Monitoring report form for CDM project activity
(Version 08.0)

MONITORING REPORT			
Title of the project activity	3 MW bundled Wind Power project at Ambaliyara and Jangi Villages, district Kutch, Gujarat, India, implemented by M/s Terapanth Foods Limited and Kutch Salt & Allied Industries Limited		
UNFCCC reference number of the project activity	4050[1]		
Version number of the PDD applicable to this monitoring report	11		
Version number of this monitoring report	01		
Completion date of this monitoring report	04/10/2021		
Monitoring period number	2		
Duration of this monitoring period	01/04/2014 - 31/12/2020 (First and last dates included)		
Monitoring report number for this monitoring period	NA		
Project participants	The Kutch Salt & Allied Industries Limited		
Host Party	India		
Applied methodologies and standardized baselines	Applied Methodology: AMS-I.D. Grid connected renewable electricity generation, Version 16.0[2] Standardized baselines: 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 until 31 December 2020	Amount achieved from 1 January 2021
	Not Applicable	25,900 tCO_2e	Not Applicable
Amount of GHG emission reductions or net anthropogenic GHG removals estimated ex ante for this monitoring period in the PDD	37,005 tCO_2e		

[1] https://cdm.unfccc.int/Projects/DB/DNV-CUK1287482354.87/view
[2] https://cdm.unfccc.int/UserManagement/FileStorage/SJI52M6QXGKFNOZABTHDYPU789EV3C

SECTION A. Description of project activity

A.1. General description of project activity

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The purpose of the project activity was to produce generation of electricity from pollution free renewable source of energy like wind, which helped in reducing the dependence of the company on fossil fuel based grid power and also helped in reducing the existing demand supply gap as prevailing in the State of Gujarat during the planning stage of the project activity. The electricity generated from the project activity is wheeled through Gujarat Electricity Transmission Corporation Limited (GETCO) to the other manufacturing units for consumption.

The project is a small scale bundled wind energy project which involves installation of two Wind Turbine Generators (WTGs) of 1.5 MW capacities each, by The Kutch Salt & Allied Industries Limited and M/s Terapanth Foods Limited at Jangi and Ambaliyara Villages, in Kutch District of Gujarat. The total installed capacity of the project is 3 MW.

The Wind Turbine Generators of location nos. S-17 by The Kutch Salt & Allied Industries Limited and S-56 by Terapanth Foods Limited had been commissioned dated 26/3/2008 and 30/3/2008 respectively and operated smoothly since commissioning except annual overhauling.

Being located in the state of Gujarat, the project activity comes under the Western Grid which is a part of the Integrated Grid system, i.e. NEWNE grid, mainly dominated by thermal power generating stations. Therefore, to address the power demand, the project proponent is utilizing renewable energy based power generation instead of drawing power from carbon intensive thermal power dominated grid system, thus leading to the reduction of greenhouse gas (GHG) emissions from the respective grid. The technology and equipment supplier for the project activity is Suzlon Energy Limited.

