



Monitoring report form for CDM project activity
(Version 06.0)

Complete this form in accordance with the instructions attached at the end of this form.

MONITORING REPORT

Title of the project activity	Tadas wind farm in Karnataka	
UNFCCC reference number of the project activity	9083	
Version number of the PDD applicable to this monitoring report	03.0	
Version number of this monitoring report	01.0	
Completion date of this monitoring report	11/05/2019	
Monitoring period number	02	
Duration of this monitoring period	01/12/2014 - 31/03/2019 (both dates are included)	
Monitoring report number for this monitoring report	NA	
Project participants	Tadas Wind Energy Private Limited (previously known as Tadas Wind Energy Limited)	
Host Party	India	
Sectoral scopes	Sectoral Scope: 01 Energy Industries (renewable/ non – renewable sources)	
Applied methodologies and standardized baselines	Applied Methodology: ACM0002, v13.0.0 (Consolidated baseline methodology for grid-connected electricity generation from renewable sources)	
Amount of GHG emission reductions or net anthropogenic GHG removals achieved by the project activity in this monitoring period	Amount achieved before 1 January 2013	Amount achieved from 1 January 2013
	0	542,395
Amount of GHG emission reductions or net anthropogenic GHG removals estimated ex ante for this monitoring period in the PDD	542,395	

SECTION A. Description of project activity

A.1. General description of project activity

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Purpose of the project activity: The purpose of the project activity is installation and operation of wind power project of aggregate capacity of 100 MW and supply clean and renewable power to Indian grid.

Measures taken for GHG emission reduction: The CDM project activity is the installation and operation of 125 Wind Electric Generators (WEGs) of 800kW capacities each in Haveri and Dharwad district of Karnataka. The CDM project activity harnesses the available wind power in order to generate electricity and does not consume any fossil fuel, thereby reducing GHG emissions, which would otherwise have been generated by operation of fossil fuel based power projects connected to Indian grid.

The total emission reductions achieved in this second monitoring period (01/12/2014 - 31/03/2019) are 542,395 tCO₂e.

Brief description of installed technology and equipment: The CDM project activity installed 125 WEGs of Wind World (India) Limited (previously known as Enercon (India) Limited) make and generates 3-phase power at 400V. The WEGs are based on gearless technology, which eliminates the mechanical losses. It also combines the variable speed with variable pitch and hence, increases the conversion efficiency. The technical details of the WEG are mentioned below:

PARAMETER	DESCRIPTION
Turbine Model	WW – 53 (previously E – 53)
Rated Power	800 kW
Rotor Diameter	52.9m
Hub Height	75m
Turbine Type	Direct driven, horizontal axis wind turbine; variable rotor speed
Power Regulation	Independent pitch system for each blade
Cut – in speed	3 m/s
Rated wind speed	12 m/s
Cut – out wind speed	28 – 34 m/s (with Enercon Storm Control)
Extreme wind speed	59.5 m/s
Rated rotational speed	29 rpm
Operating range rotational speed	12 – 29 rpm
Orientation	Upwind
Number of Blades	03
Blade Material	Fiber glass, Epoxy reinforced
Gear box type	Gear less
Generator type	Synchronous
Braking	Aerodynamic
Output Voltage	400V
Yaw system	Active yawing with 4 electric yaw drivers and brake motor
Turbine Lifetime	20 years

Relevant dates of the project activity: The purchase order for the project activity was placed by PP dated 27/07/2011. The CDM project activity had been commissioned and connected to Indian grid in the month of May 2012, June 2012, August 2012 and September 2012. The details of the commissioning has been tabulated under:

