

TEMPLATE

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

Key Project Information

0 - Description of project

0 - Implementation of project

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KEY PROJECT INFORMATION

This template has been revised to aid a consistent interpretation and to better support project developers submitting documentation for certification. Please read the accompanying guide to understand how to complete this template accurately.

[**TEMPLATE GUIDE Monitoring Report v. 1.1**](#)

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Programme of Activity Information – (delete below table if N/A)

Not applicable

Key Project Information

GS ID (s) of Project (s)	GS11402
Title of the project (s) covered by monitoring report	Mandsaur Wind Power Project in Madhya Pradesh
Version number of the PDD/VPA-DD (s) applicable to this monitoring report	05
Version number of the monitoring report	06
Completion date of the monitoring report	21/07/2023
Date of project design certification	
Date of Last Annual Report	Not Applicable
Monitoring period number	01
Duration of this monitoring period	01/10/2019 to 30/06/2022(including both date)
Project Representative	EKI Energy Services Limited
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 Version 20. Grid-connected electricity generation from renewable sources
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 13- Take urgent action to combat climate change and its impact	Emission reductions	151,582 tCO ₂ e	GS VER
SDG 7- Ensure access to affordable, reliable and modern energy for all	MWh of renewable energy generated	161,169.546	MWh
SDG 8 - Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all	Number of trainings and hiring through project	Total number of trainings imparted to employees during the entire monitoring period: 91 Total number of employment opportunities ¹ created during the entire monitoring period: 50	Number of trainings and Employment generated through project

Table 2 – Product Vintages

		Amount Achieved		
Start Dates	End Dates	SDG 7	SDG 8	SDG 13
01/10/2019	31/12/2019	7754.55 MWh	11 people were employed and 9 trainings	7,387 tCO ₂ e(GS VER)

¹ It is to be noted that the employment numbers are not cumulative (unlike ERs) and the year-wise bifurcation is given in Table 2 for both employment & training.

			were conducted	
01/01/2020	31/12/2020	55,762.25 MWh	14 people were employed and 5 trainings were conducted	53,125 tCO ₂ e(GS VER)
01/01/2021	31/12/2021	59,920.35 MWh	12 people were employed and 47 trainings were conducted	55,963 tCO ₂ e(GS VER)
01/01/2022	30/06/2022	37,732.40	13 people were employed and 30 trainings were conducted	35,107 tCO ₂ e(GS VER)

SECTION A. DESCRIPTION OF PROJECT

A.1. General description of project

The project activity generates power using renewable energy source (wind energy) and sell the power generated to the National grid. The project activity generates electricity using wind energy. The generated electricity is exported to the Indian grid system which is under the purview of the INDIAN electricity grid of India.

The project activity replaces anthropogenic emissions of greenhouse gases of 151,582 tCO₂e, thereon displacing 161,169.546 MWh amount of 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 total installed capacity of the current project activity is 36² MW; which involves operation of 45 WTGs of 0.8 MW capacity each, in the state of Madhya Pradesh in India.

Project Investor	Project Type	Total Project Capacity	State	Usage
ReNew Wind Energy (MP Two) Private Limited	Wind	36 MW	Madhya Pradesh	Sale to Grid

The project activity start date is 23/12/2014, which is date of signing of supply contract with Wind World (India) Limited.

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

The proposed monitoring period (01/10/2019 to 30/06/2022) of this monitoring report is covered in First & Second Crediting Periods as mentioned below:

Sl. No.	Crediting Period Number	CP Duration		MP Duration	
		From	To	From	To
1	First	01/04/2016	31/03/2021	01/10/2019	31/03/2021
2	Second	01/04/2021	31/03/2026	01/04/2021	30/06/2022

A.2. Location of project

Host Country: India

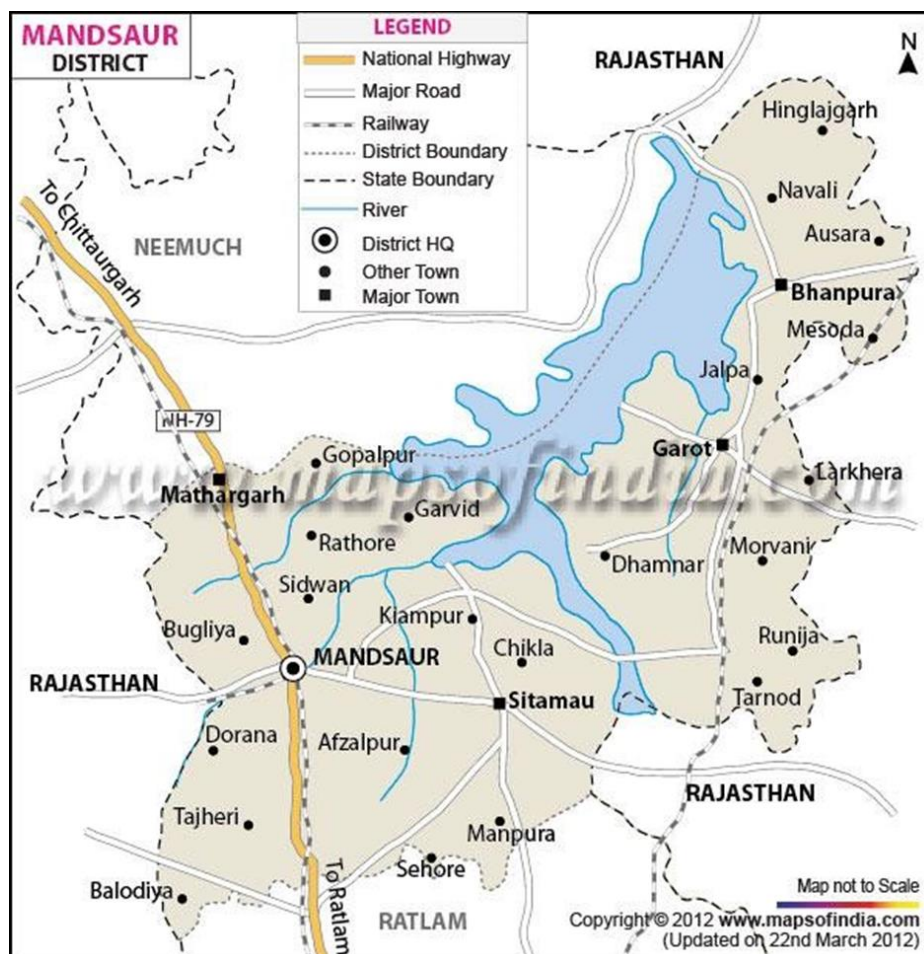
State: Madhya Pradesh

District: Mandsaur

² During registration of the project on UNFCCC CDM mechanism, investor planned 55.2 MW of project capacity. However, 36 MW of capacity has been commissioned till date.