A.2. Location of project activity

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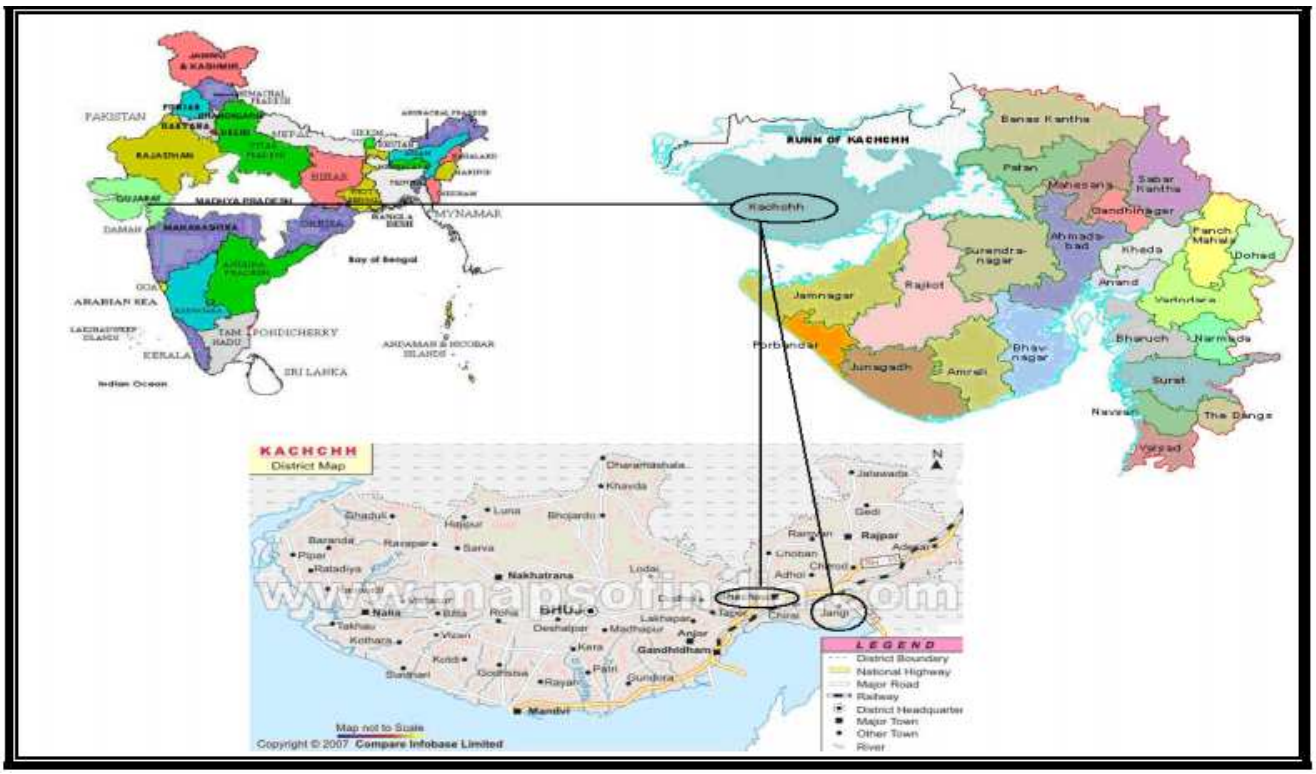
Host Party : India
Region/state/province : Western India / State: Gujarat / District: Kutch
City/town/community :

WTG No.	Village	Taluka	District
S-17	Jangi	Bhachau	Kutch
S-56	Ambaliyara	Bhachau	Kutch

The project activity is located at two villages, Jangi and Ambaliyara, in Kutch district of Gujarat, India. From the project site, the nearest railway station is Bhachau and the nearest airport is at Bhuj. The details of the project activity for unique identification of WTGs have been given as follows:

WTG No.	Capacity (MW)	WTG ID No:	Site of Installation	Site Coordinates (Lat/ Long)
S-17	1.5	SEL/ 1500/ 07- 08/ 0985	R.S. No: 794/p Village: Jangi Taluka: Bhachau Dist: Kutch	23° 12' 26.9" N 70° 31' 51.2" E
S-56	1.5	SEL/ 1500/ 07- 08/ 1027	R.S. No: 279/1 Village: Ambaliyara Taluka: Bhachau Dist: Kutch	23° 13' 43.4" N 70° 26' 58.3" 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 Party)	The Kutch Salt & Allied Industries Limited (Private Entity) (Lead Representative of the Bundling activity)	No

A.4. References to applied methodologies and standardized baselines

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The Applied Methodologies: AMS-I.D. - "Grid connected renewable electricity generation", Version 16, Scope 1, EB 54, 11th June, 2010[3]

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

Methodological Tool: "Tool to calculate the emission factor for an electricity system", Version 02[4], 16th October, 2009

A.5. Crediting period type and duration

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Type of crediting period : Fixed Crediting Period
Crediting period : 01/04/2011 – 31/03/2021

[3] https://cdm.unfccc.int/UserManagement/FileStorage/SJI52M6QXGKFNOZABTHDYPU789EV3C
[4] https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v2.pdf

SECTION B. Implementation of project activity

B.1. Description of implemented project activity

>>
The project developers have procured the Wind Energy Generators (WEG) from Suzlon Energy Limited. There are two Wind Turbine Generators (WTGs) of the Suzlon S-82 Make, each of capacity 1.5 MW, which is having the Flex-Slip Technology over and above to the robust asynchronous 4 - pole Generators with IP56 protection class. Suzlon has microprocessor based real time Pitch control. Motors and its control through frequency converter is robust system for operation and future maintenance.

