



**Monitoring report form
(Version05.1)**

MONITORING REPORT		
Title of the project activity	Renewable Energy Wind Power Project in Karnataka	
UNFCCC reference number of the project activity	4956	
Version number of the monitoring report	01	
Completion date of the monitoring report	31/07/2017	
Monitoring period number and duration of this monitoring period	2 nd Monitoring Period: 01/10/2012 to 30/06/2017 (both days are included)	
Project participant(s)	Vish Wind Infrastruktüre LLP ¹ (India)	
Host Party	India	
Sectoral scope(s)	Sectoral Scope 1 - Energy industries (renewable/ non-renewable sources).	
Selected methodology(ies)	Approved consolidated baseline methodology AMS-I.D., Version 16	
Selected standardized baseline(s)	Not Applicable (NA)	
Estimated amount of GHG emission reductions or net GHG removals by sinks for this monitoring period in the registered PDD	58,357 tCO ₂ e	
Total amount of GHG emission reductions or net GHG removals by sinks achieved in this monitoring period	GHG emission reductions or net GHG removals by sinks reported up to 31 December 2012	GHG emission reductions or net GHG removals by sinks reported from 1 January 2013 onwards
	0	48,907 tCO ₂ e

¹ Erstwhile known as "Vish Wind Infrastruktüre LLP". The entity has undergone name change via COI (name change) dated 23rd Feb 2016. The evidence is being submitted to DOE also required changes are made in CDM-MOC.

SECTION A. Description of project activity

A.1. Purpose and general description of project activity

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Purpose of the project activity and the measures taken for GHG emission reductions or net anthropogenic GHG removals by sinks:

The project activity is of capacity 6.4 MW wind energy project comprising eight Wind Energy Converters (WECs) of capacity 800 kW each, commissioned in Karnataka state of India. The electricity produced with renewable source will be supplied to Karnataka state electricity grid which is part of the Southern grid of India². Thus the project activity has been displacing equivalent amount of electricity at the grid which would have otherwise been produced at grid from fossil fuels based power plants. Thus, the project activity accounts reduction in carbon emissions that helps in mitigating the climate change impact. The project participant (PP) is Vish Wind Infrastruktüre LLP (VWLLP). PP has entered into agreement with Wind World (India) Ltd. (previously known as Enercon India Ltd.) for development, operation and maintenance of the project activity.

Brief description of the installed technology and equipment:

The project consists of 8 (eight) machines of Enercon make E-53 type WEGs of 800KW capacity each totaling to the capacity of 6.4 MW. The WEGs generates 3-phase power at 400V, which is stepped up to 33 kV and further transmitted to WWIL Sub-station (previously known as Enercon Substation). From WWIL substation electricity is further evacuated to the Karnataka State Electricity Grid. Wind World (India) Ltd (WWIL) is the turbine supplier and is the operations and maintenance contractor. The clean and green electricity supplied by the project will aide in sustainable growth in the region.

Relevant dates for the project activity (e.g. construction, commissioning, continued operation periods, etc.):

The eight WECs under project activity were commissioned on 30/09/2010. The project activity was registered as CDM project on 04/07/2011. Under the first monitoring period, the duration from 20/08/2011 to 30/09/2012 (Inclusive of first and last day) has been covered. The current monitoring period is considered from 01/10/2012 to 30/06/2017.

Total GHG emission reductions or net anthropogenic GHG removals by sinks achieved in this monitoring period:

The total emission reductions achieved under this monitoring period (i.e. 01/10/2012 to 30/06/2017) is 48,907 tCO₂e.

A.2. Location of project activity

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Host Party(ies): India

Region/State/Province, etc.: Southern Region, in the state of Karnataka.

² Currently integrated under Indian Grid.

As per CEA database version 11 (released in April 2016), in previous years the Indian electricity system was divided into two grids, the NEWNE and Southern Grid (SR), which are now integrated as a single 'Indian Grid' covering all the states. Thus, the project activity at the time of registration was part of Southern Grid which is now referred as Indian Grid.

City/Town/Community, etc.: The project is located in Village: Kalasapur, District: Gadag, State: Karnataka.

