



Monitoring report form for CDM project activity
(Version 07.0)

MONITORING REPORT		
Title of the project activity	5 MW Wind Power Project of Alembic Ltd at Bhavnagar , Gujarat, India	
UNFCCC reference number of the project activity	1456 ¹	
Version number of the PDD applicable to this monitoring report	04	
Version number of this monitoring report	01	
Completion date of this monitoring report	17/07/2020	
Monitoring period number	04	
Duration of this monitoring period	01/12/2014 to 06/02/2018	
Monitoring report number for this monitoring period	01	
Project participants	Alembic Limited Bunge Emissions Fund Limited	
Host Party	India	
Applied methodologies and standardized baselines	Methodology: AMS-I.D. ver. 11 - Grid connected renewable electricity generation Standardized baselines: N/A	
Sectoral scopes	1 : Energy industries (renewable - / non-renewable sources)	
Amount of GHG emission reductions or net anthropogenic GHG removals achieved by the project activity in this monitoring period	Amount achieved before 1 January 2013	Amount achieved from 1 January 2013
	0 tCO ₂ e	23,895 tCO ₂ e
Amount of GHG emission reductions or net anthropogenic GHG removals estimated ex ante for this monitoring period in the PDD	28,602 tCO ₂ e	

¹ <https://cdm.unfccc.int/Projects/DB/RWTUV1196336030.26>

SECTION A. Description of project activity

A.1. General description of project activity

The Project activity would generate 5 MW of electricity with efficient utilization of the available wind energy through adoption of the latest, efficient and modern technology. The generated electricity was to displace equivalent electricity procured from Gujarat Urja Vikas Nigam Limited (GUVNL) in the Panelav and Vadodara plants, shared between the plants in a ratio of 35:65 plant of Alembic Ltd. As reported in the PDD, with effect from 1 April 2006, the entire electricity generated is being supplied to the Vadodara plant as per the Alembic Limited's requirements.

M/S Alembic Ltd., Vadodara would have the ownership rights for the project activity and would be the sole transaction entity with the Executive Board of the United Nations Framework Convention on Climate Change.

The 5 MW Wind Power Project comprises of Wind Energy Generators (WEG's) each of capacities 1.25 MW supplied by M/S Suzlon Energy Ltd.

The purpose of the project activity is to generate electricity using wind energy and to wheel the net electricity generated to the Vadodra plant to meet its captive requirement. The project activity contributes in reducing the GHG emission by displacing the equivalent amount of electricity from western region grid, as in absence of the project activity the PP would have continued to import electricity from the Gujarat Urja Vikas Nigam Limited is a part of western region grid, thereby resulting GHG emission to atmosphere as the grid is dominated by fossil fuel based thermal power plants.

The Suzlon Energy Limited make S64/1.25 MW WTGs is based its technology on speed control and variable pitch, while incorporating the latest technologies to extract the maximum amount of energy from the wind and to do it as efficiently as possible. The hub height of WTGs is 65 meter and the rotor diameter is 64 meters. The design lifetime of the project activity is of 20 years. The details of commissioning is given in table below