Brief description of the installed technology and equipments:

The technical specifications of the SUZLON 1500 KW WTG have been given in the table below:

Technical Specifications of Suzlon 1500 KW WTG

Rotor Diameter	82.0 m
Installed Electrical Output	1500 kW
Cut-in wind speed	4 m/s
Rated wind speed	14 m/s
Cut-out wind speed	20 m/s
Rotor swept area	5281 m2
Rotational speed	16.30 RPM
Rotor material	GRP
Regulation	Pitch

Generator	AsynchronousGenerator,4 poles
Rated output	1500 kW
Rotational speed	1511 rpm
Operating voltage	690 V
Frequency	50 Hz
Protection	IP 54
Insulation class	H
Cooling system	Air-cooled

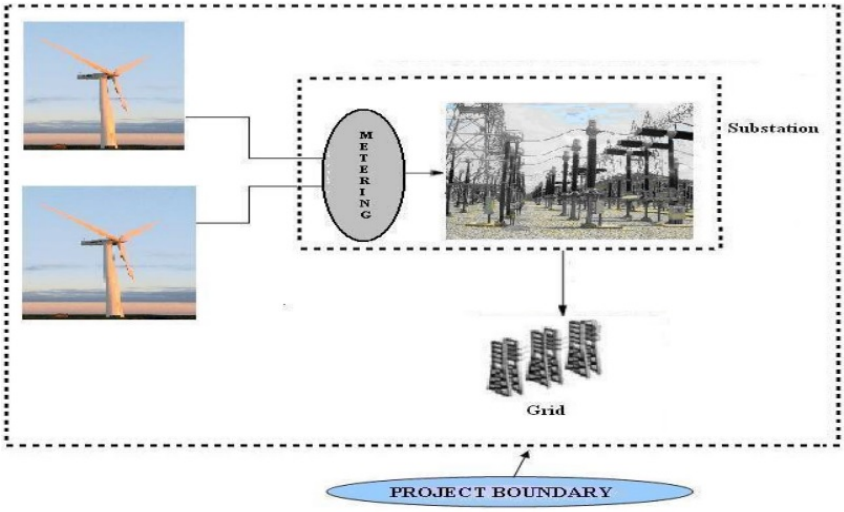
Gear box	3 stage gear box,1 planetary & 2 helical
Manufacturer	Winergy
Gear ratio	95.09
Nominal load	1650 kW
Type of cooling	Oil cooling system

Yaw drive system	4 active electrical yaw motors
Yaw bearing	Polyamide slide bearing

Safety system	
Aerodynamic brake	3 times independent pitch regulation
Mechanical brake	Spring powered disc brake, hydraulically released fail safe
Control unit	Microprocessor controlled, indicating actual Operating conditions, UPS back up system

Design standards	GL/IEC

In the project activity, the project boundary includes WTGs at the project sites, the substation and the point where the electricity is being supplied to the integrated grid system (NEWNE Grid). A diagrammatic representation of the project boundary is given below:



Relevant dates for the project activity:

WTG ID No.	Name of Companies	Commissioning Date
SEL/1500/07-08/0985	Kutch Salt & Allied Industries Limited	26/03/2008
SEL/1500/07-08/1027	Terapanth Foods Limited	30/03/2008

The project has been under operation since commissioning, without any major breakdowns. The WTGs are running smoothly since commissioning with scheduled maintenance. No events or situations happened expect the normal breakdowns for the reported monitoring period that 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

>>
There are no temporary deviations from the registered monitoring plan, the applied methodologies, the applied standardized baselines or the other applied methodological regulatory documents during this monitoring period. Hence, Not Applicable

B.2.2. Corrections

>>
There are no corrections to project information or parameters fixed at the registration or renewal of crediting period of the project activity. Hence, Not Applicable

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

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There is no request for the change the start of the crediting period. Hence, Not Applicable

B.2.4. Inclusion of monitoring plan

>>
There are no post-registration change to include a monitoring plan into the PDD. Hence, 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

>>
There are no permanent changes to the registered monitoring plan, or permanent deviation of monitoring from applied methodologies, applied standardized baseline, or other methodological regulatory documents. Hence, Not Applicable.

