



**Monitoring report form  
(Version 05.1)**

MONITORING REPORT		
<b>Title of the project activity</b>	Wind Energy Project in Dewas, Madhya Pradesh (India)	
<b>UNFCCC reference number of the project activity</b>	5863	
<b>Version number of the monitoring report</b>	1	
<b>Completion date of the monitoring report</b>	30-July-2015	
<b>Monitoring period number and duration of this monitoring period</b>	01/12/2013-24/06/2015 (including both days) 1 <sup>st</sup> Monitoring Period	
<b>Project participant(s)</b>	1. Cepco Industries Private Limited 2. Wind World (India) Power Development Pvt. Limited	
<b>Host Party</b>	India	
<b>Sectoral scope(s)</b>	Sectoral Scope 1 - Energy industries (renewable/ non-renewable sources).	
<b>Selected methodology(ies)</b>	Grid connected renewable electricity generation, AMS I D, Version 17, EB 61	
<b>Selected standardized baseline(s)</b>	Not Applicable	
<b>Estimated amount of GHG emission reductions or net GHG removals by sinks for this monitoring period in the registered PDD</b>	36,125	
<b>Total amount of GHG emission reductions or net GHG removals by sinks achieved in this monitoring period</b>	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	33,449

## SECTION A. Description of project activity

### A.1. Purpose and general description of project activity

>>

- (a) *Purpose of the project activity and the measures taken for GHG emission reductions or net anthropogenic GHG removals by sinks;*

The purpose of the project activity is to utilize renewable wind energy for generation of electricity. The project activity replaces anthropogenic emissions of greenhouse gases (GHG's) into the atmosphere, which is 33,449 tCO<sub>2</sub>e for this monitoring period, by displacing the equivalent amount of electricity generation through the operation of existing fuel mix in the grid comprising mainly fossil fuel based power plants and future capacity expansions connected to the grid. In the absence of the project activity the equivalent amount of electricity would have been generated from the connected/ new power plants in the NEWNE grid, which are/ will be predominantly based on fossil fuels. Whereas the electricity generation from operation of Wind Energy Convertors (WEC's) is emission free.

- (b) *Brief description of the installed technology and equipment;*

The project activity involves supply, erection, commissioning and operation of 18 machines of rated capacity 800 KW each. The machines are Wind World E-53 make. Wind World (India) Ltd (WWIL) is the turbine supplier and is the operations and maintenance contractor.

- (c) *Relevant dates for the project activity (e.g. construction, commissioning, continued operation periods, etc.);*

The WECs under the project activity were commissioned between 01/07/2011 and 18/08/2011. The expected operational lifetime of the project is for 20 years. The project activity was registered as CDM project on 05/10/2012. The first monitoring period is from 01/12/2013 to 24/06/2015.

- (d) *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 (01/12/2013 to 24/06/2015) is 33,449 tCO<sub>2</sub>.

### A.2. Location of project activity

>>

- (a) *Host Party(ies);*

India

- (b) *Region/State/Province, etc.;*

Northern Region/Madhya Pradesh State

- (c) *City/Town/Community, etc.;*

The Project is spread across Ratedi Hills of Dewas District of Madhya Pradesh state in India.

- (d) *Physical/ Geographical location.*

The Project is located in Ratedi Hills in the Indian State of Madhya Pradesh. The nearest airport is Indore which is 40 kms from site.

Sr. no.	Capacity (MW)	District	State	Loc. No.	Latitude (North)			Longitude (East)		
					Deg.	Minutes	Seconds	Deg.	Minutes	Seconds
1	0.8	Dewas	Madhya Pradesh	95	22	48	18.2	76	14	59.5
2	0.8			96	22	48	20.7	76	15	16.4
3	0.8			97	22	48	24.7	76	14	59.6
4	0.8			98	22	48	31.6	76	14	58.6
5	0.8			99	22	48	37.7	76	15	1.2
6	0.8			100	22	48	44.2	76	15	2.7
7	0.8			101	22	48	50.8	76	15	1.3
8	0.8			102	22	48	57.1	76	15	0.0
9	0.8			103	22	49	3.2	76	15	1.1
10	0.8			104	22	49	10.6	76	13	34.0
11	0.8			105	22	49	16.7	76	15	1.9
12	0.8			106	22	49	19.8	76	15	20.5
13	0.8			107	22	49	26.3	76	15	30.0
14	0.8			108	22	49	31.6	76	15	38.1
15	0.8			109	22	49	37.0	76	15	48.5
16	0.8			110	22	49	44.3	76	15	55.7
17	0.8			111	22	49	52.1	76	15	58.2
18	0.8			112	22	50	0.1	76	15	55.6

### 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)	1. Cepco Industries Private Limited 2. Wind World (India) Power Development Pvt. Limited – Private Entity	No

### A.4. Reference of applied methodology and standardized baseline

>>

Sectoral Scope I, Energy Industries (renewable/non-renewable sources).

