



**Monitoring report form for CDM project activity
(Version 06.0)**

Complete this form in accordance with the instructions attached at the end of this form.

MONITORING REPORT

Title of the project activity	Tata Power - Wind power project at Samana in Jamnagar district, Gujarat	
UNFCCC reference number of the project activity	8442	
Version number of the PDD applicable to this monitoring report	12	
Version number of this monitoring report	1.0	
Completion date of this monitoring report	14/02/2019	
Monitoring period number	5	
Duration of this monitoring period	01/01/2017 to 31/12/2018 (inclusive of both days)	
Monitoring report number for this monitoring report	1	
Project participants	M/s. The Tata Power Company Limited, India Swedish Energy Agency, Sweden Asian Development Bank as Trustee of the Future Carbon Fund, Sweden	
Host Party	India	
Sectoral scopes	<u>Sectoral Scope:</u> 1 - Energy industries (renewable - / non-renewable sources)	
Applied methodologies and standardized baselines	<u>Methodology:</u> ACM0002 ver. 13 - Consolidated baseline methodology for grid-connected electricity generation from 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
	-	144,542 tCO _{2e}
Amount of GHG emission reductions or net anthropogenic GHG removals estimated ex ante for this monitoring period in the PDD	193,642 tCO _{2e}	

SECTION A. Description of project activity

A.1. General description of project activity

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Purpose:

The project activity is an initiative by The Tata Power Company Limited (TPCL) to export renewable electricity produced by Wind Electric Generators to the power deficit grid in order to decrease power shortage, diversify the grid and reduce greenhouse gas emissions.

Project Description:

TPCL is the project proponent/sponsor of this wind power project with a total capacity of 50.4MW consisting of 63 Wind Energy Converter (WEC) machines of individual capacity 800 kW each. Project is getting implemented at Samana planes in Gujarat state of India which will provide reliable renewable power to the Gujarat state electricity grid which is now a part of NEWNE (Northern, Eastern, Western and North-Eastern) grid of India.

The project activity is a grid connected renewable energy project that intends to generate electricity through utilization of wind energy. Since WECs convert kinetic energy from the "air in motion" directly into electricity without using conventional sources like coal, oil or natural gas for power generation, contributes to electricity generation without GHG emissions. The Project harnesses renewable resources in the region, and thereby displacing non-renewable natural resources thereby ultimately leading to sustainable economic and environmental development. M/s Enercon (India) Ltd (*now known as Wind World India Ltd*) is wind energy technology and equipment supplier of TPCL and is also the operations and maintenance contractor for the Project.

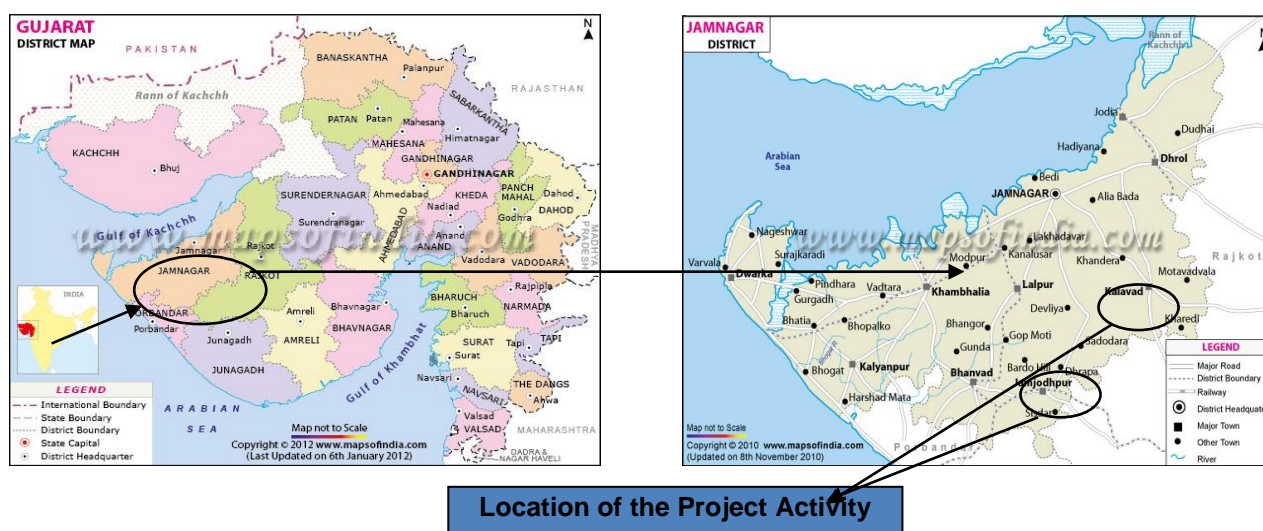
TPCL has developed this project under Clean Development Mechanism (CDM) of the United Nations Framework Convention on Climate Change (UNFCCC), as the project helps in significant reduction of GHG emissions and contributes to sustainable development of Gujarat and India. The first and last WTG under the project activity was commissioned on 29/09/2008 and 07/05/2009 respectively, and are in operation since then. The project activity was registered in UNFCCC on 06th December 2012.

The total CER generation in this monitoring period is **144,542 tCO₂e**.