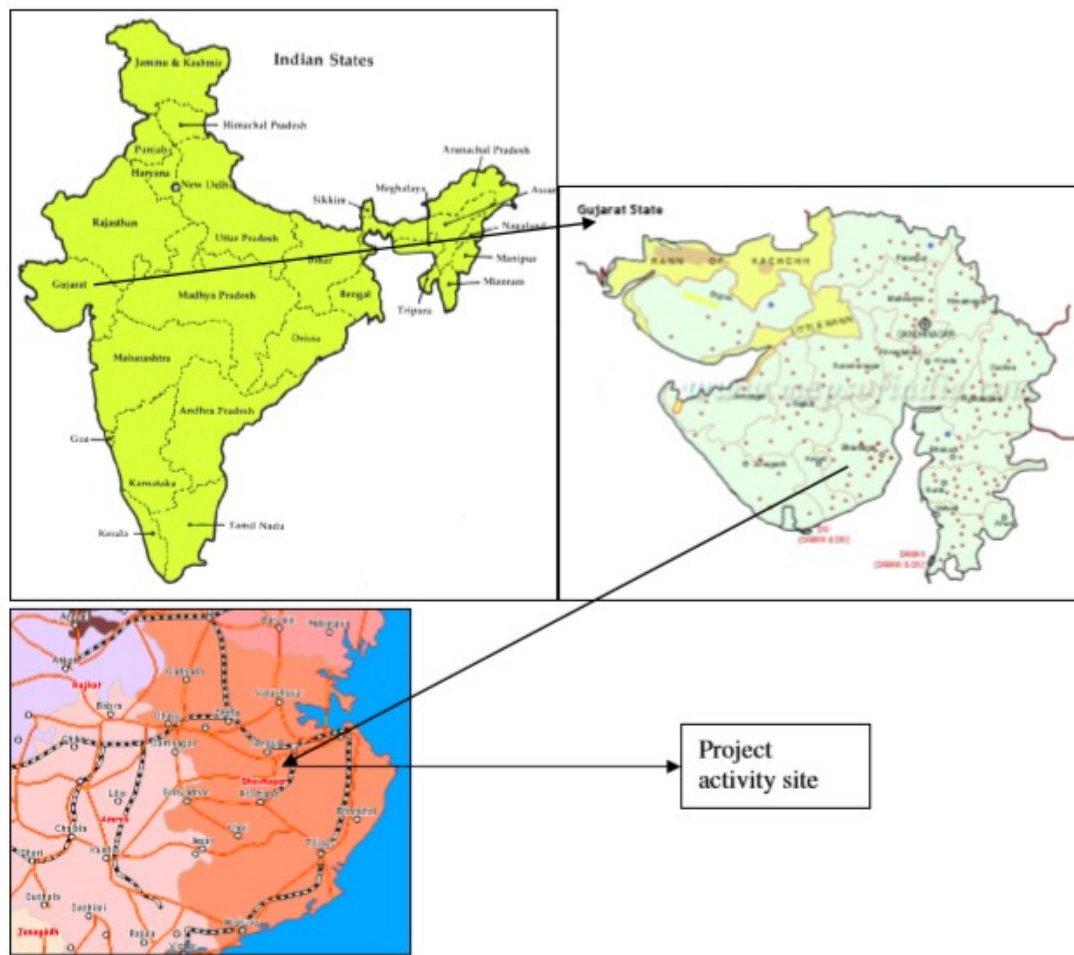
Unique ID	Date of commissioning
S 5	30/09/2003
S 6	30/09/2003
S 7	30/09/2003
S 4	02/10/2003

All the WTGs were operational during current monitoring period i.e. from 01/12/2014 to 06/02/2018 the net electricity wheeled during this verification period is 26,375 MWh, which results to a net emission reduction of 23,895 tCO_{2e}.

A.2. Location of project activity

The project site is located at Ukharla Trambak in the district of Bhavnagar and in the Indian state of Gujarat.

The detailed location of the site is shown in the map below:



The details of the WTGs physical location and geo-coordinates are given below

Unique ID	Latitude	Longitude	Physical Location
S4	21° 34' 35.3" N	72° 06' 01.5" E	Ukharla, Tambrak, Bhavnagar, Gujarat, India
S5	21° 36' 31.8" N	72° 06' 07.1" E	
S6	21° 36' 25.3" N	72° 06' 07.0" E	
S7	21° 36' 20.1" N	72° 06' 14.4" 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)	Alembic Limited (Private entity)	No
Switzerland (Other Party)	Bunge Emissions Fund Limited (Private entity)	No

A.4. References to applied methodologies and standardized baselines

The methodology applied:

AMS I.D – Grid connected renewable electricity generation, Version 11

Ref: <http://cdm.unfccc.int/methodologies/DB/W3TINZ7KKWCK7L8WTFQOQFQQH4SBK>

Methodology AMS.I.D also refers to:

Revision to the approved consolidated baseline methodology ACM0002 “Consolidated baseline methodology for grid-connected electricity generation from renewable sources”

And

Revision to the approved consolidated methodology ACM0002: Consolidated monitoring methodology for zero- emissions grid-connected electricity generation from renewable sources”.

A.5. Crediting period type and duration

This project activity has considered fixed crediting period of 10 years. The start date of crediting period is 07/02/2008 and crediting period is from 07/02/2008 to 06/02/2018.

SECTION B. Implementation of project activity

B.1. Description of implemented project activity

The project activity is implemented and operated as per registered PDD and revised monitoring plan approved by EB on 21/07/2011. The project activity consists of four number WTG's of 1.25 MW capacities totalling to 5 MW capacity and wheeling the net generated electricity to Vadodra plant of the Alembic Limited. There has been no major downtime of equipments, overhaul times or exchange of equipments in the project activity during the current monitoring period. Alembic Limited has procured the Wind Energy Generators (WEGs) from Indian company M/s Suzlon Energy Ltd. The technology is a clean and safe technology since there are no GHG emissions associated with the electricity generation. A direct grid-connected high-speed horizontal axis generator, in combination with the multiple-stage combined spur / planetary gearbox delivers harmonics-free and grid-friendly power. The technical details of the WEG are as follows:

Capacity	1250 kW
Make	Suzlon
Model	S64
Rotor diameter	64 m
Hub height	65 m (variable as per requirement)
Installed elec. Output	1250 kW
Cut-in wind speed	3 m/s
Rated wind speed	12 m/s
Cut-out wind speed	25 m/s
Survival wind speed	67 m/s
Swept area	3217 m ²
Blade type	3 blade horizontal axis
Rotational speed	13.9/20.8 rpm
Generator	Asynchronous 4/6 poles
Rated output	250 / 1250 kW
Rotational speed	1006/1506 rpm
Frequency	50 Hz
Gearbox	Integrated (1 planetary & 2 helical)
Yaw System	4 electrically driven planetary gearbox
Bearings	Polyamide slide bearings
Braking System	Aerodynamic brake, 3 independent systems with blade pitching
Mechanical brake	Hydraulic fail-safe disc brake system
Control Unit	Programmable microprocessor-based; high speed data communication, active multilevel security, sophisticated operating software, advance data collection remote monitoring & control option, UPS back up, Real time operation indication

There were no situations occurred during current monitoring period, which may impact 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

No temporary deviation taken place from registered monitoring plan or applied approved methodology during current monitoring period.

B.2.2. Corrections

No correction applied in fixed parameter mentioned in registered PDD during current monitoring period.

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

There is no change to the start date of the crediting period.

B.2.4. Inclusion of monitoring plan

There is no inclusion of monitoring plan to the registered PDD that was not included during registration.

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

The monitoring plan has been revised by the PP for improving the accuracy and completeness of the monitoring system. The CDM EB approved the revised monitoring plan on 21/07/2011. However, during the current monitoring period, there are no changes to the monitoring plan.

B.2.6. Changes to project design

There is no change in project design of registered project activity during current monitoring period.

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

Not applicable as the project activity is not an afforestation or reforestation project activity.

SECTION C. Description of monitoring system

The sole objective of having a monitoring system is to have a constant watch on the emission reductions. Metering of net electricity supplied to grid performed at 66 kV Sub – Station, its aggregation and recording activity is done by GUVNL & its subsidiary companies/GEDA supported by OEM, its calculation activity is done by GEDA and its reporting is done by GEDA/SLDC².

² Reporting authority has changed from GEDA to SLDC. Thus, SLDC is now the reporting authority from April 2010 onwards. Prior to that GEDA was the reporting authority

Metering equipment has Availability Based Tariff Meter (ABT meter)³. The metering equipment (ABT) is maintained by GUVNL & its subsidiary companies. The monthly meter readings at the project sites and the receiving station recorded from ABT Meter.

At the conclusion of each meter reading, an appointed representative of GUVNL & its subsidiary companies/GEDA submit it to SLDC–Gujarat and GEDA/SLDC issues certificate for share of electricity generated by wind farm on periodic monthly basis. Each meter shall be jointly tested & calibrated and sealed on behalf of GUVNL & its subsidiary companies / GEDA by its authorised representatives.

Measurement/ Recording Procedure:

- a) The project activity have 2 steps metering at 33 kV S/S & 66 kV S/S.
- b) Step-1: OEM facilitates recording of the electricity generated at 33 kV S/S by TVM/ABT meter.
- c) Step-2: The WTGs of a single customer (Alembic Ltd in this case) at a particular site are connected to 33kV S/S, which in-turn connected with 33/66 kV S/S , have TVM/ABT meter. The metering equipment (TVM/ABT) maintained by GUVNL & its subsidiary companies. Data monitoring takes place at the 33 kV meter of 33 kV S/S & 66 kV S/S meter of 33/66 kV S/S.
- d) The electricity metered at the 66 kV meter is proportionally divided among the customers. The emission reduction calculations are done on the basis of the 66kV meter reading (Net electricity substituted in the grid during the periodic year y) as mentioned in the share certificate issued by GEDA / SLDC on monthly basis.. WTGs of various project promoters at the site, are connected with TVM/ ABT energy meter at the pooling sub-station installed by GUVNL & its subsidiary companies at 33/66 kV S/S .Meter reading at 66 kV meter is recorded by GUVNL & its subsidiary companies / GEDA, submit it to SLDC – Gujarat and GEDA/SLDC issues certificate for share of electricity generated by wind farm on periodic monthly basis.

Project Participant has no role in the entire procedure of Measurement / Recording

The allocation of electricity is executed as per the following procedure:

1. Enter the value of electricity received from W/M at 33 KV S/S (kWh).
2. Enter the value of electricity supplied to W/M at 33 KV S/S (kWh).
3. Take the difference of electricity received and supplied to W/F at 33 KV S/S (kWh) [EGmeter A]
4. Take the difference of electricity as per the above steps 1 to 3 for each of the 33 kV S/S meters(i) connected to the 66 kV S/S metering point of Alembic Limited. [EGmeter,i] and take the total of these differences [EGmeter A + \sum EGmeter,i]
5. Divide individual difference by total calculated as per step 4 and multiply by 100 to find %. [EGmeter A / (EGmeter A + \sum EGmeter,i) x 100]
6. Enter the value of electricity received from W/M at 66 KV S/S (kWh).
7. Enter the value of electricity supplied to W/M at 66 KV S/S (kWh).
8. Take the difference of electricity received and supply to W/F at 66 KV S/S (kWh)[EGmeter,T]
9. Multiply the value calculated as per step 8 by % allocation calculated as per step 5 to calculate the net electricity export allocated to Alembic Limited.

