/QC procedure required.
Purpose of data:	Calculation of baseline emissions
Additional comments:	The data is archived for crediting period+2 years

¹⁷ https://cea.nic.in/wp-content/uploads/baseline/2020/07/user_guide_ver10.pdf

¹⁸ https://cea.nic.in/wp-content/uploads/tpe_cc/2022/02/User_Guide_ver_17_2021.pdf

Relevant Safeguarding principle: Safeguarding principle 4.2.2: Erosion and/or Water Body Instability

Data/parameter:	Soil Erosion
Unit	-
Description	General soil erosion and sediment control measures would include: • Keep open areas of excavation to a minimum and construction activities restricted to dry months to avoid heavy rainfalls; • Using existing roads and lanes used by land owner. • Stockpiles of materials placed away from drainage lines and formed with sediment control structures placed immediately down slope; • Construction debris and excavated material were cleared up at regular intervals • Excavated material stock piled and used for backfilling of foundations, platforms etc. • Minimization of traffic in construction zones and use of a dedicated parking area, i.e. site compound; • Re-vegetation taken up as necessary after construction, in order to reduce the risk of soil erosion. Specific mitigation measures followed in the operational phase of the project: • Waste oil generated shall be stored separately in containers in a secured location in the maintenance room. The storage location and the containers are properly marked. • The waste / used waste oil from the WTGs to be disposed of to a CPCB/SPCB authorized vendor. • A hazardous waste inventory is maintained as per the provisions of the Hazardous Waste (Management, Handling and Trans-boundary Movement) Rules, 2008.
Measured/calculated/default	Measured
Source of data	Project O&M HSE logbook, or interview with maintenance staff.
Value(s) applied	The O&M log book records all the parameters as listed: • Hazardous waste generated, disposed, any spillages • Waste oil generated, disposed, any spillages • Leakage of any diesel or waste oil The same O&M HSE log book is submitted to DOE. This parameter has a neutral (0) impact as there has been no incidence of oil leakage or inappropriate disposal of hazardous or waste oil during the monitoring period.
Monitoring equipment	-
Measuring/reading/recording frequency:	Annually
Calculation method(if applicable):	By Project/Plant Manager, O & M Contractor
QA/QC procedures:	-

Purpose of data:	To monitor compliance to Safeguarding Principle 4.2.2 (Release of pollutants)
Additional comments:	-

Relevant Safeguarding principle: Safeguarding principle 4.3.1: Landscape Modification and Soil

Data/parameter:	Maintenance of Landscape visual impact
Unit	Aesthetics
Description	Detailed ESIA study conducted to understand if any of the location needs to be altered. Locals were consulted wherever a WTG location or access road was in vicinity to a settlement. The WTGs are painted with non-reflect paints and are not glary. Re-vegetation taken up as necessary after construction, in order to reduce the risk of soil erosion.
Measured/calculated/default	Measured
Source of data	Project Grievance register, or interview with local villagers
Value(s) applied	No significant visual impact observed and no grievances received. Vegetation has been grown wherever possible in the project's land. Apart from this, the project proponent has planted a number of trees to improve the landscape visual impact. The parameter has a neutral (0) impact as there are no grievances received or registered. The WTGs are spread across the terrain and hence have minimalistic presence.
Monitoring equipment	-
Measuring/reading/recording frequency:	Annually
Calculation method(if applicable):	Manually by Project/Plant Manager, O & M Contractor
QA/QC procedures:	Project Grievance register, or interview with local villagers
Purpose of data:	This parameter is included to be in line with the GS4GG Transition Annex, however and it positively impacts Safeguarding Principle 9.1: Landscape Modification and Soil.
Additional comments:	-

Relevant Safeguarding principle: Safeguarding principle 4.3.11: Endangered Species

Data/parameter:	Bird & Bat Deaths
Unit	Bird Carcass Count
Description	- During the siting activity, it was ensured that there are no water bodies beside WTGs. - Water pits are not allowed around the WTGs.

