Monitoring report form for CDM project activity
(Version 07.0)

MONITORING REPORT		
Title of the project activity	Grid Connected Bundled Wind Power Project in Karnataka and Maharashtra	
UNFCCC reference number of the project activity	10198[1]	
Version number of the PDD applicable to this monitoring report	1.9	
Version number of this monitoring report	01	
Completion date of this monitoring report	27/08/2019	
Monitoring period number	01	
Duration of this monitoring period	31/01/2017 to 31/07/2019 (both days included)	
Monitoring report number for this monitoring period	Not Applicable	
Project participants	Gangadhar Narsingdas Agrawal	
Host Party	India	
Applied methodologies and standardized baselines	Methodology: AMS I.D.: "Grid connected renewable electricity generation" – Version 18.0 Selected Standardized baseline: Not Applicable	
Sectoral scopes	Sectoral Scope – 01: 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 tCO_2e	54,024 tCO_2e
Amount of GHG emission reductions or net anthropogenic GHG removals estimated ex ante for this monitoring period in the PDD	68,862 tCO_2e	

[1] https://cdm.unfccc.int/Projects/DB/RWTUV1444042818.65/view

SECTION A. Description of project activity

A.1. General description of project activity

The project activity involves the installation of 7 Wind Turbine Generators (WTGs) of rated capacity of 2.10 MW each with a total capacity of 14.70 MW. It is promoted by Agrawal Minerals (Goa) Pvt. Limited (AMGPL), Ferromar Shipping Pvt. Limited (FSPL), Gangadhar Narsingdas Agrawal (GNA), and Aryavarta Industries Pvt. Limited (AIPL), hereby referred as project promoters (PPs). All project promoters have decided to take up this CDM project activity jointly. As per the agreement among them, Gangadhar Narsingdas Agrawal would act as project participant and focal point to communicate with National CDM Authority, UNFCCC secretariat, and CDM Executive Board on matters related to registration and/or issuance.

The WTGs of the project activity are located in the states of Karnataka and Maharashtra as detailed below:

Sr. No.	Project Promoter	WTG Location No.	Site Location	Installed Capacity (MW)
1.	Agrawal Minerals (Goa) Pvt. Limited	SND-105 SND-106	Site: Sindhgiri, Village: Kurugodu, Taluka: Bellary, District: Bellary, State: Karnataka	4.20
		JTH-114	Site: Jath, Village: Umarai, Taluka: Jath, District: Sangli, State: Maharashtra	2.10
2.	Ferromar Shipping Pvt. Limited	JTH-113	Site: Jath, Village: Umarai, Taluka: Jath, District: Sangli, State: Maharashtra	2.10
3.	Gangadhar Narsingdas Agrawal	JTH-202 JTH-215	Site: Jath, Village: Valsang, Taluka: Jath, District: Sangli, State: Maharashtra	4.20
4.	Aryavarta Industries Pvt. Limited	JTH-208	Site: Jath, Village: Valsang, Taluka: Jath, District: Sangli, State: Maharashtra	2.10
Total Installed Capacity				**14.70**

The WTGs in Karnataka are connected to the Southern grid while WTGs in Maharashtra are connected to the NEWNE grid of India. The generated electricity will be sold to the concerned state electricity distribution companies.

A.2. Location of project activity

Host Party: INDIA

Region/State/Province etc.

Project Promoter	WTG Location No.	State
Agrawal Minerals (Goa) Pvt. Limited	SND-105; SND-106	Karnataka
Agrawal Minerals (Goa) Pvt. Limited	JTH-114	Maharashtra
Ferromar Shipping Pvt. Limited	JTH-113	Maharashtra
Gangadhar Narsingdas Agrawal	JTH-202; JTH-215	Maharashtra
Aryavarta Industries Pvt. Limited	JTH-208	Maharashtra

City/Town/Community etc.