Village: Rewas Devda & Surrounding area

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



Location details of the WTGs are mentioned below:

Sl.No.	WTG ID	Service Location No.	WTG Capacity	Latitude (N)	Longitude (E)
1	MAN_2	RWEMS-01	0.8 MW (each)	N 24° 05' 19.3"	E 74° 58' 54.1"
2	MAN_4	RWEMS-02		N 24° 05' 22.7"	E 74° 58' 47.3"
3	MAN_5	RWEMS-03		N 24° 05' 29.7"	E 74° 58' 52.2"
4	MAN_6	RWEMS-04		N 24° 05' 30.1"	E 74° 58' 39.9"
5	MAN_7	RWEMS-05		N 24° 05' 40.1"	E 74° 58' 46.1"
6	MAN_8	RWEMS-06		N 24° 05' 36.3"	E 74° 58' 31.0"
7	MAN_9	RWEMS-07		N 24° 05' 43.3"	E 74° 58' 31.1"
8	MAN_10	RWEMS-08		N 24° 05' 51.2"	E 74° 58' 29.7"
9	MAN_11	RWEMS-09		N 24° 05' 56.5"	E 74° 58' 23.3"
10	MAN_12	RWEMS-10		N 24° 05' 42.8"	E 74° 58' 13.5"
11	MAN_13	RWEMS-11		N 24° 05' 44.2"	E 74° 57' 59.7"
12	MAN_14	RWEMS-12		N 24° 05' 50.7"	E 74° 57' 56.3"
13	MAN_15	RWEMS-13		N 24° 05' 57.4"	E 74° 57' 46.3"
14	MAN_16	RWEMS-14		N 24° 06' 01.7"	E 74° 58' 02.9"
15	MAN_17	RWEMS-15		N 24° 06' 11.8"	E 74° 58' 05.6"

16	MAN_18	RWEMS-16		N 24° 06' 14.8"	E 74° 57' 57.7"
17	MAN_19	RWEMS-17		N 24° 06' 05.5"	E 74° 57' 37.2"
18	MAN_20	RWEMS-18		N 24° 06' 11.2"	E 74° 57' 32.6"
19	MAN_21	RWEMS-19		N 24° 06' 14.9"	E 74° 57' 25.3"
20	MAN_22	RWEMS-20		N 24° 06' 23.7"	E 74° 57' 27.4"
21	MAN_23	RWEMS-21		N 24° 06' 22.9"	E 74° 57' 39.1"
22	MAN_24	RWEMS-22		N 24° 06' 35.5"	E 74° 57' 33.8"
23	MAN_25	RWEMS-23		N 24° 06' 40.2"	E 74° 57' 28.0"
24	MAN_26	RWEMS-24		N 24° 06' 44.0"	E 74° 57' 19.7"
25	MAN_27	RWEMS-25		N 24° 06' 52.9"	E 74° 57' 47.1"
26	MAN_28	RWEMS-26		N 24° 06' 59.3"	E 74° 57' 45.0"
27	MAN_29	RWEMS-27		N 24° 07' 05.9"	E 74° 57' 36.3"
28	MAN_30	RWEMS-28		N 24° 07' 13.4"	E 74° 57' 28.6"
29	MAN_31	RWEMS-29		N 24° 07' 20.0"	E 74° 57' 24.8"
30	MAN_32	RWEMS-30		N 24° 07' 28.4"	E 74° 57' 13.5"
31	MAN_33	RWEMS-31		N 24° 07' 20.3"	E 74° 57' 13.6"
32	MAN_34	RWEMS-32		N 24° 06' 19.8"	E 74° 56' 47.7"
33	MAN_35	RWEMS-33		N 24° 06' 24.9"	E 74° 56' 42.0"
34	MAN_36	RWEMS-34		N 24° 06' 33.1"	E 74° 56' 33.2"
35	MAN_37	RWEMS-35		N 24° 06' 40.0"	E 74° 56' 46.1"
36	MAN_40	RWEMS-36		N 24° 06' 40.9"	E 74° 56' 25.1"
37	MAN_38	RWEMS-37		N 24° 06' 45.3"	E 74° 56' 39.4"
38	MAN_39	RWEMS-38		N 24° 06' 53.4"	E 74° 56' 40.8"
39	MAN_41	RWEMS-39		N 24° 06' 48.4"	E 74° 56' 23.8"
40	MAN_42N	RWEMS-40		N 24° 06' 55.2"	E 74° 56' 21.5"
41	MAN_43	RWEMS-41		N 24° 07' 03.0"	E 74° 56' 12.1"
42	MAN_44	RWEMS-42		N 24° 07' 08.7"	E 74° 55' 57.9"
43	MAN_45	RWEMS-43		N 24° 07' 07.7"	E 74° 56' 44.8"
44	MAN_46	RWEMS-44		N 24° 07' 15.5"	E 74° 56' 44.4"
45	MAN_56	RWEMS-45		N 24° 08' 02.2"	E 74° 56' 21.0"

A.3. Reference of applied methodology

Title: Grid-connected electricity generation from renewable sources

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

Methodology: ACM0002: Grid-connected electricity generation from renewable sources - Version 20.0³

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

Category: Approved Consolidated Methodology (ACM0002)

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

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

- Tool to calculate the emission factor for an electricity system⁴- Version 07.0 (EB 100, Annex 04)
- Tool for the demonstration and assessment of additionality⁵- Version 07.0.0 (EB 70, Annex 08)
- Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period, Version 03.0.1⁶

A.4. Crediting period of project

The first crediting period of this project activity is from 01/04/2016 to 31/03/2021. The second crediting period of this project activity is from 01/04/2021 to 31/03/2026.