	- None of the area of WTGs erection or transmission lines are under sensitive or under areas of conservation importance - The transmission lines wherever required has reflectors Storm water control around within 100m of every WTG
Measured/calculated/default	Measured
Source of data	Bird Strike register, or interview with local villagers
Value(s) of monitored parameter	The O&M team maintains a Bird strike register. As per the record, there are no observed carcasses in vicinity of the WTGs. The dead of birds by other reasons including prey and accidents has been observed however as this is not caused by the project's WTGs and its ancillary; it is not recorded. The impact of parameter is neutral as there is no impact observed during the current monitoring period. The DoE has been provided with details of observations.
Monitoring equipment	-
Measuring/reading/recording frequency:	Annually
Calculation method(if applicable):	-
QA/QC procedures:	-
Purpose of data:	To monitor the Safeguarding Principle 4.3.11 Endangered Species
Additional comments:	-

Relevant Safeguarding principle: Safeguarding principle 4.3.5: Hazardous Waste

Data/parameter:	Hazardous Waste
Unit	Not Applicable
Description	The manufacture, trade, release and use of hazardous and non-hazardous chemicals and/or materials.
Measured/calculated/default	-
Source of data	Plant records
Value(s) applied	1007.68 kg
Monitoring equipment	NA
Measuring/reading/recording frequency:	Once in every monitoring period
Calculation method(if applicable):	-
QA/QC procedures:	The waste is disposed to the waste handlers and the firm is complying with all the local laws for monitoring and disposal.
Purpose of data:	Analysis of safeguarding principle
Additional comments:	-

D.3. Comparison of monitored parameters with last monitoring period

Data/Parameter	Value obtained in this monitoring period	Value obtained last monitoring period
NA		
NA		

D.4. Implementation of sampling plan

Not Applicable

SECTION E. CALCULATION OF SDG IMPACTS**E.1. Calculation of baseline value or estimation of baseline situation of each SDG Impact**

For the monitoring period (01/01/2021– 31/12/2021) covering 1st CP (01/01/2015 - 31/12/2021)

SDG 7: Affordable and Clean Energy:

The monitoring parameter for the SDG 7 is Quantity of net electricity supplied to the grid during the year y. Since baseline and pre-project scenario are same, in the baseline condition no renewable electricity will be supplied to grid from the project location. Hence, the baseline value is zero.

SDG 8: Decent Work and Economic Growth

The monitoring parameter for the SDG 8 are Number of trainings provided to employees & O&M staff, income generation and Number of O&M staffs involved in the project. Since baseline and pre-project scenario are same, in the baseline condition these values are zero.

SDG 13: Climate Actions

The monitoring parameter for the SDG 13 is GHG emission reduction. Baseline Emissions for the amount of electricity supplied by project activity, BE_y is calculated as

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

Where,

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

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

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

Calculation of $EG_{PJ,y}$

As per para 48 of ACM0002, version 16 (used in CP1), when the project activity is installation of Greenfield power plant, then:

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

Where:

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

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

For this monitoring period, the emission reduction is calculated as below:

The Electricity export & import are monitored continuously and reported monthly in the JMR/B-Form. The monthly reported export & import values as per Share Certificate Issued by ReGen and JMR (Joint Meter Reading) and summary of baseline emission calculation is given below-

For the monitoring period (01/01/2021– 31/12/2021) covering 1st CP (01/01/2015 - 31/12/2021)

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

$$BE_y = 191,132.01 \times 0.9770$$

$$BE_y = 186,735 \text{ tCO}_2 \text{ (Round down)}$$

Vintage	Emission Reduction (tCO ₂ e)
2021	186,735

For the monitoring period (01/01/2022– 31/12/2022) covering 2nd CP (01/01/2022 – 31/12/2026)

SDG 7: Affordable and Clean Energy:

The monitoring parameter for the SDG 7 is Quantity of net electricity supplied to the grid during the year y. Since baseline and pre-project scenario are same, in the baseline condition no renewable electricity will be supplied to grid from the project location. Hence, the baseline value is zero.

SDG 8: Decent Work and Economic Growth

The monitoring parameter for the SDG 8 are Number of trainings provided to employees & O&M staff, income generation and Number of O&M staffs involved in the project. Since baseline and pre-project scenario are same, in the baseline condition these values are zero.

SDG 13: Climate Actions

The monitoring parameter for the SDG 13 is GHG emission reduction. Baseline Emissions for the amount of electricity supplied by project activity, BE_y is calculated as

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

Where,

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

$EG_{PJ, facility, y}$ = Total quantity of net electricity delivered to the Indian grid.