B.2.6. Changes to project design

>>
There are no any changes to the project design of the project activity. Hence, Not Applicable.

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

>>
As the project activity is not an afforestation or reforestation project activity. Hence, Not Applicable.

SECTION C. Description of monitoring system

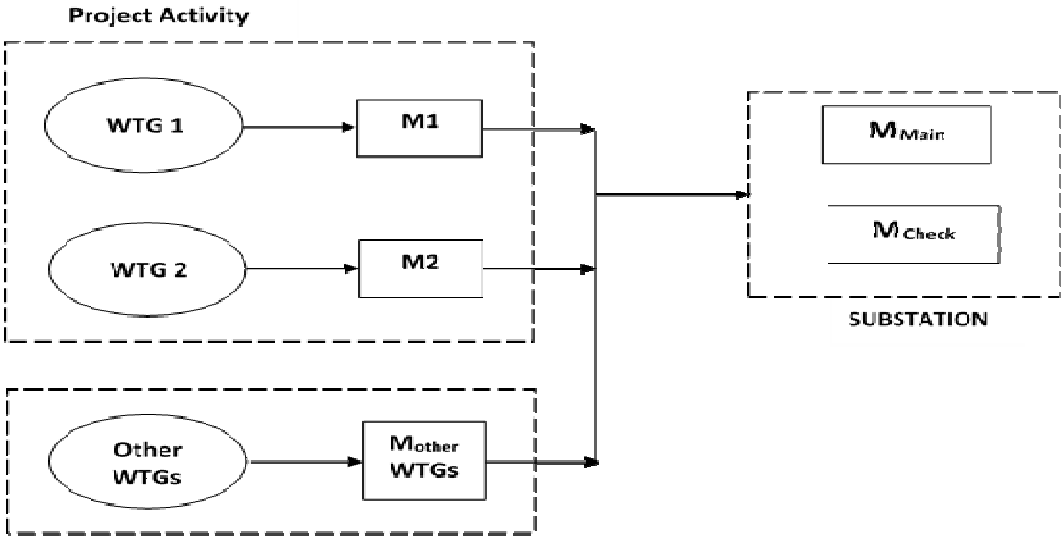
>>
The sole objective of having a monitoring system is to determine the value of the emission reductions on each monitoring interval.

As the project is a small scale renewable energy project, for which electricity is supplied to the grid, the methodology chosen is AMS I.D, Version 16, 11/06/2010. The Monitoring method has been followed as per the methodology.

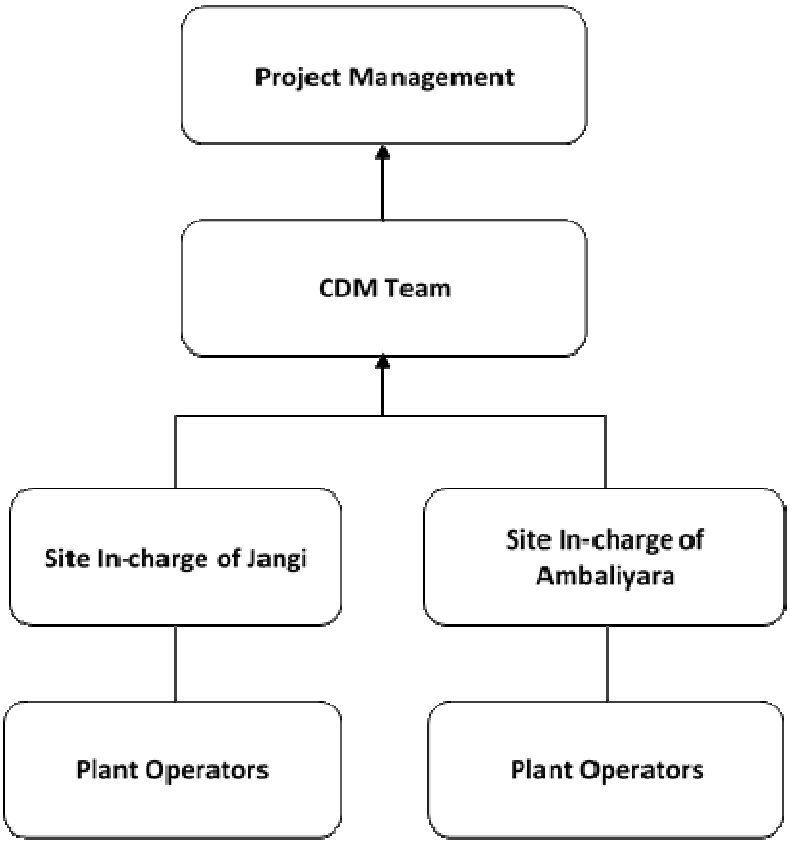
As per the Wheeling agreement, the energy generated at the Wind Farm has been metered and measured by Gujarat Electricity Transmission Corporation Limited (GETCO) & Gujarat Energy Development Agency (GEDA) on a monthly basis at sending end sub-station of the wind farm. The qualifying Energy is wheeled or sold (as the case may be) has been computed on the basis of this measurement. The single line diagram below shows the metering arrangement of the project activity.

