Monitoring report form for CDM project activity
(Version 08.0)

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MONITORING REPORT			
Title of the project activity	Bundled 9.00 MW wind power Generation project in Rajasthan, India by M/s. Gangadhar Narsingdas Agrawal Group		
UNFCCC reference number of the project activity	7215[1]		
Version number of the PDD applicable to this monitoring report	10[2]		
Version number of this monitoring report	01		
Completion date of this monitoring report	30/07/2021		
Monitoring period number	03		
Duration of this monitoring period	02/01/2017 - 31/12/2020 (inclusive of both dates)		
Monitoring report number for this monitoring period	Not Applicable		
Project participants	1. Gangadhar Narsingdas Agrawal, (HUF) (India) 2. Belektron d.o.o. (United Kingdom of Great Britain and Northern Ireland) 3. EKI Energy Services Limited (Australia)		
Host Party	India		
Applied methodologies and standardized baselines	AMS I.D – Grid connected renewable electricity generation – version 17 Standardized baseline: Not Applicable.		
Sectoral scopes	Sectoral Scope 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 until 31 December 2020	Amount achieved from 1 January 2021
	0 tCO_2e	36,584 tCO_2e	0 tCO_2e

[1] http://cdm.unfccc.int/Projects/DB/SGS-UKL1346942833.5/view

[2] http://cdm.unfccc.int/Projects/DB/SGS-UKL1346942833.5/view

Amount of GHG emission reductions or net anthropogenic GHG removals estimated ex ante for this monitoring period in the PDD	56,116 tCO_2e

SECTION A. Description of project activity

A.1. General description of project activity

The purpose of the project activity is to generate power via a 9.0 MW Wind Power Generation Project in the state of Rajasthan.

The WTGs are located in Belwa Ranaji Village, District Jodhpur in Rajasthan, and Village Ugawa in District Jaisalmer in Rajasthan. The project is promoted by Gangadhar Narsingdas Agrawal (GNA) and Ferromar Shipping Private Limited (FSPL) from Goa. The companies have business interests in mining and mineral ore exports and shipping sectors. All the WTGs are connected to NEWNE grid (now Indian Grid,) which sells generated electrical energy produced to Rajasthan State Electricity Board.

Relevant dates for the project activity:
The Commissioning dates, capacity, location number for all the WEGs of the project activity is provided in table below:

Ownership	Installed Capacity	Site	Location No.	Start date of the Project activity	Commissioning Date	Registration of project activity under CDM
GNA	4.2 MW	Ratan ka Bas(RKB)	RKB 06	20/08/2009	23/03/2010	06/09/2012
			RKB 07		17/03/2010	
GNA	4.0 MW	Ugawa	Location no. 26		05/09/2010	
			Location no. 28			
			Location no. 42			
			Location no. 80			
			Location no. 81			
FSPL	0.8 MW	Ugawa	Location no. 64		03/09/2010	

Total emission reductions achieved in this monitoring period:
During the reported monitoring period 02/01/2017 to 31/12/2020 (First and last date included) the project activity has supplied 38,591 MWh of electricity, and thus contributing to the GHG reductions of 36584 tCO_2e.

A.2. Location of project activity

The WTGs are located in Belwa Ranaji Village, District Jodhpur in Rajasthan, and Village Ugawa in District Jaisalmer in Rajasthan.
The geographical location of the project site is described in the table below:

WTG ID No.	Site	State	Latitude	Longitude
RKB 06	Ratan ka Bas(RKB)	Rajasthan	26°28'06.0"N	72°29'26.2"E
RKB 07			26°28'26.7"N	72°29'29.0"E
Location no. 26	Ugawa		26°37'12.0"N	70°57'09.0"E
Location no. 28			26°37'15.0"N	70°56'51.0"E
Location no. 42			26°37'55.0"N	70°57'31.0"E
Location no. 80	Ugawa		26°38'59.0"N	70°58'28.0"E
Location no. 81			26°39'01.0"N	70°58'20.20"E

Location no. 64			26°38'54.0"N	70°57'02.0"E

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)	Gangadhar Narsingdas Agrawal, (HUF)	No
United Kingdom of Great Britain and Northern Ireland	Belektron d.o.o.	No
Australia	EKI Energy Services Limited	No