LOC. NO.	VILLAGE	DISTRICT	COMMISSIONING DATE
77	Hirebendigeri	Haveri	03/05/2012
19A	Hulsogi	Haveri	
302A	Hirebendigeri	Haveri	
70B	Hirebendigeri	Haveri	
70N	Hirebendigeri	Haveri	
72A	Hirebendigeri	Haveri	
74B	Hirebendigeri	Haveri	
75A	Hirebendigeri	Haveri	
75B	Hirebendigeri	Haveri	
76A	Hirebendigeri	Haveri	
78N	Hirebendigeri	Haveri	
79B	Hirebendigeri	Haveri	
80N	Hirebendigeri	Haveri	
82N	Hirebendigeri	Haveri	
44	Tirtha	Dharwad	04/05/2012
511	Hirebendigeri	Haveri	
310A	Jakkankatti, Mantrodi, Kengapura	Haveri	
311B	Jakkankatti, Mantrodi, Kengapura	Haveri	
319A	Jakkankatti, Mantrodi, Kengapura	Haveri	
31A	NM Tadas	Haveri	
321A	Jakkankatti, Mantrodi, Kengapura	Haveri	
322A	Jakkankatti, Mantrodi, Kengapura	Haveri	
323B	Jakkankatti, Mantrodi, Kengapura	Haveri	
32A	NM Tadas	Haveri	
330A	Jakkankatti, Mantrodi, Kengapura	Haveri	
331B	Jakkankatti, Mantrodi, Kengapura	Haveri	
332A	Jakkankatti, Mantrodi, Kengapura	Haveri	
335A	Jakkankatti, Mantrodi, Kengapura	Haveri	
33A	NM Tadas	Haveri	
340C	Jakkankatti, Mantrodi, Kengapura	Haveri	
341D	Jakkankatti, Mantrodi, Kengapura	Haveri	
342C	Jakkankatti, Mantrodi, Kengapura	Haveri	
343G	Jakkankatti, Mantrodi, Kengapura	Haveri	
344A	Jakkankatti, Mantrodi, Kengapura	Haveri	
346A	Jakkankatti, Mantrodi, Kengapura	Haveri	
349A	Jakkankatti, Mantrodi, Kengapura	Haveri	
34C	NM Tadas	Haveri	
350B	Jakkankatti, Mantrodi, Kengapura	Haveri	
351A	Jakkankatti, Mantrodi, Kengapura	Haveri	
37A	NM Tadas	Haveri	
42 B	Tirtha	Dharwad	
43 B	Tirtha	Dharwad	
45C	Tirtha	Dharwad	
46 N	Tirtha	Dharwad	
478B	Jakkankatti, Mantrodi, Kengapura	Haveri	
479A	Jakkankatti, Mantrodi, Kengapura	Haveri	
47A	Tirtha	Dharwad	
480A	Jakkankatti, Mantrodi, Kengapura	Haveri	
481B	Jakkankatti, Mantrodi, Kengapura	Haveri	
483B	Jakkankatti, Mantrodi, Kengapura	Haveri	
55A	Kunkur	Dharwad	
595A	Jakkankatti, Mantrodi, Kengapura	Haveri	
62C	Hanumanahalli, Tirtha, Mattigatti	Dharwad	
493	Hirebendigeri	Haveri	25/05/2012