⁴ <http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v7.0.pdf>

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

⁶ <https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-11-v3.0.1.pdf>

SECTION B. IMPLEMENTATION OF PROJECT

B.1. Description of implemented project

The total installed capacity of the project is 36 MW, which comprises of 45 Wind Turbine Generators (WTGs) in Madhya Pradesh. The WTGs used in the project activity are of Wind World (India) Limited.

Technical specifications of WTG model: Wind World (India) Ltd make WW-53/0.8 MW⁷

S.N.	Parameter	Specification/ Value with unit
1	Rated power	800 kW
2	Rotor diameter	52.9 m
3	Hub height	75 m
4	Turbine type	Direct drive horizontal axis wind turbine with variable rotor speed
5	Power regulation	Independent pitch system for each blade
6	Cut in wind speed	3 m/s
7	Rated wind speed	12.6 m/s
8	Cut out wind speed	24-28 m/s
9	Operational range of rot. speed	12-29 rpm
10	Orientation	Up-wind
11	No. of blades	3
12	Blade material	Fibre glass epoxy reinforced
13	Gear box type	Gearless
14	Generator type	Synchronous
15	Braking	Aerodynamic
16	Output voltage	400 V
17	Tower	Concrete
18	Useful life	20 years

The commissioning dates of WTGs are mentioned below:

Sl.No.	WTG ID	Service Location No.	WTG Capacity	Date of Commissioning
1	MAN_2	RWEMS-01	0.8 MW (each)	30/09/2015
2	MAN_4	RWEMS-02		30/09/2015
3	MAN_5	RWEMS-03		30/09/2015
4	MAN_6	RWEMS-04		30/09/2015
5	MAN_7	RWEMS-05		30/09/2015
6	MAN_8	RWEMS-06		30/09/2015
7	MAN_9	RWEMS-07		30/09/2015
8	MAN_10	RWEMS-08		30/09/2015

⁷ <https://en.wind-turbine-models.com/turbines/1430-wind-world-india-ww-53>

9	MAN_11	RWEMS-09		30/09/2015
10	MAN_12	RWEMS-10		30/09/2015
11	MAN_13	RWEMS-11		30/09/2015
12	MAN_14	RWEMS-12		30/09/2015
13	MAN_15	RWEMS-13		30/09/2015
14	MAN_16	RWEMS-14		30/09/2015
15	MAN_17	RWEMS-15		30/09/2015
16	MAN_18	RWEMS-16		30/09/2015
17	MAN_19	RWEMS-17		30/09/2015
18	MAN_20	RWEMS-18		30/09/2015
19	MAN_21	RWEMS-19		31/10/2015
20	MAN_22	RWEMS-20		31/10/2015
21	MAN_23	RWEMS-21		31/10/2015
22	MAN_24	RWEMS-22		31/10/2015
23	MAN_25	RWEMS-23		31/10/2015
24	MAN_26	RWEMS-24		31/10/2015
25	MAN_27	RWEMS-25		31/10/2015
26	MAN_28	RWEMS-26		31/10/2015
27	MAN_29	RWEMS-27		31/10/2015
28	MAN_30	RWEMS-28		31/10/2015
29	MAN_31	RWEMS-29		31/10/2015
30	MAN_32	RWEMS-30		31/10/2015
31	MAN_33	RWEMS-31		31/10/2015
32	MAN_34	RWEMS-32		28/12/2015
33	MAN_35	RWEMS-33		28/12/2015
34	MAN_36	RWEMS-34		28/12/2015
35	MAN_37	RWEMS-35		28/12/2015
36	MAN_40	RWEMS-36		28/12/2015
37	MAN_38	RWEMS-37		27/03/2017
38	MAN_39	RWEMS-38		27/03/2017
39	MAN_41	RWEMS-39		27/03/2017
40	MAN_42N	RWEMS-40		27/03/2017
41	MAN_43	RWEMS-41		27/03/2017
42	MAN_44	RWEMS-42		27/03/2017
43	MAN_45	RWEMS-43		27/03/2017
44	MAN_46	RWEMS-44		27/03/2017
45	MAN_56	RWEMS-45		27/03/2017

Technology Transfer

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

B.1.1 Forward Action Requests

No Forward Action Requests from Design Certification or previous Performance Certification is applicable.

B.2. Post-Design Certification changes

Not Applicable during the current monitoring period. There are no post-design certification changes for this project.

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

Not Applicable during the current monitoring period. There are no temporary deviations in the monitoring & reporting plan, methodology or standardized baseline of the project.

B.2.2. Corrections

Not Applicable during the current monitoring period. There are no corrections.

B.2.3. Changes to start date of crediting period

Not Applicable during the current monitoring period. There is no change in start date of crediting period.

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

Not Applicable during the current monitoring period. There are no permanent changes from the design certified monitoring plan, applied methodology or applied standardized baseline of this project.

B.2.5. Changes to project design of approved project

Not Applicable during the current monitoring period. There are no changes to project design of the approved project.