Project Type: I, Renewable energy projects

Project Category: D, Grid connected renewable electricity generation

Version: 17, EB 61

AMS I D, Version 17, draws upon the following tools which have been used in the PDD:

- Tool to calculate the emission factor for an electricity system – Version 02.2.1, EB 63, Annex 19
- Tool for the demonstration and assessment of additionality – Version 05.2.1, EB39, Annex 10

Further information with regards to the methodology and tools can be obtained at

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

<http://cdm.unfccc.int/Reference/tools/index.html>

### A.5. Crediting period of project activity

>>

Fixed (10 years)

01 Dec 13 - 30 Nov 23

**A.6. Contact information of responsible persons/entities**

&gt;&gt;

Mr. Yogesh Mehra  
 Director  
 Wind World (India) Power Development Private Limited  
 A-9, Wind World Tower, Veera Industril Estate,  
 Veera Desai Road, Andheri West, Mumbai - 400053  
 Tel : +91-22-66924848  
 Fax: +91-22-66921175  
[yogesh.mehra@windworldindia.com](mailto:yogesh.mehra@windworldindia.com)

Mr. Rohit Aggarwal  
 Director  
 Cepco Industries Private Limited  
 8, Balaji Estate, Guru Ravi Dass Marg, Kalka Ji,  
 New Delhi – 110019  
 Tel : +91-260-2220624, 2220628  
 Fax : +91-264-69371  
[cepco@vsnl.com](mailto:cepco@vsnl.com)

Wind World (India) Power Development Private Limited & Cepco Industries Private Limited are the project participants & the details have been given in Appendix 1.

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

&gt;&gt;

The starting date of operation of the project activity is 01/07/2011.

The commissioning date for all the WECs included in the project activity is given in the table below:

Sr. No.	Unique Identification Number	Commissioning Date
1	95	01/07/2011
2	96	01/07/2011
3	97	01/07/2011
4	98	01/07/2011
5	99	23/07/2011
6	100	23/07/2011
7	101	23/07/2011
8	102	23/07/2011
9	103	23/07/2011
10	104	23/07/2011
11	105	23/07/2011
12	106	23/07/2011
13	107	23/07/2011
14	108	18/08/2011
15	109	18/08/2011
16	110	18/08/2011
17	111	18/08/2011
18	112	18/08/2011

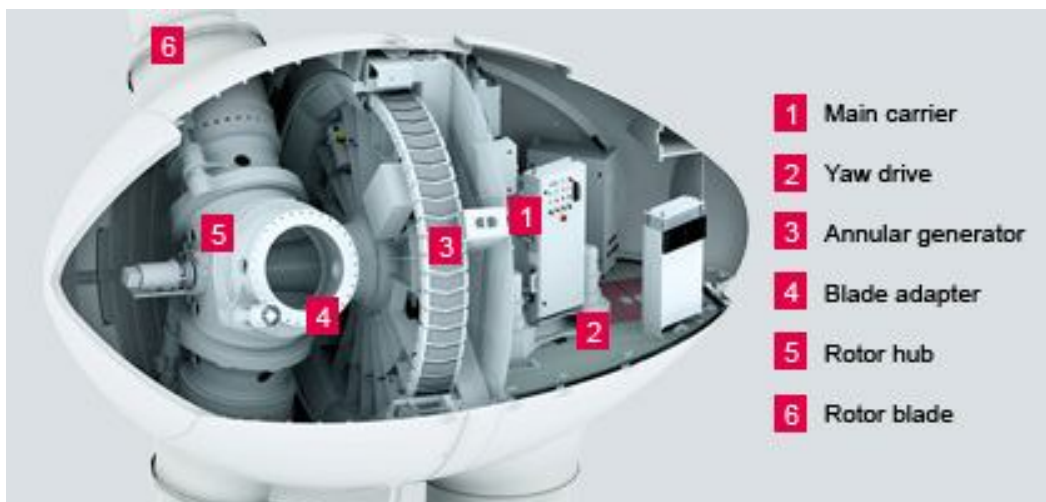
Wind World operation and maintenance activities are ISO 9001:2008 certified and all the events are recorded at the project site. Referring to the data available, it can be inferred that there has not been any major event for any machines that are included in the project activity. As a part of regular maintenance, the machines are stopped for mechanical and electrical maintenance.

