Monitoring report form for CDM project activity
(Version 07.0)

MONITORING REPORT		
Title of the project activity	2.10 MW Wind Power Project by M/s Chhotabhai Jethabhai Patel & Co. (CJP) at Belwa Ranaji Village, Shergarh Taluka, Jodhpur District, Rajasthan, India	
UNFCCC reference number of the project activity	4693	
Version number of the PDD applicable to this monitoring report	03	
Version number of this monitoring report	01	
Completion date of this monitoring report	10/11/2020	
Monitoring period number	01	
Duration of this monitoring period	15/04/2012 to 31/12/2012 (Inclusive of both the dates)	
Monitoring report number for this monitoring period	Not Applicable	
Project participants	M/s Chhotabhai Jethabhai Patel & Co. (CJP)	
Host Party	India	
Applied methodologies and standardized baselines	AMS-I.D. ver. 16 - Grid connected renewable electricity generation Standardized baselines – Not Applicable	
Sectoral scopes	1: Energy industries (renewable - / non-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 tCO2e	2,118 tCO_2e
Amount of GHG emission reductions or net anthropogenic GHG removals estimated ex ante for this monitoring period in the PDD	2,463 tCO_2e	

SECTION A. Description of project activity

A.1. General description of project activity

The project activity involves grid connected renewable electricity generation by using wind turbine generator. The project activity is having a total capacity of 2.10 MW (1 No. × 2.10 MW). The project activity is based in Belwa Ranaji Village, Shergarh Taluka, Jodhpur District, Rajasthan, India. The wind technology is supplied by Suzlon Energy Limited. The class of wind turbine is S-88.

The project activity has been commissioned on 27th February 2010. The project activity is connected to the NEWNE Grid of India. The NEWNE Grid of India is mostly dominated by the GHG emitting fossil power plants. The implementation of this project activity has resulted into avoidance of GHG emissions. The avoided GHG mainly consists of CO2. The project is estimated to generate 3,741 MWh of electricity per year and concurrently achieving emission reductions of 3,445 tonnes of CO2 during same period. The baseline scenario for the project activity is same as the condition prior to the project activity. The project activity is promoted and developed by Chhotabhai Jethabhai Patel & Co. (CJP hereafter) CJP is a partnership firm & is part of well-known CEEJAY Group, based in Nadiad, Gujarat, India. By implementing this project, PP has taken initiative towards achieving sustainable development goals in the local region of Rajasthan in both direct & indirect way.

The emission reduction achieved for this monitoring period is 2,118 tCO_2e

A.2. Location of project activity

The project activity is located at Belwa Ranaji (Location No. RKB-24/389), Shergarh Taluka, Jodhpur District, Rajasthan, India. The nearest railway station and airport is Jodhpur located at a distance of 170 km (approx) from WTG site. The details of physical location, including information allowing the unique identification of the project location is given below:

Capacity	Location No.	Location	Generator Serial No2	Latitude	Longitude	Date of Commissioning
1× 2.10 MW	RKB- 24	Belwa Ranaji	521090076	N 26°28'32.0"	E 72°30'13.4"	27/02/2010