A.4. References to applied methodologies and standardized baselines

According to APPENDIX B[3] of "Simplified modalities and procedures for small-scale clean development mechanism project activities" the type and category of project activity is given below:

Project Type : I–Renewable Energy Projects
Sectoral Scope: 01, Energy industries (renewable / non-renewable sources)
Title : Grid connected renewable electricity generation[4]
Reference : AMS - I.D.
Version : 17
Tool : "Tool to calculate the emission factor for an electricity system" Version 02.2.1 EB 63 Annex 19[5]

A.5. Crediting period type and duration

Type of crediting period	Fixed
Crediting period from	01/01/2013 - 31/12/2022
Length of the Crediting Period	10 years
Current Monitoring period number	3
Current Monitoring period from	02/01/2017 to 31/12/2020
Length of the Monitoring Period	1460 Days

SECTION B. Implementation of project activity

B.1. Description of implemented project activity

The total installed capacity of the project is 9.0 MW, which comprises of total 8 number of Wind Turbine Generator (WTG) in Rajasthan. The technology used for the project activity is of Suzlon Energy Limited and Enercon India Limited.
A brief description of the installed technology and equipments used in the project activity is given below:

Particulars	Details

[3] http://cdm.unfccc.int/Reference/COPMOP/08a01.pdf#page=43

[4] http://cdm.unfccc.int/UserManagement/FileStorage/V9LRSXKP24Q7YT6HZDUBO3C0ING8AJ

[5] http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v2.2.1.pdf

Rotor:	
Diameter	88 m
No. of Rotor Blade	3
Swept area	6082 m^3
Hub Height	80 m
Regulation	Pitch regulated
Operational data	
Start Wind speed	4 m/s
Stop Wind speed	25 m/s
Installed electrical output	2100kW
Gear Box:	
Type	1 planetory stage/two helical stages
Gear ratio	1:98:8
Power	2310 KW
Generator:	
Type	Single fed induction generator with slip-rings, variable rotor resistance with Suzlon- Flexi – Slip control system
Rated output	2100 kW
Reference speed	1545 rpm
Rated voltage	3phase - 690 V AC
Frequency	50 Hz

Technical details of Enercon E-53 800KW WTGs

Particulars	**Details**
Rated Power	800KW
Rotor Diameter	52.9m
Hub Height	75m(Concrete)
Turbine Type	Direct driven, horizontal axis wind turbine with variable rotor speed
Power Regulation	Independent pitch system for each blade.
Cut in wind speed	2.5m/s
Rated wind speed	12m/s
Cut out wind speed	28-34m/s
Extreme wind speed	59.5m/s
Rated rotational speed	29 m/s
Operational range rotational speed	12-29m/s
Orientation	Upwind
No. of Blades	3
Blade Material	Fibre glass Epoxy reinforced
Gear box type	Gear Less
Generator type	Synchronous generator
Braking	Aerodynamic
Output Voltage	400V
Yaw System	Active yawing with 4 electric yaw drives with brake motor
Tower	74m(Concrete)

All the WTGs are running successfully, during for the reported monitoring period. All the physical and technical features as stated in the registered PDD are in place and project is operated as described in the registered PDD.
No events or situations happened during the reported monitoring period which can alter the applicability of the applied methodology

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

B.2.2. Corrections

Not Applicable

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

Changes regarding state date of crediting period has been informed to UNFCCC via email by PP and same is approved. Please refer UN web page of same project. The earlier crediting period was from 10/09/2012 – 09/09/2022 and it is changed to 01/01/2013 – 31/12/ 2022 .

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 for the current monitoring period.

B.2.6. Changes to project design

There has not been any change in the PDD during the current monitoring period.

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

Not Applicable

SECTION C. Description of monitoring system

The project proponents have engaged various experienced O&M service providers for the management of the WTGs. O&M team is responsible for preventive maintenance, handling emergency situations and improvement measures. Monitoring plan is same for both the companies in the state of Rajasthan where both GNA and FSPL WTGs are installed.