SECTION C. DESCRIPTION OF MONITORING SYSTEM APPLIED BY THE PROJECT

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

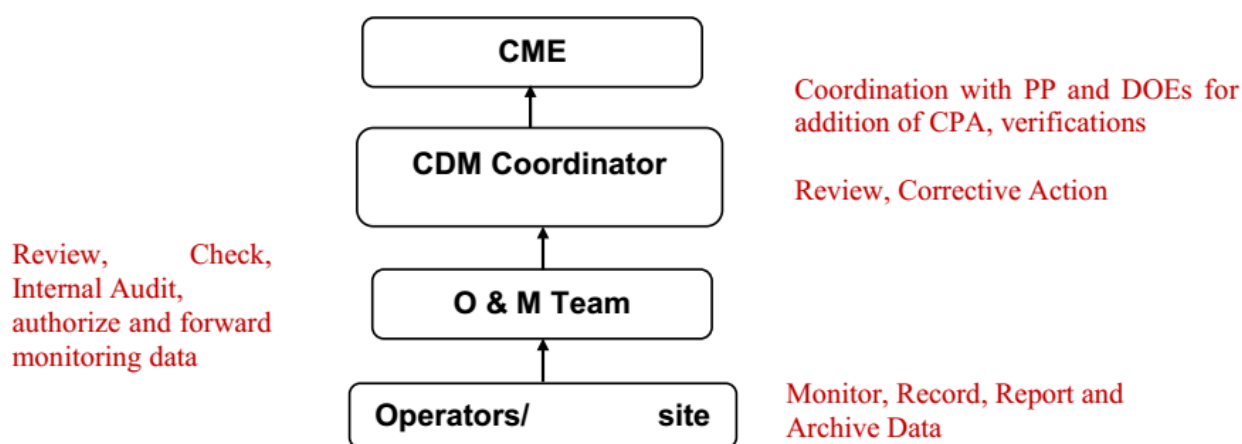
Meter readings are taken jointly at the appointed date by PP's representative, Wind World (India) Ltd. official and State Discom official. The same is reported as Joint Meter Reports (JMR). The same is reported to the O&M team and the complied reports are generated in the form of monthly report on generation and consumption.

Net electricity supplied by the project activity to the grid is cross-checked with records for sold electricity by invoices raised for the payment purpose.

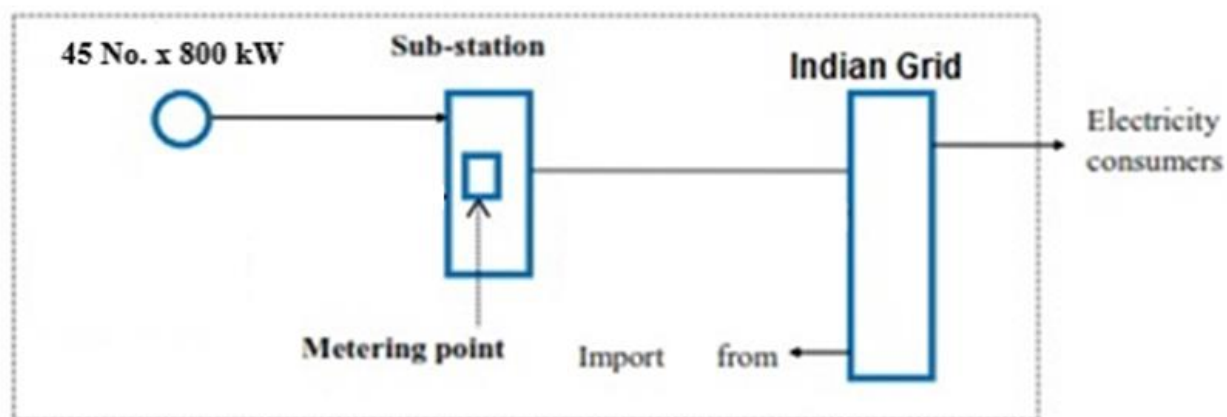
One metering system is there at the substation/yard and another at the WTG site. If the variation between the two meter readings is significant for the monthly recording of data, the meters will be reset and calibrated. The measurement is taken from the energy meter located in the substation/yard. Meter reading is carried out in every calendar month.

The accuracy of monitoring parameter is ensured by adhering to the calibration and testing procedure as set in the power purchase agreement. The project adhere to all mandatory regulatory and statutory requirements at the state as well as national level. The energy meters installed are tri-vector meters of 0.2% accuracy class.

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



Apportioning of net electricity supplied is not required as the WTGs are connected with dedicated feeder i.e only WTGs of project developer are connected in same feeder. The metering location diagram is shown below:



Procedures for handling data uncertainty:

- a. In case main meter is faulty: In the event that the main metering system is not in the service as result of maintenance, repairs or testing, then the backup metering system shall be used during the period the main metering system is not in service and the provisions above shall apply to the reading of the backup metering system.
- b. In case both the meters are faulty: When the Main Metering System and/or Backup Metering System and/or any component thereof is found to be outside the acceptable limit of accuracy or otherwise not functioning properly, it shall be repaired, recalibrated or replaced as soon as possible by the state agency. The error observed during this calibration will be applied to all readings from last correct JMR / last meter calibration. State agency will ensure that metering system is tested for accuracy at least once in year and report furnished along with joint meter reading.

Any meter seal(s) shall be broken only by the authorised officer of state agency in the presence of representative of Power Producers/ Developers, whenever the Main Metering System or the backup metering system is to be inspected, tested, adjusted, repaired or replaced.

In case, the monitoring period starts mid- month, the reading for that month will be apportioned based on the daily electricity export data give by the O&M contractor. This will be also checked with the average daily export arrived from that month's JMR and the conservative of the two will be used for the emission reduction calculation.

Apportioning Procedure

Procedure for apportioning of electricity:

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

Apportioning will be carried out based on ratio of generation data recorded using LCS installed at the each WTG. The emission reductions of that particular period (between the start/end date of monitoring period and the end/start of the billing period) will be calculated based on percentage generation of that particular period at WTG using LCS

data multiplied with the total units generated in the month as per the Joint Meter Reading Sheets / Generation report issued. The calculation formula has been furnished below:

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

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

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

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

Where:

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

y2 = No. of days in the billing period

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

All the WTGs are connected with dedicated feeder. So there is no non-project WTG which is connected with same meter. So there is no need of apportioning of meter reading on the basis of generation ratio for each month.

Impact of CP1 & CP2 on the Monitored Values:

As the monitoring period is covered in CP1 & CP2 of the project activity, the Emission Factor of 0.9528 & the Emission Factor of 0.9305 is used for CP1 & CP2 respectively.