697	Jakkankatti, Mantrodi, Kengapura	Haveri	
778	Hirenankatti/Vanahalli	Haveri	
798	Jakkankatti, Mantrodi, Kengapura	Haveri	
116N	Hanumanahalli, Tirtha, Mattigatti	Dharwad	
117A	Hanumanahalli, Tirtha, Mattigatti	Dharwad	
132A	Belvelkoppa, Surapgatti	Haveri	
133A	Belvelkoppa, Surapgatti	Haveri	
13A	Hulsogi	Haveri	
14A	Hulsogi	Haveri	
15B	Hulsogi	Haveri	
16 A	Hulsogi	Haveri	
203A	Hirenankatti/Vanahalli	Haveri	
212A	Hirenankatti/Vanahalli	Haveri	
215A	Hirenankatti/Vanahalli	Haveri	
23A	Hulsogi	Haveri	
306D	Hirebendigeri	Haveri	
308C	NM Tadas	Haveri	
312B	Jakkankatti, Mantrodi, Kengapura	Haveri	
314B	Jakkankatti, Mantrodi, Kengapura	Haveri	
334A	Jakkankatti, Mantrodi, Kengapura	Haveri	
336A	Jakkankatti, Mantrodi, Kengapura	Haveri	
38A	NM Tadas	Haveri	
467B	Kunkur	Dharwad	
477C	Hirebendigeri	Haveri	
482D	Jakkankatti, Mantrodi, Kengapura	Haveri	
489A	Hanumanahalli, Tirtha, Mattigatti	Dharwad	
490A	Hanumanahalli, Tirtha, Mattigatti	Dharwad	
492C	Hanumanahalli, Tirtha, Mattigatti	Dharwad	
520A	Jakkankatti, Mantrodi, Kengapura	Haveri	
54 A	Kunkur	Dharwad	
81B	Hirebendigeri	Haveri	
96A	Hirebendigeri	Haveri	
693	Kunkur	Dharwad	22/06/2012
831	Jakkankatti, Mantrodi, Kengapura	Haveri	
114C	Hanumanahalli, Tirtha, Mattigatti	Dharwad	
115C	Hanumanahalli, Tirtha, Mattigatti	Dharwad	
200B	Hirenankatti/Vanahalli	Haveri	
307F	Kunkur	Dharwad	
317D	Jakkankatti, Mantrodi, Kengapura	Haveri	
318B	Jakkankatti, Mantrodi, Kengapura	Haveri	
329D	Jakkankatti, Mantrodi, Kengapura	Haveri	
333E	Jakkankatti, Mantrodi, Kengapura	Haveri	
337A	Jakkankatti, Mantrodi, Kengapura	Haveri	
468C	Kunkur	Dharwad	
491B	Hanumanahalli, Tirtha, Mattigatti	Dharwad	
61B	Hanumanahalli, Tirtha, Mattigatti	Dharwad	
64B	Hanumanahalli, Tirtha, Mattigatti	Dharwad	
715	Kunkur	Dharwad	06/08/2012
130B	Belvelkoppa, Surapgatti	Haveri	
65C	Hanumanahalli, Tirtha, Mattigatti	Dharwad	27/09/2012
524	Hanumanahalli, Tirtha, Mattigatti	Dharwad	
836	Kunkur	Dharwad	
160A	Hanumanahalli, Tirtha, Mattigatti	Dharwad	
160D	Hanumanahalli, Tirtha, Mattigatti	Dharwad	
517D	Hirebendigeri	Haveri	

690A	Kunkur	Dharwad	29/09/2012
928	Hanumanahalli, Tirtha, Mattigatti	Dharwad	
217A	Hirenankatti/Vanahalli	Haveri	
354E	Kyalkonda	Haveri	
355B	Kyalkonda	Haveri	
357C	Kyalkonda	Haveri	
358A	Kyalkonda	Haveri	
359B	Kyalkonda	Haveri	
361D	Kyalkonda	Haveri	
501B	Hulsogi	Haveri	
548A	Hanumanahalli, Tirtha, Mattigatti	Dharwad	
557B	Hanumanahalli, Tirtha, Mattigatti	Dharwad	
63B	Hanumanahalli, Tirtha, Mattigatti	Dharwad	
66 A	Hanumanahalli, Tirtha, Mattigatti	Dharwad	
716C	Kunkur	Dharwad	

A.2. Location of project activity

Host Party : India
District : Haveri; Dharwad
State : Karnataka

A.3. Parties and project participants

Parties involved	Project participants	Indicate if the Party involved wishes to be considered as project participant (Yes/No)
India (host Party)	Private Entity: Tadas Wind Energy Private Limited (previously known as Tadas Wind Energy Limited)	No

A.4. Reference to applied methodologies and standardized baselines

Methodology: ACM0002, v13.0.0 (EB67 Annex13)

Name of Methodology: Consolidated baseline methodology for grid-connected electricity generation from renewable sources

UNFCCC CDM Website Reference:

<https://cdm.unfccc.int/methodologies/DB/M0CSBFOF8RQG5I84XU5Y4WX0I5LHS1>

Methodology Tool: Tool for the demonstration and assessment of Additionality, v06.1.0 (EB69 Annex20)

UNFCCC CDM Website Reference:

<https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-01-v6.1.0.pdf>

Methodology Tool: Tool to calculate emission factor for an electricity system, v02.2.1 (EB63 Annex19)

UNFCCC CDM Website Reference:

<https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v2.2.1.pdf>

A.5. Crediting period type and duration

The crediting period of the registered CDM project activity has been detailed below:

Type of Crediting Period: Fixed

Start Date of Crediting Period: 30/12/2012

Length of Crediting Period: 10 Years

This is the second periodic verification of the monitoring period starting from 01/12/2014 – 30/11/2019 (both days included).