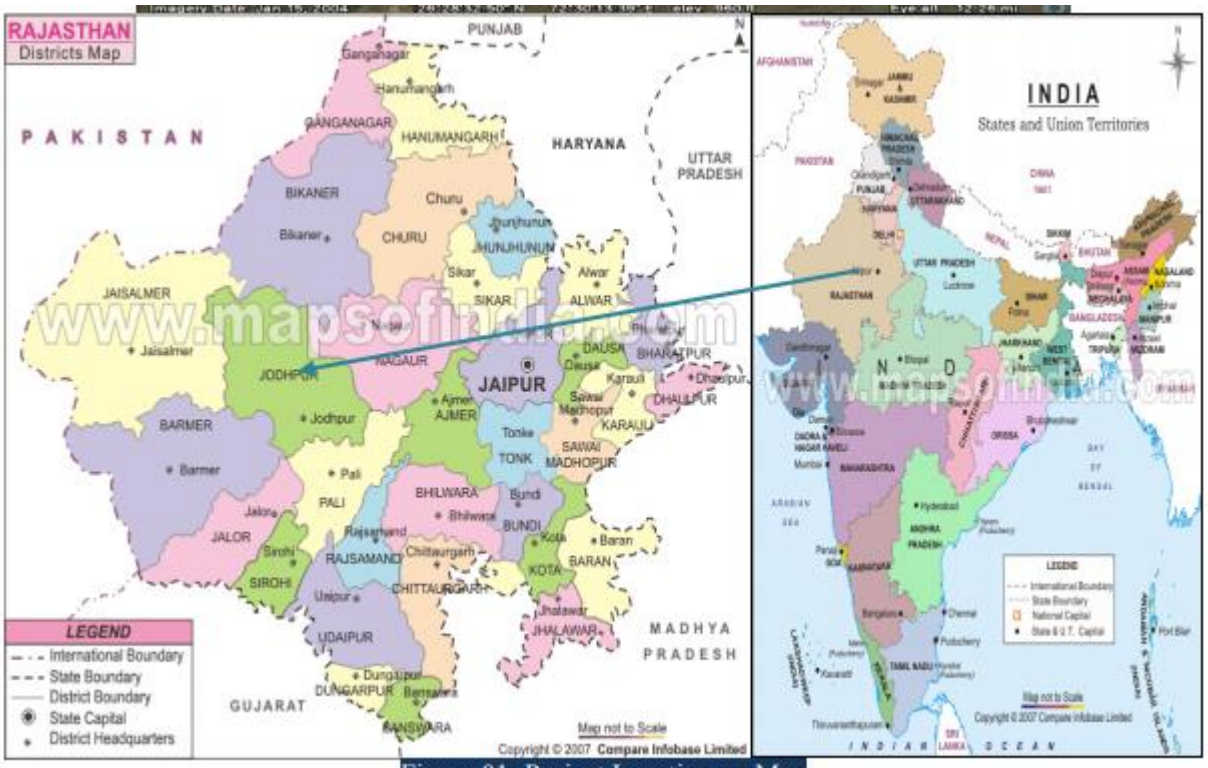


Figure 01: Project Location on Map

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)	M/s Chhotabhai Jethabhai Patel & Co. (CJP)	No

A.4. References to applied methodologies and standardized baselines

The approved baseline and monitoring methodology for small scale project activity, Grid connected renewable electricity generation (AMS- I.D. Version- 16, EB- 54), has been applied to this wind power project activity. The title and reference of the approved baseline and monitoring methodology applied to the small-scale project activity is as below

Title of Methodology: Grid connected renewable electricity generation ---Version 16
Reference: AMS- I.D.[1]

Tools referred to design Project baseline & additionality:

- Tool to calculate the emission factor for an electricity system (Version- 02, EB- 50)[2]
- Attachment A to Appendix B, Version 06: 30/09/2005[3]
- Tool for the demonstration and assessment of additionality (Version: 05.2, EB: 39)[4]
- Guidelines on the Assessment of Investment Analysis (Version- 03.1, Annex- 58, EB- 51)[5]

[1] http://cdm.unfccc.int/UserManagement/FileStorage/SJI52M6QXGKFNOZABTHDYPU789EV3C
[2] http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v2.pdf
[3] http://cdm.unfccc.int/Reference/Guidclarif/ssc/methSSC_guid05.pdf
[4] http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-01-v5.2.pdf
[5] http://cdm.unfccc.int/Reference/Guidclarif/reg/reg_guid03.pdf

A.5. Crediting period type and duration

The project activity has chosen fixed crediting period.
The starting date of the crediting period is 15/04/2012
Length: 10 years & 0 months

SECTION B. Implementation of project activity

B.1. Description of implemented project activity

The project is a small scale CDM project activity. According to the Appendix B of the simplified modalities and procedures (M & P) for small-scale CDM project activities, the project activity falls under the following type and category.

Project Type **:** Type I – Renewable Energy Projects
Project Category **:** I.D. – Grid connected renewable electricity generation

Technology of Project Activity:

The class S-88 is an indigenous technology & does not involve any technology transfer. It is designed for a medium wind speed regime. Its wind turbine concept is based on a robust design with pitch regulated blade operation, a 3-stage gearbox with 2200 kW rating and flexible coupling to the asynchronous induction generator. The Suzlon flexi-slip system provides efficient control of the load and power control and the turbine operation is efficiently controlled by the Suzlon controller. These technologies are all well-known in the wind power industry and have proven themselves over time. The S 88-2.1 MW is designed to withstand extreme conditions and operate effectively with lower maintenance cost.