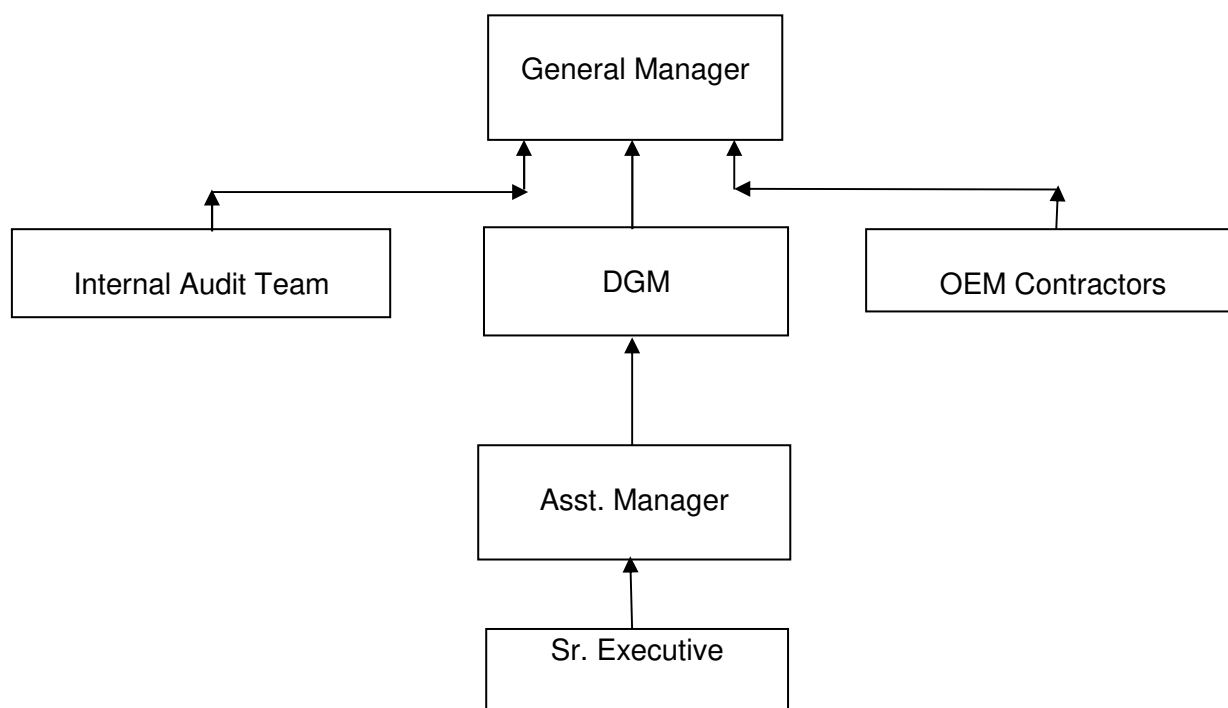
Roles and responsibilities:

³ Availability Based Tariff Meter (ABT meter) came into use from April 2010 onwards. Prior to that Tri Vector Meters (TVM) was in use.

General Manager: In the project management structure General Manager is responsible for the project management. He is responsible to plan and allocate the annual budget for operation, estimation of the likely operating cost, electricity dispatch, organizing third party contractors, revenue collection etc.

General Manager will check the monthly electricity generated and annual emission reduction calculations. He is responsible for any leakage of emissions in the project boundary.

Operation and maintenance of wind generators will be done by Suzlon energy Limited and they will be responsible to General Manager.



Deputy General Manager: DGM is assisting to General Manager for completing the task discussed above. He is responsible for the electricity generations at the individual wind turbine installations. He will crosscheck the log book regularly and report to General Manager for any abnormality.

Sr. Executive/Ass Manager: Sr. Executive/asst. manger is responsible for recording the electricity meter reading.

Record Handling: OEM contractors are collecting daily report obtained from hourly monitoring with all the related parameters. All the records are given to General Manager every month. The GM has final responsibility for record keeping.

Internal Audits and performance review

These records are regularly audited and checked by the senior officials from Alembic Limited during their visits to the site. The senior officials visit once in a year and audit the records. The officials have crosschecked the emissions reductions claimed in PDD with respect to actual emissions reduction.