Hence,

The number of Emission Reductions in CP1 comes out to be – 69,529 tCO₂e

The number of Emission Reductions in CP2 comes out to be – 82,053 tCO₂e

SECTION D. DATA AND PARAMETERS

D.1. Data and parameters fixed ex ante or at renewal of crediting period SDG13 (Indicators 13.2.1)

For the First Crediting Period

Data/parameter	EF_{grid,OM,y}
Unit	tCO ₂ /MWh
Description	Operating Margin CO ₂ emission factor in year y
Source of data	Calculated from CEA database, Version 7, January 2012 ⁸
Value(s) applied	0.9842
Choice of data or Measurement methods and procedures	Calculated as per "Tool to calculate the emission factor for an electricity system, version 07" as per the latest data available for the most three recent years 2008-09, 2009-10 and 2010-11 of NEWNE Grid. The data is obtained from "CO ₂ Baseline Database for Indian Power Sector" version 7, published by the Central Electricity Authority, Ministry of Power, Government of India.
Purpose of data	For the calculation of the Baseline Emission
Additional comment	This parameter is fixed ex-ante for the entire crediting period.

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

⁸ <https://cea.nic.in/cdm-co2-baseline-database/?lang=en>

Source of data	Calculated from CEA database, Version 7, January 2012 ⁹
Value(s) applied	0.8588
Choice of data or Measurement methods and procedures	Calculated as per "Tool to calculate the emission factor for an electricity system, version 07" as per the latest data available for the most recent year 2010-11 of NEWNE Grid. The data is obtained from "CO ₂ Baseline Database for Indian Power Sector" version 7, published by the Central Electricity Authority, Ministry of Power, Government of India.
Purpose of data	For the calculation of the Baseline Emission
Additional comment	This parameter is fixed ex-ante for the entire crediting period.

Data/parameter	EF_{grid,CM,y}
Unit	tCO ₂ /MWh
Description	Combined Margin CO ₂ emission factor in year y
Source of data	Calculated from CEA database, Version 7, October 2012 ¹⁰
Value(s) applied	0.9528
Choice of data or Measurement methods and procedures	The combined margin emissions factor is calculated as follows: $EF_{grid,CM,y} = EF_{grid,OM,y} * W_{OM} + EF_{grid,BM,y} * W_{BM}$ Where: EF_{grid,BM,y}= Build margin CO₂ emission factor in year y (tCO₂/MWh) EF_{grid,OM,y}= Operating margin CO₂ emission factor in year y (tCO₂/MWh) W_{OM} = Weighting of operating margin emissions factor (%) = 75% W_{BM} = Weighting of build margin emissions factor (%) = 25%

⁹ <https://cea.nic.in/cdm-co2-baseline-database/?lang=en>

¹⁰ <https://cea.nic.in/cdm-co2-baseline-database/?lang=en>

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

For the Second Crediting Period

Data/parameter	EF_{grid,OM,y}
Unit	tCO ₂ /MWh
Description	Operating Margin CO ₂ emission factor in year y
Source of data	Calculated from CEA database, Version 17, October 2021 ¹¹
Value(s) applied	0.9522
Choice of data or Measurement methods and procedures	Calculated as per "Tool to calculate the emission factor for an electricity system, version 07" as per the latest data available for the most three recent years 2018-19, 2019-20 and 2020-21. The data is obtained from "CO ₂ Baseline Database for Indian Power Sector" version 17, published by the Central Electricity Authority, Ministry of Power, Government of India.
Purpose of data	For the calculation of the Baseline Emission
Additional comment	This parameter is fixed ex-ante for the entire crediting period.

Data/parameter	EF_{grid,BM,y}
Unit	tCO ₂ /MWh
Description	Build Margin CO ₂ emission factor in year y
Source of data	Calculated from CEA database, Version 17, October 2021 ¹²
Value(s) applied	0.8653

¹¹ https://cea.nic.in/wp-content/uploads/tpe_cc/2022/02/User_Guide_ver_17_2021.pdf

¹² https://cea.nic.in/wp-content/uploads/tpe_cc/2022/02/User_Guide_ver_17_2021.pdf

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

Data/parameter	EF_{grid,CM,y}
Unit	tCO ₂ /MWh
Description	Combined Margin CO ₂ emission factor in year y
Source of data	Calculated from CEA database, Version 17, October 2021 ¹³
Value(s) applied	0.9305
Choice of data or Measurement methods and procedures	The combined margin emissions factor is calculated as follows: $EF_{grid,CM,y} = EF_{grid,OM,y} * W_{OM} + EF_{grid,BM,y} * W_{BM}$ Where: EF_{grid,BM,y}= Build margin CO₂ emission factor in year y (tCO₂/MWh) EF_{grid,OM,y}= Operating margin CO₂ emission factor in year y (tCO₂/MWh) W_{OM} = Weighting of operating margin emissions factor (%) = 75% W_{BM} = Weighting of build margin emissions factor (%) = 25%
Purpose of data	For the calculation of the Baseline Emission
Additional comment	This parameter is fixed ex-ante for the entire crediting period.

¹³ https://cea.nic.in/wp-content/uploads/baseline/2021/06/User_Guide_ver_16_2021-1.pdf

Since the project activity is applying for combined transition and renewal of the second crediting period, the latest emission factor calculated from the latest CEA database has been considered for the second crediting period and emission factor used in UNFCCC CDM mechanism for the same project has been used for First Crediting Period.

D.2 Data and parameters monitored

SDG 13 (Indicators 13.2.1)

Data / Parameter	ER_y								
Unit	tCO ₂ e								
Description	Emission reductions achieved per year								
Source of data	ER Sheet								
Value(s) applied	<table border="1"> <thead> <tr> <th>Period</th><th>Emission Reduction (tCO₂e)</th></tr> </thead> <tbody> <tr> <td>CP1(01/10/2019 to 31/03/2021)</td><td>69,529</td></tr> <tr> <td>CP2(01/04/2021 to 30/06/2022)</td><td>82,053</td></tr> <tr> <td>Total</td><td>151,582</td></tr> </tbody> </table>	Period	Emission Reduction (tCO ₂ e)	CP1(01/10/2019 to 31/03/2021)	69,529	CP2(01/04/2021 to 30/06/2022)	82,053	Total	151,582
Period	Emission Reduction (tCO ₂ e)								
CP1(01/10/2019 to 31/03/2021)	69,529								
CP2(01/04/2021 to 30/06/2022)	82,053								
Total	151,582								
Measurement methods and procedures	The baseline emissions are the product of electrical energy baseline EG _{facility,y} expressed in MWh of electricity produced by the renewable generating unit multiplied by an emission factor.								
Monitoring frequency	As per monitoring period								
QA/QC procedures	Not Applicable								
Purpose of data	To Monitor the SDG 13 Indicator								
Additional comment	Data will be archived in paper & electronic form for two years after the end of crediting period or of the last issuance of VERs for this project activity, whichever occurs later.								