The project activity is a clean source of power generation. The environmental aspects in consideration are as follows:

- In comparison to other sources of power generation prevailing in the project grid region, wind power is one of the cleanest power generation modes
- Project activity does not involve release pollutants in air, water or soil
- As compared to other power plants, less amount of land is required for wind power generation
- No or less biodiversity loss which may occur in some other power plants like hydro
- Less noise pollution
- Conservation of conventional fuels

The electricity generation is the result of the utilization of kinetic energy in wind to drive the wind turbine blades to generate electricity. Thus the operation of the wind power project is considered as environmentally safe and benign to environment as compared to conventional power generation.

Moreover, currently Suzlon technologies like 0.6 MW (S-52), 1.25 MW (S-66), 1.5 MW (S-82) is mostly adopted by many PPs. CJP has considered the latest technology of 2.10 MW (S-88) from Suzlon due to following advantages:

- Single largest capacity in the country among all the technology suppliers
- Highest Swept Area of 6082 m^2
- Robust design

Technical specifications:

Rotor	
Diameter	88m
No. of rotor blade	3

Rotor blade material	Fiberglas/Epoxy
Swept area	6082m^2
Hub height	79m
Operational data	
Cut in wind speed	4m/s
Rated wind speed	14m/s
Cut off wind speed	25m/s
Gear box	
Type	3 stage 1 planetary & 2 helical
Gear ratio	1:98.8 / 1:118.1
Nominal load	3 stage 1 planetary & 2 helical
Generator	
Type	Asynchronous 4 poles with slip ring
Rotational speed	15 – 17.6 RPM
Rated output	2100 kW
Rated voltage	690 / 600 V
Frequency	50 /60 Hz
Insulation	Class H
Cooling system	Air cooled
Yaw drive	
Method of operation	3 electrical driven planetary drives
Bearing type	Polyamide slide bearing
Safety systems	
Aerodynamic Brake system	3 independent systems with blade pitching
Mechanical Brake system	Hydraulic fail-safe disc brake system
Tower	
Type	Tubular in 4 sections
Other Features	
Operational lifetime of WTG[6]	20 years

B.2. Post-registration changes: Not Applicable

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

Not Applicable

B.2.2. Corrections

Not applicable

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

The start date of crediting period has been changed from 15/04/2011 to 15/04/2012. The same can be viewed from Project UN web page https://cdm.unfccc.int/Projects/DB/RINA1302863561.04/view

B.2.4. Inclusion of monitoring plan

Not Applicable

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

Not applicable

B.2.6. Changes to project design

Not applicable

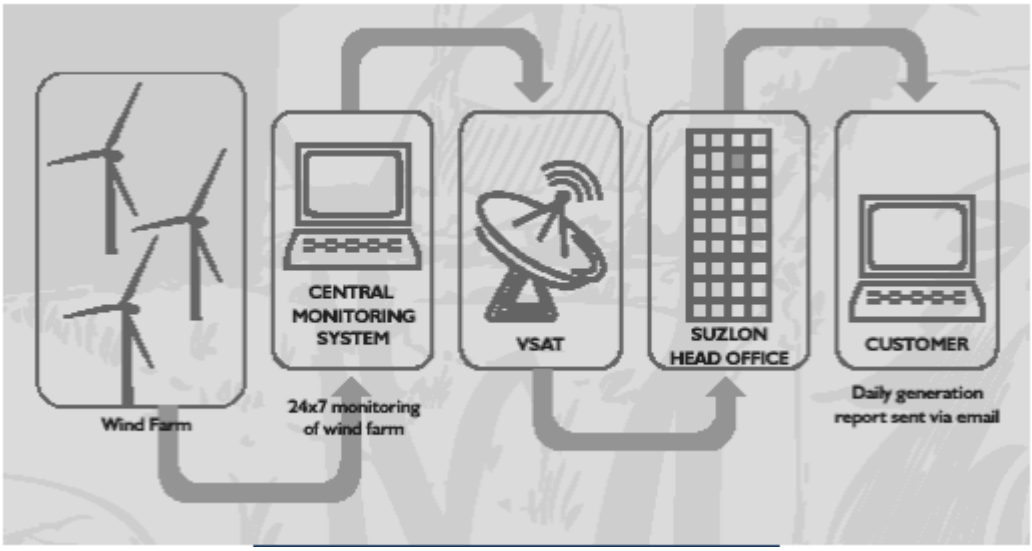
B.2.7. Changes specific to afforestation or reforestation project activity