During the current monitoring period, there has not been any event that may impact the applicability of the methodology.

The project activity involves 18-wind energy converters (WEC's) of Wind World make (800 kW, E-53) with internal electrical lines connecting the project activity with local 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  $\pm$  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	E – 53
Rated Power	800 kW
Rated 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	Gearless
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

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**

&gt;&gt;

Not Applicable

**B.2.2. Corrections**

&gt;&gt;

Not Applicable

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

&gt;&gt;

01 Dec 13 - 30 Nov 23 (Fixed)

Changed from: 02 Dec 12 - 01 Dec 22

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

&gt;&gt;

Not Applicable

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

&gt;&gt;

Not Applicable

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

&gt;&gt;

Not Applicable

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

&gt;&gt;

Not Applicable

**SECTION C. Description of monitoring system**

&gt;&gt;

The applicable simplified baseline and monitoring methodology for selected small scale CDM project activities AMS I.D. version 17 requires monitoring of the following parameters:

- Net 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

Since the baseline methodology is based on ex ante determination of the baseline, the monitoring of operating margin emission factor and build margin emission factor is not required. Further, wind based electricity generation is not associated with any kind of leakages. Hence, the sole parameter for monitoring is the electricity generated by the project and supplied to the grid.

The reading will be taken by the representatives of Wind World and the State utility at the meter(s) for the project activity connecting 18 turbines and the turbines from other wind farm developers at the project site. These meters are located at Ratedi Hills site substation. These reading become the basis of JMR (Joint Meter reading) report and are signed by the representatives of Wind World and State Utility. The net electricity export and import by project activity and other wind farms will be metered at this metering point.

The net electricity supplied by individual wind turbines is determined by allocating proportion of the total electricity recorded at the main meter at Ratedi Hills Substation. This allocation procedure complies with the power purchase agreement signed between CEPCO Industries Pvt. Ltd. and MP Power Trading Co. Ltd. The individual turbine electricity generation is recorded by the LCS meter (controller) at the individual wind turbine. The procedure for allocation is as follows:

$E_{JMR, Export}$  = Electricity exported by project activity and the turbines from other wind farm developers, as recorded by the main meter at the substation. Main and check meters are under purview of state utility.

$E_{JMR, Import}$  = Electricity imported by project activity and the turbines from other wind farm developers, as recorded by the main meter at the substation. Main and check meters are under purview of state utility

$E_{Controller, Export}$  = Electricity exported by a Wind Energy Converter (WEC), as measured at the controller

$\Sigma E_{Controller, Export}$  = Electricity exported by all the WECs (by project activity and the turbines from other wind farm developers) connected to the main meter at the substation, measured at the controller of each WEC. Controller assigned to each WEC of project activity only is under purview of PP.

$\Sigma E_{project, Controller, Export}$  = Summation of electricity exported by WECs of project activity, as measured at the individual controller of each WEC. This Summation is carried out on WECs of project activity only.

$E_{WEC, Export}$  = Apportioned value of electricity exported by a WEC (for all individual project and nonproject WECs) to the grid, calculated

$E_{WEC, Import}$  = Apportioned value of electricity imported by a WEC (for all individual project and nonproject WECs) from the grid, calculated

$\Sigma_{Project} E_{WEC, Export}$  = Summation of apportioned value of electricity exported by WECs of project activity

$\Sigma_{Project} E_{WEC, Import}$  = Summation of apportioned value of electricity imported by WECs of project activity

Electricity exported by each WEC is apportioned on the basis of electricity exported recorded at the controller of each WEC and the electricity exported at the main meter and mentioned in the Breakup sheet

The export multiplication factor is calculated as follows-

Export Multiplication factor (Apportioning factor for Export)

$$= E_{JMR, Export} \div \Sigma E_{Controller, Export} \dots \dots \dots (1)$$

Thus the energy exported by a WEC to the grid is given by the equation-

$$E_{WEC, Export} = \text{Export Multiplication factor} * E_{Controller, Export} \dots \dots \dots (2)$$

As the controller meter doesn't record import, the apportioning of energy imported by each WEC is also done on the basis of electricity exported recorded at the controller of each WEC and the electricity imported at the main meter and mentioned in the Breakup sheet  
The import multiplication factor is calculated as follows-

Import Multiplication factor (Apportioning factor for Import)

$$= E_{JMR, Import} \div \Sigma E_{Controller, Export} \dots \dots \dots (3)$$

Thus the energy imported by a WEC to the grid is given by the equation-

$$E_{WEC, Import} = \text{Import Multiplication factor} * E_{Controller, Export} \dots \dots \dots (4)$$