Project Promoter	WTG Location No.	Village	Taluka	District
Agrawal Minerals (Goa) Pvt. Limited	SND-105; SND-106	Kurugodu	Bellary	Bellary
Agrawal Minerals (Goa) Pvt.	JTH-114	Umarani	Jath	Sangli

Limited				
Ferromar Shipping Pvt. Limited	JTH-113	Umarani	Jath	Sangli
Gangadhar Narsingdas Agrawal	JTH-202; JTH-215	Valsang	Jath	Sangli
Aryavarta Industries Pvt. Limited	JTH-208	Valsang	Jath	Sangli

Physical/Geographical location

Project Promoter	WTG Location No.	Site Location	Latitude	Longitude
Agrawal Minerals (Goa) Pvt. Limited	SND-105 SND-106	Site:Sindhgiri, Village: Kurugodu, Taluka: Bellary, District: Bellary, State: Karnataka	$15^0 20' 12.2'' N$ $15^0 20' 05.0'' N$	$76^0 53' 00.4'' E$ $76^0 53' 00.6'' E$
	JTH-114	Site: Jath, Village: Umarani, Taluka: Jath, District: Sangli, State: Maharashtra	$16^0 53' 52.6'' N$	$75^0 16' 14.2'' E$
Ferromar Shipping Pvt. Limited	JTH-113	Site: Jath, Village: Umarai, Taluka: Jath, District: Sangli, State: Maharashtra	$16^0 54' 06.0'' N$	$75^0 15' 58.6'' E$
Gangadhar Narsingdas Agrawal	JTH-202 JTH-215	Site: Jath, Village: Valsang, Taluka: Jath, District: Sangli, State: Maharashtra	$17^0 04' 42.7'' N$ $17^0 02' 59.4'' N$	$75^0 16' 46.3'' E$ $75^0 16' 53.5'' E$
Aryavarta Industries Pvt. Limited	JTH-208	Site: Jath, Village: Valsang, Taluka: Jath, District: Sangli, State: Maharashtra	$16^0 54' 07.3'' N$	$75^0 12' 23.8'' E$

Geographical locations can be viewed in the following maps:

A.3. Parties and project participants

Party involved	Project participants	Indicate if the Party involved wishes to be considered as project participant (Yes/No)
India	Gangadhar Narsingdas Agrawal	No

All project promoters have authorised Gangadhar Narsingdas Agrawal to act as project participant and focal point to communicate with National CDM Authority, UNFCCC secretariat, and CDM Executive Board on matters related to registration and/or issuance.

A.4. References to applied methodologies and standardized baselines

Methodology Title: AMS I.D.: "Grid connected renewable electricity generation" – Version 18.0[2]

Methodological Tools:

- Tool to calculate the emission factor for an electricity system– Version, 05.0[3]
- Tool for the demonstration and assessment of additionality-Version 07.0.0[4]
- Tool27: Investment Analysis version 7.0[5]

A.5. Crediting period type and duration

Duration of Crediting Period: 31/01/2017 to 30/01/2027

Type of crediting period: Fixed crediting period

SECTION B. Implementation of project activity

B.1. Description of implemented project activity

The project activity will generate electrical energy by utilising wind energy and supply the generated electricity to the regional Southern/ NEWNE grid. The project activity uses wind energy in producing electricity and no other input is being used, therefore, it will not produce any GHG emission during its lifetime. In absence of the project activity equivalent amount of electricity would have otherwise been generated by existing and new power plants connected to the emission intensive Southern/ NEWNE electricity grid. Thus the project activity would result in avoidance of Green House Gases (GHGs) emission and contribute to mitigation of global warming.

All WTGs involved in the project activity are developed and supplied by Suzlon Energy Limited, which is a well-known Indian supplier of wind turbines and so far has installed different capacities of WTGs in various countries. Suzlon Infrastructure Services Limited (SISL), a SUZLON Group Company, will provide all operations and maintenance services to the project activity.

TECHNOLOGY

The use of wind energy to generate electricity involves the conversion of power contained in masses of moving air into rotating shaft power. The conversion process utilises aerodynamic forces (lift and/or drag) to produce a net positive turning moment on a shaft, resulting in the production of mechanical power which can be converted to electrical power.

The efficiency of wind turbines differs from location to location significantly due to various factors / parameters like latitude, land-sea disposition, altitude and season. In India the factor which mostly governs the availability of wind energy at a particular site is its geographical location with respect to the monsoon wind. The availability of wind speed data is a basic requirement for determining the feasibility of wind power generation at any site. As the distribution of wind speed is highly uneven

[2] http://cdm.unfccc.int/methodologies/DB/W3TINZ7KKWCK7L8WTXFQQOFQQH4SBK

[3] http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v5.0.pdf

[4] http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-01-v7.0.0.pdf

[5] http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-27-v7.0.pdf

over the country, the Govt. agencies undertake the assessment of the wind energy resource over different regions before any plan of harnessing the wind energy is drawn for implementation.