$EF_{grid, CM, y}$ = Combined margin CO_2 emission factor for grid connected power generation in year y

As per para 41 of ACM0002, version 20 (used in CP2), when the project activity is installation of Greenfield power plant, then:

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

Where,

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

For this monitoring period, the emission reduction is calculated as below:

The Electricity export & import are monitored continuously and reported monthly in the JMR. The monthly reported export & import values as per Share Certificate Issued by ReGen and JMR (Joint Meter Reading) and summary of baseline emission calculation is given below-

For the monitoring period (01/01/2022– 31/12/2022) covering 2nd CP (01/01/2022 – 31/12/2026)

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

$$BE_y = 182,582 \times 0.9305$$

$$BE_y = 169,892 \text{ tCO}_2 \text{ (Round down)}$$

Vintage	Emission Reduction (tCO_2e)
2022	169,892

For the complete monitoring period 01/01/2021 to 31/12/2022

$$BE_y = (186,735 + 169,892) \text{ tCO}_2$$

$$BE_y = 356,627 \text{ tCO}_2 \text{ (Round down)}$$

E.2. Calculation of project value or estimation of project situation of each SDG Impact

For the monitoring period (01/01/2021– 31/12/2021) covering 1st CP (01/01/2015 - 31/12/2021)

SDG 7 Affordable and Clean Energy:

The monitoring parameter for the SDG 7 is Quantity of net electricity supplied to the grid during the year y. In the project situation, the project supplied 191,132.01 MWh electricity during the monitoring period (01/01/2021 to 31/12/2021) of 1st CP. This can be crosschecked from JMR/B-Form & Invoices.

SDG 8: Decent Work and Economic Growth

The monitoring parameter for the SDG 8 are Number of trainings provided to employees O&M staff, income generation & Number of O&M staffs involved in the project. During the project scenario of 1st CP covering the MP of 01/01/2021 to 31/12/2021, following is achieved:

Number of trainings – 41

Income generation – 125.70 Lakhs

Number of Employment –83

These can be crosschecked from the training records, O&M contract & employment records.

SDG 13 Climate Actions

The monitoring parameter for the SDG 13 is Quantity of emission reduction during the year y. In the project situation, the project reduced 186,735 tCO₂e during the monitoring period (01/01/2021 to 31/12/2021) of 1st CP. This parameter is calculated and no such QA/ QC is required.

As mentioned in the PDD, the project activity involves the generation of electricity from the installation of wind turbines. Hence, as per ACM0002, Version 16.0, for the 1st CP covering the MP of 01/01/2021 to 31/12/2021 there is no project emission for windmill projects. Therefore, project emissions are zero.

PE_y = 0

For the monitoring period (01/01/2022– 31/12/2022) covering 2nd CP (01/01/2022 – 31/12/2026)

SDG 7 Affordable and Clean Energy:

The monitoring parameter for the SDG 7 is Quantity of net electricity supplied to the grid during the year y. The project supplied 182,582 MWh electricity during the monitoring period (01/01/2022 to 31/12/2022) of 2nd CP. This can be crosschecked from JMR/B-Form & Invoices.

SDG 8: Decent Work and Economic Growth

The monitoring parameter for the SDG 8 are Number of trainings provided to employees O&M staff, income generation & Number of O&M staffs involved in the project. During the project scenario of 2nd CP covering the MP of 01/01/2022 to 31/12/2022, following is achieved:

Number of trainings – 39

Income generation – 131.98 Lakhs

Number of Employment –83

These can be crosschecked from the training records, O&M contract & employment records.

SDG 13 Climate Actions

The monitoring parameter for the SDG 13 is Quantity of emission reduction during the year y. The project reduced 169,892 tCO₂e during the monitoring period (01/01/2022 to 31/12/2022) of 2nd CP. This parameter is calculated and no such QA/ QC is required.

As mentioned in the RCP-PDD, the project activity involves the generation of electricity from the installation of wind turbines. Hence, as per ACM0002, Version 20.0, for the 2nd CP covering the MP of 01/01/2022 to 31/12/2022 there is no project emission for windmill projects. Therefore, project emissions are zero.