SDG 7 (Indicators 7.2.1)

Data / Parameter	EG_{facility, y}						
Unit	MWh						
Description	Quantity of net electricity generation supplied by the project plant/unit in year y in MWh						
Source of data	Monthly report on generation and consumption provided by Wind World (India) Ltd.						
Value(s) applied	<table border="1"> <thead> <tr> <th>Period</th><th>Net Generation(MWh)</th></tr> </thead> <tbody> <tr> <td>CP1(01/10/2019 to 31/03/2021)</td><td>72,981.546</td></tr> <tr> <td>CP2(01/04/2021 to 30/06/2022)</td><td>88,188</td></tr> </tbody> </table>	Period	Net Generation(MWh)	CP1(01/10/2019 to 31/03/2021)	72,981.546	CP2(01/04/2021 to 30/06/2022)	88,188
Period	Net Generation(MWh)						
CP1(01/10/2019 to 31/03/2021)	72,981.546						
CP2(01/04/2021 to 30/06/2022)	88,188						

	Total	161,169.546																																			
Measurement methods and procedures	The JMR is usually taken once in month for the bulk/ revenue meter at the common substation/yard. Based on the JMR a monthly report on generation and consumption is prepared by the Wind World (India)Ltd. By using these data, net export by the WTGs in the project activity is calculated (as in some case net export is not explicitly reported in JMR).																																				
	Measurement by: electricity meters (bulk, WTG controller/ CMS)																																				
	Recording: Electronic and paper																																				
	Recording Frequency: Continuous monitoring and monthly recording																																				
	Responsibility: The operators/ O&M team is responsible for measurement																																				
	Calibration Testing Frequency: Annually																																				
	Accuracy class of meters: 0.2s/ 0.5s (as per state regulation)																																				
	Archiving: Crediting Period + 2 years																																				
	<table><tr><td>Feeder</td><td>Meter No.</td><td>Meter Type</td><td>Make</td><td>Accuracy</td></tr><tr><td rowspan="2">Feeder 1 (Daloda)</td><td>XB593636</td><td>Main Meter</td><td>SEMS</td><td>0.2</td></tr><tr><td>XB593635</td><td>Check Meter</td><td>SEMS</td><td>0.2</td></tr><tr><td rowspan="2">Feeder 2 (Daloda)</td><td>XC522563</td><td>Main Meter</td><td>SEMS</td><td>0.2</td></tr><tr><td>XA474851</td><td>Check Meter</td><td>SEMS</td><td>0.2</td></tr><tr><td rowspan="2">Feeder 3 (Malhargarh)</td><td>XD505810</td><td>Main Meter</td><td>SEMS</td><td>0.2</td></tr><tr><td>XD505811</td><td>Check Meter</td><td>SEMS</td><td>0.2</td></tr></table>					Feeder	Meter No.	Meter Type	Make	Accuracy	Feeder 1 (Daloda)	XB593636	Main Meter	SEMS	0.2	XB593635	Check Meter	SEMS	0.2	Feeder 2 (Daloda)	XC522563	Main Meter	SEMS	0.2	XA474851	Check Meter	SEMS	0.2	Feeder 3 (Malhargarh)	XD505810	Main Meter	SEMS	0.2	XD505811	Check Meter	SEMS	0.2
	Feeder	Meter No.	Meter Type	Make	Accuracy																																
Feeder 1 (Daloda)	XB593636	Main Meter	SEMS	0.2																																	
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	XA474851	Check Meter	SEMS	0.2																																	
Feeder 3 (Malhargarh)	XD505810	Main Meter	SEMS	0.2																																	
	XD505811	Check Meter	SEMS	0.2																																	
Meter calibration details have been provided in Annexure 1 of Monitoring Report.																																					
Monitoring frequency	Continuous measurement & monthly recording																																				
QA/QC procedures	Cross check measurement results with records for sold electricity – where electricity sale is applicable																																				
Purpose of data	To Monitor the SDG 7 Indicator																																				
Additional comment	Data will be archived in paper & electronic form for two years after the end of crediting period or of the last issuance of VERs for this project activity, whichever occurs later.																																				

SDG 8 (Indicators 8.5.1)

Data / Parameter	Number of employment generation																												
Unit	Number																												
Description	Number of people employed directly due to the project activity																												
Source of data	Plant records or The training records for all the employees/Letter from O&M contractor for employment generation/ DOE interview with employees, local stakeholders etc																												
Value(s) applied	Total employment opportunities generated during the current monitoring period is 50. Further, below is the breakup of employment generated during the monitoring period. <table><tr><th>Year</th><th>Skilled</th><th>Unskilled</th><th>Total</th></tr><tr><td>2019</td><td>8</td><td>3</td><td>11</td></tr><tr><td>2020</td><td>8</td><td>6</td><td>14</td></tr><tr><td>2021</td><td>8</td><td>4</td><td>12</td></tr><tr><td>2022</td><td>10</td><td>3</td><td>13</td></tr></table> Four unskilled female staffs were employed during the current monitoring period. Crediting Period wise break up is show below: <table><tr><th>Period</th><th>Employment Generated</th></tr><tr><td>CP1(01/10/2019 to 31/03/2021)</td><td>29</td></tr><tr><td>CP2(01/04/2021 to 30/06/2022)</td><td>21</td></tr><tr><td>Total</td><td>50</td></tr></table>	Year	Skilled	Unskilled	Total	2019	8	3	11	2020	8	6	14	2021	8	4	12	2022	10	3	13	Period	Employment Generated	CP1(01/10/2019 to 31/03/2021)	29	CP2(01/04/2021 to 30/06/2022)	21	Total	50
Year	Skilled	Unskilled	Total																										
2019	8	3	11																										
2020	8	6	14																										
2021	8	4	12																										
2022	10	3	13																										
Period	Employment Generated																												
CP1(01/10/2019 to 31/03/2021)	29																												
CP2(01/04/2021 to 30/06/2022)	21																												
Total	50																												
Measurement methods and procedures	The total number of persons working in the plant is checked from the daily attendance sheet available at site. This parameter also monitors number of men/women employed by the project activity. The project activity ensures that “equal pay for work of equal value” for both men and women and there is no any discrimination against women. "The employment covers number of men and number of women employed by the project activity. The job is of type temporary/permanent or skilled/unskilled, etc. Also it is ensured that people gets equal payment for equal work. The payment is based on work and no any gender inequality for payment for work of equal value”. The average hourly earnings of a person is calculated by considering 8 hours per day working as per Indian standards and is depicted below.																												