Operation and Maintenance contract for the 4.2 MW (2 X 2.1 MW) windmills (supplied by Suzlon Ltd.) has been awarded to Suzlon Energy Ltd. while, the contract for the 4.0 MW (5 X 0.8 MW) windmills of GNA and 0.8 MW (1 X 0.8 MW) windmills of FSPL (supplied by Enercon (India) limited) in Jaisalmer has been awarded to Enercon (India) Limited. O&M team is responsible for preventive maintenance, handling emergency situations and improvement measures. They submit monthly reports to the management of the two companies GNA and FSPL.

Actual electricity supplied by wind machines each month is monitored by Rajasthan Rajya Vidyut Prasaran Nigam Limited (RVPN) / DISCOM. WTG electricity generation is measured using WTG controller at the project site. Electricity exported to grid is measured using RVPN meter installed at Sub-Station, this reading is taken monthly by joint team of Operation and Maintenance (O & M) team (Project proponent's representatives) and RVPN / DISCOM personnel. Details of the monitoring hierarchy is given in the annex 1 of this document.

The quantity of electricity supplied to the grid can also be verified by the monthly invoices raised by the project proponent. This reading is derived using installed meters. Calibration of WTG meters and substation meters is carried out as per the requirements.

Project Management

Apart from the O&M contract, the authority and responsibility for registration, monitoring, measurement, reporting and reviewing of the data rests with the Project head/Project Manager from project proponent side for review.

Monitoring Approach

Actual energy supplied by windmills each month is measured by DISCOM. DISCOM issues a certificate for the share of electricity generated every month. Monthly share of electricity certificate is prorated by DISCOM based on actual generation of windmills and the net electricity supplied by the wind farm.

Actual power generated by windmills is measured at the project site. At the substation both main meter and check meter are installed. Net electricity exported to grid by the wind farm is calculated using the electricity measured by the meters installed at the substation. The reading is taken monthly by joint team of Operation and Maintenance (O & M) team at wind farm and DISCOM personnel.

Based on this DISCOM issues certificate for share of net electricity exported by the windmills to the grid. Reading recorded in this certificate for the WTGs in the project activity is used for actual estimations. This reading can be cross verified with the actual invoices presented to the DISCOM. In case of mismatch between these readings, the generation details can be cross-checked with the WTG monthly generation report given by the O&M service provider and CERs can be claimed for the most conservative and accurate value.

Meter readings:

Meter readings are taken jointly by the representatives of DISCOM and the power producer. Such meter readings shall be treated as the accurate and final measurement of the energy supplied to the NEWNE grid(now Indian Grid) by the power producer for preceding month for the period of payment.

The measurement of various parameters mentioned in the following diagram is done by the O&M contractor and the respective DISCOM. All the parameters are used in apportioning procedure based on which Electricity Sharing Certificate is issued to the PP. This is in line with the Power Purchase Agreement with the respective DISCOM. In the apportioning procedure generation details of other power producer connected to the same feeder is required, which PP is not entitled to get. Hence, these measurements are not covered in the section Data and parameters. However, electricity sharing certificate is prepared based on these measurements and calculation done by the O&M contractor in consultation with the DISCOM. Thus, electricity sharing certificate is an authentic and final document based on which billing is done and hence can be trusted. Moreover the apportioning procedure is designed by the WTGs supplier in consultation with the DISCOM and it may be subject to change in future and PP has no control over the same.

The net energy supplied by WTGs ($EG_{facility,y}$) of the project activity is calculated using apportioning procedure as per the following formula.

Step 1: Feeder (pooling substation) wise apportion for each WTG (export and import)

Example:

$$\text{A. } EG_{export,\,project} = EG_{controller,\,project} \times \frac{EG_{export,\,feeder}}{\Sigma EG_{controller,i,\,feeder}}$$

$$\text{B. } EG_{import,\,project} = EG_{controller,project} \times \frac{EG_{import,,feeder}}{\Sigma EG_{controller,\,i,\,feeder}}$$

Step 2: Apportion for Line losses (for export and import) of each WTG between pooling substation and Grid Substation

Example:

$$C.\ EG_{export,\ line\ loss\ project} = EG_{controller,\ project} \times \frac{EG_{export,line\ loss}}{\Sigma EG_{controller,i,feeders\ j}}$$

$$C.\ EG_{import,\ line\ loss,\ project} = EG_{controller,\ project} \times \frac{EG_{import,line\ loss}}{\Sigma EG_{controller,i,feeders,j}}$$