A.2. Location of project activity

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The project activity is located in the Samana planes (Kalavad and Jamjodhpur taluk) of Jamnagar district in Gujarat. The nearest airport and railway station is at Jamnagar city and distance of approximately 60 kms from the project activity site. The WEC wise details of location are provided below.



The Project consists of 63 numbers of E-53 WECs of 800 kW each. The WEC (wind energy conversion) unit wise details of location are provided below.

Table 1: Project WEC locations

Name of Taluka	Name of Village	No. of WEC
Kalavad	Dhun Dhoraji	09
	Mota Paanchdevada	25
	Nana Paanchdevada	01
Jamjodhpur	Sadodar	15
	Narmana	01
	Dal Devaliya	12

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)	M/s. The Tata Power Company Limited	No
Sweden	Swedish Energy Agency	Yes
Sweden	Asian Development Bank as Trustee of the Future Carbon Fund	Yes

A.4. Reference to applied methodologies and standardized baselines

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Methodology:

ACM0002 ver. 13 - Consolidated baseline methodology for grid-connected electricity generation from renewable sources¹

Tools:

- Tool for the demonstration and assessment of additionality², (Version 6.1.0, EB 69, Annex 20)
- Tool to calculate the emission factor for an electricity system³, (Version 2.2.1, EB 63, Annex 19)

A.5. Crediting period type and duration

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Choice of crediting period : Fixed crediting period
 Length of the crediting period : 10 years
 Crediting period duration : 06/12/2012 – 05/12/2022

SECTION B. Implementation of project activity**B.1. Description of implemented project activity**

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The first WEG under the project activity was commissioned on 29/09/2008 and last WEG under the project activity was commissioned on 07/05/2009. The project activity consists of total 63 WEGs (800 kW) of Enercon make E – 53. The commissioning date for all the WEGs include in the project activity is given in the table below:

Table 2: WEC commissioning details:

Commissioning dates	No of WEC's	Capacity (MW)
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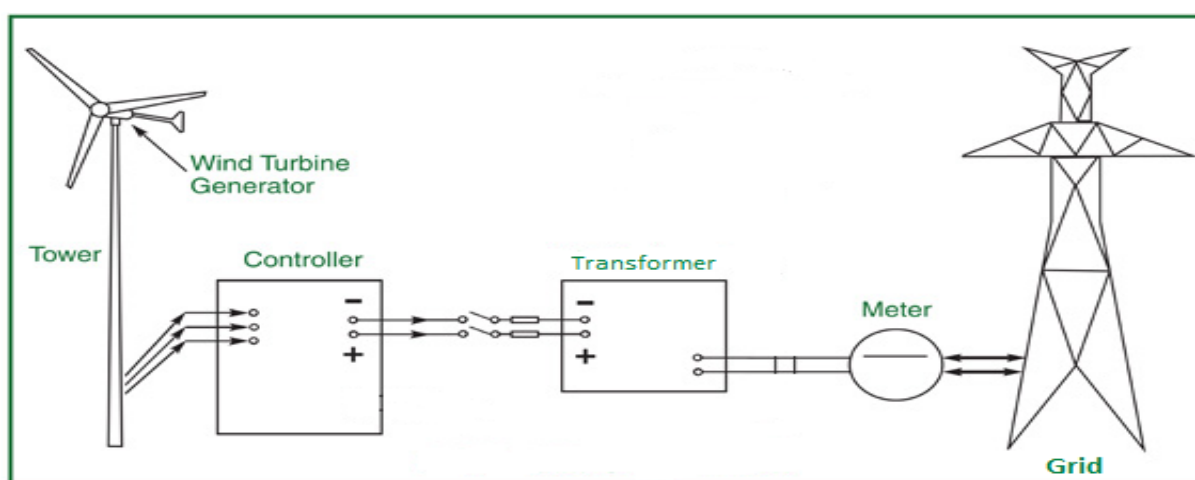
¹ <http://cdm.unfccc.int/methodologies/DB/UB3431UT9I5KN2MUL2FGZXZ6CV71LT>

² <http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-01-v6.1.0.pdf>

³ <https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v2.2.1.pdf>

	commissioned	
29/09/2008	11	8.8
30/09/2008	04	3.2
14/11/2008	08	6.4
29/11/2008	03	2.4
08/12/2008	04	3.2
11/12/2008	01	0.8
05/01/2009	05	4.0
16/01/2009	01	0.8
06/05/2009	15	12.0
07/05/2009	11	8.8
Total	63	50.4

The Project involves 63-wind energy converters (WECs) of Enercon make (800 kW E-53) with internal electrical lines connecting the Project with evacuation facility. The WECs generates 3-phase power at 400V, which is stepped up to 33 kV. The Project can operate in the frequency range of 47.5–51.5 Hz and in the voltage range of 400 V \pm 10%.



The other salient features of the state-of-art-technology are:

- Gearless Construction - Rotor & Generator Mounted on same shaft eliminating the Gearbox.
- Variable speed function – has the speed range of 12 to 29 RPM thereby ensuring optimum efficiency at all times.
- Variable Pitch functions ensuring maximum energy capture.
- Near Unity Power Factor at all times.
- Minimum drawl (less than 1% of kWh generated) of Reactive Power from the grid.
- No voltage peaks at any time.
- Operating range of the WEC with voltage fluctuation of -20 to +20%.
- Rotor diameter is 53m & having Swept area of 2205 m², Blade material used is Fibreglass (reinforced epoxy) with integral lightning protection
- Three Independent Braking Systems with power back up supply.
- Generator achieving rated output at only 29 rpm.
- Starts Generation of power at wind speed of 3 m/s.