The single line diagram below shows the metering arrangement of the project activity

Metering System	
M1, M2	WTGs meters of the project activity
$M_{OTHER\ WTGs}$	WTGs meters of other project activities
M_{MAIN}	Substation (Main Meter)
M_{CHECK}	Substation (Check Meter)



The responsibilities of different members of the monitoring team are as follows:



The plant operators are responsible for the complete operation and maintenance of the power plant and ensure the smooth running of the power plant. The overall project generation data based on the Gujarat Energy Development Agency (GEDA) Certificate for share of electricity are checked by the Site-in charge and therefore, are sent to the CDM team and the Project Management. The CDM team used this data to determine and cross-check the projected value of the GHG emission reductions.

SECTION D. Data and parameters

D.1. Data and parameters fixed ex ante

Data/Parameter	$EF_{grid,CM,y}$
Unit	tCO_2/MWh
Description	Combined Margin Emission Factor of NEWNE Grid
Source of data	Combined Margin emission factor of the NEWNE Grid calculated based on "Baseline Carbon Dioxide Emission Database", Version 4[5], 1st September, 2008 by Central electricity Authority (CEA).
Value(s) applied	0.90589
Choice of data or measurement methods and procedures	Data has been sourced from Central Electricity Authority, Government of India. The same is calculated as a weighted sum of Operating Margin emission factor and Build Margin emission factor as per the "Tool to calculate the emission factor for an electricity system" and on the basis of the data available at the time of PDD submission .

[5] https://cea.nic.in/wp-content/uploads/baseline/2020/07/database_4.zip

Purpose of data/parameter	Baseline Calculation
Additional comments	This is fixed for the entire crediting period.

Data/Parameter	$EF_{grid,OM,y}$
Unit	tCO_2/MWh
Description	Simple Operating Margin Emission Factor of NEWNE Grid
Source of data	Values of Operating Margin emission factor of the NEWNE Grid has been taken from "Baseline Carbon Dioxide Emission Database" Version 4[6], 1st September, 2008.
Value(s) applied	1.00862
Choice of data or measurement methods and procedures	The weighted average of the most recent 3 years' (2005-06; 2006-07; 2007-08) Operating Margin (OM) emission factor values have been used from the database of Central Electricity Authority, Government of India, as available at the time of the PDD submission.
Purpose of data/parameter	Baseline Calculation
Additional comments	This is fixed for the entire crediting period.

Data/Parameter	$EF_{grid,BM,y}$
Unit	tCO_2/MWh
Description	Build Margin Emission Factor of NEWNE Grid
Source of data	Values of Build Margin emission factor of the NEWNE Grid has been taken from "Baseline Carbon Dioxide Emission Database" Version [7], 1st September, 2008.
Value(s) applied	0.59771
Choice of data or measurement methods and procedures	Build Margin emission factor data (for the year 2007-08) from Central Electricity Authority, Government of India has been used as available at the time of the PDD submission.
Purpose of data/parameter	Baseline Calculation
Additional comments	This is fixed for the entire crediting period.