Step 3: Net power export by each WTG = [Feeder wise Export (A) – line losses for export(C)] – [Feeder wise import (B) – line losses for import (D)]

Example:

$EG_{net\ export,\ project} = (EG_{export,project} - EG_{export,line\ loss,\ project}) - (EG_{import,project} - EG_{import,line\ loss,\ project})$ Where,

$EG_{export,\ project}$/ $EG_{import,\ project}$ = Net energy export/import by the project WTG based ofeeder meter reading of the pooling substation.

$EG_{controller,project}$ = Gross energy generation measured at the controller meter of the project WTG.

$EG_{export,feeder}$ / $EG_{import,,feeder}$ = Energy export/import by the WTGs connected to the respective = Feeder at the poolling substation.

$EG_{controller,i,\ feeder}$ = Total gross energy generation measured at the controller meters of al WTGs connected to the Feeder i.

$EG_{export,\ line\ loss\ project}$ = Line loss between pooling substation and GSS substation for energy export by the project WTG

$EG_{export,\ line\ loss}$ = Line loss between pooling substation and GSS substation for energy export by all WTGs connected to the GSS substation

$EG_{import,\ line\ loss\ project}$ = Line loss between pooling substation and GSS substation for energy import by the project WTG.

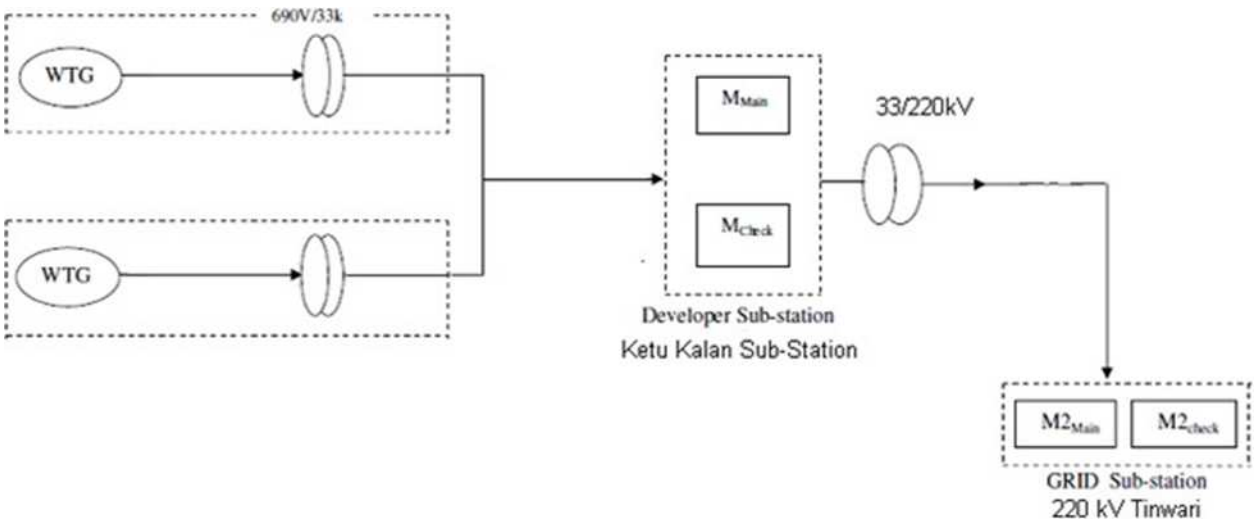
$EG_{import,\ line\ loss}$ = Line loss between pooling substation and GSS substation for energy import by the project WTGs connected to the GSS substation

$EG_{controller,i,\ feeders,j}$ = Total controller meter reading of all WTGs connected to the GSS.

$EG_{net\ export,\ project}$ = Net energy export by the project WTG

Quality Assurance
Calibration/testing of substation meter is carried out as per the national standard followed by the Discom, but at least once in three years in accordance with paragraph 17(c), Annex21, EB61.