E-53 / 800 kW TECHNICAL DATA:

0.8 MW (E-53, Enercon Make)		
Sr. No.	Particulars	Specifications
1	Turbine Model	Enercon E-53
2	Rated Power	800 kW
3	Rotor Diameter	53 meters
4	Hub height	75 meters
5	Turbine Type	Direct driven, upwind, horizontal axis WEC with

		variable rotor speed
6	Power Regulation	Independent pitch system for each blade
7	Design life time	20 years
8	Cut-in wind speed	2.5 m/s
9	Rated wind speed	12 m/s
10	Cut-out wind speed	28-34 m/s
11	Extreme Wind Speed	59.5 m/s
12	Rated rotational speed	32 rpm
13	Operating range rot. speed	12-29 rpm
14	Orientation	Upwind
15	No. of blades	3
16	Blade material	Glass Fibre Epoxy Reinforced
17	Gear box type	Gearless
18	Generator type	Synchronous Generator
19	Braking	Aerodynamic
20	Output Voltage	400 V
21	Yaw System	Active yawing with 4 electric yaw drives with brake motor
22	Tower	Concrete Tower of 74 meters

The technology is environmentally safe & sound and not leads to any GHG emissions. The project technology manufactured, operated & maintained indigenously and doesn't involve any technology transfer from foreign countries.

B.2. Post-registration changes**B.2.1. Temporary deviations from the registered monitoring plan, applied methodologies or standardized baselines**

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Not Applicable

B.2.2. Corrections

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Not Applicable

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

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Not Applicable

B.2.4. Inclusion of monitoring plan

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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 applied standards or tools

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The project activity had undergone twice for permanent changes from the monitoring plan or the monitoring methodology prior to submission of the monitoring report for verification activity. The changes and the revised PDD were submitted to the board and were approved as on 13/08/2014 (PRC- 8442-001⁴) and 02/10/2015 (PRC-8442-002⁵).

B.2.6. Changes to project design

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Not Applicable

SECTION C. Description of monitoring system

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The project activity is in accordance with the approved monitoring methodology ACM0002 Version 13 Sectoral Scope: 1, "Consolidated baseline methodology for grid-connected electricity generation from renewable sources"

This approved monitoring methodology requires monitoring of the following:

- Electricity generation from the project activity; and
- Operating margin emission factor and build margin emission factor of the grid, where *ex post* determination of grid emission factor has been chosen

Monitoring Process for the Project Activity:

Metering of wind power is done at 3 different points as given under:

- Point 1: there are two ABT meters at Sadodar (33/220kV) sub-station referred as Line 1 and Line 2 meters. These meters are owned by the GETCO.
- Point 2: there are five transformer yard meters located before the sub-station meters. All the WEC's which are part and not part of the project activity are connected to these meters. These meters are also owned by the GETCO.
- Point 3: the WEC's are also connected to cluster meters located at the WEC metering yard. There are two cluster meter locations (feeder no 18 – 24.8MW and feeder no 19 –25.6MW) to which the

⁴ <http://cdm.unfccc.int/PRCContainer/DB/prcp107403340/view>

⁵ <http://cdm.unfccc.int/PRCContainer/DB/prcp942351660/view>

WEC's of the project activity are connected. These meters are owned by the wind farm owners and have an accuracy class of 0.5s. The meters are calibrated once in 3 years.