The net electricity exported by the WECs of the project activity is given by the equation-

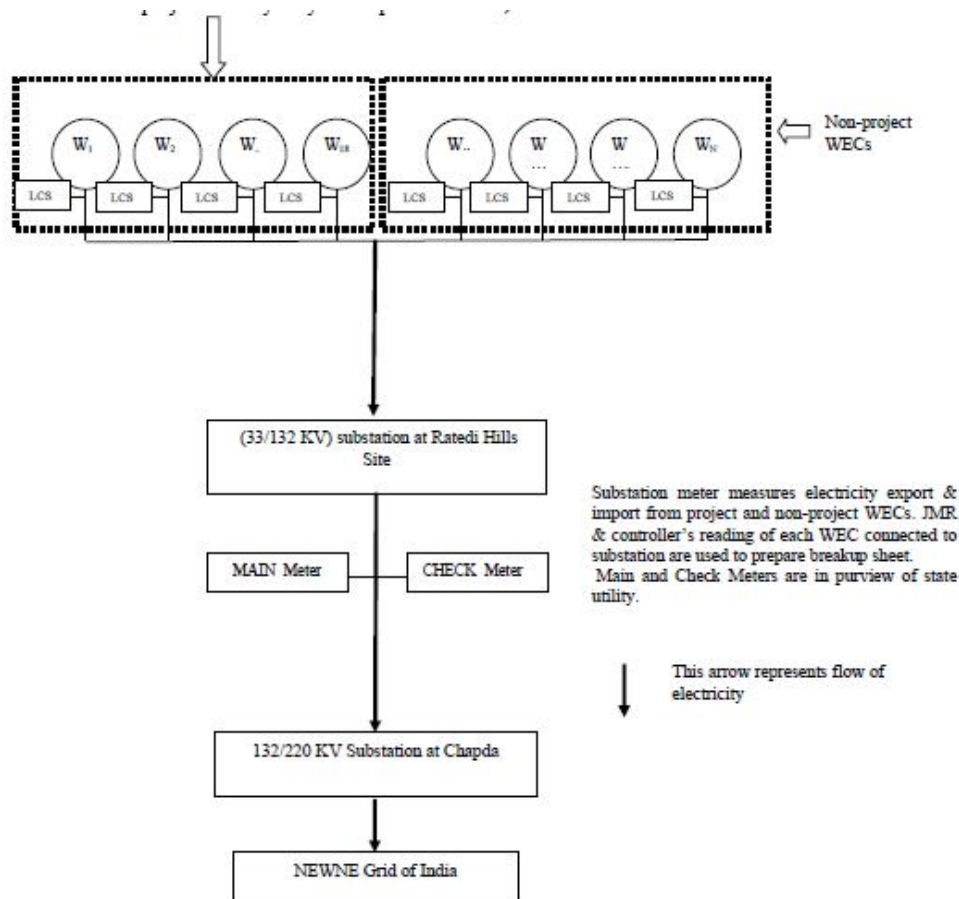
$$EG_y = \sum_{\text{Project}} E_{\text{WEC, Export}} - \sum_{\text{Project}} E_{\text{WEC, Import}} \dots \dots \dots (5)$$

The summation is done on the WECs belonging to the project activity.

**NOTE:** The net electricity supplied to the grid by the project activity is a calculated value which is arrived by using the value of electricity generation by project WECs, non-project WECs at individual controller and the cumulative value of electricity import and export of the entire number of WECs connected to substation (i.e. including project and non-project WECs) as measured at the pooling substation. Since the measurement of electricity generation of non-project WECs at controller is not feasible for PP, hence only parameters i.e.  $EG_y$  (sourced from breakup sheet) and  $\sum E_{\text{project, Controller, Export}}$  (Summation of electricity exported by WECs of project activity, as measured at the individual controller of each WEC); have been included as the monitoring parameters in section 3.2 of Monitoring Report.

The monitoring arrangement, metering system under project boundary has been illustrated in schematic diagram below:

Project WECs (There are 18 WEC under project activity. Each machine has individual LCS meter. LCS meters of project activity only are in purview of PP)



The daily records for parameters such as power generation, frequency and voltage of the individual machines are noted by the SCADA system. These records are maintained by Wind World India Limited (the O&M contractor) and the PP.

The operational and maintenance contract for the project is with Wind World. Wind World is an ISO 9001:2000 certified Quality Management system from Germanischer Lloyd. Wind World 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. Wind World 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.

