



**Monitoring report form**  
**(Version 04.0)**

*Complete this form in accordance with the Attachment "Instructions for filling out the monitoring report form" at the end of this form.*

**MONITORING REPORT**

<b>Title of the project activity</b>	Tadas wind farm in Karnataka
<b>Reference number of the project activity</b>	9083
<b>Version number of the monitoring report</b>	02.1
<b>Completion date of the monitoring report</b>	05/12/2015
<b>Registration date of the project activity</b>	24/12/2012 (Date of registration action: 03/05/2013)
<b>Monitoring period number and duration of this monitoring period</b>	Monitoring period Number: 01 Duration: 30/12/2012 to 30/11/2014
<b>Project participant(s)</b>	Tadas Wind Energy Private Limited ( <i>previously known as Tadas Wind Energy Limited</i> )
<b>Host Party(ies)</b>	India (host)
<b>Sectoral scope and selected methodology(ies), and where applicable, applied standardized baseline(s)</b>	<u>Sectoral Scope</u> : 01 Energy Industries (renewable/non – renewable sources) <u>Applied Methodology</u> : ACM0002, v13.0.0 (Consolidated baseline methodology for grid-connected electricity generation from renewable sources)
<b>Estimated amount of GHG emission reductions or net anthropogenic GHG removals by sinks for this monitoring period in the registered PDD</b>	353,775
<b>Actual GHG emission reductions or net anthropogenic GHG removals by sinks achieved in this monitoring period</b>	279,829
<b>Actual GHG emission reductions or net anthropogenic GHG removals by sinks achieved during the period up to 31 December 2012(if applicable)</b>	0
<b>Actual GHG emission reductions or net anthropogenic GHG removals by sinks achieved during the period from 1 January 2013 onwards (if applicable).</b>	279,829

**SECTION A. Description of project activity****A.1. Purpose and general description of project activity**

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**Purpose of the project activity:** The purpose of the project activity is installation and operation of wind power project of aggregate capacity of 100MW and supply clean and renewable power to Southern regional (SR) grid of India.

**Measures taken for GHG emission reduction:** The CDM project activity is the installation and operation of 125 Wind Electric Generators (WEGs) of 800kW capacities each in Haveri and Dharwad district of Karnataka. The CDM project activity harnesses the available wind power in order to generate electricity and does not consume any fossil fuel, thereby reducing GHG emissions, which would have been otherwise generated by operation of fossil fuel based power projects connected to Southern regional grid.

**Brief description of installed technology and equipment:** The CDM project activity installed 125 WEGs of Wind World (India) Limited (*previously known as Enercon (India) Limited*) make and generates 3-phase power at 400V. The WEGs are based on gearless technology, which eliminates the mechanical losses. It also combines the variable speed with variable pitch and hence, increases the conversion efficiency. The technical details of the WEG is mentioned below:

PARAMETER	DESCRIPTION
Turbine Model	WW – 53 ( <i>previously E – 53</i> )
Rated Power	800 kW
Rotor Diameter	52.9m
Hub Height	75m
Turbine Type	Direct driven, horizontal axis wind turbine; variable rotor speed
Power Regulation	Independent pitch system for each blade
Cut – in speed	3 m/s
Rated wind speed	12 m/s
Cut – out wind speed	28 – 34 m/s (with Enercon Storm Control)
Extreme wind speed	59.5 m/s
Rated rotational speed	29 rpm
Operating range rotational speed	12 – 29 rpm
Orientation	Upwind
Number of Blades	03
Blade Material	Fiber glass, Epoxy reinforced
Gear box type	Gear less
Generator type	Synchronous
Braking	Aerodynamic
Output Voltage	400V
Yaw system	Active yawing with 4 electric yaw drivers and brake motor
Turbine Lifetime	20 years

**Relevant dates of the project activity:** The purchase order for the project activity was placed by PP dated 27/07/2011. The CDM project activity had been commissioned and connected to Southern regional grid in the month of May 2012, June 2012, August 2012 and September 2012. The details of the commissioning has been tabulated under:

LOCATION NO.	VILLAGE	DISTRICT	COMMISSIONING DATE
77	Hirebendigeri	Haveri	03/05/2012
19A	Hulsogi	Haveri	
302A	Hirebendigeri	Haveri	
70B	Hirebendigeri	Haveri	
70N	Hirebendigeri	Haveri	
72A	Hirebendigeri	Haveri	
74B	Hirebendigeri	Haveri	
75A	Hirebendigeri	Haveri	
75B	Hirebendigeri	Haveri	
76A	Hirebendigeri	Haveri	