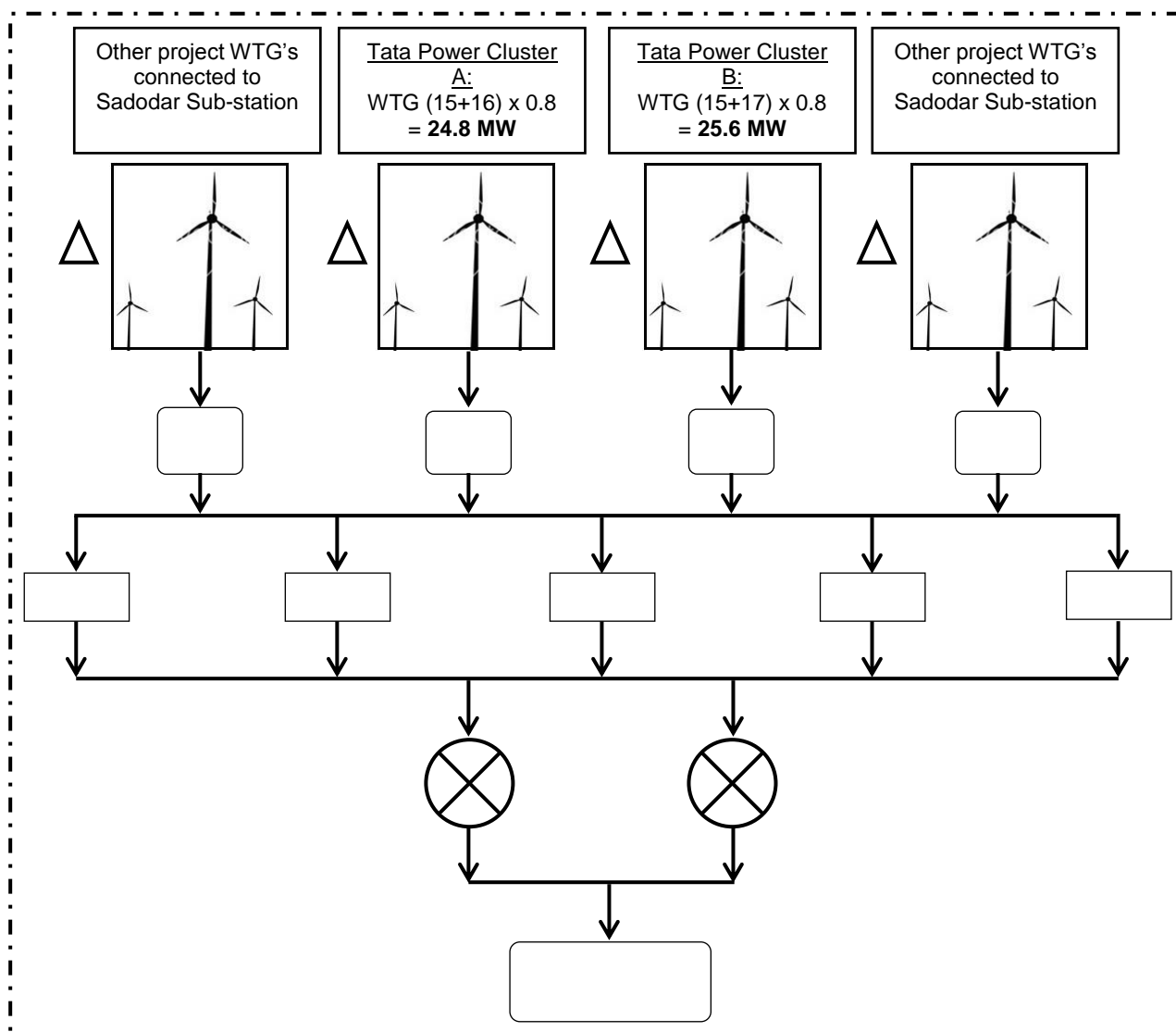
- The energy meters at the sub-station and the transformer yard are of accuracy class 0.2s whereas the cluster meters at the WEC metering yard are of accuracy class 0.5s. All the meters are calibrated once in 3 years.
- Monthly joint meter reading is taken from the Sadodar sub-station meters (line 1 and line 2 meters) by the representative of GETCO (Gujarat Electricity Transmission Company) and O&M service provider (on behalf of individual wind farm owners). The monthly share certificate generated is based on these meter readings.
- Similarly monthly joint meter reading is also recorded from the WEC cluster meters by the representatives of GETCO and O&M service provider for the purpose of apportioning.
- GETCO/GEDA distributes recorded share of electricity certificate for the particular month to all owners for their respective WECs which are connected to Sadodar substation.

Apportioning procedure:

- Joint meter reading is taken at Sadodar (220/33KV) substation meter (line 1 and line 2 meter) by representative of GETCO (Gujarat Electricity Transmission Company) and O&M service provider (on behalf of individual wind farm owners). Let the total net generation recorded for particular month is 'X' units in sub-station meter.
- Joint meter reading is taken at cluster Meter-(feeder no 18 and feeder no 19 to which a group of WEC's under the project activity are connected) by representative of GETCO (Gujarat Electricity Transmission Company) and O&M service provider (on behalf of individual wind farm owners). Let us assume total net generation of TPCL recorded for particular month is 'Y1' units.
- Similarly joint meter reading for other wind farm owners is also taken. Let the generation of individual owner recorded for particular month are 'Y2, Y3,.....Yn' units.
- GETCO distributes 'X' to individual wind farm owners using following formula and issues monthly certificates.
- For TPCL, net units calculated for billing = $X * Y1 / \sum Yn$
- It must be noted here that the meter readings as mentioned above are calculated as the product of meter multiplication factor and the difference of the current and previous meter readings.
- The apportioning procedure is followed and conducted by GETCO every month and TPCL has no part/ role in apportioning procedure.

Additionally, all the WECs at the site are connected to a central monitoring system located at that site only. This system captures daily generation figures for each WEC, which are later made available to wind farm owners on the customized website of Wind World (India) Limited (earlier known as Enercon). This will be used to check the electricity generation figures.

Single line diagram for metering details



– indicates cluster meters at the metering yard

F_i to F_{i+n} – indicates feeder Lines

TF_1 to TF_5 – indicates 5 Transformer meters



– indicates 2 ABT line meters at the sub-station

Emergency Preparedness:

If both main meter and check meter are found faulty, energy generation is monitored in accordance with procedures described in PPA as follows.