$PE_y = 0$

Total $PE_y = 0$

Therefore, for the complete monitoring period 01/01/2021 to 31/12/2022 the following SDGs are as follows:

SDG 7 Affordable and Clean Energy:

Therefore, the total quantity of net electricity supplied to the grid during the complete period 01/01/2021 to 31/12/2022 is 373,714.01 MWh.

SDG 8: Decent Work and Economic Growth

Therefore, the total Number of trainings provided to employees O&M staff, income generation & Number of O&M staffs involved in the project scenario covering the complete period of 01/01/2021 to 31/12/2022, following is achieved:

Number of trainings – 80

Income generation – 257.68 Lakhs

Number of Employment – 83

SDG 13 Climate Actions

Therefore, the total Quantity of emission reduction covering both the monitoring periods is 356,627 tCO₂e.

E.3. Calculation of leakage

As per PDD version 2.0, no leakage emissions are considered in the project activity. The main emissions potentially giving rise to leakage in the context of electric sector projects are emissions arising due to activities such as power plant construction and upstream emissions from fossil fuel use (e.g. extraction, processing, transport). Since the emissions sources are small, it is neglected.

LE_y= 0

As per RCP PDD version 4.0, no leakage emissions are applicable. Therefore, the leakage emissions are zero.

LE_y= 0

Hence, Total LE_y= 0

E.4. Calculation of net benefits or direct calculation for each SDG Impact

SD G	SDG Impact	Baseline estimate	Project estimate	Net benefit
13	Emission Reduction (tCO ₂ e)	356,627	0	356,627
7	Renewable Electricity Generated (MWh)	0	373,714.01	373,714.01

8	Trainings provided to O&M staff (Nos)	0	80	80
	Income generation (Lakh INR)	0	257.68	257.68
	Number of Jobs generated	0	83	83

E.5. Comparison of actual SDG Impacts with estimates in approved PDD

The below comparison is for the 1st CP covering MP of 01/01/2021 to 31/12/2021

SDG	Values estimated in ex ante calculation of approved PDD for this monitoring period	Actual values ¹⁹ achieved during this monitoring period
13	176,331 tCO ₂ emission reduction for this monitoring period (365 days)	186,735 tCO ₂ emission reduction
7	180,478 MWh Renewable electricity Generation for this monitoring period	191,132.01 MWh Renewable electricity generation
8	1 Training for this monitoring period 93.8 Lakh INR income generation for this monitoring period 89 employment generation for this monitoring period	41 Training 125.70 Lakh INR income generation 83 employment generation

The below comparison is for the 2nd CP covering MP of 01/01/2022 to 31/12/2022

SDG	Values estimated in ex ante calculation of approved PDD for this monitoring period	Actual values ²⁰ achieved during this monitoring period
13	167,934 tCO ₂ emission reduction (365 days)	169,892 tCO ₂ emission reduction
7	180,478 MWh Renewable electricity generation	182,582 MWh Renewable electricity generation
8	1 Training	39 Training

¹⁹ Whenever emission reductions are capped, both the original and capped values used for calculations must be transparently reported. Use brackets to denote original values.

²⁰ Whenever emission reductions are capped, both the original and capped values used for calculations must be transparently reported. Use brackets to denote original values.

NA (No estimation provided in PDD or Transition annex)	131.98 Lakh INR income generation
15 employment generation	83 employment generation

E.5.1. Explanation of calculation of value estimated ex ante calculation of approved PDD for this monitoring period

The estimated value is based on the estimated value provided for 1 year in the PDD and the actual number of operating days in the monitoring period. The calculation is provided below.

The below comparison is for the 1st CP covering MP of 01/01/2021 to 31/12/2021

SDG	Parameter	Annual Average Estimation as per PDD	Estimation for the monitoring period	Actual Achieved during the monitoring period	Difference
7	Renewable electricity generation	180,478	180,478	191,132.01	5.90%
8	Number of Trainings Conducted	1	1	41	4000%
	Income generation (Lakh INR)	93.8	94	125.70	34%
	Number of Employment	89	89	83	-7%
13	Emission Reduction	176,331	176,331	186,735	5.90%

The below comparison is for the 2nd CP covering MP of 01/01/2022 to 31/12/2022

SDG	Parameter	Annual Average Estimation as per PDD	Estimation for the monitoring period	Actual Achieved during the monitoring period	Difference
7	Renewable electricity generation	180,478	180,478	182,582	1.17%
8	Number of Trainings Conducted	1	1	39	3800%

	Income generation (Lakh INR)	NA	NA	131.98	NA
	Number of Employment	15	15	83	453%
13	Emission Reduction	167,934	167,934	169,892	1.17%

E.6. Remarks on increase in achieved SDG Impacts from estimated value in approved PDD

SDG 8: Actual number of trainings conducted during the monitoring period is higher than the estimated value as per PDD. The O&M is managed by third party and hence during registration PP has considered conservative value for the number of trainings in the PDD.