SECTION B. Implementation of project activity

B.1. Description of implemented project activity

The first WEG under the project activity has been commissioned on 03/05/2012 and the last WEG has been commissioned on 29/09/2012. During the current monitoring period, the project activity has been operated and monitored in-line with the provisions of the applied methodology, ACM0002, v13.0.0 and registered CDM-PDD.

The project activity involves installation of 125 WEGs of Wind World (I) Ltd. (*previously Enercon (I) Ltd*) make (E – 53, 800kW) distributed among different villages in Haveri and Dharwad district of Karnataka, India. The WEGs generates 3 – phase power at 400V, stepped – up to 33kV. The average lifetime of the project activity is 20 years. The technical details of the equipment has already been mentioned in section A.1 of CDM-MR-FORM.

The commissioning schedule of all the WEGs included in the project activity has been detailed in section A.1 of CDM-MR-FORM and in <Introduction> workbook of ER spreadsheet.

There are no changes that happened in project activity which may impact the applicability of the methodology. Wind World (I) Ltd (*previously Enercon (I) Ltd*) operation and maintenance activities are ISO certified and all the events are recorded in the log book available at the project site. Referring to the data available it can be inferred that there have not been any major events for any of the machines that are included in the project activity.

B.2. Post-registration changes

B.2.1. Temporary deviations from the registered monitoring plan, applied methodologies or standardized baselines

Project Participant (PP) would like to confirm that the project activity has not temporarily deviated from either of the registered monitoring plan and applied methodology for the current monitoring period.

B.2.2. Corrections

The location numbers and geographical coordinates of 12 WEGs have not been correctly stated in the registered F-CDM-PDD, v02 dated 23/11/2012. Consequently, the location numbers and geo-coordinates have changed from the previous validated values, which was based on the information provided by the service provider at the time of validation. The geographical coordinates of 02 WEGs were not correctly mentioned in the registered F-CDM-PDD, v02 dated 23/11/2012. These corrections are now incorporated in Appendix 8 of revised CDM-PDD-FORM, v03.0, in-line with the requirement of §1 of Appendix 1 of CDM Project Standard, v07.0. In addition, location numbers of 03 WEGs were not correctly stated in the registered F-CDM-PDD, v02 dated 23/11/2012. Same has also been corrected in Appendix 8 of revised CDM-PDD-FORM, v03.0.

B.2.3. Changes to the start date of the crediting period

PP would like to confirm that no changes to the start date of the crediting period has been approved during this monitoring period or submitted with the present monitoring report.

B.2.4. Inclusion of monitoring plan

PP would like to confirm that no inclusion of monitoring plan into the PDD has been approved by the Board or submitted together with this monitoring report.

B.2.5. Permanent changes to the registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines, or other applied standards or tools

PP would like to confirm that no permanent changes from the registered monitoring plan or applied methodology have been approved during this monitoring period or submitted with this monitoring report.

B.2.6. Changes to project design

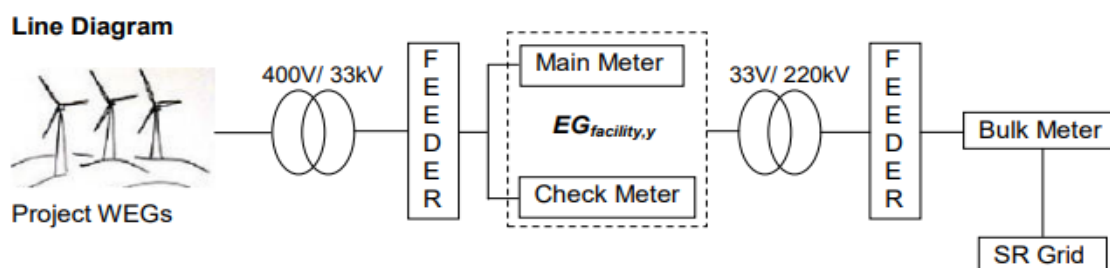
PP would like to confirm that no changes to the project design of the project activity have been approved during this monitoring period or submitted with this monitoring report.