Physical/Geographical location: The project activity is situated between latitude 15° 21' & 15° 22' North and longitude 75° 37' & 75° 38' East. The Project activity has eight WEC of type E-53 of Enercon make. Capacity of each WEC is 800 kW. The Substation, which is maintained by WWIL, is located at Harthi village.

Individual WEG location numbers and coordinates are detailed out in the table below:-

Details of Latitude & Longitude are given below:-

Sr. No.	WEG Capacity (MW)	Village	District	Latitude (N)			Longitude (E)		
				Hr	Min	Sec	Hr	Min	Sec
1	0.8	Kalasapur	Gadag	15	22	22.2	75	38	21.2
2				15	21	50.8	75	37	52.1
3				15	21	59.8	75	37	52.4
4				15	21	43.6	75	38	31.0
5				15	21	50.3	75	38	27.3
6				15	21	42.6	75	37	54.4
7				15	21	59.2	75	38	31.3
8				15	21	32.9	75	37	57.8

A.3. Parties and project participant(s)

Party involved ((host) indicates a host Party)	Private and/or public entity(ies) project participants (as applicable)	Indicate whether the Party involved wishes to be considered as project participant (yes/no)
India (host)	Vish Wind Infrastruktüre LLP (Private entity)	No

A.4. Reference of applied methodology and standardized baseline

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Title: "Grid connected renewable electricity generation"

Reference: Approved small scale baseline methodology AMS-I.D (Version 16, SC 01, EB 54)

UNFCCC web reference of methodology:

<http://cdm.unfccc.int/methodologies/PAmethodologies/approved.html>

Tools referenced in this methodology:

- ✓ "Tool to calculate project or leakage CO₂ emissions from fossil fuel combustion" (Version 02)
- ✓ "Tool to calculate the emission factor for an electricity system" (version 02.1.0)

A.5. Crediting period of project activity

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Type of crediting period : Fixed
Length of crediting period : 10 years
Start date of crediting period : 20/08/2011
End date of crediting period : 19/08/2021

A.6. Contact information of responsible persons/entities

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Mr. Yogeshh Mehra
Designated Partner
Vish Wind Infrastrukture LLP
C/o Wind World Tower, A-9, Veera Industrial Estate, Veera Desai Road, Andheri (W).
Mumbai – 400 053.
Tel: +91-22-66924848
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yogeshh.mehra@windworldindia.com

Vish Wind Infrastrukture LLP is the project participant in this project.
Detailed contact information is mentioned in Appendix-1.

SECTION B. Implementation of project activity

B.1. Description of implemented registered project activity

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The project activity comprises of eight WECs of Enercon's model E-53. The project uses technology that is environmentally clean and safe since there are no GHG emissions associated with the electricity generation from the windmills.

The project activity can operate in the frequency range of 47.5–51.5 Hz and in the voltage range of 400 V \pm 12.5%. The average life time of the WEC is around 20 years as per the industry standards.

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

Turbine model	Enercon E- 53
Rated power	800 KW
Rotor diameter	53 m
Hub height	75 m
Turbine Type	Gearless horizontal axis wind turbine with variable rotor speed
Power regulation	Independent electromechanical pitch system for each blade.
Cut in wind speed	2.5 m/s
Rated wind speed	12 m/s
Cut out Wind speed	28-34 m/s
Extreme Wind Speed	59.5 m/s
Rated rotational speed	32 rpm
Operating range rot. speed	12-29 rpm
Orientation	Upwind
No of Blades	3
Blade Material	Fibre Glass Epoxy reinforced with integral lightning protection
Gear box type	Gear less
Generator type	Synchronous generator
Braking	Aerodynamic
Output Voltage	400 V
Yaw System	Active yawing with 4 electric yaw drives with brake motor and friction bearing
Tower	74 m concrete