SDG 7 & 13: The estimated value of generation and emission reductions is lower than the actual values achieved during monitoring period of 01/01/2021 to 31/12/2021. Due to high wind availability, the actual electricity generation is 5.90% higher than estimated generation. This is due to the variability of wind and planned maintenance of the WTGs during the monitoring period, this is not in control of Project Owner. Similarly, the estimated value of generation and emission reductions is lower than the actual values achieved during monitoring period of 01/01/2022 to 31/12/2022. Due to high wind availability, the actual electricity generation is 1.17% higher than estimated generation. This is due to the variability of wind and planned maintenance of the WTGs during the monitoring period, this is also not in control of Project Owner.

SECTION F. SAFEGUARDS REPORTING

The safeguarding parameters monitored during the 1st CP covering monitoring period 01/01/2021 to 31/12/2021 as per PDD

Safeguarding Principle 4.3.4: Release of pollutants

Data/parameter:	Air quality
Mitigation measures followed	In order to reduce dust emissions during the construction phase, the following dust suppression measures stipulated and implemented: • Spraying water and covering material trucks' body to minimize dust; • Reuse of water for sprinkling of unpaved roads. • Imposition of speed controls for vehicles and unpaved

	site roads; • Well-maintained diesel-powered mechanical equipment to avoid black smoke emissions; • Shut-down of diesel-powered mechanical equipment or trucks inside the worksites when they are not in operation.
Source	Central Electricity Authority: "CO ₂ Emission Database CEA CO ₂ Baseline database Version 10" published by Central Electricity Authority (CEA), Ministry of Power, Government of India
Additional comments:	-

Safeguarding Principle 4.2.2: (Erosion and/or Water Body Instability)

Data/parameter:	Soil Erosion
Mitigation measures followed	• General soil erosion and sediment control measures would include: • Keep open areas of excavation to a minimum and construction activities restricted to dry months to avoid heavy rainfalls; • Using existing roads and lanes used by land owner. • Stockpiles of materials placed away from drainage lines and formed with sediment control structures placed immediately down slope; • Construction debris and excavated material were cleared up at regular intervals • Excavated material stock piled and used for backfilling of foundations, platforms etc. • Minimization of traffic in construction zones and use of a dedicated parking area, i.e. site compound; • Re-vegetation taken up as necessary after construction, in order to reduce the risk of soil erosion. • Specific mitigation measures followed in the operational phase of the project: • Proper drainage controls such as culverts, cut-off trenches shall be used to ensure proper management of surface water runoff to prevent erosion. • Waste oil generated shall be stored separately in containers in a secured location in the maintenance room. The storage location and the containers are properly marked. • The waste / used waste oil from the WTGs to be disposed of to a CPCB/SPCB authorized vendor. • A hazardous waste inventory is maintained as per the provisions of the Hazardous Waste (Management, Handling and Trans-boundary Movement) Rules, 2008. The possibility of soil erosion due to the project operation is negligible to none. Hence, does not involve many mitigation measures.

Source	Project O&M HSE logbook, or interview with maintenance staff
Additional comments:	-

Safeguarding Principle 4.3.1: Landscape Modification and Soil

Data/parameter:	Maintenance of Landscape visual impact
Mitigation measures followed	Detailed ESIA study was conducted to understand if any of the location needs to be altered. As per ESIA report, no change in location is required. Locals were consulted wherever a WTG location or access road was in vicinity to a settlement. No complaints received from any local people. The WTGs are painted with non-reflect paints and are not glary. Vegetation has been grown wherever possible in the project's land. Apart from this, the project proponent has planted a number of trees to improve the landscape visual impact.
Source	Project Grievance register, or interview with local villagers
Additional comments:	-