Not applicable

SECTION C. Description of monitoring system

The monitoring of the project activity is given as below:

- The primary monitoring is done at the individual WTG. The WTG is equipped with an integrated electronic controller, which displays generated electricity on the onboard screen. This controller is connected to the Central Monitoring Station (CMS) of Suzlon Energy Limited through SCADA. The generation data of individual machine can be monitored as a real-time parameter at CMS. Furthermore, the WTG controller is a micro-processor based intelligent controller which has been specially designed for control of wind turbines & which is self calibrated. It uses a Woodward multi function relay that has three current inputs from CT and three direct voltage inputs (690 Volts). The analog values of current / voltage is converted into digital signal internally using A/D Converters at very high sampling rate. A software program reads these values and displays instantaneous parameters such as voltage, current, power factor, kVARh, and kWh. These instantaneous values are then time integrated and displayed / stored. Woodward relay is having no display and needs special protocol to view energy readings as this relay is communicating digital signal through special communication protocol hence, it is not possible to calibrate. In case of malfunctioning of the controller, the WTG is programmed for automatic shut-down. The probability of error in controller panel meter is negligible. This information at the CMS is further transmitted to Suzlon Head office via VSAT. The daily generation report is being sent to PP via email.



- The recording of the electricity delivered to the project metering point at Ketu Kalan GSS is carried out jointly by the representative of PP & State Utility on monthly basis.
- All the feeder wise metering points of the wind farm are further connected to the Bulk meter at the state utility substation (GSS) at Tinwari.
- The bulk meter at Tinwari GSS records total electricity received from all connected metering points. The bulk meters consist of both main & check meters. The monthly JMR is taken by the representative of PP & State Utility on monthly basis. It records parameters like total export, total import etc.
- The meters shall be approved, tested & sealed by the RVPNL/JdVVNL. The meters are in the custody of RVPNL/JdVVNL. The calibration of the meters are carried out by RVPNL/JdVVNL once annually. Other than periodic calibration of the meters, the reading of

both meters is matched every month. In case of failure of main meter during the monitoring the metering of the electricity is done as per the Power Purchase Agreement.

- Data is archived for two years after the end of crediting period or of the last issuance of CERs for this project activity, whichever occurs later. The data is archived in paper as well as in the electronic format.

Sample Apportioning Procedure:

The apportioning of the electricity is the responsibility of the State Utility. The sample apportioning procedure adopted for the project activity is given below:

Generation Ratio for metering point (Ketu Kalan GSS):

The generation ratio is the ratio of electricity generated by installed WTG of PP to the total generation by all the connected WTGs to the project metering point.

$G_{R,\ \text{metering point}} = EG_{\text{Controller, PP}} / EG_{\text{Controller, metering point}}$

Calculation of electricity exported at project activity metering point:

The Main and Check meter at the project metering point displays number of parameters including export and import for all the connected WTGs.

The import, kWh for PP is calculated in the following manner:

$EG_{\text{Import, metering point}} = G_{R,\ \text{metering point}} \times EG_{\text{Total Import, metering point}}$

The export, kWh for PP is calculated in the following manner:

$EG_{\text{Export, metering point}} = G_{R,\ \text{metering point}} \times EG_{\text{Total Export, metering point}}$

The electricity exported at project activity metering point by the project activity is calculated by subtracting equation (b) from (a).

Thus,

The net electricity exported at project activity metering point = $EG_{\text{Export, metering point}} - EG_{\text{Import, metering point}}$

Transmission Loss Calculation:

The total transmission loss occurred during export & import of the electricity is calculated between the 33/220 kV level at Ketu- Kalan & 220 kV level at Tinwari Bulk metering point.