	For e.g, a person is getting a monthly salary of INR 19,632; then his hourly earnings is calculated as follows: Hourly Income = $19,632 / (30 \times 8) = \text{INR } 81.8$. The hourly wages can be checked from the notification from the order published by the Chief Labour Commissioner (Central)¹⁴. As per the notification from Chief Labour Commissioner, for semi-skilled workers working in B Category of cities, the daily wage is 625, and accordingly the average hourly earnings come out to be INR 78.12. Thus, it can be justified that, PP is providing the employees/workers with salary/wages higher than the minimum wages as determined by the minimum wages order published by Chief Labour Commissioner (Central). The same can be checked from the salary slips provided. Also, as India is a member of International Labour Organization(ILO), project developer maintains the standards set by ILO¹⁵.
Monitoring frequency	Monthly monitoring and annual compilation
QA/QC procedures	The number of persons employed is mentioned in the plant register, which can be crossed checked with attendance register. Average hourly earnings of the employees/workers can be checked and calculated from the salary slips.
Purpose of data	To Monitor the SDG 8 Indicator
Additional comment	-

SDG 8 (Indicators 8.6.1)

Data / Parameter	Quality of Employment
Unit	-
Description	Number of trainings provided per year
Source of data	Plant records or the training records for all the employees / DOE interview with employees, etc.

¹⁴ <https://clc.gov.in/clc/min-wages>

¹⁵ <https://www.ilo.org/global/standards/introduction-to-international-labour-standards/lang--en/index.htm>

Value(s) applied	During the current monitoring period, a total of 91 trainings were conducted. The training details are provided below:	
	Year	Training
	2019	Fire & Safety Training – 2 Nos. Mock Drill – 2 Nos. Repairing Training – 1 No. PM & BM Documentation – 1No. Behaviour based Safety – 1 No. Instrument Handling – 1 No. Work and Height – 1 No.
	2020	Mock Drill – 1 No. Emergency Preparedness Plan – 1 No. First Aid Training – 1 No. LOTO, PTW, TBT & Incidence Sharing – 1 No. SHE Training – 1 No.
	2021	Safety Training – 4 Nos. Covid 19 Awareness – 2 Nos. Information on MTTR, MTBF, MTBY – 1 No. Work at Height – 4 Nos. M&DS Training – 1 No. PTW Training & Incident Management – 3 Nos. First Aid Training – 3 Nos. Mock Drill on Fire – 1 No. Fire Safety – 2 Nos. SHE Training – 1 No. Mock Drill on Height – 2 Nos. Hazard Identification & Risk Assessment – 2 Nos. Flood Awareness – 1 No. Road Travel Safety – 2 Nos. Incidence Sharing – 2 Nos. LOTO Awareness – 2 No. PM Preparedness – 2 Nos. Material Lifting & Handling – 2 Nos. Mock Drill on Snake Bite – 1 No. Technical Document – 1 No.

		Awareness on Plastic Use – 1 No. Electrical PM Preparedness – 1 No. Electrical Equipment Testing – 1No. TBT on WTG – 1 No. Electrical Safety Training – 1 No. Permit to Work System – 1 No. Emergency Response Plan – 1 No. Mock Drill on Earth Quake Awareness – 1 No.
	2022	Road Safety – 2 Nos. TBT on WTG – 1 No. Electrical Safety -3 Nos. Fire Fighting – 1 No. Hazard Control – 2 Nos. First Aid – 2 Nos. Site Safety – 4 Nos. Permit to Work System – 1 No. Incident Management – 2 Nos. Emergency Response Plan – 2 Nos. Mock Drill on Earth Quake Awareness – 1 No. PM Awareness – 1 No. MSDS Awareness – 1 No. Lifting Tools -1 No. HSE Training -2 Nos. HIRA Awareness – 2 Nos. PTW, TBT & LOTO – 1 No. Site Maintenance -1 No.
Crediting Period wise break up is show below:		
	Period	Training Conducted
	CP1(01/10/2019 to 31/03/2021)	29
	CP2(01/04/2021 to 30/06/2022)	62
	Total	91
Measurement methods and procedures	Together with the technology supplier, the Project organize training for the staff on the technology and the monitoring of the plant operation, and the emergency and safety procedures.	
Monitoring frequency	Annual	

QA/QC procedures	The training records for all the employees
Purpose of data	To Monitor the SDG 8 Indicator
Additional comment	-

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	NA

This section is Not Applicable since no community service activities are involved in this project activity.

D.4. Implementation of sampling plan

There is no sampling plan used for this project activity.

SECTION E. CALCULATION OF SDG IMPACTS

E.1. Calculation of baseline value or estimation of baseline situation of each SDG Impact

For SDG 7 and SDG 8, the baseline estimate is zero as due to absence of plant no power from renewable energy sources would be generated and no employment would be made.