Safeguarding Principle 4.3.11 Endangered Species

Data/parameter:	Bird & Bat Deaths
Mitigation Measures followed	During the construction the following mitigation measures followed: 1. During the siting activity it was ensured that there are no water bodies beside WTGs. 2. Water pits are not allowed around the WTGs. 3. None of the area of WTGs erection or transmission lines are under sensitive or under areas of conservation importance 4. The transmission lines wherever required has reflectors 5. Storm water control around within 100m of every WTG During operation of the project, the following mitigation measures followed: PP maintains a Bird Strike register and investigate in case of any Bird or Bat Deaths. However, during the monitoring period no bird or bats death reported.
Monitoring frequency	Continuous monitoring of birds & bats death
Source	Interview with maintenance staff.
Additional comments	-

Safeguarding Principle 3.8 Achieve universal health coverage, including financial risk protection, access to quality essential health-care services and access to safe, effective, quality and affordable essential medicines and vaccines for all

Data/parameter:	Livelihood of the poor
Mitigation Measures followed	-
Monitoring frequency	Annually
Source	CSR records and photographic evidence.
Additional comments	-

The safeguarding parameters monitored during the 2nd CP covering monitoring period 01/01/2022 to 31/12/2022 as per PDD

Safeguarding Principle 9.5 Hazardous and Non- hazardous Waste

Data/parameter:	Hazardous Waste
Mitigation Measures followed	The waste is disposed to the waste handlers and the firm is complying with all the local laws for monitoring and disposal.
Monitoring frequency	Once in a monitoring period
Source	Plant Records
Additional comments	-

Safeguarding Principle 2 Gender Equality

Data/parameter:	Gender Equality
Mitigation Measures followed	The project proponent is committed to the employee's equal pay for equal work during all phases of the project.
Monitoring frequency	Once in a monitoring period
Source	Plant Records
Additional comments	-

Safeguarding Principle 6.1 Labour Rights

Data/parameter:	Labour Rights
Mitigation Measures followed	The project developer ensures the training of workers, documentation and reporting of accidents and incidents, and emergency preparedness and response measures.
Monitoring frequency	Once in a monitoring period
Source	Plant Records
Additional comments	-

SECTION G. STAKEHOLDER INPUTS AND LEGAL DISPUTES

G.1. List all Inputs and Grievances which have been received via the Continuous Input and Grievance Mechanism together with their respective responses/mitigations.

As continuous feedback from stakeholders, grievance register is maintained at project site and is being continuously monitored and addressed through the grievances cell on regular basis which is open for all. Although 2 comments have been received but are not relevant to the project activity and both are been resolved during the current monitoring period only.

G.2. Report on any stakeholder mitigations that were agreed to be monitored.

Not Applicable

G.3. Provide details of any legal contest that has arisen with the project during the monitoring period

No legal contest or dispute arisen with the project during the monitoring period.

Appendix 1 Calibration details

Details	Main meter	Check meter
Meter Number	MPC65127	MPC65126
Make	Secure	Secure
Accuracy class	0.2s	0.2s
Location	220kV Pooling Substation	220kV Pooling Substation
Date of calibration	20/03/2019	20/03/2019
Validity	19/03/2022	19/03/2022

Details	Main meter	Check meter
Meter Number	Q0321953 ²¹	Q0231954
Make	Apex 100	Apex 100
Accuracy class	0.2s	0.2s
Location	220kV Pooling Substation	220kV Pooling Substation
Date of Previous calibration	22/12/2020	22/12/2020
Date of calibration	07/12/2021	07/12/2021
Validity	06/12/2024	06/12/2024

²¹The meters MPC65127 and MPC65126 were replaced by Q0321953 and Q0231954 on 22/12/2020. The meters are calibrated once in three years as per the registered Validation Report version 03.0 dated 02/08/2022.