The transmission loss during export & import is the difference between total aggregated reading of export, import for all metering points at 33/220 kV level and the total reading of export, import for same metering points recoded at the to 220 kV substation bulk meter.

The PP wise transmission loss during export & import is calculated by multiplying the values of arrived transmission loss for export & import for wind farm with the Generation Ratio for wind farm.

Generation Ratio for wind farm.

The generation ratio is the ratio of electricity generated by installed WTG of PP to the total generation by all the connected WTGs to the project metering point.

$GR,\ \text{wind farm} = EG_{\text{Controller, PP}} / EG_{\text{Controller, all metering points}}$

Calculation of Net electricity delivered to the Grid by the project activity

The net values of export & import is obtained by subtracting the transmission loss during export & import for PP from $EG_{Export, metering point}$ & $EG_{Import, metering point}$ respectively.

The net electricity delivered to the Grid by the project activity in a given month (net export kWh) is obtained by subtracting net value of import from net values of export as obtained above. Thus,

Net electricity delivered to the Grid by the project activity in a given month = Export – Import

The sum of all these monthly net readings in a given year y gives $EG_{BL,y.}$

The apportioned values for the project activity can be referred from the Monthly Break up of net export units report.

O & M management structure:

Suzlon Energy Limited is providing O & M services to the project promoter. The O & M management structure is as follows:

Routine maintenance services: Routine maintenance labour work involves making available suitable manpower for operation and maintenance of the equipment and covers periodic preventive maintenance, cleaning and upkeep of the equipment including

- Tower torquing
- Blade cleaning
- Nacelle torquing and cleaning
- Transformer oil filtration
- Control panel & LT panel maintenance
- Site and transformer yard maintenance

Security services: This service includes watch and ward and security of the wind turbines and the equipment.

Management services:

- Data logging for power generation, grid availability, machine availability.
- Preparation and submission of monthly performance report in agreed format.
- Taking monthly meter reading jointly with utility of power generated at promoter's wind turbines and supplied to grid from the meter/s maintained by utility for the purpose and coordinate to obtain necessary power credit report/ certificate.

Technical services:

- Visual inspection of the WTGs and all parts thereof.
- Technical assistance including checking of various technical, safety and operational parameters of the equipment, trouble shooting and relevant technical services.

Emergency Preparedness Plan:

Project activity is having well design Onsite Emergency Plan (OEP). As per Onsite Emergency Plan (OEP) the identified emergencies are:

1. Fire / explosion at office, guest house, canteen and WTG panel
2. Emergency at height Fall
3. Calamities
4. Communicable diseases

5. Food poisoning 6. Snake Bite
7. Road Accident
8. Electrical short circuit at panel / HT Yard
9. Oil Spillage

Out of above emergencies Fire / explosion at office, guest house, canteen may cause unintended emissions during the project operations. This emergency is handled by O & M contractor as below:

1. On receiving information quickly rush to the emergency spot with fire extinguisher & operate the fire extinguisher to bring the fire under control.
2. If the fire is out of control inform Site/ Section in charge to inform fire brigade for further control & help.

Moreover, sudden mechanical failure of WTG including metering equipments may also occur during project operation this is tackled by the onsite O & M Team. The Central Monitoring Station (CMS) monitors the wind farm operations on continuous basis. After receiving the emergency/malfunction call from the Central Monitoring Station (CMS) the O & M team rush to the spot and cures the faults. The team is equipped with necessary skills & equipment to handle such situations. The fault in the metering system is determined by the State Utility/representative of PP (O & M contractor) during the regular inspection of the system or during the periodic testing or monthly meter reading matching. The malfunctioning of the electrical and metering system is tackled by PP & the State Utilities (RVPNL/JdVVNL) as per the Power Purchase Agreement.

Training needs:

CJP has appointed Suzlon Energy Limited as the Operation & Maintenance contractor for this project activity. Suzlon Energy Limited is well known for its well managed wind project operations in wind power industry throughout the world. It is an ISO certified company. The training activity to the employees is an integral part of the ISO system. It has trained its man power to carry out day to-day activity at the project site. It provides regular training to its employees. The training to the employees working at the project site involves following areas.