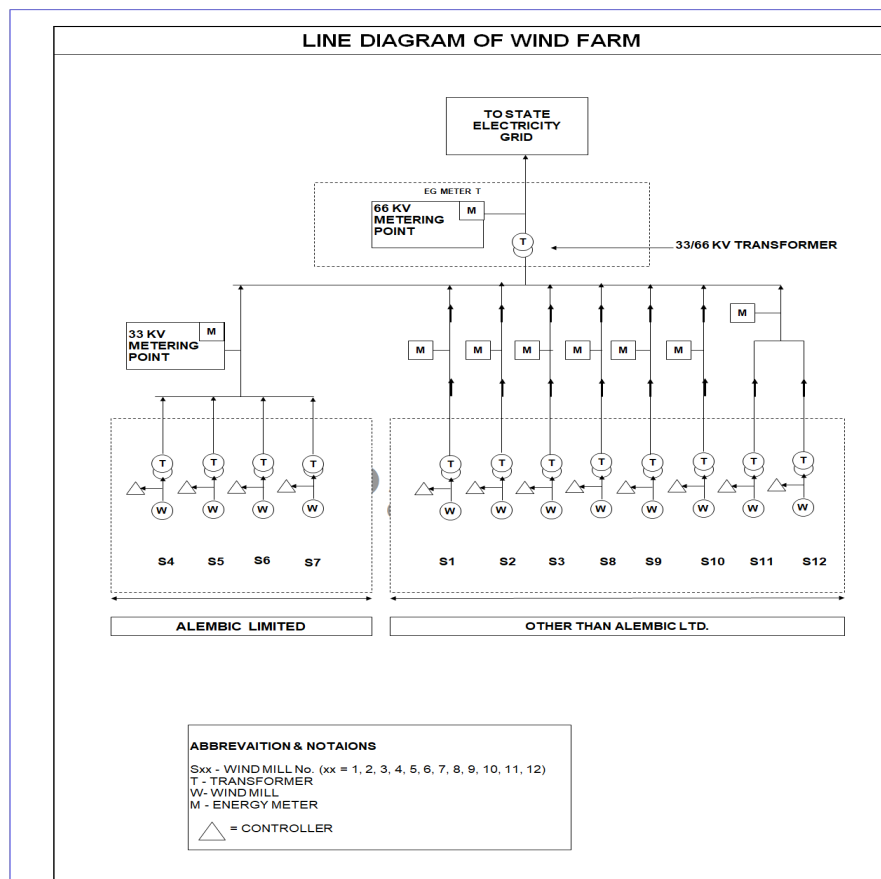
Monitoring and Calibration

As emission reductions from the project are determined by the number of units exported to the grid, it is mandatory to have a monitoring system in place and ensure that the project activity

produces and exports the rated power at the stipulated norms. The sole objective of having monitoring system is to have a constant watch on the emission reductions.

Necessary records of calibration are undertaken by GEDA/SLDC/GUVNL & its subsidiary companies.

Project Participant has no role in the entire procedure.



The total number of CDM and non-CDM project activity WTG connected to 66 kV meter are 8. The list of these WTG along with name and capacity can be checked from sharing certificates issued by GEDA/SLDC.

SECTION D. Data and parameters

D.1. Data and parameters fixed ex ante

Data/Parameter	EF _{OM}
Unit	tCO ₂ /MWh
Description	Operating Margin Grid Emission factor
Source of data	CEA Reviews
Value(s) applied	0.998
Choice of data or measurement methods and procedures	The value applied is taken from the CEA reviews of three years. The detailed calculation is shown in the baseline section above.
Purpose of data/parameter	To calculate baseline emissions
Additional comments	Data will be kept for crediting period + 2 years.

Data/Parameter	EF _{BM}
Unit	tCO ₂ /MWh

Description	Build Margin Grid Emission factor
Source of data	CEA Report
Value(s) applied	0.63
Choice of data or measurement methods and procedures	The value applied is taken from the plant from CEA reviews.
Purpose of data/parameter	To calculate baseline emissions
Additional comments	Data will be kept for crediting period + 2 years.

Data/Parameter	EF_y
Unit	tCO ₂ /MWh
Description	Combined Margin Grid Emission factor
Source of data	CEA Reviews
Value(s) applied	0.906
Choice of data or measurement methods and procedures	The value applied is taken from the plant from CEA reviews. The weights used for calculating combined margin emission factor are 0.75 and 0.25 for operating margin and built margin respectively.
Purpose of data/parameter	To calculate baseline emissions
Additional comments	Data will be kept for crediting period + 2 years

D.2. Data and parameters monitored

Data/Parameter	EG_y
Unit	MWh
Description	Net electricity substituted in the grid during the periodic year y
Measured/calculated/default	Import and Export values are measured and based on these values GEDA/SLDC/GUVNL and its subsidiary calculates the net electricity exported (EG _y)
Source of data	Certificate for share of electricity generated by wind farms issued by GEDA/SLDC/GUVNL & its subsidiary companies, which ever applicable
Value(s) of monitored parameter	26,375 MWh
Monitoring equipment	The value is calculated
Measuring/ Reading/ Recording frequency	Monthly recording