SECTION C. Description of monitoring system

PP applied approved monitoring methodology ACM0002, v13.0.0 in order to monitor the emission reductions from the registered CDM project activity.

Monitoring system of the project activity: As per the applied monitoring methodology, PP is required to monitor the electricity supplied to the grid and grid emission factor. However, the methodology is based on the ex-ante determination of the baseline and therefore, monitoring of grid emission factor is not required. Therefore, PP monitored the electricity supplied to the grid by the project activity.

The electricity is generated at 400V and is stepped-up to 33kV for transmission of electricity. The meters (main and check) are installed at 33kV line. Joint Meter Reading is taken at these meters by the representative of State Electricity Supply Company Limited and PP. The voltage is further stepped-up to 220kV and electricity is supplied to the Indian grid.



Data Collection Procedure: The only data to be monitored as per the monitoring methodology is electricity supplied to the grid by the project activity. Primarily, the data is collected by Wind World (India) Limited (*previously known as Enercon (India) Ltd.*), who are the supplier of WEGs. PP entered into comprehensive O&M contract with Wind World (India) Limited and therefore, they are responsible for primary data collection.

Metering System:

- ➡ There is LCS reading panel at WEG end and one set of main and check meter at 33kV line;
- ➡ A Joint Meter Reading is taken by the representatives respective DISCOM [Hubli Electricity Supply Company Limited (HESCOM)] and Wind Word (I) Ltd. at the high voltage side of the step up transformer at a particular date.
- ➡ In case, the main metering system is not in service; the check metering system is used until the main system is back to service.
- ➡ Joint Meter Reading is taken by the representatives of DISCOM [Hubli Electricity Supply Company Limited (HESCOM)] and Wind World (India) Ltd. (representative of PP) at 33kV line on a particular date
- ➡ The main and the check metering systems shall be sealed in presence of representatives of DISCOM [Hubli Electricity Supply Company Limited (HESCOM)], Wind World (India) Ltd. and PP.

- ➡ When any of these metering system is found to be outside acceptable limits of accuracy or otherwise not functioning properly, it is repaired, recalibrated or replaced.
- ➡ Monthly energy bill/statement shall be raised on the basis of JMR/ credit note at the end of each calendar month. Payment of the sale of electricity is based on JMR/ credit note. The billing and payment record shall be maintained by PP;
- ➡ Calibration and Testing of Meters is done once in three years.

Calculation of monthly generation: Monthly invoice shall be calculated based on the formula provided below:

$$DE = X_i - (X_i \times Z\%)$$

Where:

DE Delivered energy pertaining to the project activity

X_i Reading of energy meter installed at the project's receiving stations

Z Transmission loss (%) incurred in line between project and receiving stations

ii varies from 1 to n which is the number of receiving stations of project activity

$$Z = \frac{(X_1 + X_2 + X_3 + \dots + X_n) - Y}{(X_1 + X_2 + X_3 + \dots + X_n)} \times 100$$

Where

Y Reading of the bulk energy meter installed on the 200 KV side of receiving station
 $X_1, X_2, X_3, \dots, X_n$ readings of the energy meters installed at the various individual wind mill power projects being developed/proposed to be set up in the area and connected to the Receiving Station

Apportionment Procedure: The electricity exported and imported from the grid is recorded on a monthly basis, jointly in the presence of representatives of O&M Contractor [Wind World (I) Ltd.] and distribution licensee personnel. Following the joint meter readings, the O&M Contractors provide the readings of the WEG controller to Distribution licensee. Based on the monthly export and import data as per main/check meters and the WEG controller readings, distribution licensee provides a break-up of the electricity exported and imported for each WEG.