#### Quality Control

Meter Type	Serial No.	Date of Calibration		
Main Meter	MPU-02768	16/05/2012	05/05/2014	22/05/2015

- **Metering:** Electricity supplied to the grid is metered continuously and recorded monthly at the metering point connecting 18 machines of the project activity along with other wind farm developers at Ratedi Hills site. The meter reading is taken in the presence of representatives of Wind World (O&M Contractor for the project activity) and MPPTCL.
- **Metering Equipment:** Metering system for the project activity consists of main meter, check meter and LCS meters. Main and check meters are two-way trivector meters capable of recording import and export of electricity. Main and check meters will be calibrated annually. LCS meters do not require calibration as the energy readings of electricity generated at the LCS meter is cross verified by the energy calculated by inverting system installed in the WECs. In case there is any mismatch in the energy values recorded by the LCS meter and the energy values calculated by the inverting system; the machine will stop working and generate the error report.
- **Meter Readings:** The electricity supplied to the grid is recorded monthly by taking a Joint Meter Reading (JMR) in the presence of Officials from the Utility and Wind World, O&M contractor, on behalf of project owner. The Joint meter reading contains the value of energy imported and exported. These certified readings are then used by the Wind World officials to prepare the breakup sheet for individual customers and then breakup sheet is approved by DISCOM authorities. The breakup sheet is used by project developer to raise 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 MPPTCL's testing Division. The MPPTCL will carry out the calibration, periodical testing, sealing and maintenance of meters. The MPPTCL 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

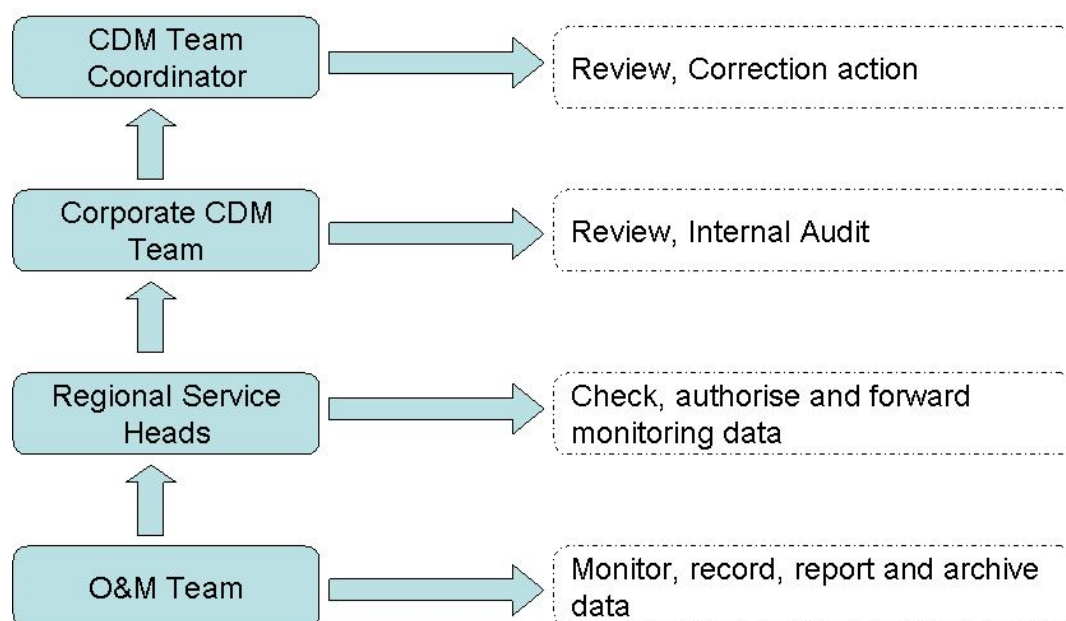
will be as per the main meter as usual. The check meter shall, however, be calibrated immediately.

- 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.

**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 Wind World'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 Wind World Training Academy provides need-based training to meet the training requirements of Wind World 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:



## SECTION D. Data and parameters

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

<b>Data/parameter:</b>	$EF_{OM,y}$
Unit	tCO <sub>2</sub> e/MWh
Description	Operating Margin Emission Factor of NEWNE Electricity Grid
Source of data	"CO <sub>2</sub> Baseline Database for Indian Power Sector", version 6 published by the Central Electricity Authority, Ministry of Power, Government of India. The "CO <sub>2</sub> Baseline Database for Indian Power Sector", version 6 is available at <a href="http://www.cea.nic.in">www.cea.nic.in</a>
Value(s) applied)	0.99410
Choice of data or measurement methods and procedures	Calculated by using 3 years vintage (2007-2008, 2008-2009 and 2009-10) data obtained from "CO <sub>2</sub> Baseline Database for Indian Power Sector" version 6.0, published by the Central Electricity Authority, Ministry of Power, Government of India, which is based on the tool "Tool to calculate the emission factors for an electricity system".
Purpose of data	Calculation of baseline emissions
Additional comments	The value is calculated on ex-ante basis and it will remain same throughout the crediting period.