- Operation & maintenance
- Trouble shootings
- Preventive maintenance
- Safety techniques
- Onsite Emergency Plan (OEP)

The O & M contractor is well equipped with standard equipments to carry out necessary O & M operation

Project Monitoring Team:

S. No.	Monitoring Team	Responsibility
1	Project Head (CJP)	• Overall performance monitoring • Project execution • Monthly review of project operations
2	Project Coordinator (CJP)	• Data Archival • Site visit for actual project monitoring Storage of data • Coordination with O & M Contractor for day to-day operations • Invoice preparation & follow ups • Coordination with Suzlon for regular calibration of meters • Reporting to Project Head • Online project monitoring

		• Feedback and corrective action wherever necessary • Follow up of project operation as per PPA.
3	O & M Contractor (Suzlon)	
3.1	Suzlon Mumbai Office	• Focal point between PP and O & M team at project site • Daily Generation Report to PP • Storage of data • Coordinating with PP/Consultant/Auditors during their site visit for validation/annual verification • Coordinating with state utility for monthly JMR reports • Complying as per O & M Agreement with the PP • Requesting/coordinating state utility for annual calibration behalf of PP
3.2	Project Site Team	• Day-to-day operation and maintenance • Data monitoring & recording • Storage of data • Monthly Joint meter reading with state utility • Maintenance of monitoring equipment and installations • Day-to-day records handling Monitoring, measurement and reporting, calibration of monitoring equipment • Handling of emergency situations, monitoring data adjustments & uncertainties, review of reports/data etc • Monitoring of project activity through facility at CMS, site visits

SECTION D. Data and parameters

D.1. Data and parameters fixed ex ante

Data/Parameter	**$EF_{grid,OM,y}$**
Unit	tCO_2/ MWh
Description	CO_2 Operating Margin emission factor for the NEWNE Grid (Latest three years average-2006-07, 2007-08, 2008-09)
Source of data	CO_2 Baseline Database (Version: 5 , November 2009): http://www.cea.nic.in/planning/c%20and%20e/database_publishing_ver5. zip & CO2 Baseline Database, User Guide (Version- 5, November 2009) httphttp://www.cea.nic.in/planning/c%20and%20e/user_guide_ver5.pdf
Value(s) applied	1.004 tCO_2 / MWh
Choice of data or measurement methods and procedures	The Development of this CO_2 Database has been done under Indo- German Bi-lateral Technical Cooperation between the Governments of India and Germany jointly implemented by GTZ together with partners Central Electricity Authority and the Bureau of Energy Efficiency under the Ministry of Power.
Purpose of data/parameter	To determine baseline emissions
Additional comments	The calculation is done ex ante.

Data/Parameter	**$EF_{grid, BM,y}$**
Unit	tCO_2/ MWh
Description	CO_2 Build Margin emission factor for the NEWNE Grid 2008-09
Source of data	CO_2 Baseline Database (Version: 5, November 2009): http://www.cea.nic.in/planning/c%20and%20e/database_publishing_ver5. zip & CO2 Baseline Database, User Guide (Version- 5, November 2009) httphttp://www.cea.nic.in/planning/c%20and%20e/user_guide_ver5.pdf

Value(s) applied	0.675 tCO_2 / MWh
Choice of data or measurement methods and procedures	The Development of this CO_2 Database has been done under Indo- German Bi-lateral Technical Cooperation between the Governments of India and Germany jointly implemented by GTZ together with partners Central Electricity Authority and the Bureau of Energy Efficiency under the Ministry of Power.
Purpose of data/parameter	To determine baseline emissions
Additional comments	The calculation is done ex ante.