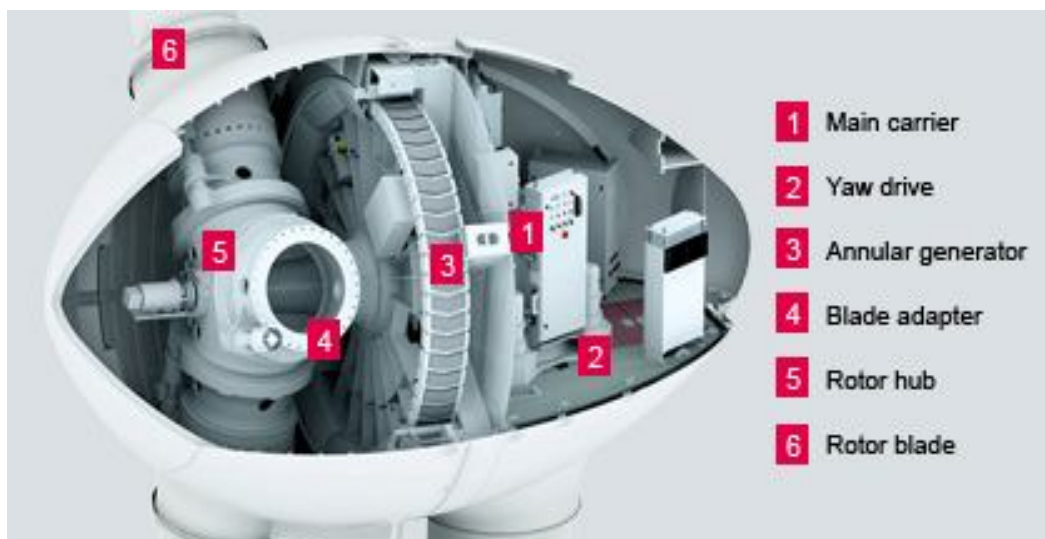
The eight WECs under project activity were commissioned on 30/09/2010.

Wind World (India) Ltd (erstwhile known as Enercon (India) Ltd., herein after also referred as WWIL) conducts operation and maintenance activities, which are ISO 9001:2008 certified. Referring to the available data give in the ER sheet, it can be inferred that there have not been any major special events for any of the machines that are included in the project activity. As a part of regular maintenance the machines are stopped for mechanical and electrical maintenance for 16 to 18 hours annually and for visual inspection for 6 to 7 hours quarterly. Further the consolidated performance report of project WEGs during the monitoring period including the down time,

machine availability, grid availability, etc. has been submitted to DOE. During the monitoring period there were no events or situations occurred, which may impact the applicability of the methodology.

WWIL has secured and facilitated the technology transfer for wind based renewable energy generation from Enercon GmbH, has established a manufacturing plant at Daman in India, where along with other components the "Synchronous Generators" using "Vacuum Impregnation" technology are manufactured. Diagram of main component of Enercon make E-53 is shown in below picture:-

Figure: E-53 Diagram (Cross sectional drawing of nacelle E-53 / 800 kW).



B.2. Post-registration changes

B.2.1. Temporary deviations from registered monitoring plan, applied methodology or applied standardized baseline

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Not applicable.

B.2.2. Corrections

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Not applicable.

B.2.3. Changes to start date of crediting period

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Not applicable.

B.2.4. Inclusion of a monitoring plan to the registered PDD that was not included at registration

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Not applicable

B.2.5. Permanent changes from registered monitoring plan, applied methodology or applied standardized baseline

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Not applicable.

B.2.6. Changes to project design of registered project activity

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Not applicable

B.2.7. Types of changes specific to afforestation or reforestation project activity

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Not applicable

SECTION C. Description of monitoring system

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Metering:

Electricity supplied to the grid is metered continuously at the metering point connecting 8 machines of the project activity. The meter reading is taken in the presence of representatives of WWIL (O&M Contractor for the project activity) and KPTCL.

Metering Equipment:

Metering system for the project activity consists of main and check meter. Both the meters are two-way trivector meters (accuracy class of 0.2%) capable of recording import and export of electricity. The metering equipment is calibrated annually.

Meter Readings:

The electricity exported to the grid is recorded monthly by taking a Joint Meter Reading (JMR) in the presence of Officials from the Utility and WWIL, O&M contractor, on behalf of project owner. The Joint meter reading contains the value of energy imported and exported. These readings become the basis of making Form B. These certified readings are then used by the DISCOM officials to prepare the tariff invoices. Thus the monitoring parameters for the project activity are the electricity import and electricity export to the grid as mentioned in the JMR. The readings are then adjusted for the transmission loss in the Form B, which can be crosschecked with the value mentioned in the invoices.