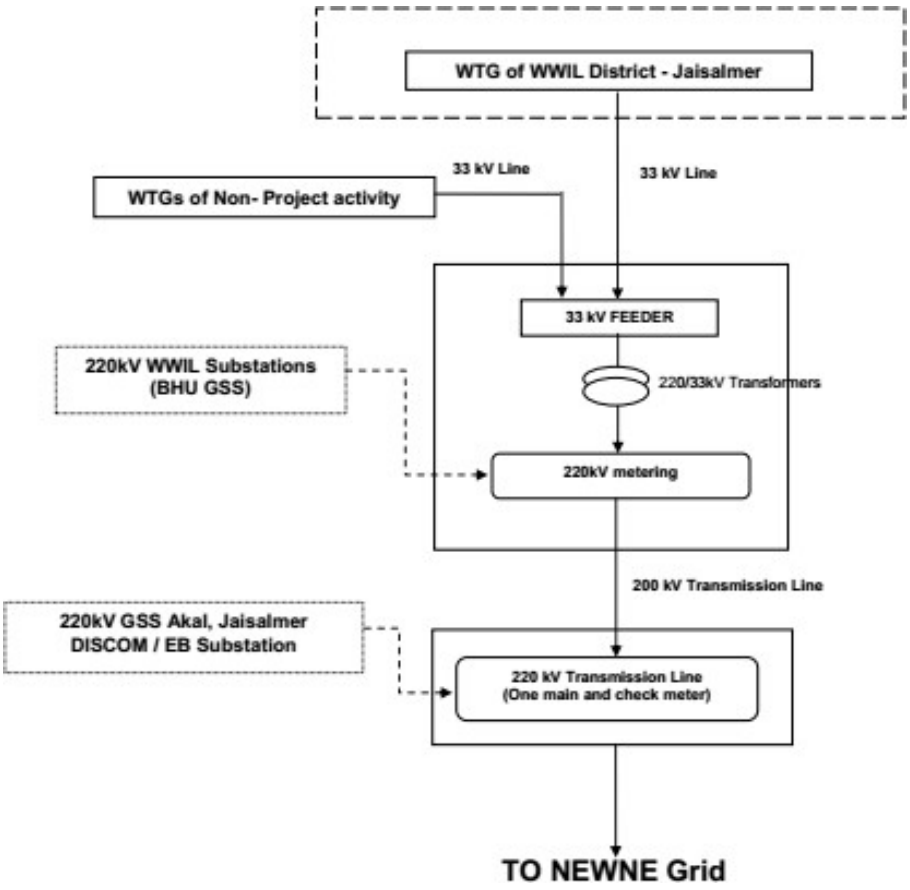
Data Storage
All of the above parameters monitored under the monitoring plan is kept for 2 years after the end of the crediting period or the last issuance of CERs for this project activity, whichever is later. The monitored data is presented to the verification agency or DOE to whom verification of emission reductions is assigned. Please refer to Annex 4 for details of monitoring plan. Further the voltage levels, and location of the meters, which are used for monitoring the net export to the grid, has been shown in the following line diagram.



WTG	Project Activity WTGs
WTG_o	Other Project Activity WTGs
M_{Main}	Sub-station – The 33 kV line transfer at Developer Sub-station, after injection point stepped up to 220kV
M_{check}	Sub-station – The 33 kV line transfer at Developer Sub-station after injection point stepped up to 220kV
$M_{2\ Main}$	GRID Sub-station – The 220kV line transfer from Developer Sub-station to Grid substation. (This is used for billing purpose)
$M_{2\ Check}$	GRID Sub-station – The 220kV line transfer from Developer Sub-station to Grid Substation. (This is used for billing purpose)

As per the aforementioned line diagram, referring to WTGs **RKB 06 & RKB 07**, the generated electricity is measured through a two-step procedure wherein the first metering is carried out at the controller of the machine with on-board meter. The monitoring of all these wind turbines is done from a common monitoring station as a part of central monitoring system (CMS). The electricity generated from this site is fed to metering arrangement through 33 kV feeder line at pooling substation (Ketu Kalan), after the injection point this is further stepped-up to 220 kV voltage level and is further connected to 220 kV Grid Substation at Tinwari. The generation reading is collectively displayed by the Main Billing meter at Tinwari, Jodhpur substation. Back up meters are also installed at all 33KV feeders as well as Ketu Kalan GSS for energy auditing purpose. At Tinwari sub-station at 220kV level metering is done. The WTGs are connected to the, Feeder No. 1