The net electricity generation from each WEG is determined by distribution licensee as follows:

$$\text{Export from WEG (main/ check meter)} = \frac{\text{Generation at WEG controller}}{\text{Total generation at all WEG controllers for the feeder}} \times \text{Export from distribution licensee}$$

$$\text{Import from WEG (main/ check meter)} = \frac{\text{Generation at WEG controller}}{\text{Total generation at all WEG controllers for the feeder}} \times \text{Import from distribution licensee}$$

$$\text{Net electricity export from WEG} = \text{Export from WEG} - \text{Import from WEG}$$

The above calculations would be carried out solely by distribution licensee and only the final apportioned electricity export, import, and net export for each WEG would be reported by distribution licensee in the Credit Notes. The details of the joint meter readings are not reported in the credit notes issued by distribution licensee.

The dates of the monitoring period for the project activity may not coincide with the dates of the Credit Note issued by distribution licensee. In such a scenario, the net electricity generation data would have to be apportioned. For carrying out the apportioning procedures, WEG controller data (data recorded by the WEG controller software) would be utilized. The electricity generation from WEG controllers is recorded on a daily basis in the Power Generation Reports maintained by the O&M contractor. The data from Power Generation Reports would be referred for determination of the apportioning ratio. The following steps will be applied to carry out the apportioning:

$$\text{Apportioning Ratio} = \frac{\text{Generation at WEG controller for apportioning period}}{\text{Generation at WEG controller for period covered under Credit Note Period}}$$

Apportioned electricity export = Apportioning ratio × electricity export as per credit note
 Apportioned electricity import = Apportioning ratio × electricity import as per credit note
 Apportioned Net Electricity Supplied to Grid = Apportioned Electricity Export – Apportioned Electricity Import

Data Archiving & Storage: All the data items monitored under the monitoring plan will be kept for 2 years after the end of crediting period or till the last issuance of CERs for this project activity, whichever occurs later. The data will be archived both electronically and manually.

Roles and Responsibilities:

Role	Organization	Responsibility
Project Manager	PP	<ul style="list-style-type: none"> ↪ Cross – checking of the data collected by O&M Team (Site In-charge, Supervisor, Technician); ↪ Review of the collected data; ↪ Forwarding monitored data to corporate office; ↪ Forwarding the data to CDM Advisor for calculation and reporting of emission reductions.
Site In-charge	Wind World (India) Ltd.	<ul style="list-style-type: none"> ↪ Primary collection of data; ↪ Facilitating timely periodic testing and calibration of monitoring equipment; ↪ Monitoring, recording, reporting and archiving of data.
Supervisor		
Technician		

QA/QC Procedures: There is a reading panel at each WEG end and 0.2s accuracy class, 3-phase, 4-wire tri-vector electronic meters at 33kV line (one main and one check meter) to measure the energy supplied by the project activity.

Calibration Details:

Serial No.	Serial No.	Group	Accuracy Class	Calibration details			
(Main)	(Check)			2014	Due Date*	2018	Due Date
10286994	6675402	TWEL-A	0.2s	31-Jan-14	30-Jan-19	10-Apr-18	9-Apr-23
				7-Jun-14	6-Jun-19		
12090837	12090842	TWEL-B	0.2s	31-Jan-14	30-Jan-19	10-Apr-18	9-Apr-23
				6-Jun-14	5-Jun-19		
11071516	11071508	TWEL-C	0.2s	31-Jan-14	30-Jan-19	10-Apr-18	9-Apr-23
				6-Jun-14	5-Jun-19		
12090407	11071515	TWEL-D	0.2s	31-Jan-14	30-Jan-19	10-Apr-18	9-Apr-23
				6-Jun-14	5-Jun-19		
12090834	12090832	TWEL-E	0.2s	31-Jan-14	30-Jan-19	10-Apr-18	9-Apr-23
				6-Jun-14	5-Jun-19		
12090458	12090461	TWEL-F	0.2s	7-Feb-14	6-Feb-19	10-Apr-18	9-Apr-23
				7-Jun-14	6-Jun-19		
12090460	12090459	TWEL-G	0.2s	30-Jan-14	29-Jan-19	10-Apr-18	9-Apr-23
				7-Jun-14	6-Jun-19		
12090843	12092915	TWEL-H	0.2s	8-Jan-14	7-Jan-19	10-Apr-18	9-Apr-23
				24-May-14	23-May-19		