Data/Parameter	**$EF_{grid,CM,y}$**
Unit	tCO_2 / MWh
Description	EFgrid,CM,y is the grid emission coefficient calculated in a transparent and conservative manner as Combined Margin (CM) which is the combination of Operation Margin (OM) and Build Margin (BM) (OM & BM have been calculated ex-ante) Grid emission factor calculation: $EF_{grid,CM,y} = 0.75 \times EFgrid,OM,y + 0.25 \times EF_{grid, BM,y}$ = 0.75 × 1.004 + 0.25 × 0.675 = 0.921 tCO_2/MWh
Source of data	CO_2 Baseline Database (Version: 5, November 2009): http://www.cea.nic.in/planning/c%20and%20e/database_publishing_ver5. zip & CO_2 Baseline Database, User Guide (Version- 5, November 2009) httphttp://www.cea.nic.in/planning/c%20and%20e/user_guide_ver5.pdf
Value(s) applied	0.921 tCO2/MWh
Choice of data or measurement methods and procedures	The Development of this CO2 Database has been done under Indo- German Bi-lateral Technical Cooperation between the Governments of India and Germany jointly implemented by GTZ together with partners Central Electricity Authority and the Bureau of Energy Efficiency under the Ministry of Power. The EFgrid,CM,y calculation is based on the guidelines in "Tool to calculate the emission factor for an electricity system" (Version- 02, EB- 50)
Purpose of data/parameter	To determine baseline emissions
Additional comments	The calculation is done ex ante.

D.2. Data and parameters monitored

Data/Parameter	**$EG_{BL,y}$**
Unit	kWh/y
Description	Quantity of net electricity supplied to the grid in year y
Measured/calculated/ default	Measured and Calculated
Source of data	Monthly Joint Meter Readings Reports / Monthly Break up of net export units report/Monthly invoices of sale
Value(s) of monitored parameter	2,300
Monitoring equipment	Metering: Trivector meters of Accuracy class: 0.2s
Measuring/reading/recording frequency	Monthly

Calculation method (if applicable)	The electricity generated by the wind farm/WTG is first displayed on the in-built control WTG panel. WTG is connected to Suzlon CMS through SCADA. Metering at Ketu Kalan 33 kV/220 kV GSS: The electricity from the wind farm/WTGs is evacuated to the Suzlon pooling station at Ketu Kalan GSS. The project activity WTG along with other WTGs, are connected to the feeder wise metering points. The project metering is done at one of the metering points which consists of both main & check meter. The joint meter reading is taken on monthly basis by the representatives of PP & RVPNL/JdVVNL. It records parameters like export, import etc. All the feeder wise metering points of the wind farm are further connected to the bulk metering point at the state utility 220 kV GSS Tinwari. The electricity (export, import & net export) for the project activity is apportioned on the basis of generation ratio (Controller reading of WTG of PP/ Total controller reading for all WTGs) at the project metering point at Ketu Kalan GSS. Metering at Tinwari 220 kV GSS: The bulk meter at Tinwari records total electricity received from all connected metering points. The bulk meters consist of both main & check meters. The monthly JMR is taken by the representative of PP & State Utility. It records parameters like total export, total import etc. The total transmission loss occurred during export & import of electricity between the 33/220 kV level at Ketu Kalan GSS & 220 kV Tinwari GSS bulk metering point is calculated. The transmission loss occurred during export & import of electricity is further apportioned for each PP & is subtracted from the values of EGExport, metering point & EGImport, metering point to get net value of export & import. The net electricity delivered/supplied to the grid is obtained by subtracting net import from net export. Thus, Net electricity delivered to the Grid by the project activity in a given month = Export – Import The values of the net electricity delivered to the Grid by the project activity is aggregated annually to get the value of net electricity delivered to the Grid (EGBL,y, kWh) by the project activity per annum. The value of net electricity delivered to the Grid (EGBL,y) by the project activity per annum is converted to MWh before the calculation of emission reductions (ex ante determined in tCO2/MWh unit).
QA/QC procedures	Energy meter calibration frequency: Once annually as per PPA Responsibility: State Utility shall be responsible for regular calibration of the meters. The meters shall be approved, tested & sealed by the RVPNL/JdVVNL. All meters are sealed and are in the custody of State Utility. The calibration of the meters is carried out by PP/Developer or RVPNL/JdVVNL once annually. Other than periodic calibration of the meters, the reading of both meters are matched every month. In case of failure of main meter during the monitoring the metering of the electricity is done as per the Power Purchase Agreement.
Purpose of data/parameter	To determine Baseline Emissions
Additional comments	Data is archived for two years after the end of crediting period or of the last issuance of CERs for this project activity, whichever occurs later.