78N	Hirebendigeri	Haveri	
79B	Hirebendigeri	Haveri	
80N	Hirebendigeri	Haveri	
82N	Hirebendigeri	Haveri	
44	Tirtha	Dharwad	04/05/2012
511	Hirebendigeri	Haveri	
310A	Jakkankatti, Mantrodi, Kengapura	Haveri	
311B	Jakkankatti, Mantrodi, Kengapura	Haveri	
319A	Jakkankatti, Mantrodi, Kengapura	Haveri	
31A	NM Tadas	Haveri	
321A	Jakkankatti, Mantrodi, Kengapura	Haveri	
322A	Jakkankatti, Mantrodi, Kengapura	Haveri	
323B	Jakkankatti, Mantrodi, Kengapura	Haveri	
32A	NM Tadas	Haveri	
330A	Jakkankatti, Mantrodi, Kengapura	Haveri	
331B	Jakkankatti, Mantrodi, Kengapura	Haveri	
332A	Jakkankatti, Mantrodi, Kengapura	Haveri	
335A	Jakkankatti, Mantrodi, Kengapura	Haveri	
33A	NM Tadas	Haveri	
340C	Jakkankatti, Mantrodi, Kengapura	Haveri	
341D	Jakkankatti, Mantrodi, Kengapura	Haveri	
342C	Jakkankatti, Mantrodi, Kengapura	Haveri	
343G	Jakkankatti, Mantrodi, Kengapura	Haveri	
344A	Jakkankatti, Mantrodi, Kengapura	Haveri	
346A	Jakkankatti, Mantrodi, Kengapura	Haveri	
349A	Jakkankatti, Mantrodi, Kengapura	Haveri	
34C	NM Tadas	Haveri	
350B	Jakkankatti, Mantrodi, Kengapura	Haveri	
351A	Jakkankatti, Mantrodi, Kengapura	Haveri	
37A	NM Tadas	Haveri	
42 B	Tirtha	Dharwad	
43 B	Tirtha	Dharwad	
45C	Tirtha	Dharwad	
46 N	Tirtha	Dharwad	
478B	Jakkankatti, Mantrodi, Kengapura	Haveri	
479A	Jakkankatti, Mantrodi, Kengapura	Haveri	
47A	Tirtha	Dharwad	
480A	Jakkankatti, Mantrodi, Kengapura	Haveri	
481B	Jakkankatti, Mantrodi, Kengapura	Haveri	
483B	Jakkankatti, Mantrodi, Kengapura	Haveri	
55A	Kunkur	Dharwad	
595A	Jakkankatti, Mantrodi, Kengapura	Haveri	
62C	Hanumanahalli, Tirtha, Mattigatti	Dharwad	
493	Hirebendigeri	Haveri	25/05/2012
697	Jakkankatti, Mantrodi, Kengapura	Haveri	
778	Hirenankatti/Vanahalli	Haveri	
798	Jakkankatti, Mantrodi, Kengapura	Haveri	
116N	Hanumanahalli, Tirtha, Mattigatti	Dharwad	
117A	Hanumanahalli, Tirtha, Mattigatti	Dharwad	
132A	Belvelkoppa, Surapgatti	Haveri	
133A	Belvelkoppa, Surapgatti	Haveri	
13A	Hulsogi	Haveri	
14A	Hulsogi	Haveri	
15B	Hulsogi	Haveri	
16 A	Hulsogi	Haveri	
203A	Hirenankatti/Vanahalli	Haveri	
212A	Hirenankatti/Vanahalli	Haveri	