Calculation method (if applicable)	<p>The allocation of electricity is executed as per the following procedure:</p> <ol style="list-style-type: none"> 1. Enter the value of electricity received from W/M at 33 KV S/S (kWh). 2. Enter the value of electricity supplied to W/M at 33 KV S/S (kWh). 3. Take the difference of electricity received and supplied to W/F at 33 KV S/S (kWh) [EGmeter A] 4. Take the difference of electricity as per the above steps 1 to 3 for each of the 33 kV S/S meters (i) connected to the 66 kV S/S metering point of Alembic Limited. [EGmeter,i] and take the total of these differences [EGmeter A + ΣEGmeter,i] 5. Divide individual difference by total calculated as per step 4 and multiply by 100 to find %. [EGmeter A / (EGmeter A + ΣEGmeter,i) x 100] 6. Enter the value of electricity received from W/M at 66 KV S/S (kWh). 7. Enter the value of electricity supplied to W/M at 66 KV S/S (kWh). 8. Take the difference of electricity received and supply to W/F at 66 KV S/S (kWh [EGmeter,T] 9. Multiply the value calculated as per step 8 by % allocation calculated as per step 5 to calculate the net electricity export allocated to Alembic Limited.
QA/QC procedures	<p>i) The net electricity supplied to the grid can be cross verified with the monthly bill issued by GUVNL & its subsidiary companies to Alembic Limited.</p> <p>ii) In case of malfunction of both 33 kV & 66 kV meter PP will not claim emission reduction for period of malfunction. In the current monitoring period there is no instant of failure or malfunction of the meters. Hence not applicable.</p>
Purpose of data/parameter	To calculate baseline emission
Additional comments	Data will be kept for crediting period +2 years

Data/Parameter	EG_{meter, A}
Unit	kWh
Description	Net Electricity Supplied by WTG of Alembic Limited (33 kV S/S to 66 kV S/S point).
Measured/calculated/default	
Source of data	Electricity Bifurcation reading issued by OEM on periodic monthly basis for "Certificate for share of electricity generated by wind farms"
Value(s) of monitored parameter	27,726,840 kWh
Monitoring equipment	Tri-vector Meter of accuracy class 0.2s Calibration details of the energy meters have been mentioned in Appendix-A of the report
Measuring/ Reading/ Recording frequency	Monitoring Frequency: Continuous Recording: monthly recording
Calculation method (if applicable)	-

QA/QC procedures	<p>i) In case, 33 kV Meter fails or malfunction, it will be sent for repair / replacement by OEM. (a) In this case readings of Controller, installed on each WTG (All WTG connected with 33 kV & finally to 66 kV Meter) will be considered for calculation of electricity exported by project activity to grid. Calculation will be performed on the highest percentage loss considering the reading of "Generation at Controller" & 33 kV Meter reading from the historical verified values from previous verification (From start of crediting period to most recent JMR available at the start of verification). Furthermore the highest transmission losses between 33 kV and 66 kV S/S point will be considered from 33 kV and 66 kV meter value (From start of crediting period to most recent JMR available at the start of verification). (b) For the electricity import, following method is applicable. The 66 kV meter provides the electricity imported by the WTGs connected to the sub- station meter. Highest historical % allocation (From start of crediting period to most recent JMR available at the start of verification) will be considered while calculating electricity imported by the project activity from grid. (c) The net electricity exported to the grid will be difference of (a) and (b). It is also possible that GUVNL & its subsidiary companies may come up with their approach. Conservative value which will lead to conservative emission reduction will be selected by the PP in that case.</p> <p>ii) Calibration of Controller at WTG: MITA Controller WP 3000 is a microprocessor based intelligent controller which has been specially designed to control the wind turbines, where control functions, data collection & storage, real time grid monitoring, storage & such other functions are integrated. In order to measure Electrical Energy & Grid Parameters, the controller uses an interface card WP 3090. The controller has three current inputs from CT and three voltage inputs from PT. The analog values of current/voltage are converted into digital signal internally using A/D Converters at very high sampling rate. A software program reads these values and displays instantaneous values of parameters such as voltage, current, frequency, power factor, kVA, kVAr and kW. These instantaneous values are then time integrated to display kVAh, kVArh, kWh & stored .</p> <p>WP 3000 being main controller for controlling entire turbine operation & is calculating energy generation with the basic signal of CT & PT connected to through I/O hence , not possible to calibrate.</p> <p>iii) It is also possible that GUVNL & its subsidiary companies may come up with their approach. Conservative value which will lead to conservative emission reduction will be selected by the PP in that case.</p> <p>In the current monitoring period there is no instant of failure or malfunction of the meters. Hence not applicable.</p>
Purpose of data/parameter	To calculate baseline emission
Additional comments	Data will be kept for crediting period +2 years