D.3. Implementation of sampling plan

Not applicable

SECTION E. Calculation of emission reductions or net anthropogenic removals

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

Baseline Emissions:

According to in paragraphs 10-18 of the approved small-scale methodology AMS I.D. the baseline emissions are product of electrical energy baseline $EG_{BL,\ y}$ expressed in MWh of electricity produced by the renewable generating unit multiplied by the grid emission factor.

$BE_y = EG_{BL,y} * EF_{CO2,grid,y}$

Where:

BE_y = Baseline emissions in year y; (t CO_2)

$EG_{BL,y}$ = Quantity of net electricity supplied to the grid as a result of the implementation of the CDM project activity in year y (MWh)

$EF_{CO2,grid,y}$ = CO_2 emission factor of the grid in year y; (t CO_2 / MWh)

Multiplication of Energy baseline ($EG_{BL,y)}$ in MWh with CO_2 Emission Factor (EF_{CO2}) in tCO_2e/MWh gives the estimated value of Baseline Emissions tCO2 (BE_y). Thus,

$BE_y = EG_{BL,y} * EF_{CO2,grid,y}$
$= 2300 * 0.921$
$= 2{,}118\ tCO_2e$ (Round-down Value)

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

As per paragraph 19 of approved methodology AMS-I.D. (Version- 16, EB- 54), For most renewable energy project activities, $PE_y = 0$.

As the project activity is a wind power generation, the project emissions can be considered as zero.

E.3. Calculation of leakage emissions

As per paragraph 20 of the approved methodology AMS- I.D. (Version- 16, EB- 54), If the energy generating equipment is transferred from another activity, leakage is to be considered. The leakage emissions may be considered as zero tCO2 as no such equipment shall be transferred from another project activity.

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

	Baseline GHG emissions or baseline net GHG removals (t CO_2e)	Project GHG emissions or actual net GHG removals (t CO_2e)	Leakage GHG emissions (t CO_2e)	GHG emission reductions or net anthropogenic GHG removals (t CO_2e)		
				Before 01/01/2013	From 01/01/2013	Total amount
Total	2,118	0	0	0	2,118	2,118

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_2e)	Amount estimated ex ante for this monitoring period in the PDD (t CO_2e)
2,118	2,463

E.5.1. Explanation of calculation of "amount estimated ex ante for this monitoring period in the PDD"

The explanation regarding calculation of estimated ex ante for this monitoring period is mentioned below:

Start date of the monitoring period	15-04-12
End date of monitoring period	31-12-12
Number of days in monitoring period	261
Annual estimated reductions as per PDD	3,445
Estimated emission reductions for this monitoring period	2,463
Actual emission reductions for this monitoring period	2,118
Percentage deviation of actual reductions as compared to estimated reductions for this monitoring period	-16%

E.6. Remarks on increase in achieved emission reductions

It is to be noted here that as per the estimated emission reduction to be achieved from the project activity for the current monitoring period is 2,463 tCO_2e, whereas actual emission reductions achieved are 2,118 tCO_2e, which is approximately 16% lower than the estimated emission reductions. The generation of electricity depends upon many other climatic conditions, which are not within the control of the project participant. The lower generation during the current verification period is due to certain natural conditions. Hence, it is acceptable.

E.7. Remarks on scale of small-scale project activity

The project activity remained within the limit of small-scale project activity in each year of the crediting period as the emission reductions are less than the limit of small scale CDM Project activity.

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Document information

Version	*Date*	*Description*
07.0	31 May 2019	Revision to: • Ensure consistency with version 02.0 of the "CDM project standard for project activities" (CDM-EB93-A04-STAN); • Add a section on remarks on the observance of the scale limit of small-scale project activity during the crediting period; • Add "changes specific to afforestation or reforestation project activity" as a possible post-registration changes; • Clarify the reporting of net anthropogenic GHG removals for A/R project activities between two commitment periods; • Make editorial improvements.
06.0	7 June 2017	Revision to: • 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: • 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: • 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 *F-CDM-MR* to *CDM-MR-FORM*; • 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).

Version	*Date*	*Description*
01.0	28 May 2010	EB 54, Annex 34. Initial adoption.

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