The project activity involves WTGs made by Suzlon, model S88, rated capacity 2.1 MW. The technical details of the WTGs are provided below:

SUZLON MEGAWATT SERIES (S88: 2.1 MW):

S88-2.1 MW 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 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.

Operating Data:	
Rated Power	2.1 MW
Cut-in wind speed	4 m/s
Rated wind speed	14 m/s
Cut-out wind speed	25 m/s
Hub Height	79 m
Wind Class	IEC-IIA
Rotational speed	15 to 17.6 rpm
Rotor:	
Pitch system	Pitch regulated, electrical
Diameter	88 m
Swept Area	6082 m^2
Blade material type	Epoxy bundled fibre glass
Generator:	
Type	Asynchronous slip ring type induction generator
Rated Power	2100 kW
Rated Voltage	690 / 600 V
Frequency	50/60 Hz
Protection	IP 54, IP 23 for slip ring unit
Cooling system	Air cooled
Insulation	Class H
Slip control	Unique Flexi-Slip providing slip up to 16.67%
Braking System:	
Aerodynamic brake	3 Independent systems with blade pitching mechanism
Mechanical brake	Hydraulic fail-safe disc brake system
Gear box:	
Type	3 stage (1 planetary and 2 helical)
Ratio	1:98.8/1:118.1
Nominal load	2200 kW
Yaw system:	
Type	Driven by 3 electrical driven planetary drives
Bearings	Polyamide slide
Certifications:	
Design standards	GL 2003

Quality	ISO 9001:2000, ISO 9001:2008, ISO 14001:2004 & OHSAS 18001:2007
Tower:	
Type	Tubular Tower (4 sections)
Corrosion Protection	Epoxy/PU coated

B.2. Post-registration changes

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

Not Applicable during the current monitoring period.

B.2.2. Corrections

Not Applicable during the current monitoring period.

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

Not Applicable during the current monitoring period.

B.2.4. Inclusion of monitoring plan

Not Applicable during the current monitoring period.

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 during the current monitoring period.

B.2.6. Changes to project design

Not Applicable during the current monitoring period.

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

Not Applicable

SECTION C. Description of monitoring system

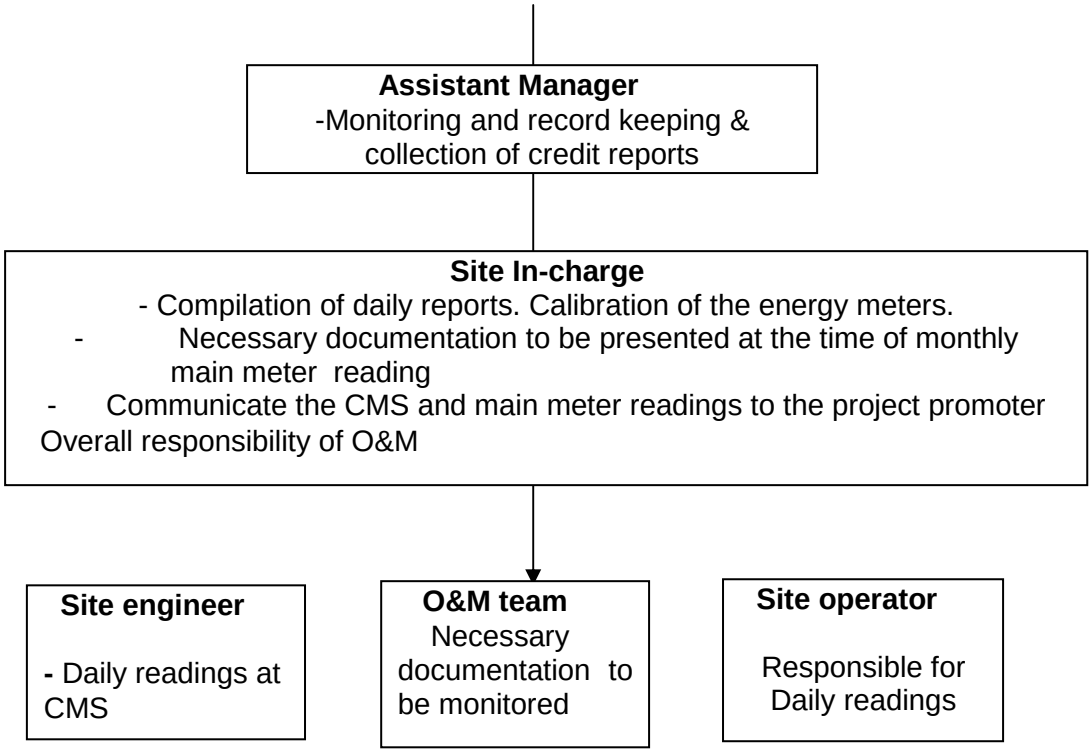
Roles & Responsibility Structure:

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

The detailed monitoring procedure has been provided in Appendix-5.

The authority and responsibility for registration, monitoring, measurement, reporting and reviewing of the data rests with the project promoters. PPs proposed the following structure for data monitoring, collection, data archiving and calibration of equipments for this project activity:

Director
- Overall responsibility of implementation of the CDM project activity



(**Operation and Maintenance Structure of the Project Activity)**

The above mentioned structure clearly indicates the roles and responsibilities of the different persons engaged in the project activity.

The project promoters have assigned the responsibility of operation and maintenance of the WTGs to the M/s. Suzlon.

QA/QC procedures:

The energy main/ check meters used for reading purpose are having the accuracy class of 0.2 s. The main/ check meters shall be jointly inspected and sealed by the utility and shall not be interfered by either utility or project promoter except in the presence of the accredited representatives of both utility and SISL. The calibration of the energy meters will be undertaken once in three years in accordance with the General Guidelines to SSC CDM Methodologies.

Data archiving:

Monthly data shall be archived and stored for the entire crediting period plus two years.

Training

The monitoring personnel will be trained for performing daily operation and maintenance aspects of the wind farm. The training and maintenance will ensure preventive maintenance and operation control of the wind farm.

SECTION D. Data and parameters

D.1. Data and parameters fixed ex ante

NEWNE grid:

Data/Parameter	$EF_{NEWNE,y}$

Unit	tCO_2e/kWh
Description	CO_2 emission factor of NEWNE grid in year y
Source of data	Calculated weighted average combined margin using equation – $EF_{grid,y} = EF_{grid,OM,y} X\ w_{OM} + EF_{grid,BM,y} X\ w_{BM}$ The default values for w_{OM} and w_{BM} are taken as applicable to wind power generation project activities as $w_{OM} = 0.75$ and $w_{BM} = 0.25$. Reference: Tool to calculate the emission factor for an electricity system, Version 05.0.
Value(s) applied	$0.95827x10^{-3}$
Choice of data or Measurement methods and procedures	Calculated ex ante as per "Tool to calculate the emission factor for an electricity system, ver. 05.0" as follows: $EF_{grid,y} = 0.75xEF_{grid,OM,y} + 0.25x\ EF_{grid,BM,y}$
Purpose of data	Calculation of baseline emissions
Additional comment	Computed once during PDD finalization (ex-ante) and will remain same throughout the crediting period.

Southern grid:

Data/Parameter	$EF_{SOUTHERN,y}$
Unit	tCO_2e/kWh
Description	CO_2 emission factor of Southern grid in year y
Source of data	Calculated weighted average combined margin using equation – $EF_{grid,y} = EF_{grid,OM,y} X\ w_{OM} + EF_{grid,BM,y} X\ w_{BM}$ The default values for w_{OM} and w_{BM} are taken as applicable to wind power generation project activities as $w_{OM} = 0.75$ and $w_{BM} = 0.25$. Reference: Tool to calculate the emission factor for an electricity system, Version 05.0.
Value(s) applied	$0.92417x10^{-3}$
Choice of data or Measurement methods and procedures	Calculated ex ante as per "Tool to calculate the emission factor for an electricity system, ver. 05.0" as follows: $EF_{grid,y} = 0.75xEF_{grid,OM,y} + 0.25x\ EF_{grid,BM,y}$
Purpose of data	Calculation of baseline emissions
Additional comment	Computed once during PDD finalization (ex-ante) and will remain same throughout the crediting period.