"In case, both the main meters and check meter are found to be beyond permissible limit of error, both the meters shall be calibrated immediately and the correction applicable to main meter shall be applied to the energy registered by the main meter at the correct energy for the purpose of energy account/billing for the actual period during which inaccurate measurements were made, if such period can be determined or, if not readily determinable, shall be the shorter of:

- *The period since the immediately preceding test of the relevant main meter, (OR)*
- *One hundred and eighty (180) days immediately preceding the test at which the relevant Main meter was determined to be defective or inaccurate."*

In case of failure of the main meter, generation value would be taken from the check meter and the grid officials would immediately replace the faulty meter with a calibrated meter. The project promoters have contracted the technology supplier for providing O&M services for the power project. The service provider would be responsible for maintenance of the necessary spare parts and consumables for the maintenance of the WECs such as anemometers, wind vanes and sensors, oil filters, batteries, auxiliary motors and pumps, WEC controllers, slip rings, limit switches and sensors, detergents & solvents etc. The service provider would also be responsible for supply of necessary main components of the WEC such as main gearboxes, blades, generators, towers, hubs, main shafts & bearings, ground and top controller and hydraulic systems. The service provider would also ensure that occupational health and safety procedures are adhered to during the operation & maintenance activities. Additionally, spare meters would also be kept available at the site for replacement in case of failure of any of the monitoring equipments.

Internal audits & Performance review:

The records are regularly audited and checked by the senior officials from project proponent on an annual basis. The officials will monitor the actual emission reduction for the project activity. The personnel responsible for taking readings at site are adequately trained.

On behalf of TPCL, the Project is operated and managed by Enercon India Limited. Enercon India Limited is an ISO 9001:2008 certified company and will follow the standard documentation practices to ensure the reliability of the monitored data. The accuracy of monitoring parameter is ensured by adhering to the calibration and testing procedure. The project will adhere to all the mandatory regulatory and statutory requirements at the state as well as national level.

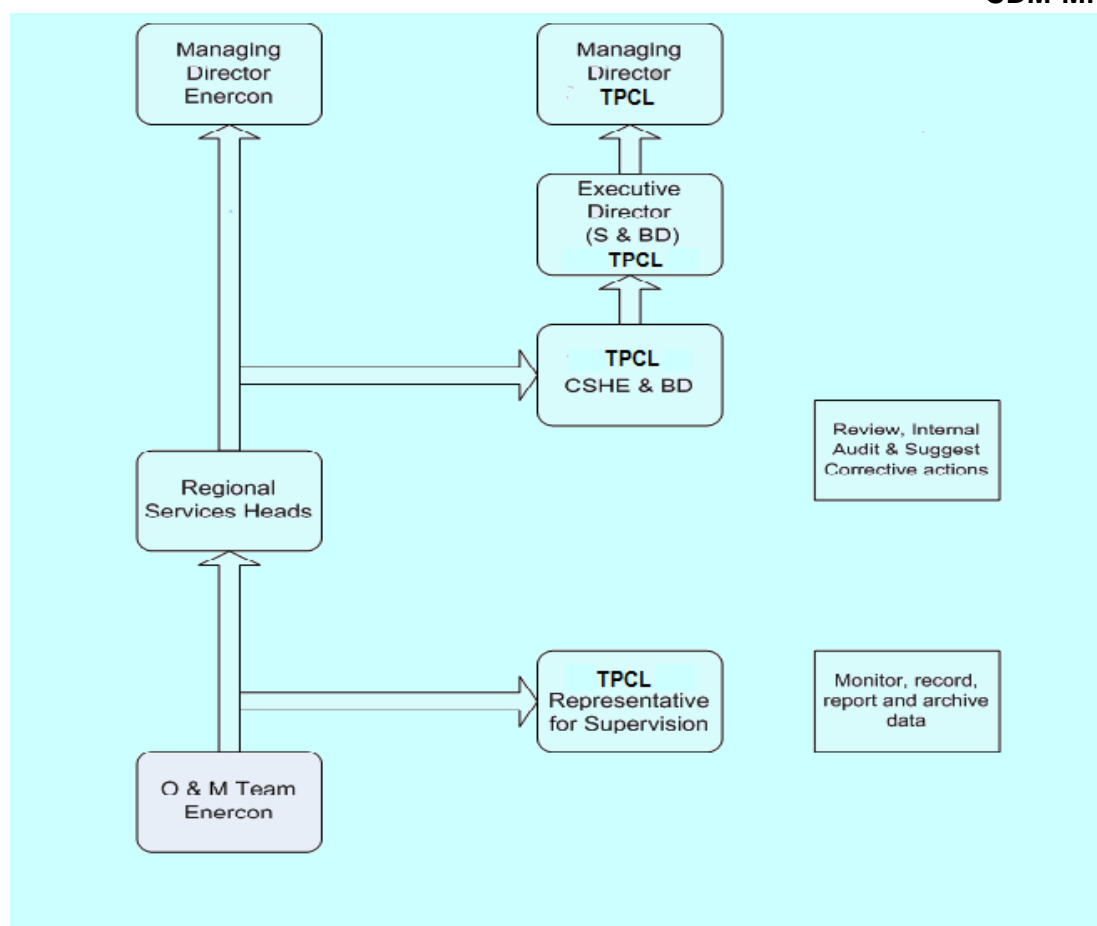
Data cross checking:

TPCL prepare invoices on a monthly basis for the net electricity supplied to the grid and submit the same to GUVNL along with copy of joint meter reading as certified by SEA (State energy Account) issued by of Gujarat SLDC (State Load Dispatch Centre). These invoices can be used for cross checking of data mentioned in share of electricity certificate by GEDA, used for Emission reduction calculation.