SECTION D. Data and parameters**D.1. Data and parameters fixed ex ante**

Data/Parameter	$EF_{grid,OM,y}$
Unit	tCO ₂ / MWh
Description	Operating Margin CO ₂ emission factor for Indian grid
Source of data	CO ₂ baseline database for Indian Power Sector, v07.0
Value(s) applied	0.9515
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 "Tool to calculate the emission factor for an electricity system".
Purpose of data/parameter	Calculation of baseline emissions
Additional comments	-----

Data/Parameter	$EF_{grid,BM,y}$
Unit	tCO ₂ / MWh
Description	Build Margin CO ₂ Emission Factor for NEWNE regional grid
Source of data	CO ₂ baseline database for Indian Power Sector, v8.0
Value(s) applied	0.7339
Choice of data or measurement methods and procedures	Build Margin Emission Factor has been calculated by the Central Electricity Authority using the simple OM approach in accordance with "Tool to calculate the emission factor for an electricity system".
Purpose of data/parameter	Calculation of baseline emissions
Additional comments	-

Data/Parameter	$EF_{grid,CM,y}$
Unit	tCO ₂ / MWh
Description	Combined Margin CO ₂ Emission Factor for NEWNE regional grid
Source of data	CO ₂ baseline database for Indian Power Sector, v8.0
Value(s) applied	0.8971
Choice of data or measurement methods and procedures	Combined Margin Emission Factor has been calculated by the Central Electricity Authority using the simple OM approach in accordance with "Tool to calculate the emission factor for an electricity system".
Purpose of data/parameter	Calculation of baseline emissions
Additional comments	-

D.2. Data and parameters monitored

(Copy this table for each data or parameter.)

Data/Parameter	$EG_{facility,y}$
Unit	MWh
Description	Quantity of net electricity generation supplied by the project plant/unit to the grid in year y
Measured/calculated/default	Measured
Source of data	Distribution Licensee report on energy delivered to grid (Credit Note/JMR)
Value(s) of monitored parameter	542,395

Monitoring equipment	Type: 3 – phase; 4 – wire Accuracy class: 0.2s Sr. No.: Details mentioned in section C of CDM-MR-FORM Calibration frequency: State Board norms or Annually Date of last calibration and validity: Details mentioned in section C of CDM-MR-FORM
Measuring/reading/recording frequency	Continuous measurement and monthly recording
Calculation method (if applicable)	Although the data is monitored through energy meter installed at site, the apportionment procedure and procedure for calculation of electricity supplied by WEGs adjusting for transmission loss has been discussed in detailed manner in section C of CDM-MR-FORM.
QA/QC procedures	The meter readings can be cross checked with the invoices for sale of electricity to ensure correctness. The meter(s) shall be calibrated annually and maintained by the state utility.
Purpose of data/parameter	Calculation of baseline emissions
Additional comments	The data will be kept for two years after the end of the crediting period or the last issuance of CERs for this project activity, whichever occurs later.

Data / Parameter:	EG_{WEG}
Unit:	MWh
Description:	Daily electricity generation at the WEG controller
Measured/ Calculated/ Default:	Measured
Source of data:	Power Generation Reports from O&M Contractor
Value(s) of monitored parameter:	765,467
Monitoring equipment:	WEG Controllers
Measuring/ Reading/ Recording frequency:	Continuous measurement and monthly recording
Calculation method (if applicable):	The data will be monitored via project activity WEG Controllers and will be recorded daily in Power Generation Reports by Wind World Limited [previously Enercon (I) Limited]. This data will be used only for determination of apportioning ratio, and will be applied only in cases where the monitoring period does not coincide with the initial/final meter reading dates in the Credit Notes.
QA/QC procedures:	In case of any fault with the WEG Controller, the same would be immediately identified through an interlocking mechanism. In such a scenario the WEG Controller would be automatically shut down. The WEG Controller would then be replaced.
Purpose of data:	Calculation of baseline emissions
Additional comment:	The data will be kept for two years after the end of the crediting period or the last issuance of CERs for this project activity, whichever occurs later.