D.2. Data and parameters monitored

For Jath site in Maharashtra:

Data/Parameter	**EGexport-1, y**
Unit	MWh (Mega-watt hour)
Description	The quantity of electricity supplied by the project activity of AMGPL to the NEWNE grid (MWh)
Source of data	Main energy meter installed at the common metering point
Value(s) applied	6,527.13 MWh

Measurement methods and procedures	The main meter installed at the common metering point will measure the quantity of electricity supplied by the project activity to the grid. Main meter reading will be taken and verified, once in a month, jointly by the representatives of MSEDCL and the authorized representative of the contractor (SISL). Joint Meter Reading Report is developed by MSEDCL for all connected WTGs. Joint Meter Reading Report (JMR) for individual WTGs is also developed by MSEDCL after apportioning main meter readings. JMR contains data on export, import and net electricity supplied.
Monitoring frequency	Continuous monitoring, hourly measurement and monthly recording
QA/QC procedures	Calibration Frequency: Once in three years Accuracy class of energy meters: 0.2s
Purpose of data	Calculation of baseline emissions
Additional comment	Data shall be archived for the entire crediting period + 2 years

Data/Parameter	**$EG_{import-1, y}$**
Unit	MWh (Mega-watt hour)
Description	The quantity of electricity delivered to the project activity of AMGPL from the NEWNE grid (MWh)
Source of data	Main energy meter installed at the common metering point
Value(s) applied	12.26 MWh
Measurement methods and procedures	The main meter installed at the common metering point will measure the quantity of electricity delivered to the project activity from the grid. Main meter readings will be taken and verified, once in a month, jointly by the representatives of MSEDCL and the authorized representative of the contractor (SISL). Joint Meter Reading Report is developed by MSEDCL for all connected WTGs. Joint Meter Reading Report (JMR) for individual WTGs is also developed by MSEDCL after apportioning main meter readings. JMR contains data on export, import and net electricity supplied.
Monitoring frequency	Continuous monitoring, hourly measurement and monthly recording
QA/QC procedures	Calibration Frequency: Once in three years Accuracy class of energy meters: 0.2s
Purpose of data	Calculation of baseline emissions
Additional comment	Data shall be archived for the entire crediting period + 2 years

Data/Parameter	**$EG_{PJ-1,facility,y}$**
Unit	MWh (Mega-watt hour)
Description	Quantity of net electricity generation supplied by the project activity of AMGPL to the NEWNE grid in year *y*
Source of data	Joint Meter Reading Report (JMR)
Value(s) applied	6,515 MWh
Measurement methods and procedures	Net electricity supplied to the grid will be calculated as $EG_{PJ-1,facility,y} = EG_{export-1, y} – EG_{import-1, y}$ Joint Meter Reading Report (JMR) is developed by MSEDCL for all connected WTGs after calculating net electricity supplied to the grid as per above mentioned formula. JMR contains data on export, import and net electricity supplied.
Monitoring frequency	Recorded monthly
QA/QC procedures	The data can be cross-checked with the invoices and/ or credit notes.
Purpose of data	Calculation of baseline emissions
Additional comment	Data shall be archived for the entire crediting period + 2 years

Data/Parameter	**$EG_{export-2, y}$**

Unit	MWh (Mega-watt hour)
Description	The quantity of electricity supplied by the project activity of FSPL to the NEWNE grid (MWh)
Source of data	Main energy meter installed at the common metering point
Value(s) applied	6,213.87 MWh
Measurement methods and procedures	The main meter installed at the common metering point will measure the quantity of electricity supplied by the project activity to the grid. Main meter reading will be taken and verified, once in a month, jointly by the representatives of MSEDCL and the authorized representative of the contractor (SISL). Joint Meter Reading Report is developed by MSEDCL for all connected WTGs. Joint Meter Reading Report (JMR) for individual WTGs is also developed by MSEDCL after apportioning main meter readings. JMR contains data on export, import and net electricity supplied.
Monitoring frequency	Continuous monitoring, hourly measurement and monthly recording
QA/QC procedures	Calibration Frequency: Once in three years Accuracy class of energy meters: 0.2s
Purpose of data	Calculation of baseline emissions
Additional comment	Data shall be archived for the entire crediting period + 2 years