Data/Parameter	EG_{meter ,i} (i = 1,2,.....n)
Unit	kWh
Description	Net electricity supplied WTG of PP other than Alembic Limited (33 kV S/S to 66 kV S/S point) WTG i.
Measured/ Calculated / Default	Measured & Calculated
Source of data	Electricity Bifurcation reading issued by OEM on periodic monthly basis for "Certificate for share of electricity generated by wind farms"
Value(s) of monitored parameter	43,044,871 kWh

Monitoring equipment	Trivector Energy meter Manager (OEM) is responsible to undertake regular calibration of the meter by GUVNL and its subsidiary. PP has no control on the calibration of meters of PP other than their own Meter.
Measuring/ Reading/ Recording frequency	Continuous monitoring, monthly recording
Calculation method (if applicable):	The allocation of electricity is executed as per the following procedure: <ol style="list-style-type: none"> 1. Enter the value of electricity received from W/M at 33 kV S/S (kWh). 2. Enter the value of electricity supplied to W/M at 33 kV S/S (kWh). 3. Take the difference of electricity received and supplied to W/F at 33 kV S/S (kWh) $[EG_{\text{meter A}}]$. 4. Take the difference of electricity as per the above steps 1 to 3 for each of the 33 kV S/S meters (i) connected to the 66 kV S/S Metering point of Alembic Limited. $[EG_{\text{meter},i}]$ and take the total of these differences $[EG_{\text{meter A}} + \sum EG_{\text{meter},i}]$ 5. Divide individual difference by total calculated as per step 4 and multiply by 100 to find %. $[EG_{\text{meter A}} / (EG_{\text{meter A}} + \sum EG_{\text{meter},i}) \times 100]$
QA/QC procedures	In case, 33 kV Meter fails or malfunction, it will be sent for repair / replacement by OEM.
Purpose of data/parameter	To calculate baseline emission
Additional comments	Data will be kept for crediting period +2 years

Data/Parameter	$EG_{\text{meter},T}$
Unit	MWh
Description	Net electricity supplied at 66 kV Meter.
Source of data	Certificate for share of electricity generated by wind farms issued by GEDA/SLDC/GUVNL & its subsidiary companies, which ever applicable.
Value(s) of monitored parameter	68,142.76 MWh
Monitoring equipment	Trivector meter (TVM) and ABT meter Calibration details of the energy meters have been mentioned in Appendix-A of the report
Measuring/ Reading/ Recording frequency	Continuous monitoring, monthly recording
Calculation method (if applicable)	-
QA/QC procedures to be applied:	<p>i) (a) In case, 66 kV Meter fails or malfunction, it will be sent for repair /replacement by GUVNL & its subsidiary. In this case readings of 33 kV meter installed at 33kV S/S of each PP (All WTG connected with 33 kV & finally to 66 kV Meter) will be considered for calculation. Calculation will be performed on the highest percentage loss considering the reading of transmission loss from 33 kV meter to 66 kV Meter reading from the historical verified values from previous verification (From start of crediting period to most recent JMR available at the start of verification). (b) The 33 kV meter will provide the electricity imported by the WTG's connected to the sub-station meter.</p> <p>Imported electricity will be calculated for 66 kV level with the application of highest historic transmission loss to arrive at electricity imported by WTG from grid at 66 kV level. (c) The net electricity exported to grid will be difference of (a) and (b). It is also possible that GUVNL & its subsidiary companies may come up with their approach. Conservative value, which will lead to conservative emission reduction will be selected by the PP in that case.</p>

	ii) In the current monitoring period there is no instant of failure or malfunction of the meters. Hence not applicable.
Purpose of data/parameter	To calculate baseline emission
Additional comments	Data will be kept for crediting period +2 years

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

The baseline emission is calculated as: $BE_y = EG_y * EF_y$

Where,

BE_y = Baseline Emissions due to displacement of electricity during the year y (in tons of CO₂)

EG_y = Net units of electricity substituted in the grid during the year y (in MWh)

EF_y = Emission Factor of the grid (in tCO₂/ MWh) and y is any year within the crediting period of the project activity = 0.906 tCO₂/MWh