<b>Data/parameter:</b>	$EF_{BM,y}$
Unit	tCO <sub>2</sub> e/MWh
Description	Build Margin Emission Factor of NEWNE Electricity Grid

Source of data	"CO <sub>2</sub> Baseline Database for Indian Power Sector" version 6 published by the Central Electricity Authority, Ministry of Power, Government of India. The "CO <sub>2</sub> Baseline Database for Indian Power Sector", version 6 is available at <a href="http://www.cea.nic.in">www.cea.nic.in</a>
Value(s) applied)	0.81231
Choice of data or measurement methods and procedures	2009-10 data obtained from "CO <sub>2</sub> Baseline Database for Indian Power Sector" version 6.0, published by the Central Electricity Authority, Ministry of Power, Government of India, which is based on the tool "Tool to calculate the emission factors for an electricity system".
Purpose of data	Calculation of baseline emissions
Additional comments	The value is calculated on ex-ante basis and it will remain same throughout the crediting period.

<b>Data/parameter:</b>	EF <sub>y</sub> or EF <sub>CM,y</sub>		
Unit	tCO <sub>2</sub> e/MWh		
Description	Combined Margin Emission Factor of NEWNE Electricity Grid		
Source of data	Combined Margin Emission Factor (EFCM,y) is calculated as the weighted average of Operating Margin Emission Factor (EFOM,y) and Build Margin Emission Factor (EFBM,y). The "CO <sub>2</sub> Baseline Database for Indian Power Sector" version 6 published by the Central Electricity Authority, Ministry of Power, Government of India. The "CO <sub>2</sub> Baseline Database for Indian Power Sector", version 6 is available at <a href="http://www.cea.nic.in">www.cea.nic.in</a>		
Value(s) applied)	In case of wind power projects default weights of 0.75 for EF <sub>OM</sub> and 0.25 for EF <sub>BM</sub> are applicable as per ACM0002. <table border="1" data-bbox="523 1144 1350 1189"> <tr> <td>Combined Margin Emission Factor (EF<sub>y</sub> or EF<sub>CM,y</sub>)</td> <td>0.94865</td> </tr> </table> Refer Appendix 2 for comprehensive calculation of Combined Margin Emission Factor.	Combined Margin Emission Factor (EF <sub>y</sub> or EF <sub>CM,y</sub> )	0.94865
Combined Margin Emission Factor (EF <sub>y</sub> or EF <sub>CM,y</sub> )	0.94865		
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: ACM0002, and Tool to Calculate the emission Factor for an Electricity System.		
Purpose of data	Calculation of baseline emissions		
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

<b>Data/parameter:</b>	EG <sub>y</sub>
Unit	MWh (Mega-watt hour)
Description	Net electricity supplied to the grid by the Project activity.
Measured/calculated/default	Calculated
Source of data	Electricity supplied to the grid as per the breakup sheet signed by DISCOM authorities and can also be verified with tariff invoices raised on State Utility. Further, to cross check; the net electricity supplied to the grid by the Project must be lesser than summation of electricity exported by WECs (Wind Energy Converter) of project activity, as measured at the individual controller (LCS) of each WEC.

Value(s) of monitored parameter	35259.5515
Monitoring equipment	All the meters are two way tri-vector meter. Please refer section 3.3 for meter details.
Measuring/reading/recording frequency:	The project activity is continuously monitored through hourly measurement and monthly recording.
Calculation method (if applicable):	Apportioning plan for calculating net electricity exported to the grid is given in section C.
QA/QC procedures:	Electricity supplied to the grid can be verified with tariff invoices raised on State Utility. Further, to cross check; the net electricity supplied to the grid by the Project must be lesser than summation of electricity exported by WECs (Wind Energy Converter) of project activity, as measured at the individual controller (LCS) of each WEC.
Purpose of data:	To Calculate Baseline Emissions
Additional comments:	The data will be archived both in electronic and hard paper format for crediting period + 2 years.