Furthermore, WTGs with **Location no. 26, 28, 42, 80, 81, 64** of the project activity installed in Jaisalmer district is connected through 220kV Wind World (India) Limited (formerly known as Enercon India Limited herein after referred as WWIL) pooling sub-station (220 kV BHU substation), through 33kV feeder lines. At WWIL pooling sub-station BHU electricity is stepped up to 220kV, wherein the backup meter (main and check meters) are connected. From WWIL pooling substation electricity is transmitted to state utility (DISCOM) sub-station (AKAL) through 220kV transmission line/ EHV line wherein the billing meter (one main meter & one check meter) is connected. At Akal sub-station metering is done at 220kV point of sale. From EB sub-station electricity is further transmitted to NEWNE grid now Indian Grid . The following line diagram details, metering points at the project site.



SECTION D. Data and parameters

D.1. Data and parameters fixed ex ante

Data/Parameter	$EF_{grid,OM,y}$
Unit	tCO_2/MWh
Description	Generation Weighted Average Operating Margin
Source of data	Central Electricity Authority (CEA) and Tool to calculate emission factor for an electricity system
Value(s) applied	0.994
Choice of data or measurement methods and procedures	Data used from CEA database, version 6
Purpose of data/parameter	Calculation of baseline emissions or baseline net GHG removals by sinks
Additional comments	The data is used to calculate the combined margin for the NEWNE grid (now Indian Grid) of India as per the procedures laid down in the tool to calculate emission factor for an electricity system, version 2.2.1, Annex 19, EB 63

Data/Parameter	$EFgrid_{,BM,y}$
Unit	tCO_2/MWh
Description	Build margin emission factor
Source of data	Central Electricity Authority (CEA) and Tool to calculate emission factor for an electricity system
Value(s) applied	0.812

Choice of data or measurement methods and procedures	Data used from CEA database, version 6 has been used
Purpose of data/parameter	Calculation of baseline emissions or baseline net GHG removals by sinks
Additional comments	The data is used to calculate the combined margin for the NEWNE grid (now Indian Grid)of India as per the procedures laid down in the tool to calculate emission factor for an electricity system, version 2.2.1, Annex 19, EB 63

Data/Parameter	EF_{CO2}
Unit	tCO_2/MWh
Description	CO_2 Baseline Emission factor of the grid
Source of data	CEA database version 6 has been used
Value(s) applied	0.948
Choice of data or measurement methods and procedures	Data used from CEA database, version 6 has been used
Purpose of data/parameter	Calculation of baseline emissions or baseline net GHG removals by sinks
Additional comments	Data used from CEA database which accounts for data from various plant sources; uses latest versions of Tool to calculate the emission factor for an electricity system Data will be kept for crediting period + 2 Years. The emission factor is fixed ex ante for the first crediting period.

D.2. Data and parameters monitored

Data/Parameter	**$EG_{facility,y}$ ($EG_{BL,y}$)**
Unit	MWh
Description	Quantity of net electricity supplied to the grid as a result of the implementation of the CDM project activity in year y (MWh)
Measured/calculated/ default	Calculated
Source of data	This is a calculated value from power import and export for both EGGNA,y and $EG_{FSPL,y}$.
Value(s) of monitored parameter	38,591
Monitoring equipment	Energy meters are used for monitoring.
Measuring/reading/recording frequency	Continuous monitoring, hourly measurement and monthly recording
Calculation method (if applicable)	$EG_{BL,y}$ is calculated as : $EG_{facility,y} = EG_{GNA,y} + EG_{FSPL,y}$ $EG_{GNA,y}$ Quantity of net electricity supplied to the grid as a result of the implementation of the CDM project activity of GNA in year y (MWh) $EG_{FSPL,y}$ Quantity of net electricity supplied to the grid as a result of the implementation of the CDM project activity of FSPL in year y (MWh)
QA/QC procedures	QA and QC is applied to $EG_{GNA,y}$, $EG_{FSPL,y}$ parameters
Purpose of data/parameter	Calculation of baseline emissions or baseline net GHG removals by Sinks
Additional comments	Data archived: Crediting period + 2 yrs