Training and maintenance requirements:

Training on the machine is an essential pre-requisite, to ensure necessary safety of man and machine. The Enercon Training Academy provides need-based training to meet the training requirements of Enercon projects. The training is contemporary, which results in imparting focused knowledge leading to value addition to the attitude and skills of all trainees. This ultimately leads to creativity in problem solving.

The authority and responsibility of project management as well as registration, monitoring, measurement and reporting lie with The Tata Power Company Ltd. (TPCL) They have formulated a Project Team to ensure proper and continuous monitoring of the performance of WECs and generation of electricity. The same has been outlined as follows:



The O&M personnel are qualified engineers and are trained at the WEC manufacturing facility of Enercon India Limited for operating and ensuring best performance of the WECs. The general conditions set out for metering, recording, meter readings, meter inspections, Test & Checking and communication shall be as per the PPA (power purchase agreement) with GUVNL.

For monitoring, record, report and archived data following responsibilities are allotted:-

Designation	Responsibilities
Regional Service head	<ul style="list-style-type: none"> Overall performance monitoring Project execution Operation Verification of data Site visit to check authenticity of data and take corrective action, wherever necessary Storage of data
Site Main Controller (TPCL representative for supervision)	<ul style="list-style-type: none"> Operation, monitoring and verification of data Data recording Storage of data
Operation and Maintenance team from Enercon	<ul style="list-style-type: none"> Operation and maintenance Data recording Storage of data

The responsibilities of upper authorities in TPCL are to review, do internal audits and take corrective actions for the project activity.

SECTION D. Data and parameters**D.1. Data and parameters fixed ex ante***(Copy this table for each data or parameter.)*

Data/Parameter	EF_{OM, y}
Unit	tCO ₂ / MWh
Description	Emission factor for the operating margin of the NEWNE Grid
Source of data	CEA – CO2 baseline database for Indian power sector
Value(s) applied	1.0049
Choice of data or measurement methods and procedures	Operating Margin Emission Factor has been calculated by the Central Electricity Authority using the simple OM approach in accordance with "Tool to calculate the emission factor for an electricity system".
Purpose of data/parameter	Baseline emission calculation
Additional comments	CO2 Baseline Database for the Indian Power Sector prepared by Central Electricity Authority (CEA) Version 5.0 has been referred for the values of operating margin. The operating margin emission factor is calculated as the generation-weighted average CO2 emissions per unit net electricity generation (tCO2/MWh) estimated for year 2006-07, 2007-08 and 2008-09. Value is fixed ex-ante for entire crediting period.

Data/Parameter	EF_{BM, y}
Unit	tCO ₂ / MWh
Description	Emission factor for the build margin of the NEWNE Grid
Source of data	CEA – CO2 baseline database for Indian power sector
Value(s) applied	0.6752
Choice of data or measurement methods and procedures	The Build Margin Emission Factor has been calculated by the Central Electricity Authority using the simple OM approach in accordance with "Tool to calculate the emission factor for an electricity system"
Purpose of data/parameter	Baseline emission calculation
Additional comments	CO2 Baseline Database for the Indian Power Sector prepared by Central Electricity Authority (CEA) Version 5.0 has been referred for the values of build margin and is estimated for year 2008-09. Value is fixed ex-ante for entire crediting period

Data/Parameter	EF _y
Unit	tCO ₂ / MWh
Description	Combined Margin CO ₂ emission factor for NEWNE regional grid
Source of data	Estimated figure based on 75% of OM and 25% of BM values. Referred by "CO ₂ Baseline Database for Indian Power Sector, version 5" published by the Central Electricity Authority, Ministry of Power, Government of India.
Value(s) applied	0.9224
Choice of data or measurement methods and procedures	The Combined Margin Emission Factor has been calculated using the simple OM approach in accordance with "Tool to calculate the emission factor for an electricity system"
Purpose of data/parameter	Calculation of baseline emission
Additional comments	Value is fixed ex-ante for entire crediting period

D.2. Data and parameters monitored

(Copy this table for each data or parameter.)

Data/Parameter	EG _y
Unit	MWh
Description	Net electricity supplied to the grid by the Project
Measured/calculated/default	<p>Measured and Calculated</p> <p>There are two ABT Energy Meters (referred as line 1 and line 2 energy meters) located at Sadodar (33/220kV) substation. Further there are five transformer yard meters located before the sub-station meters. All WECs which are part and not part of the project are connected to these meters. Electricity generation is measured at the sub-station meters (line 1 and line 2 meters) by the representative of GETCO (Gujarat Electricity Transmission Company) and O&M service provider (on behalf of individual wind farm owners). Similarly, all WECs which are part of the project activity are also connected to the cluster meters located at the metering yard. The monthly joint meter reading is also recorded from these cluster meters by the representatives of GETCO and O&M service provider for apportioning purpose. GETCO then distributes share certificates for the particular month after deducting the import from the export.</p>
Source of data	Monthly share certificate issued by GETCO/GEDA
Value(s) of monitored parameter	156,702
Monitoring equipment	<p>Monitoring Equipment: Sub-station Energy Meters (line 1 and line 2 meters) Serial Number: GJ-2458-A (Line 1), GJ-2459-A (Line 2) Accuracy Class : 0.2S Calibration Frequency: once in 3 years Date of Last Calibration: 11/11/2015 Validity of Last Calibration: 10/11/2018 Date of Current Calibration: 10/11/2018 Current Validity: 10/11/2021</p> <p>Monitoring Equipment: Transformer Yard Energy Meters Serial Number: GJB01470, GJU04175, GJU04176, GJU67589 and KAB11082 Accuracy Class: 0.2S Calibration Frequency: once in 3 years Date of Last Calibration: 06/09/2013 Validity of Last Calibration: 05/09/2016 Date of Current Calibration: 30/09/2016 Current Validity: 29/09/2019</p>