Inspection of Energy Meters:

All main and check energy meters (export and import) and all associated instruments, transformers installed at the project are of 0.2% accuracy class. Each meter is jointly inspected and sealed on behalf of the parties and is not to be interfered with by either party except in the presence of the other party or its accredited representatives.

Meter Test Checking:

There is a separate check and main meter. The Main and Check Meters are close to each other and will be tested for accuracy, with a standard meter, by the KPTCL's testing Division. The KPTCL will carry out the calibration, periodical testing, sealing and maintenance of meters. The KPTCL will provide a copy of the test reports.

If during the meter test checking,

- the main meter is found to be within the permissible limit of error and the corresponding check meter is beyond the permissible limits, then the meter reading will be as per the main meter as usual. The check meter shall, however, be calibrated immediately.
- the main meter is found to be beyond permissible limits of error, but the corresponding check meter is found to be within permissible limit of error, then the meter reading for the month up to the date and time of such test shall be as per the check meter.
- If both the main meters and the corresponding check meters are found to be beyond the permissible limits of error, both the meters shall be immediately calibrated and the correction will be applied to the reading registered by the main meter to arrive the correct reading of energy supplied to the grid for the period up to last test.
- If during any of the monthly meter readings, the variation between the main meter and the check meter is more than the permissible limit for meters of 0.2% accuracy class, all the meters shall be re-tested and calibrated immediately and the correction will be applied to the reading registered by the main meter to arrive the correct reading of energy supplied to the grid for the period up to last test.

- In case of the failures such as burning of the meter and the erratic display of the metered parameters and when the error found in testing the meters is beyond the permissible limit of error, the meter shall be calibrated immediately and the correction will be applied to the reading registered by the main meter to arrive the correct reading of energy supplied to the grid for the period up to last test.

CALCULATION OF DATA:

$$EGy = Gpe - 115\% * Gpi - Li$$

EGy : Net Electricity supplied to grid by the project activity

Gpe : Electricity Export is recorded at the meter(s) connecting 08 machines of the project activity

Gpi : Electricity Import is recorded at the meter(s) connecting 08 machines of the project activity

Li : Transmission loss

Transmission loss is certified by the state utility in JMR:

$$L = \sum_j Gj - N$$

$\sum_j Gj$: Summation of electricity generation data measured at all the feeders connected to substation at Harthi Village (export – Import)

N : Electricity generation data measured at Substation at Harthi Village from the feeders emanating from the pooling station

L : Total transmission loss

$$Li = Gpe * (L / \sum_j Gj)$$

The meter reading will be taken by the representatives of WWIL and the State utility at the meter(s) for the project activity connecting 08 turbines at the project site at 33kV and at the substation located at Harthi Village where bulk metering is done at 220kV. These readings become the basis of making Form B, which is signed by the representatives of WWIL and State Utility.

Transmission loss between metering point for the project activity and the metering point at the Substation at Harthi Village is applied to the meter reading taken at the feeder connecting 08 turbines of the project activity. Transmission losses are applied to the meter readings taken at the metering point of the project activity. Net Electricity exported to the grid is calculated by applying transmission loss to the meter reading taken at the metering point of the project activity connecting 8 turbines.

The Form B contains the following data:-

1. Electricity Export

2. Electricity Import

3. Transmission Loss

(Between the metering point for project activity and at the substation where bulk metering is done)

4. Net Electricity exported to the Grid [Electricity Export-115%*Electricity Import-Transmission Loss]

Joint Meter reading is signed by the representatives of WWIL and the state utility. The meter readings (both export and import), transmission loss and net electricity exported to the grid are noted in the Form B. Hence all these values will be reproduced from the JMR at the time of verification. Please refer Annex 4 for details on calibration and QA/QC procedures.