Data/Parameter	$EG_{GNA,y}$

Unit	MWh
Description	Quantity of net electricity supplied to the grid as a result of the implementation of the CDM project activity of GNA in year y
Measured/calculated/ default	Calculated
Source of data	Certificate for breakup of net export units
Value(s) of monitored parameter	34,624.44
Monitoring equipment	Energy meters are used for monitoring.
Measuring/reading/recording frequency	Measuring frequency: Continuous Recording frequency: Monthly
Calculation method (if applicable)	The net generation value of all WTGs of GNA is derived from the measured value of 1. Power export, power import by all WTGs connected at the substation of the RKB site for the WTGs installed at the RKB site and the controller meter reading of each WTG connected to the substation of the RKB site. Please refer to the section C for calculation procedure for arriving at net electricity supplied to the grid 2. Power export, power import by all WTGs connected at the substation of the Ugawa site for the WTGs installed at the Ugawa site and the controller meter reading of each WTG connected to the substation of the Ugawa site. Please refer to the section C for calculation procedure for arriving at net electricity supplied to the grid.
QA/QC procedures	All the energy meters (both main and check meter) installed at the substation are of accuracy class of 0.2s and are calibrated as per the national standards followed by the Discom, but they are calibrated at least once in three years. Controller meters are software based meter and does not required calibration. Invoice raised by the project proponent to the DISCOM against net power export to the grid can be used for cross checking the measured data.
Purpose of data/parameter	Calculation of baseline emissions or baseline net GHG removals by sinks
Additional comments	Data archived: Crediting period + 2 yrs

Data/Parameter	**$EG_{FSPL, y}$**
Unit	MWh
Description	Quantity of net electricity supplied to the grid as a result of the implementation of the CDM project activity of FSPL in year y
Measured/calculated/ default	Calculated
Source of data	Certificate for breakup of net export units
Value(s) of monitored parameter	3966.72
Monitoring equipment	Energy meters are used for monitoring.
Measuring/reading/recording frequency	Measuring frequency: Continuous Recording frequency: Monthly
Calculation method (if applicable)	Calculated from the power export, power import by all WTGs connected at the substation of the Ugawa site and the controller meter reading of each WTG connected to the substation of the Ugawa site and the controller meter reading of each WTG connected to the substation of the Ugawa site. Please refer to the section C for calculation procedure for arriving at net electricity supplied to the grid.

QA/QC procedures	All the energy meters (both main and check meter) installed at the substation are of accuracy class of 0.2s and are calibrated as per the national standards followed by the Discom, but they are calibrated at least once in three years. Controller meters are software based meter and does not required calibration. Invoice raised by the project proponent to the DISCOM against net power export to the grid can be used for cross checking the measured data.
Purpose of data/parameter	Calculation of baseline emissions or baseline net GHG removals by sinks
Additional comments	Data archived: Crediting period + 2 yrs

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

As per the approved methodology AMS I.D version 17, baseline emissions for the project activity is calculated by multiplying the net quantity of electricity supplied by this project activity ($EG_{BL,y}$) with the CO_2 baseline emission factor for the electricity displaced due to the project (EFCO2) as follows

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

Where,

$EF_{CO2,grid,y}$	=	CO_2 emission factor of the grid in year $_y$
	=	0.948 tCO_2e/MWh
$EG_{BL,y}$	=	Net electricity supplied to the grid , now Indian Grid (MWh)
	=	38,591 MWh
BE_y	=	Baseline emissions in year y (tCO_2)

And

$EG_{BL,y} = EG_{GNA,y} + EG_{FSPL,y}$

Where,

$EG_{GNA,y}$	=	Quantity of net electricity supplied to the grid by GNA in year y (MWh)
$EG_{FSPL,y}$	=	Quantity of net electricity supplied to the grid by FSPL in year *y* (MWh)

Baseline emissions

$BE_y = EG_{BL,y} \times EF_{CO2,grid,y}$
$= (EG_{GNA,y} + EG_{FSPL,y}) \times EF_{CO2,grid,y}$
$= (34624.45 + 3966.72)$ MWh X 0.948 tCO_2/MWh
$= 38,591 \times 0.948$
$= 36,584\ tCO_{2e}$ (round down value)

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

Since the project activity is a renewable energy project, which generates electricity using wind power, therefore there are no resulting project emissions.