<b>Data/parameter:</b>	$\Sigma E_{\text{project, Controller, Export}}$
Unit	MWh (Mega-watt hour)
Description	Summation of electricity exported by WECs (Wind Energy Converter) of project activity, as measured at the individual controller (LCS) of each WEC. Every WEC has separate LCS. This Summation is carried out on WECs of project activity. The measured value of this parameter must always be more than net electricity supplied to the grid by the Project activity.
Measured/calculated/default	Measured
Source of data	This reading is monitored continuously by the online monitoring station at the project site.
Value(s) of monitored parameter	NA
Monitoring equipment	LCS Meter
Measuring/reading/recording frequency:	The LCS readings of each WEC is monitored and recorded continuously by the online monitoring station.
Calculation method (if applicable):	Not Applicable
QA/QC procedures:	Refer Section 3.3 for an illustration of the provisions for QA/QC procedures.
Purpose of data:	To Calculate Baseline Emissions
Additional comments:	The data will be archived for crediting period + 2 years.

<b>Data/parameter:</b>	$E_{\text{JMR, Export}}$
Unit	MWh (Mega-watt hour)
Description	Electricity exported by project activity and the turbines from other wind farm developers, as recorded by the main meter at the substation.
Measured/calculated/default	Measured
Source of data	The breakup sheet signed by state utility authorities
Value(s) of monitored parameter	NA
Monitoring equipment	All the meters are two way tri-vector meter. Please refer section C for meter details.
Measuring/reading/recording frequency:	The project activity is continuously monitored and monthly recording.

Calculation method (if applicable):	Not Applicable
QA/QC procedures:	Main and check meters are under purview of state utility. The original document endorsed by the representatives of O&M service provider and the State utility shall not be under purview of project participant. Refer Section C for an illustration of the provisions for QA/QC procedures.
Purpose of data:	To Calculate Baseline Emissions
Additional comments:	The data will be archived for crediting period + 2 years.

<b>Data/parameter:</b>	<b>E<sub>JMR, Import</sub></b>
Unit	MWh (Mega-watt hour)
Description	Electricity imported by project activity and the turbines from other wind farm developers, as recorded by the main meter at the substation.
Measured/calculated/default	Measured
Source of data	The breakup sheet signed by state utility authorities
Value(s) of monitored parameter	NA
Monitoring equipment	All the meters are two way tri-vector meter. Please refer section C for meter details.
Measuring/reading/recording frequency:	The project activity is continuously monitored and monthly recording.
Calculation method (if applicable):	Not Applicable
QA/QC procedures:	Main and check meters are under purview of state utility. The original document endorsed by the representatives of O&M service provider and the State utility shall not be under purview of project participant. Refer Section C for an illustration of the provisions for QA/QC procedures.
Purpose of data:	To Calculate Baseline Emissions
Additional comments:	The data will be archived for crediting period + 2 years.

### D.3. Implementation of sampling plan

&gt;&gt;

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

&gt;&gt;

Baseline emissions include only CO<sub>2</sub> 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:

$$BE_y = EG_y * EF_{CM,y} \dots \dots \dots (2)$$

Where:

BE<sub>y</sub> = Baseline emissions in year y (tCO<sub>2</sub>/yr)EG<sub>y</sub> = Net electricity supplied to the grid by the CDM project activity in year y (MWh/yr)

$EF_{CM,y}$  = Combined margin CO<sub>2</sub> emission factor for grid connected power generation in year y calculated using the latest version of the "Tool to calculate the emission factor for an electricity system", version 02.2.1, Annex 19, EB 63.(tCO<sub>2</sub>/MWh)

Emission reduction (ER) calculation for the period 01-Dec-2013 to 24-Jun-2015 (including first and last day):

$$\begin{aligned} BE_y &= 35259.5515 \text{ (MWh)} * 0.94865 \text{ (tCO}_2\text{/MWh)} \\ &= 33,449 \text{ tCO}_2 \text{ e} \end{aligned}$$

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

>>

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**

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

**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 <sub>2</sub> e)	Project emissions or actual net GHG removals by sinks (t CO <sub>2</sub> e)	Leakage (t CO <sub>2</sub> e)	GHG emission reductions or net GHG removals by sinks (t CO <sub>2</sub> e) achieved in the monitoring period		
				Up to 31/12/2012	From 01/01/2013	Total amount
<b>Total</b>	33,449	0	0	0	33,449	33,449

**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 <sub>2</sub> e)	36,125	33,449

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

&gt;&gt;

Proportionate number of ERs for a period of 565 days as per PDD comes out to be 36,125 tCO<sub>2</sub>e. However, actual number of ERs achieved in the present monitoring period is 33,449 tCO<sub>2</sub>e. This reflects a difference of 7.41% on the downside, which is due to the low PLF achieved by the project activity during the monitoring period.