Data/Parameter	$EG_{import-2, y}$
Unit	MWh (Mega-watt hour)
Description	The quantity of electricity delivered to the project activity of FSPL from the NEWNE grid (MWh)
Source of data	Main energy meter installed at the common metering point
Value(s) applied	13 MWh
Measurement methods and procedures	The main meter installed at the common metering point will measure the quantity of electricity delivered to the project activity from the grid. Main meter readings will be taken and verified, once in a month, jointly by the representatives of MSEDCL and the authorized representative of the contractor (SISL). Joint Meter Reading Report is developed by MSEDCL for all connected WTGs. Joint Meter Reading Report (JMR) for individual WTGs is also developed by MSEDCL after apportioning main meter readings. JMR contains data on export, import and net electricity supplied.
Monitoring frequency	Continuous monitoring, hourly measurement and monthly recording
QA/QC procedures	Calibration Frequency: Once in three years Accuracy class of energy meters: 0.2s
Purpose of data	Calculation of baseline emissions
Additional comment	Data shall be archived for the entire crediting period + 2 years

Data/Parameter	$EG_{PJ-2,facility,y}$
Unit	MWh (Mega-watt hour)
Description	Quantity of net electricity generation supplied by the project activity of FSPL to the NEWNE grid in year *y*
Source of data	Joint Meter Reading Report (JMR)
Value(s) applied	6,201 MWh
Measurement methods and procedures	Net electricity supplied to the grid will be calculated as $EG_{PJ-2,facility,y} = EG_{export-2, y} – EG_{import-2, y}$ Joint Meter Reading Report (JMR) is developed by MSEDCL for all connected WTGs after calculating net electricity supplied to the grid as per above mentioned formula. JMR contains data on export, import and net electricity supplied.

Monitoring frequency	Recorded monthly
QA/QC procedures	The data can be cross-checked with the invoices and/ or credit notes.
Purpose of data	Calculation of baseline emissions
Additional comment	Data shall be archived for the entire crediting period + 2 years

Data/Parameter	$EG_{export-3, y}$
Unit	MWh (Mega-watt hour)
Description	The quantity of electricity supplied by the project activity of GNA to the NEWNE grid (MWh)
Source of data	Main energy meter installed at the common metering point
Value(s) applied	10,026 MWh
Measurement methods and procedures	The main meter installed at the common metering point will measure the quantity of electricity supplied by the project activity to the grid. Main meter reading will be taken and verified, once in a month, jointly by the representatives of MSEDCL and the authorized representative of the contractor (SISL). Joint Meter Reading Report is developed by MSEDCL for all connected WTGs. Joint Meter Reading Report (JMR) for individual WTGs is also developed by MSEDCL after apportioning main meter readings. JMR contains data on export, import and net electricity supplied.
Monitoring frequency	Continuous monitoring, hourly measurement and monthly recording
QA/QC procedures	Calibration Frequency: Once in three years Accuracy class of energy meters: 0.2s
Purpose of data	Calculation of baseline emissions
Additional comment	Data shall be archived for the entire crediting period + 2 years

Data/Parameter	$EG_{import-3, y}$
Unit	MWh (Mega-watt hour)
Description	The quantity of electricity delivered to the project activity of GNA from the NEWNE grid (MWh)
Source of data	Main energy meter installed at the common metering point
Value(s) applied	469 MWh
Measurement methods and procedures	The main meter installed at the common metering point will measure the quantity of electricity delivered to the project activity from the grid. Main meter readings will be taken and verified, once in a month, jointly by the representatives of MSEDCL and the authorized representative of the contractor (SISL). Joint Meter Reading Report is developed by MSEDCL for all connected WTGs. Joint Meter Reading Report (JMR) for individual WTGs is also developed by MSEDCL after apportioning main meter readings. JMR contains data on export, import and net electricity supplied.
Monitoring frequency	Continuous monitoring, hourly measurement and monthly recording
QA/QC procedures	Calibration Frequency: Once in three years Accuracy class of energy meters: 0.2s
Purpose of data	Calculation of baseline emissions
Additional comment	Data shall be archived for the entire crediting period + 2 years