E.3. Calculation of leakage emissions

No leakage is considered from the project activity as per approved methodology AMS-I.D. Version 17.

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 until 31/12/ 2020	From 01/01/ 2021	Total amount
Total	36,584	0	0	0	36,584	0	36,584

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)
36,584	56,116

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	02/01/2017
End date of monitoring period	31/12/2020
Number of days in monitoring period	1460
Annual estimated reductions as per the PDD	14029
Estimated emission reductions for this monitoring period	(1460*14029)/365
Hence, Estimated emission reductions for this monitoring period	56,116
Actual emission reductions for this monitoring period	36,584
Percentage deviation of actual reductions as compared to estimated reductions for this monitoring period	34.81%

E.6. Remarks on increase in achieved emission reductions

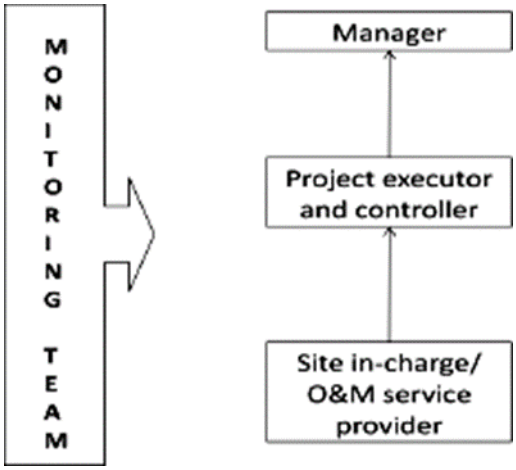
From E.5 above, we can observe that actual emission reduction for the monitoring is lower than estimated emission reductions by 34.81%. This is due to low PLF during current monitoring period.

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

Annex 1: Monitoring Information

Organizational Structure & Responsibilities:



The project activity is operated and managed by the PPs with the help of site in-charge (personnel appointed by PPs) and site O&M contractor (personnel appointed by supplier of WTG/PP). For the accurate execution of the project activity a project team has been formed. The wind power project abides and will abide by all regulatory and statutory requirements prescribed by the state and central laws and regulations. The project team is delegated with the responsibility to monitor and document the electricity generated and to safe-keep the recorded data.

The electricity being generated is monitored at each wind mill / common metering point as per the provisions on site, using calibrated energy meters. These meters record the electricity generated on a continuous basis.

Every month officials of the electricity board visit each metering point accompanied by the site in- charge and the meter reading is taken and recorded. The energy meter reading recorded in the presence of state and project proponent representative is then cross-checked with internal generation data. The energy meter is inspected and sealed on behalf of the Electricity Board and the PP's. The meters are not interfered with by any party except in the presence of the other party or its accredited representatives. Invoices are raised by the project proponent for the quantity of electricity supplied to the grid based on the meter readings. These can be corroborated for determining the quantity of energy delivered to the grid.

The project team is also responsible for the calculation of the actual creditable emission reductions in a transparent and relevant manner. All the monitoring data is stored/will be recorded and kept under safe custody for 2 years. In case of the faulty meters they are changed immediately and the necessary correction in the electricity generation are adjusted in agreement with the RVPN / DISCOM.

Designation	Responsibilities
Manager Wind Projects	Holds complete control over monitoring aspects pertaining to the project
Project Executor and Controller	• Recording • Verification • Storage of Data
Site Incharge	• Operation, Monitoring and Verification of Data • Data Recording • Storage of data
Operation and Maintenance service provider	• Operation and Maintenance • Storage of data • Data Recording

Document information

Version	*Date*	*Description*
08.0	6 April 2021	Revision to: • Reflect the "Clarification: Regulatory requirements under temporary measures for post-2020 cases" (CDM-EB109-A01-CLAR).
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).

Version	*Date*	*Description*
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.

Decision Class: Regulatory
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