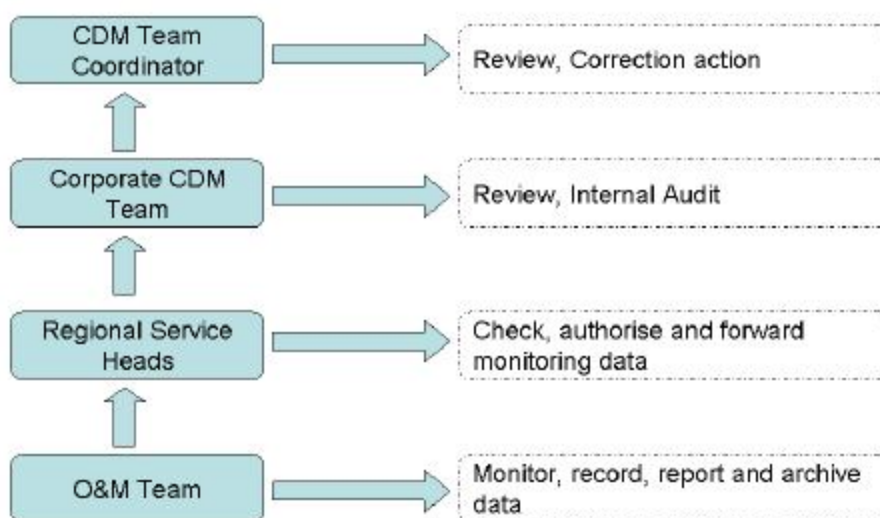
The Project is operated and managed by Vish Wind Infrastruktüre LLP. The operational and maintenance contract for the project is with WWIL. WWIL is an ISO 9001:2000 certified Quality Management system from Germanischer Lloyd. WWIL follows the documentation practices to ensure the reliability and availability of the data for all the activities as required from the identification of the site, wind resource assessment, logistics, finance, construction, commissioning and operation of the wind power project.

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. WWIL is Operation and Maintenance contractor for the project activity and provides the daily generation report to the project proponent. The project proponent also maintains the records of daily generation report and joint meter report.

Training and maintenance requirements:

Training on the machine is an essential pre-requisite, to ensure necessary safety of man and machine. Further, in order to maximize the output from the Wind Energy Converters (WECs), it is extremely essential, that the engineers and technicians understand the machines and keep them in good health. In order to ensure, that WWIL's service staff is deft at handling technical snags on top of the turbine, the necessity of ensuring that they are capable of climbing the tower with absolute ease and comfort has been established. The WWIL Training Academy provides need-based training to meet the training requirements of WWIL 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 operational and management structure implemented is as follows:



Meter Calibration details:

Meter Location	RR Number	Meter Details
VWLLP pooling station/MAIN meter	GDG/DN/WF/HESCOM WWIL/138	Sr. No: 09142236 Accuracy Class: 0.2 Make: L&T

VWLLP pooling station/CHECK meter	GDG/DN/WF/HESCOM VWIL/138	Sr. No: 09142599 Accuracy Class: 0.2 Make: L&T
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The details of the meter calibration for the meters at receiving station at Harthi are provided below:

Meter Details	Meter Serial Number
Receiving station (Main Meter)	06760786 Accuracy Class: 0.2 Make: L&T
Metering Point-3	
Receiving station (Check Meter)	06767587 Accuracy Class: 0.2 Make: L&T
Metering Point-3	

SECTION D. Data and parameters

D.1. Data and parameters fixed ex ante or at renewal of crediting period

Data/parameter:	$EF_{OM,y}$
Unit	tCO ₂ e/MWh
Description	Operating Margin Emission Factor of Southern Regional Electricity Grid
Source of data	<p>"CO₂ Baseline Database for Indian Power Sector" published by the Central Electricity Authority, Ministry of Power, Government of India.</p> <p>The "CO₂ Baseline Database for Indian Power Sector" (Version 5) is available at www.cea.nic.in</p>
Value(s) applied)	0.98755
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.
Purpose of data	To calculate Baseline Emission.
Additional comments	The value is calculated on ex-ante basis and it will remain same throughout the crediting period.

Data/parameter:	$EF_{BM,y}$
Unit	tCO ₂ e/MWh
Description	Build Margin Emission Factor of Southern Electricity Grid
Source of data	<p>"CO₂ Baseline Database for Indian Power Sector" published by the Central Electricity Authority, Ministry of Power, Government of India.</p> <p>The "CO₂ Baseline Database for Indian Power Sector" (Version 5) is available at www.cea.nic.in</p>
Value(s) applied)	0.81792
Choice of data or measurement methods and procedures	Build Margin Emission Factor has been calculated by the Central Electricity Authority.
Purpose of data	To calculate Baseline Emission.
Additional comments	The value is calculated on ex-ante basis and it will remain same throughout the crediting period.