	Monitoring Equipment: Cluster Energy Meters (metering yard) Serial Number: GJB01605 (feeder no 18), 07025563 (feeder no 18), GJB01604 (feeder no 19) and 07025367 (feeder no 19) Accuracy Class: 0.2S Calibration Frequency: once in 3 years Date of Last Calibration: 15/07/2013 Validity of Last Calibration: 14/07/2016 Date of Current Calibration: 14/06/2016 Current Validity: 13/06/2019
Measuring/reading/recording frequency	Measuring frequency: Continuous Recording frequency: Monthly
Calculation method (if applicable)	Monthly share certificate issued by GETCO/GEDA mentions only net electricity supplied to the grid after deducting import (the quantity of electricity delivered to the project activity from the grid) from Export (the quantity of electricity supplied by the project activity to the grid). The invoicing is done on the basis of this share certificate. $EG_y = EG_{\text{export}} - EG_{\text{import}}$
QA/QC procedures	All energy meters calibration shall be conducted once in 3 years by GETCO in accordance with the local calibration standards. Meter accuracy: The energy meters at the sub-station and the transformer yard are of 0.2s accuracy class whereas at the WEC metering yard are of accuracy class 0.5s. TPCL prepare invoices on monthly basis for the net electricity supplied to the grid and submit the same to GUVNL along with copy of joint meter reading as certified by SEA (State energy Account) issued by of Gujarat SLDC (State Load Dispatch Centre). These invoices can be used for cross checking of data mentioned in share of electricity certificate by GEDA, used for Emission reduction calculation.
Purpose of data/parameter	Calculation of baseline emission
Additional comments	The data (electricity supplied to the grid) will be archived on electronic media as well as on paper. The archive will be kept for the period up to two years after the completion of the crediting period or the last issuance of CERs for the project activity whichever occurs later.

D.3. Implementation of sampling plan

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Not Applicable

SECTION E. Calculation of emission reductions or net anthropogenic removals

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

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As per the methodology ACM0002, version 13.0.0, "Baseline emissions include only CO₂ emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity. The methodology assumes that all project electricity generation above baseline levels would have been generated by existing grid-connected power plants and the addition of new grid-connected power plants. The baseline emissions are to be calculated as follows:

$$BE_y = EG_y * EF_y \dots\dots\dots (1)$$

Where,

BE_y = Baseline emissions in year y (tCO₂ / yr)

EG_y = Net electricity supplied to the grid by the project

EF_y = Combined margin CO₂ emission factor for NEWNE regional grid

$$BE_y = 156,702 * 0.9224 = 144,542 \text{ tCO}_2$$

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

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As stated in the registered PDD and as per ACM0002 version 13.0.0, for most renewable energy project activities, $PE_y = 0$.

E.3. Calculation of leakage emissions

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As stated in the registered PDD and as per ACM0002 version 13.0.0, the main emissions potentially giving rise to leakage in the context of electric sector projects are emissions arising due to activities such as power plant construction, fuel handling (extraction, processing, and transport). Project participants do not need to consider these emission sources as leakage in applying this methodology. Therefore no leakage is taken into consideration. Also no credits on account of reducing these emissions below the level of the baseline scenario are claimed. $LE_y = 0$.

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	144,542	0	0	0	144,542	144,542

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 (t CO ₂ e)
144,542	193,642 ⁶

E.6. Remarks on increase in achieved emission reductions

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As per the registered PDD, the annual average emission reductions estimated were 96,821 tCO₂e/annum. During the current monitoring period is for two years from 01/01/2017 to 31/12/2018, hence the pro-rata emission reduction stands to 193,642 tCO₂e. The actual emission reductions achieved is 144,452 tCO₂e which is 25.36% lesser than the value estimated in the PDD. This is due to lower PLF observed at the project site during the monitoring period.

⁶ The current monitoring period is for two years. Accordingly the estimated emission reduction in-line with the registered PDD input values is calculated for two years.