SDG 13: Climate Action

For the current monitoring period, the emission reductions contributed by the project activity (ER_y) is calculated as follows:

For the period covered in CP1:

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

Where:

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

$$\begin{aligned} BE_y &= 72,981.546 \text{ MWh} \times 0.9528 \text{ tCO}_2/\text{MWh} \\ &= 69,529 \text{ tCO}_2\text{e (Round down value)} \end{aligned}$$

For the period covered in CP2:

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

Where:

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

$$BE_y = 88,188.00 \text{ MWh} \times 0.9305 \text{ tCO}_2/\text{MWh}$$

$$= 82,053 \text{ tCO}_2\text{e (Round down value)}$$

Hence, the total is = 69,529 tCO₂e + 82,053 tCO₂e = 151,582 tCO₂e

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

SDG 7: Affordable and Clean Energy

For the current monitoring period, the clean energy generation contributed by the project activity is 161,169.546 MWh.

Generation in CP1 = 72,981.546 MWh

Generation in CP2 = 88,188 MWh

SDG 8: Decent Work and Economic Growth

The project leads to employment opportunities which would not have been possible in the baseline scenario. During the current monitoring period, the project activity provided employment to 50 persons.

Also project activity improves the quality of employment by giving training to employee. During the current monitoring period, 91 trainings has been conducted.

SDG 13: Climate Action

The SDG 13 project estimate in current monitoring period is zero. As it is a renewable energy project activity, there is no project emission.

E.3. Calculation of leakage

This is not Applicable as per the consolidated methodology ACM0002, version 20.0.

So, $LE_y = 0\text{tCO}_2\text{e}$.

So, emission reduction in current monitoring period is,

$$ER_y = BE_y - PE_y - LE_y$$

Where:

ER_y = Emission reductions in year y (tCO₂e)

BE_y = Baseline emissions in year y (tCO₂e)

PE_y = Project emissions in year y (tCO₂e)

LE_y = Leakage emissions in year y (tCO₂e)

Therefore,

$$ER_y = 151,582 - 0 - 0$$

= 151,582 tCO₂e.

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

SDG	SDG Impact	Baseline estimate	Project estimate	Net benefit
13	Climate Action	151,582 tCO ₂ e	-	151,582 tCO ₂ e
7	Affordable and Clean Energy	-	161,169.546 MWh	161,169.546 MWh
8	Decent Work and Economic Growth	-	No. of Employment Opportunities created: 50 No. of trainings conducted: 91	No. of Employment Opportunities created: 50 No. of trainings conducted: 91

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

SDG	Values estimated in ex ante calculation of approved PDD for this monitoring period	Actual values ¹⁶ achieved during this monitoring period			
13	153,710 tCO ₂ e	151,582 tCO ₂ e			
7	163,060.603 MWh	161,169.546 MWh			
8	3 training and employment to 28 persons	Total number of trainings imparted to employees during the entire monitoring period: 91			
		Total number of employment opportunities created during the entire monitoring period: 50			
		Year	Skilled	Unskilled	Total
		2019	8	3	11
		2020	8	6	14
		2021	8	4	12

¹⁶ Whenever emission reductions are capped, both the original and capped values used for calculations must be transparently reported. Use brackets to denote original values.

		2022	10	3	13
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E.5.1. Explanation of calculation of value estimated ex ante calculation of approved PDD for this monitoring period

The annual estimated power generation for the project activity is 59,280 MWh, thus considering number of days covered during present monitoring period to be 1004, the estimated power generation will be 163,060.603 MWh.

SDG 8: Decent Work and Economic Growth

The project leads to employment opportunities which would not have been possible in the baseline scenario. The project will provide employment to at least 10 persons per year. Taking the Monitoring Period is of 1,004 days, the estimated number of employment for this monitoring period is 28.

Also project activity improves the quality of employment by giving training to employee. Thus, minimum 1 training per year will be conducted by the project activity. Taking the Monitoring Period is of 1,004 days, the estimated number of training for this monitoring period is 3.

SDG 13: Climate Action

The annual estimated emission reduction for the project activity is 56,481 tCO₂e for CP1 and 55,160 tCO₂e for CP2, thus considering number of days covered during present monitoring period to be 1004 (within which 548 days are from first crediting period and 456 days are from second crediting period), the estimated emission reduction contributing towards SDG 13 will be 153,710 tCO₂e.

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

SDG 7 and SDG 13:

A total of 1.16% lower generation and 1.38% lower emission reduction achieved with respect to estimated values due to lower wind speed in some days. The generation is nature dependent and it will vary based on wind conditions and PP do not have any control on it.

SDG 8:

Number of training and employment figure is slightly higher, which is conservative.

SECTION F. SAFEGUARDS REPORTING

Environmental Safeguard

Data / Parameter	Noise and Shadow Flickering
Unit	-

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

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

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 a part of continuous feedback from stakeholders, the grievances register is placed at site and is being continuously monitored and if any comments are received, they are addressed through the grievance cell.

During the current monitoring period, there were no comments/feedbacks received in the grievance register.

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 Not Applicable.

Annexure 1: Meter Calibration Details

Meter Location	Meter No.	Meter Type	Make	Accuracy Class	Date of Calibration	Validity of Calibration	Delay in Calibration¹⁷
Feeder 1 (Daloda)	XB593636	Main Meter	SEMS	0.2	08/02/2019	07/02/2020	08/02/2020 to 22/10/2020
					23/10/2020	22/10/2021	
					23/10/2021	22/10/2022	
	XB593635	Check Meter	SEMS	0.2	23/10/2020	22/10/2021	
					23/10/2021	22/10/2022	
Feeder 2 (Daloda)	XC522563	Main Meter	SEMS	0.2	08/02/2019	07/02/2020	08/02/2020 to 22/10/2020
					23/10/2020	22/10/2021	
					23/10/2021	22/10/2022	
	XA474851	Check Meter	SEMS	0.2	23/10/2020	22/10/2021	
					23/10/2021	22/10/2022	
Feeder 3 (Malhargarh)	XD505810	Main Meter	SEMS	0.2	08/02/2019	07/02/2020	08/02/2020 to 22/10/2020
					23/10/2020	22/10/2021	
					23/10/2021	22/10/2022	
	XD505811	Check Meter	SEMS	0.2	23/10/2020	22/10/2021	
					23/10/2021	22/10/2022	

¹⁷Error Factor 0.2% has been applied where delay in calibration occurred.

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