Period	Net Electricity Supplied to grid (in kWh) from 1 st December 2014 to 6 th February 2018				
Month/Year	2014	2015	2016	2017	2018
Jan	-	700,734	437,612	547,215	460,657
Feb	-	500,687	549,722	416,776	77,522
Mar	-	541,524	492,993	542,028	-
Apr	-	720,841	667,000	956,755	-
May	-	792,916	1,017,172	897,413	-
June	-	592,108	1,018,383	1,112,211	-
July	-	813,760	1,185,022	1,478,901	-
Aug	-	849,988	1,279,736	951,954	-
Sep	-	622,398	770,069	316,091	-
Oct	-	310,051	255,337	310,310	-
Nov	-	386,505	397,983	389,099	-
Dec	815,798	848,485	580,371	770,377	-
Total (in KWh)	815,798	7,679,997	8,651,400	8,689,130	538,179

Baseline Emission from 1st December, 2014 to 6th February, 2018 is,

$$BE_y = (815,798 + 7,679,997 + 8,651,400 + 8,689,130 + 538,179) \times 0.906/1000$$

$$= 23,895 \text{ tCO}_2 \text{ (Rounded down)}$$

So, total Baseline Emission during current monitoring period is 23,895 tCO₂.

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

The Project activity does not envisage any fossil fuel consumption. Therefore, the parameter $PE_y = 0$

E.3. Calculation of leakage emissions

There are no leakage, therefore $LE_y = 0$

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

	Baseline GHG emissions or baseline net GHG removals (t CO ₂ e)	Project GHG emissions or actual net GHG removals (t CO ₂ e)	Leakage GHG emissions (t CO ₂ e)	GHG emission reductions or net anthropogenic GHG removals (t CO ₂ e)		
				Before 01/01/2013	From 01/01/2013	Total amount
Total	23,895	0	0	0	23,895	23,895

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

Amount achieved during this monitoring period (t CO ₂ e)	Amount estimated ex ante for this monitoring period in the PDD (t CO ₂ e)
23,895	28,602

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

As per the UNFCCC database the amount of reductions for this project activity is 8,669 tCO₂ equivalent per annum. The monitoring period duration is from 1st December, 2014 to 6th February, 2018 which is total of 1,164 days. So estimated reduction for current monitoring period is calculated with the help of emission value per annum.

$$\begin{aligned}\text{Estimated ex-ante for this monitoring period} &= 8,669 \times (1,164/365) \\ &= 28,602 \text{ tCO}_2\text{e (Rounded down)}\end{aligned}$$

E.6. Remarks on increase in achieved emission reductions

The actual amount emission reduction amount achieved for the current monitoring period is 19.70% less than the estimated emission reduction value. The generation of electricity depends upon many other climatic conditions, which are not within the control of the project participant. The lower generation during the current verification period is due to certain natural conditions. Hence, it is acceptable.

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

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

Appendix-A: Energy Meter Details

Meter Sl. No.	Description	Calibration Frequency	Accuracy Class	Date of Calibration	Due Date of Calibration
GJB03550	33 kV TVM Meter	1 year	0.2s	16/10/2014	15/10/2015
				08/10/2015	07/10/2016
				04/10/2016	03/10/2017
				28/09/2017	27/09/2018
GJB00266	66 kV TVM Meter	1 year	0.2s	24/11/2014	23/11/2015
				18/11/2015	17/11/2016
				15/11/2016	14/11/2017
				07/11/2017	06/11/2018
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				05/12/2015	04/12/2018

Document information

<i>Version</i>	<i>Date</i>	<i>Description</i>
07.0	31 May 2019	Revision to: <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> • Ensure consistency with version 01.0 of the “CDM project standard for project activities” (CDM-EB93-A04-STAN); • Make editorial improvements.
05.1	4 May 2015	Editorial revision to correct version numbering.
05.0	1 April 2015	Revisions to: <ul style="list-style-type: none"> • Include provisions related to delayed submission of a monitoring plan; • Provisions related to the Host Party; • Remove reference to programme of activities; • Overall editorial improvement.
04.0	25 June 2014	Revisions to: <ul style="list-style-type: none"> • Include the Attachment: Instructions for filling out the monitoring report form (these instructions supersede the "Guideline: Completing the monitoring report form" (Version 04.0)); • Include provisions related to standardized baselines; • Add contact information on a responsible person(s)/ entity(ies) for completing the CDM-MR-FORM in A.6 and Appendix 1; • Change the reference number from <i>F-CDM-MR</i> to <i>CDM-MR-FORM</i>; • Editorial improvement.
03.2	5 November 2013	Editorial revision to correct table in page 1.
03.1	2 January 2013	Editorial revision to correct table in section E.5.
03.0	3 December 2012	Revision required to introduce a provision on reporting actual emission reductions or net GHG removals by sinks for the period up to 31 December 2012 and the period from 1 January 2013 onwards (EB 70, Annex 11).
02.0	13 March 2012	Revision required to ensure consistency with the "Guidelines for completing the monitoring report form" (EB 66, Annex 20).
01.0	28 May 2010	EB 54, Annex 34. Initial adoption.

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