Data/Parameter	$EG_{PJ-3,facility,y}$
Unit	MWh (Mega-watt hour)
Description	Quantity of net electricity generation supplied by the project activity of GNA to the NEWNE grid in year *y*
Source of data	Joint Meter Reading Report (JMR)
Value(s) applied	9,556 MWh

Measurement methods and procedures	Net electricity supplied to the grid will be calculated as $EG_{PJ-3,facility,y} = EG_{export-3,\ y} - EG_{import-3,\ y}$ Joint Meter Reading Report (JMR) is developed by MSEDCL for all connected WTGs after calculating net electricity supplied to the grid as per above mentioned formula. JMR contains data on export, import and net electricity supplied.
Monitoring frequency	Recorded monthly
QA/QC procedures	The data can be cross-checked with the invoices and/ or credit notes.
Purpose of data	Calculation of baseline emissions
Additional comment	Data shall be archived for the entire crediting period + 2 years

Data/Parameter	**$EG_{export-4,\ y}$**
Unit	MWh (Mega-watt hour)
Description	The quantity of electricity supplied by the project activity of AIPL to the NEWNE grid (MWh)
Source of data	Main energy meter installed at the common metering point
Value(s) applied	5,750.19 MWh
Measurement methods and procedures	The main meter installed at the common metering point will measure the quantity of electricity supplied by the project activity to the grid. Main meter reading will be taken and verified, once in a month, jointly by the representatives of MSEDCL and the authorized representative of the contractor (SISL). Joint Meter Reading Report is developed by MSEDCL for all connected WTGs. Joint Meter Reading Report (JMR) for individual WTGs is also developed by MSEDCL after apportioning main meter readings. JMR contains data on export, import and net electricity supplied.
Monitoring frequency	Continuous monitoring, hourly measurement and monthly recording
QA/QC procedures	Calibration Frequency: Once in three years Accuracy class of energy meters: 0.2s
Purpose of data	Calculation of baseline emissions
Additional comment	Data shall be archived for the entire crediting period + 2 years

Data/Parameter	**$EG_{import-4,\ y}$**
Unit	MWh (Mega-watt hour)
Description	The quantity of electricity delivered to the project activity of AIPL from the NEWNE grid (MWh)
Source of data	Main energy meter installed at the common metering point
Value(s) applied	37.19 MWh
Measurement methods and procedures	The main meter installed at the common metering point will measure the quantity of electricity delivered to the project activity from the grid. Main meter readings will be taken and verified, once in a month, jointly by the representatives of MSEDCL and the authorized representative of the contractor (SISL). Joint Meter Reading Report is developed by MSEDCL for all connected WTGs. Joint Meter Reading Report (JMR) for individual WTGs is also developed by MSEDCL after apportioning main meter readings. JMR contains data on export, import and net electricity supplied.
Monitoring frequency	Continuous monitoring, hourly measurement and monthly recording
QA/QC procedures	Calibration Frequency: Once in three years Accuracy class of energy meters: 0.2s
Purpose of data	Calculation of baseline emissions
Additional comment	Data shall be archived for the entire crediting period + 2 years

Data/Parameter	**$EG_{PJ-4,facility,y}$**
Unit	MWh (Mega-watt hour)

Description	Quantity of net electricity generation supplied by the project activity of AIPL to the NEWNE grid in year *y*
Source of data	Joint Meter Reading Report (JMR)
Value(s) applied	5,713 MWh
Measurement methods and procedures	Net electricity supplied to the grid will be calculated as $EG_{PJ-4,facility,y} = EG_{export-4,\ y} - EG_{import-4,\ y}$ Joint Meter Reading Report (JMR) is developed by MSEDCL for all connected WTGs after calculating net electricity supplied to the grid as per above mentioned formula. JMR contains data on export, import and net electricity supplied.
Monitoring frequency	Recorded monthly
QA/QC procedures	The data can be cross-checked with the invoices and/ or credit notes.
Purpose of data	Calculation of baseline emissions
Additional comment	Data shall be archived for the entire crediting period + 2 years

For Sindhgiri site in Karnataka:

Data/Parameter	**$EG_{export-S,\ y}$**
Unit	MWh (Mega-watt hour)
Description	The quantity of electricity supplied by the project activity of AMGPL to the Southern grid (MWh)
Source of data	Main electricity meter located at each WTG and owned by GESCOM.
Value(s) applied	22,399 MWh
Measurement methods and procedures	The main meter installed at 33 kV metering point of each WTG will measure the quantity of electricity supplied by the project plant/unit to the grid. Main meter reading will be taken and verified, once in a month, jointly by the representatives of GESCOM and the authorized representative of the contractor (SISL) as per the applicable provisions mentioned in the Energy Purchase Agreement.
Monitoring frequency	Continuous monitoring, hourly measurement and monthly recording
QA/QC procedures	Calibration Frequency: Once in three years Accuracy class of energy meters: 0.2s
Purpose of data	Calculation of baseline emissions
Additional comment	Data shall be archived for the entire crediting period + 2 years

Data/Parameter	**$EG_{import-S,\ y}$**
Unit	MWh (Mega-watt hour)
Description	The quantity of electricity delivered to the project activity of AMGPL from the Southern grid (MWh)
Source of data	Main electricity meter located at each WTG and owned by GESCOM.
Value(s) applied	86 MWh
Measurement methods and procedures	The main meter installed at 33 kV metering point of the WTG will measure the quantity of electricity delivered to the project plant/unit from the grid. Main meter readings will be taken and verified, once in a month, jointly by the representatives of GESCOM and the authorized representative of the contractor (SISL) as per the applicable provisions mentioned in the Energy Purchase Agreement.
Monitoring frequency	Continuous monitoring, hourly measurement and monthly recording
QA/QC procedures	Calibration Frequency: Once in three years Accuracy class of energy meters: 0.2s
Purpose of data	Calculation of baseline emissions
Additional comment	Data shall be archived for the entire crediting period + 2 years

Data/Parameter	$EG_{PJ-S,facility,\ y}$
Unit	MWh (Mega-watt hour)
Description	Quantity of net electricity generation supplied by the project activity of AMGPL to the Southern grid in year *y*
Source of data	Meter reading report
Value(s) applied	29,449 MWh
Measurement methods and procedures	Net electricity supplied to the grid will be calculated as $EG_{PJ,facility,\ y} = EG_{export,\ y} – EG_{import,\ y}$
Monitoring frequency	Recorded monthly
QA/QC procedures	The data can be cross-checked with the invoices and/ or credit notes.
Purpose of data	Calculation of baseline emissions
Additional comment	Data shall be archived for the entire crediting period + 2 years

D.3. Implementation of sampling plan

There are no parameters to be determined by sampling approach

SECTION E. Calculation of emission reductions or net anthropogenic removals

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

Baseline emissions:

The baseline emissions are to be calculated as follows:

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

The combined margin emission factors for NEWNE and Southern grids are

Grid	Combined margin CO_2 emission factor ($EF_{grid,\ CM,y}$) (tCO_2/MWh)
NEWNE	0.95827
Southern	0.92417

For NEWNE grid, the baseline calculations are

BE_y = 27,985 * 0.95827
= 26,809 tCO_2e

For Southern grid, the baseline calculations are

BE_y = 29,449 * 0.92417
= 27,214 tCO_2e

Total Electricity generated from the project activity during the current monitoring period
= 27,985 + 29,449
= 57,434 MWh

Total Emission reductions during the monitoring period = 26,809 + 27,214
= 54,024 tCO_2e

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

In the project activity there is no emissions resulting due to the project. Hence, Project Emission (PE_y) = 0

E.3. Calculation of leakage emissions

The project activity is wind power project. Hence, the leakage is considered as zero, LE_y = 0.

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	54,024	0	0	0	54,024	54,024

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)
54,024	68,862

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

As per the CDM registered PDD, the amount of CERs generated annually is 27,560 tCO_2e.

Therefore, the amount of estimated ex ante for this monitoring period is identified as explained below.

The total number of days in this monitoring period is 912 days.

Hence, the amount of estimated ex ante for this monitoring period = 27,560 * (912/365)
= 68,862 tCO_2e

E.6. Remarks on increase in achieved emission reduction

CER's generated are low as compared due to registered PDD because, in actual case the PLF is on lower side, due to which there is a decrease in the electricity generation. The actual ER is 27.47% lower than estimated values.

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.

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).
01.0	28 May 2010	EB 54, Annex 34. Initial adoption.

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