Data/parameter:	$EF_{CO_2,grid,y}$
Unit	tCO ₂ e/MWh
Description	Combined Margin Emission Factor of Southern Electricity Grid
Source of data	Calculated
Value(s) applied)	<p>In case of wind power projects default weights of 0.75 for $EF_{OM,y}$ and 0.25 for $EF_{BM,y}$ are applicable as per ACM0002 Version 12.1.0.</p> <p>Combined Margin Emission Factor ($EF_{CO_2,grid,y}$) = 0.94515</p>
Choice of data or measurement methods and procedures	Combined Margin Emission Factor has been calculated by the Central Electricity Authority in accordance with CDM methodologies and Tool to Calculate the emission Factor for an Electricity System.

Purpose of data	To calculate Baseline Emission.
Additional comments	The value is calculated on ex-ante basis and it will remain same throughout the crediting period.

D.2. Data and parameters monitored

Data/parameter:	EG _y
Unit	MWh (Mega-watt hour)
Description	Net electricity supplied to the grid by the Project during the period y
Measured/calculated/default	Calculated. Electricity supplied to the grid as per the Form B. This is a calculated parameter derived from Energy exported, imported and transmission losses mentioned in Form B.
Source of data	Form B issued by state Utility.
Value(s) of monitored parameter	51,770.470 ³
Monitoring equipment	<p>The meter readings will be taken by the representatives of WWIL and the State utility at the meter(s) for the project activity connecting 08 turbines at the project site at 33kV and at the substation located at Harthi Village where bulk metering is done at 220kV. These readings become the basis of making Form B, which is signed by the representatives of WWIL and State Utility. Transmission loss between metering point for the project activity and the metering point at the Substation at Harthi Village is applied to the meter reading taken at the feeder connecting 08 turbines of the project activity.</p> <p>Transmission losses are applied to the meter readings taken at the metering point of the project activity. Net Electricity exported to the grid is calculated by applying transmission loss to the meter reading taken at the metering point of the project activity connecting 08 turbines.</p> <p>The Form B contains the following data:-</p> <ol style="list-style-type: none"> 1. Electricity Export 2. Electricity Import 3. Transmission Loss (Between the metering point for project activity and at the substation where bulk metering is done) 4. Net Electricity exported to the Grid [Electricity Export-115%*Electricity Import-Transmission Loss] <p>Joint Meter reading is signed by the representatives of WWIL and the state utility. The meter readings (both export and import), transmission loss and net electricity exported to the grid are noted in the Form B.</p>
Measuring/reading/recording frequency:	<p>Monthly.</p> <p>The reading is jointly noted by the representatives of state utility and WWIL. The value of EG_y for the project activity is also provided in the JMR (Form B) and is applied directly for calculation of emission reductions.</p>
Calculation method (if applicable):	$EG_y = G_{pe} - 115\% * G_{pi} - Li$ <p>Refer section C for details.</p>

³ The detail calculation and month wise values have been provided in the ER sheet. Please refer to version 01 of the ER sheet.

QA/QC procedures:	QA/QC procedures are implemented by state utility pursuant to the provisions of the power purchase agreement. Refer section C of QA/QC procedures
Purpose of data:	Calculation of Baseline Emissions
Additional comments:	The data will be archived for crediting period + 2 years.

Data/Parameter	Gpe
Unit	MWh (Mega-watt hour)
Description	Electricity Export is recorded at the meter(s) connecting 8 machines of the project activity.
Measured/Calculated /Default	This is a measured parameter.
Source of data	Electricity exported to the grid as per the Form B.
Value(s) of monitored parameter	52,177.375
Monitoring equipment	<p>Main meter details: Sr. No: 09142236 Accuracy Class: 0.2 Make: L&T</p> <p>Check meter details: Sr. No: 09142599 Accuracy Class: 0.2 Make: L&T</p> <p>Details of Meter calibration have been provided under Appendix 3.</p>
Measuring/Reading/ Recording frequency	Electricity exported to the grid will be recorded by the meter(s) connecting the 08 machines of the project activity feeding the substation of WWIL. Metering will be continuous and recording will be done monthly as Form B.
Calculation method (if applicable)	Not applicable
QA/QC procedures	QA/QC procedures are implemented by state utility pursuant to the provisions of the power purchase agreement. Refer section C of QA/QC procedures.
Purpose of data	To calculate emission reduction.
Additional comment	The data will be archived for crediting period + 2 years.