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

<b>Project participant and/or responsible person/ entity</b>	<input checked="" type="checkbox"/> Project participant <input type="checkbox"/> Person/entity responsible for completing the CDM-MR-FORM
<b>Organization name</b>	Cepco Industries Private Limited
<b>Street/P.O. Box</b>	8, Balaji Estate, Guru Ravi Dass Marg, Kalka Ji,
<b>Building</b>	---
<b>City</b>	New Delhi
<b>State/region</b>	Delhi
<b>Postcode</b>	110019
<b>Country</b>	India
<b>Telephone</b>	+91-260-2220624, 2220628
<b>Fax</b>	+91-264-69371
<b>E-mail</b>	<a href="mailto:cepco@vsnl.com">cepco@vsnl.com</a>
<b>Website</b>	
<b>Contact person</b>	
<b>Title</b>	Director
<b>Salutation</b>	Mr.
<b>Last name</b>	Aggarwal
<b>Middle name</b>	
<b>First name</b>	Rohit
<b>Department</b>	---
<b>Mobile</b>	+91-9810514822
<b>Direct fax</b>	+91-264-69371
<b>Direct tel.</b>	+91-264-40702
<b>Personal e-mail</b>	<a href="mailto:cepco@vsnl.com">cepco@vsnl.com</a>

<b>Project participant and/or responsible person/ entity</b>	<input checked="" type="checkbox"/> Project participant <input type="checkbox"/> Person/entity responsible for completing the CDM-MR-FORM
<b>Organization name</b>	Wind World (India) Power Development Private Limited
<b>Street/P.O. Box</b>	A-9, Veera Industrial Estate, Veera Desai Road,
<b>Building</b>	Wind World Tower,
<b>City</b>	Andheri (W),
<b>State/region</b>	Mumbai
<b>Postcode</b>	400053
<b>Country</b>	India
<b>Telephone</b>	+91-22-66924848
<b>Fax</b>	+91-22-66921175
<b>E-mail</b>	<a href="mailto:yogesh.mehra@windworldindia.com">yogesh.mehra@windworldindia.com</a>
<b>Website</b>	
<b>Contact person</b>	
<b>Title</b>	Director
<b>Salutation</b>	Mr.
<b>Last name</b>	Mehra
<b>Middle name</b>	
<b>First name</b>	Yogesh
<b>Department</b>	Corporate
<b>Mobile</b>	+91-98200 40301
<b>Direct fax</b>	+91-22-66921175
<b>Direct tel.</b>	+91-22-66924848 extn. 7111
<b>Personal e-mail</b>	<a href="mailto:yogesh.mehra@windworldindia.com">yogesh.mehra@windworldindia.com</a>

## Appendix 2. BASELINE INFORMATION

The Operating Margin data for the most recent three years and the Build Margin data for the NEWNE Region Electricity Grid as published in the CEA database are as follows:

### Simple Operating Margin

	NEWNE Grid (tCO <sub>2</sub> e/MWh)
Simple Operating Margin - 2007-08	0.99990
Simple Operating Margin - 2008-09	1.00655
Simple Operating Margin - 2009-10	0.97774
<b>Generation Weighted Average Operating Margin of last three years (t CO<sub>2</sub>e/MWh)</b>	<b>0.99410</b>

### Build Margin

	NEWNE Grid (tCO <sub>2</sub> e/GWh)
<b>Build Margin- 2009-10</b>	<b>0.81231</b>

### Combined Margin Calculations

	Weights	NEWNE Grid (tCO <sub>2</sub> e/MWh)
Generation Weighted Average Operating Margin	0.75	<b>0.99410</b>
Build Margin	0.25	0.81231
<b>Combined Margin</b>		<b>0.94865</b>

Detailed information on calculation of Operating Margin Emission Factor and Build Margin Emission Factor is available at [www.cea.nic.in](http://www.cea.nic.in). In the CO<sub>2</sub> Baseline Database, Version 06.

- - - - -

**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"> <li>• Include provisions related to delayed submission of a monitoring plan;</li> <li>• Provisions related to the Host Party;</li> <li>• Remove reference to programme of activities;</li> <li>• Overall editorial improvement.</li> </ul>
04.0	25 June 2014	Revisions to: <ul style="list-style-type: none"> <li>• Include the Attachment: Instructions for filling out the monitoring report form (these instructions supersede the "Guideline: Completing the monitoring report form" (Version 04.0));</li> <li>• Include provisions related to standardized baselines;</li> <li>• Add contact information on a responsible person(s)/ entity(ies) for completing the CDM-MR-FORM in A.6 and Appendix 1;</li> <li>• Change the reference number from <i>F-CDM-MR</i> to <i>CDM-MR-FORM</i>;</li> <li>• Editorial improvement.</li> </ul>
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		