Appendix 2 Training details

The below data is for 1st CP covering MP from 01/01/2021 to 31/12/2021

Date	Topics	Total no. of trainings
16/01/2021	DCN work instruction and importance	1
16/01/2021	Nitrogen protection system	1
30/01/2021	Covid 19 (HSE)	1
30/01/2021	Hydraulic trouble shooting	1
06/02/2021	DGR preparation and report analysis	1
09/02/2021	Duty and responsibility	1
06/03/2021	WEC performance and evaluation	1
06/03/2021	VCB operation	1
06/03/2021	Waste management	1
09/03/2021	HR monthly meeting	1
19/03/2021	Covid 19 awareness (HSE)	1
20/03/2021	Darwing box training	1
20/03/2021	Covid 19 & Health and safety (HSE)	1
27/03/2021	Accountability	1
27/03/2021	WTG performance check and calibration procedure	1
31/03/2021	Culture sensitivity and Diversity	1
10/04/2021	Excel training	1
18/04/2021	Pitch system	1
16/05/2021	Converter system	1
18/05/2021	Culture sensitivity, inclusion & Diversity	1
18/05/2021	Culture sensitivity, inclusion & Diversity	1
18/06/2021	Awareness session of GMAT	1
19/06/2021	Awareness session of defense driving (HSE)	1
19/06/2021	Developing gratitude and empathy of work	1
17/07/2021	Work instruction of IGBT stack replacement	1
19/07/2021	Awareness session on covid 3rd wave (HSE)	1
24/07/2021	VSS C&R Panel	1
28/08/2021	Excel training	1
28/08/2021	SAP training	1
04/09/2021	Wiring Diagram study and awareness	1
10/09/2021	Basic information of WTG	1
11/09/2021	Transformer maintenance	1
11/09/2021	Covid 19 awareness (HSE)	1
30/09/2021	GTMs ticketing system	1

09/10/2021	SOP & PM Activity training	1
04/12/2021	Internal line maintenance and wedge clamp installation	1
04/12/2021	SCADA system & operation	1
04/12/2021	Modification in turbine & its purpose	1
06/12/2021	E maintenance and preparation	1
18/12/2021	Emotional intelligence	1
18/12/2021	PPEs (HSE)	1
Total		41

The below data is for 2nd CP covering MP from 01/01/2022 to 31/12/2022

Date	Topics	Total no. of trainings
26/03/2022	MPU study and block diagram	1
26/03/2022	Implementation of LOTO	1
30/03/2022	Adoptability and change mindset	1
02/04/2022	Study of blade basics	1
05/04/2022	POSH	1
10/04/2022	Converter System Operation	1
23/04/2022	Awareness training on unsafe act & unsafe condition (HSE)	1
23/04/2022	Awareness on EHS procedures and system	1
11/05/2022	EHS	1
14/05/2022	Fire safety	1
14/05/2022	Heat stress	1
11/06/2022	Awareness on permit to work	1
11/06/2022	Behaviour based safety	1
18/06/2022	Pitch system and trouble shooting	1
18/06/2022	LOTO	1
14/07/2022	Awareness on incident management	1
14/07/2022	LOTO	1
23/07/2022	Performance check of WTG	1
30/07/2022	LOTO	1
30/07/2022	Awareness on road accident (HSE)	1
06/08/2022	Hydraulic basic training	1
06/08/2022	Confined space awareness (HSE)	1
19/08/2022	Defensive driving (HSE)	1
20/08/2022	GIMS	1
27/08/2022	Work at height (HSE)	1
03/09/2022	PPE (HSE)	1
10/09/2022	Portable and electrical hand tool machine guarding	1
01/10/2022	H&S Plan	1

26/11/2022	ZH and 4-layer discussion	1
10/12/2022	Material handling	1
10/12/2022	Contract safety management	1
12/12/2022	GWO BST training	1
15/12/2022	GWO manual handling training	1
15/12/2022	GWO firefighting training	1
16/12/2022	Work at height	1
17/12/2022	Work at height and self-rescue practical (HSE)	1
18/12/2022	First aid (HSE)	1
19/12/2022	Manual handling	1
19/12/2022	Fire awareness (HSE)	1
Total		39

Revision History

Version	Date	Remarks
1.1	14 October 2020	Hyperlinked section summary to enable quick access to key sections Improved clarity on Key Project Information Section for POA monitoring Forward action request section Improved Clarity on SDG contribution/SDG Impact term used throughout Clarity on safeguard reporting Clarity on design changes Leakage section added for VER/CER projects Addition of Comparison of monitored parameters with last monitoring period Provision of an accompanying Guide to help the user understand detailed rules and requirements
1.0	10 July 2017	Initial adoption