Data/Parameter	Gpi
Unit	MWh (Mega-watt hour)
Description	Electricity Imported recorded at the meter(s) connecting 8 machines of the project activity.
Measured/Calculated /Default	This is a measured parameter.
Source of data	Electricity imported to the grid as per the Form B.
Value(s) of monitored parameter	41.400
Monitoring equipment	<p>Main meter details: Sr. No: 09142236 Accuracy Class: 0.2 Make: L&T</p> <p>Check meter details: Sr. No: 09142599 Accuracy Class: 0.2 Make: L&T</p> <p>Details of Meter calibration have been provided under Appendix 3.</p>
Measuring/Reading/ Recording frequency	Electricity imported to the grid will be recorded by the meter(s) connecting the 8 machines of the project activity feeding the substation of WWIL. Metering will be continuous and recording will be done monthly as Form B.
Calculation method (if applicable)	Not applicable
QA/QC procedures	QA/QC procedures are implemented by state utility pursuant to the provisions of the power purchase agreement. Refer section C of QA/QC procedures.
Purpose of data	To calculate emission reduction.
Additional comment	The data will be archived for crediting period + 2 years.

Data/Parameter	Li
Unit	MWh (Mega-watt hour)
Description	Transmission loss between the metering point for the project activity and the metering point at Substation where bulk metering is done.
Measured/Calculated /Default	This is a measured parameter.
Source of data	Transmission Loss will directly applied from the Form B for the project activity.
Value(s) of monitored parameter	359.295
Monitoring equipment	<p>Main meter details: Sr. No: 06760786 Accuracy Class: 0.2 Make: L&T</p> <p>Check meter details: Sr. No: 06767587 Accuracy Class: 0.2 Make: L&T</p> <p>Details of Meter calibration have been provided under Appendix 3.</p>
Measuring/Reading/ Recording frequency	<p>Transmission loss between metering point (feeder connecting 8 turbines of the project activity) and the metering point at the Substation is applied to the meter reading taken at the feeder connecting 08 turbines of the project activity. Substation is connected to the machines of the project activity and the machines commissioned by the other project developers. The project proponent does not have control over the data of the other project developers.</p> <p>Therefore the project developer has to rely upon the transmission loss applied to the project activity by the state utility as reflected in the JMR (Form B). The JMR is signed by the representatives of WWIL and the state utility. Metering will be continuous and recording will be done monthly as Form B.</p>
Calculation method (if applicable)	Not applicable
QA/QC procedures	QA/QC procedures are implemented by state utility pursuant to the provisions of the power purchase agreement. Refer section C of QA/QC procedures.
Purpose of data	To calculate emission reduction.
Additional comment	The data will be archived for crediting period + 2 years.

D.3. Implementation of sampling plan

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Not applicable.

SECTION E. Calculation of emission reductions or GHG removals by sinks

E.1. Calculation of baseline emissions or baseline net GHG removals by sinks

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The baseline emissions are calculated as:

$$BE_y = EG_y * EF_{CO_2, grid, y}$$

Where:

BE_y = Baseline emissions in year y tCO₂.

EG_y = Energy baseline in year y MWh.

$EF_{CO_2, grid, y}$ = CO₂ emission factor in year y, tCO₂/MWh.

BE_y = 51770.470 * 0.94515 tCO₂e/MWh

= 48907 tCO₂e

Baseline Emission Reductions calculation for project activity:-

Duration	Quantity of net electricity generation supplied by the project activity to the grid in year y [MWh]	Baseline Emission Factor (tCO ₂ e/MWh)	Baseline Emissions (tCO ₂ e)
	[EG _y]	[EF _{CO₂, grid, y}]	[BE _y] = [EG _y] * [EF _{CO₂, grid, y}]
01 Oct 2012 to 30 Jun 2017	51770.470	0.94515	48,907

In the emission reduction excel spreadsheet, the baseline emissions for the current monitoring period have been calculated as the sum of the monthly baseline emissions. To be conservative, the final value (i.e. the sum of monthly values of baseline emissions) has been rounded down, hence the final value arrived is conservative (i.e. reported value is less than the manually calculated value). Please refer the spreadsheet for the calculations of baseline emission and emission reductions for the current monitoring period.