D.3. Implementation of sampling plan

The section is not applicable to the CDM project activity.

SECTION E. Calculation of emission reductions or net anthropogenic removals

E.1. Calculation of baseline emissions or baseline net removals

In – line with the applied methodology, ACM0002, v14.0.0, baseline emission is calculated to be:

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

Since, the project activity is installation of new grid – connected renewable energy power plant, $EG_{PJ,y}$ is calculated as follows:

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

Where: BE_y : Baseline emission in year y (tCO₂)
 $EG_{PJ,y}$: Quantity of net electricity generation that is produced and fed into the grid as a result of implementation of the CDM project activity in year y (MWh)
 $EF_{grid,CM,y}$: Combined margin CO₂ emission factor for grid connected power generation in year y (tCO₂/MWh)

Where:

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

Therefore,

$$\begin{aligned} BE_y &= 604,613 \text{ MWh} \times 0.8971 \text{ tCO}_2/\text{MWh} \\ &= 542,395 \text{ tCO}_2\text{e} \end{aligned}$$

E.2. Calculation of project emissions or actual net removals

Since, the project activity is the installation of new – grid connected wind power project, which generates electricity using wind power; therefore, in accordance with the applied methodology, ACM0002, v14.0.0;

$$PE_y = 0.$$

E.3. Calculation of leakage emissions

In accordance with the applied methodology ACM0002, v13.0.0; no leakage emission has been considered for the project activity.

E.4. Calculation of emission reductions or net anthropogenic removals

	Baseline GHG emissions or baseline net GHG removals (t CO ₂ e)	Project GHG emissions or actual net GHG removals (t CO ₂ e)	Leakage GHG emissions (t CO ₂ e)	GHG emission reductions or net anthropogenic GHG removals (t CO ₂ e)		
				Before 01/01/2013	From 01/01/2013	Total amount
Total	542,395	0	0	Na	542,395	542,395

E.5. Comparison of emission reductions or net anthropogenic removals achieved with estimates in the registered PDD

Amount achieved during this monitoring period (t CO ₂ e)	Amount estimated ex ante (t CO ₂ e)
542,395	798,392

E.6. Remarks on increase in achieved emission reductions

The estimated annual emission reductions as per the registered CDM PDD corresponding to the current monitoring period are 798,392 tCO₂e. The actual emission reductions achieved during the current monitoring period is 542,395 tCO₂e which are 32.06% more than the estimated emission reduction. The difference is due variation in the wind availability during the current monitoring period.

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Document information

<i>Version</i>	<i>Date</i>	<i>Description</i>
06.0	7 June 2017	Revision to: <ul style="list-style-type: none"> • Ensure consistency with version 01.0 of the “CDM project standard for project activities” (CDM-EB93-A04-STAN); • Make editorial improvements.
05.1	4 May 2015	Editorial revision to correct version numbering.
05.0	1 April 2015	Revisions to: <ul style="list-style-type: none"> • Include provisions related to delayed submission of a monitoring plan; • Provisions related to the Host Party; • Remove reference to programme of activities; • Overall editorial improvement.
04.0	25 June 2014	Revisions to: <ul style="list-style-type: none"> • Include the Attachment: Instructions for filling out the monitoring report form (these instructions supersede the "Guideline: Completing the monitoring report form" (Version 04.0)); • Include provisions related to standardized baselines; • Add contact information on a responsible person(s)/ entity(ies) for completing the CDM-MR-FORM in A.6 and Appendix 1; • Change the reference number from <i>F-CDM-MR</i> to <i>CDM-MR-FORM</i>; • Editorial improvement.
03.2	5 November 2013	Editorial revision to correct table in page 1.
03.1	2 January 2013	Editorial revision to correct table in section E.5.
03.0	3 December 2012	Revision required to introduce a provision on reporting actual emission reductions or net GHG removals by sinks for the period up to 31 December 2012 and the period from 1 January 2013 onwards (EB 70, Annex 11).
02.0	13 March 2012	Revision required to ensure consistency with the "Guidelines for completing the monitoring report form" (EB 66, Annex 20).
01.0	28 May 2010	EB 54, Annex 34. Initial adoption.
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