D.2. Data and parameters monitored

Data/Parameter	EG_y
Unit	MWh
Description	Net Electricity supplied to the grid by the project activity.
Measured/calculated/ default	Calculated
Source of data	Monthly Certificate for Share of Electricity Generated by Wind Farm is issued as per the submission of GEDA and is issued to the Project Participant by State Load Despatch Centre (SLDC).
Value(s) of monitored parameter	28,590.80
Monitoring equipment	Details of energy meters installed at Transformer Yard of each WTGs and Grid Substation.
Measuring/reading/recording frequency	Measuring Frequency: Continuous Reading Frequency: Daily Recording Frequency: Monthly

[6] https://cea.nic.in/wp-content/uploads/baseline/2020/07/database_4.zip
[7] https://cea.nic.in/wp-content/uploads/baseline/2020/07/database_4.zip

Calculation method (if applicable)	The following formula is used by Gujarat Energy Development Agency(GEDA) for the apportionment of the electricity supplied by the project activity and to issue the share of electricity certificates to the project proponent: Units supplied by the project = $EGy = T_G \times \frac{P_G}{P_{1G}+P_{2G}+P_{3G}\ldots\ldots\ldots P_{nG}}$ Where, • TG is the total energy supplied for any month/monitoring interval, by all the wind turbines connected to the Sub-station including the two turbines at this project activity. • PG is the total electricity generation recorded at site for the respective month by the two turbines at the project activity; • Generation at site of the individual project activity (connected to the substation) as recorded for the same month is P1G, P2G, P3G…….PnG units.
QA/QC procedures	The measured value can be cross checked with the invoices raised. Meters are calibrated once in three years as per "General Guidelines to SSC CDM methodologies" (Version 14.1), EB 55, Annex 35, paragraph 17". This is also in coherence with the National Standard. The accuracy class of energy meters are 0.2.
Purpose of data/parameter	Emission Reduction Calculation
Additional comments	Data have been archived both electronically and in paper. This data is being kept for two years after the crediting period or till the last issuance of CERs for the project activity, whichever occurs later.

D.3. Implementation of sampling plan

>>
Sampling is not required for the given project activity

SECTION E. Calculation of emission reductions or net anthropogenic removals

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

>>
Baseline Emissions (BE_y)

The baseline emissions are the 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.

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

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) = EG_y
$EF_{CO2, grid, y}$ = CO_2 Emission Factor in year y (t CO_2e/MWh) = $EF_{grid,CM,y}$

EGy = 28,590.80 MWh
$EF_{CO2, grid, y}$ = 0.90589 tCO_2 e/MWh.

Hence, BE_y = 28,590.80 MWh x 0.90589 tCO_2e/MWh
= 25,900 tCO_2e per year (round down to nearest integer)

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

>>
Being a renewable energy based, small scale wind project, there is no emission anticipated with the project activity as per the approved methodology.

Therefore,

PE_y = 0 tonnes of CO_2e per year

E.3. Calculation of leakage emissions

>>
No leakage has been identified from the project activity as per the methodology used.

Therefore,

LE_y = 0 tonnes of CO_2e per year

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	25,900	0	0	0	25,900	0	25,900

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)
25,900	37,005

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

>>
Estimated Emission Reduction according to PDD = 5,475 tCO_2e per annum
Total number of days in this monitoring period = 2467 days

The ex-ante estimated ER for the current monitoring period has been calculated by factorizing the annualized projected ER value for the equivalent days of the current monitoring period.

= (5,475 * 2467) / 365 = 37,005 tCO_2e

E.6. Remarks on increase in achieved emission reductions

>>
During the present monitoring period, actual emission reductions achieved are 25,900 tCO_2e whereas estimated emission reductions was 37,005 tCO_2e.

The actual emission reduction achieved is 30.01% less than the estimated in the registered PDD. This is due to lower PLF achieved during the current monitoring period as compared to the estimated PLF in the registered PDD.

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

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The installed capacity of the plant is still 3 MW which is less than 15 MW. The project activity is still a small-scale project activity.

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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.

Version	*Date*	*Description*
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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