Also, as the monitoring period covers three months from CP1 period (i.e. Oct 2012, Nov 2012, Dec 2012) which do not have validity under UNFCCC due to the end of true up period as on 19 Nov 2015; hence values under CP1 has been period have been considered as Nil.

E.2. Calculation of project emissions or actual net GHG removals by sinks

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Since the project activity is a renewable energy project which generates electricity using wind power and hence does not result in project emissions.

E.3. Calculation of leakage

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No leakage is considered from the project activity as per approved methodology AMS ID.

E.4. Summary of calculation of emission reductions or net GHG removals by sinks

Item	Baseline emissions or baseline net GHG removals by sinks (t CO ₂ e)	Project emissions or actual net GHG removals by sinks (t CO ₂ e)	Leakage (t CO ₂ e)	GHG emission reductions or net GHG removals by sinks (t CO ₂ e) achieved in the monitoring period		
				Up to 31/12/2012	From 01/01/2013	Total amount
Total	48,907	0	0	0	48,907	48,907

E.5. Comparison of actual emission reductions or net GHG removals by sinks with estimates in registered PDD

Item	Values estimated in ex ante calculation of registered PDD	Actual values achieved during this monitoring period
Emission reductions or GHG removals by sinks (t CO ₂ e)	58,357	48,907

E.6. Remarks on difference from estimated value in registered PDD

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The CERs for the current monitoring period is 16.19% (downside) than the estimated value in the PDD for the comparable period. This is primarily due to seasonal nature of wind power projects where actual achieved PLF of the project was lower than the projection. Also, the current monitoring period includes three months from CP1 (i.e. Oct – Dec 2012); thus the days count under the MP includes these three months but for conservativeness the generation (hence the ER values) for this CP1 period has not been considered. This has also led to difference in actual and estimated values in CERs.

However, as shown in the ER estimation sheet, the PLF of project activity for the current monitoring period (i.e. 1 Oct 2012 to 30 Jun 2017) comes out to be 19.44%. The PLF projection as per the revised approved PDD was 23.18%.

Appendix 1. Contact information of project participants and responsible persons/entities

Project participant and/or responsible person/ entity	<input checked="" type="checkbox"/> Project participant <input checked="" type="checkbox"/> Person/entity responsible for completing the CDM-MR-FORM
Organization name	Vish Wind Infrastrukture LLP
Street/P.O. Box	A-9, Veera Industrial Estate, Veera Desai Road, Andheri (W)
Building	Wind World Tower
City	Mumbai
State/region	Maharashtra
Postcode	400 053
Country	India
Telephone	+91-22 - 6692 4848
Fax	+91-22 – 67040473
E-mail	yogeshh.mehra@windworldindia.com
Website	
Contact person	
Title	Designated Partner
Salutation	Mr.
Last name	Mehra
Middle name	
First name	Yogeshh
Department	Corporate
Mobile	
Direct fax	+91-22-6692 4848
Direct tel.	+91-22-67040473
Personal e-mail	yogeshh.mehra@windworldindia.com

Appendix 2. Baseline Information

The Operating Margin data for the most recent three years and the Build Margin data for the Southern Grid as published in the "Baseline Carbon dioxide Emission Database"⁴, Version 5.0, published by Central Electricity Authority (CEA), Government of India have been used for the estimation of the Baseline Emission.

⁴http://www.cea.nic.in/reports/planning/cdm_co2/cdm_co2.htm

Appendix 3. MONITORING INFORMATION

Detailed metering information has been provided in the section C.

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Document information

<i>Version</i>	<i>Date</i>	<i>Description</i>
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 (EB70, 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	28 May 2010	EB 54, Annex 34. Initial adoption.
Decision Class: Regulatory Document Type: Form Business Function: Issuance Keywords: monitoring report		