Annex 1: Geographical Co-ordinates of the WECs

Sr. No	WEC Name	Latitude	Longitude
1	TATASP-01 (2100)	22° 4' 39.900" N	70° 13' 56.940" E
2	TATASP-02 (2101)	22° 4' 47.520" N	70° 13' 53.340" E
3	TATASP-03 (2105)	22° 5' 20.520" N	70° 13' 33.300" E
4	TATASP-04 (2106)	22° 5' 30.000" N	70° 13' 29.340" E
5	TATASP-05 (2107)	22° 5' 38.160" N	70° 13' 25.380" E
6	TATASP-06 (2109)	22° 5' 57.240" N	70° 13' 17.160" E
7	TATASP-07 (2110)	22° 6' 3.600" N	70° 13' 16.200" E
8	TATASP-08 (2111)	22° 6' 11.200" N	70° 13' 14.000" E
9	TATASP-09 (2112)	22° 6' 20.940" N	70° 13' 11.340" E
10	TATASP-10 (2113)	22° 6' 30.600" N	70° 13' 8.400" E
11	TATASP-11 (2121)	22° 4' 53.700" N	70° 14' 29.700" E
12	TATASP-12 (2022)	22° 4' 52.380" N	70° 11' 32.880" E
13	TATASP-13 (2023)	22° 4' 46.320" N	70° 11' 36.900" E
14	TATASP-14 (2024)	22° 4' 48.600" N	70° 11' 52.980" E
15	TATASP-15 (2025)	22° 4' 42.660" N	70° 12' 4.140" E
16	TATASP-16 (2102)	22° 4' 57.000" N	70° 13' 50.580" E
17	TATASP-17 (2103)	22° 5' 2.820" N	70° 13' 43.020" E
18	TATASP-18 (2104)	22° 5' 11.040" N	70° 13' 35.700" E
19	TATASP-19 (2108)	22° 5' 45.300" N	70° 13' 18.900" E
20	TATASP-20 (2075)	22° 6' 41.460" N	70° 12' 31.200" E
21	TATASP-21 (2026)	22° 4' 36.900" N	70° 12' 5.760" E
22	TATASP-22 (2029)	22° 4' 12.300" N	70° 11' 59.100" E
23	TATASP-23 (2001)	22° 5' 14.760" N	70° 11' 10.500" E
24	TATASP-24 (2115)	22° 6' 45.660" N	70° 13' 6.060" E
25	TATASP-25 (2117)	22° 7' 6.120" N	70° 13' 9.540" E
26	TATASP-26 (2073)	22° 6' 22.020" N	70° 12' 28.560" E
27	TATASP-27 (2074)	22° 6' 32.700" N	70° 12' 27.540" E
28	TATASP-28 (2085)	22° 5' 38.940" N	70° 13' 2.460" E
29	TATASP-29 (2086)	22° 5' 30.900" N	70° 13' 4.620" E
30	TATASP-30 (2098)	22° 4' 21.900" N	70° 14' 13.500" E
31	TATASP-31 (2070)	22° 5' 56.820" N	70° 12' 31.380" E
32	TATASP-32 (2002)	22° 5' 25.260" N	70° 11' 7.920" E
33	TATASP-33 (2004)	22° 5' 35.940" N	70° 10' 46.740" E
34	TATASP-34 (2005)	22° 5' 42.420" N	70° 10' 49.800" E
35	TATASP-35 (2027)	22° 4' 29.160" N	70° 12' 8.760" E
36	TATASP-36 (2028)	22° 4' 21.000" N	70° 12' 7.680" E
37	TATASP-37 (2068)	22° 5' 40.200" N	70° 12' 39.780" E
38	TATASP-38 (2097)	22° 3' 58.740" N	70° 14' 5.460" E
39	TATASP-39 (2077)	22° 6' 58.500" N	70° 12' 25.080" E
40	TATASP-40 (2078)	22° 7' 10.260" N	70° 12' 49.800" E
41	TATASP-41 (2116)	22° 6' 56.160" N	70° 13' 6.360" E
42	TATASP-42 (2114)	22° 6' 39.000" N	70° 13' 7.080" E
43	TATASP-43 (2048)	22° 5' 48.240" N	70° 12' 19.320" E
44	TATASP-44 (2019)	22° 5' 6.480" N	70° 11' 44.400" E
45	TATASP-45 (2123)	22° 3' 54.660" N	70° 11' 45.840" E
46	TATASP-46 (2003)	22° 5' 26.640" N	70° 10' 47.580" E
47	TATASP-47 (2008)	22° 6' 23.280" N	70° 11' 15.420" E
48	TATASP-48 (2009)	22° 6' 15.060" N	70° 11' 15.300" E
49	TATASP-49 (2010)	22° 6' 6.600" N	70° 11' 16.260" E
50	TATASP-50 (2012)	22° 5' 49.980" N	70° 11' 21.240" E
51	TATASP-51 (2013)	22° 5' 42.060" N	70° 11' 24.060" E
52	TATASP-52 (2015)	22° 5' 29.520" N	70° 11' 30.480" E
53	TATASP-53 (2016)	22° 5' 22.800" N	70° 11' 28.980" E
54	TATASP-54 (2017)	22° 5' 21.240" N	70° 11' 44.700" E
55	TATASP-55 (2038)	22° 6' 51.360" N	70° 11' 32.340" E
56	TATASP-56 (2039)	22° 6' 58.560" N	70° 11' 53.580" E
57	TATASP-57 (2040)	22° 6' 49.320" N	70° 11' 54.960" E

58	TATASP-58 (2051)	22° 5' 22.800" N	70° 12' 28.140" E
59	TATASP-59 (2052)	22° 5' 14.580" N	70° 12' 11.940" E
60	TATASP-60 (2062)	22° 4' 49.380" N	70° 12' 48.780" E
61	TATASP-61 (2063)	22° 4' 58.020" N	70° 12' 46.860" E
62	TATASP-62 (2064)	22° 5' 6.000" N	70° 12' 46.620" E
63	TATASP-63 (2066)	22° 5' 19.860" N	70° 12' 43.800" E

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Document information

<i>Version</i>	<i>Date</i>	<i>Description</i>
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.
Decision Class: Regulatory Document Type: Form Business Function: Issuance Keywords: monitoring report		