215A	Hirenankatti/Vanahalli	Haveri	
23A	Hulsogi	Haveri	
306D	Hirebendigeri	Haveri	
308C	NM Tadas	Haveri	
312B	Jakkankatti, Mantrodi, Kengapura	Haveri	
314B	Jakkankatti, Mantrodi, Kengapura	Haveri	
334A	Jakkankatti, Mantrodi, Kengapura	Haveri	
336A	Jakkankatti, Mantrodi, Kengapura	Haveri	
38A	NM Tadas	Haveri	
467B	Kunkur	Dharwad	
477C	Hirebendigeri	Haveri	
482D	Jakkankatti, Mantrodi, Kengapura	Haveri	
489A	Hanumanahalli, Tirtha, Mattigatti	Dharwad	
490A	Hanumanahalli, Tirtha, Mattigatti	Dharwad	
492C	Hanumanahalli, Tirtha, Mattigatti	Dharwad	
520A	Jakkankatti, Mantrodi, Kengapura	Haveri	
54 A	Kunkur	Dharwad	
81B	Hirebendigeri	Haveri	
96A	Hirebendigeri	Haveri	
693	Kunkur	Dharwad	
831	Jakkankatti, Mantrodi, Kengapura	Haveri	22/06/2012
114C	Hanumanahalli, Tirtha, Mattigatti	Dharwad	
115C	Hanumanahalli, Tirtha, Mattigatti	Dharwad	
200B	Hirenankatti/Vanahalli	Haveri	
307F	Kunkur	Dharwad	
317D	Jakkankatti, Mantrodi, Kengapura	Haveri	
318B	Jakkankatti, Mantrodi, Kengapura	Haveri	
329D	Jakkankatti, Mantrodi, Kengapura	Haveri	
333E	Jakkankatti, Mantrodi, Kengapura	Haveri	
337A	Jakkankatti, Mantrodi, Kengapura	Haveri	
468C	Kunkur	Dharwad	
491B	Hanumanahalli, Tirtha, Mattigatti	Dharwad	
61B	Hanumanahalli, Tirtha, Mattigatti	Dharwad	
64B	Hanumanahalli, Tirtha, Mattigatti	Dharwad	
715	Kunkur	Dharwad	06/08/2012
130B	Belvelkoppa, Surapgatti	Haveri	
65C	Hanumanahalli, Tirtha, Mattigatti	Dharwad	
524	Hanumanahalli, Tirtha, Mattigatti	Dharwad	27/09/2012
836	Kunkur	Dharwad	
160A	Hanumanahalli, Tirtha, Mattigatti	Dharwad	
160D	Hanumanahalli, Tirtha, Mattigatti	Dharwad	
517D	Hirebendigeri	Haveri	
690A	Kunkur	Dharwad	29/09/2012
928	Hanumanahalli, Tirtha, Mattigatti	Dharwad	
217A	Hirenankatti/Vanahalli	Haveri	
354E	Kyalkonda	Haveri	
355B	Kyalkonda	Haveri	
357C	Kyalkonda	Haveri	
358A	Kyalkonda	Haveri	
359B	Kyalkonda	Haveri	
361D	Kyalkonda	Haveri	
501B	Hulsogi	Haveri	
548A	Hanumanahalli, Tirtha, Mattigatti	Dharwad	
557B	Hanumanahalli, Tirtha, Mattigatti	Dharwad	
63B	Hanumanahalli, Tirtha, Mattigatti	Dharwad	
66 A	Hanumanahalli, Tirtha, Mattigatti	Dharwad	
716C	Kunkur	Dharwad	

841B	Kunkur	Dharwad	
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**Total GHG reductions achieved during this monitoring period:** This is the first periodic monitoring and verification of the CDM project activity. The total emission reduction achieved during the monitoring period [30/12/2012 to 30/11/2014 (both days included)] has been calculated to be 279,829 tCO<sub>2</sub>e.

## A.2. Location of project activity

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Host Party : India  
 Region : Southern India  
 District : Haveri; Dharwad  
 State : Karnataka

## 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 if the Party involved wishes to be considered as project participant (Yes/No)
India (host)	<b>Private Entity:</b> Tadas Wind Energy Private Limited (previously known as Tadas Wind Energy Limited)	No

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

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**Methodology:** ACM0002, v13.0.0 (EB67 Annex13)

**Name of Methodology:** Consolidated baseline methodology for grid-connected electricity generation from renewable sources

**UNFCCC CDM Website Reference:**

<https://cdm.unfccc.int/methodologies/DB/M0CSBFOF8RQG5I84XU5Y4WX0I5LHS1>

**Methodology Tool:** Tool for the demonstration and assessment of Additionality, v06.1.0 (EB69 Annex20)

**UNFCCC CDM Website Reference:**

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

**Methodology Tool:** Tool to calculate emission factor for an electricity system, v02.2.1 (EB63 Annex19)

**UNFCCC CDM Website Reference:**

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

## A.5. Crediting period of project activity

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The crediting period of the registered CDM project activity has been detailed below:

**Type of Crediting Period:** Fixed

**Start Date of Crediting Period:** 30/12/2012

**Length of Crediting Period:** 10 Years

This is the first periodic verification of the monitoring period starting from 30/12/2012 – 30/11/2014 (both days included).

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

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The details of the person/ entity responsible for completing the CDM-MR-FORM has been presented below:

Subrata Chakrabarty

IL&FS Environmental Infrastructure & Services Limited (CDM Consultant to PP)

4th Floor, Dr. Gopal Das Bhawan, 28 Barakhamba Road  
Connaught Place, New Delhi 110 001 (India)

The above mentioned contact person/ entity is not project participant.

## **SECTION B. Implementation of project activity**

### **B.1. Description of implemented registered project activity**

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The first WEG under the project activity has been commissioned on 03/05/2012 and the last WEG has been commissioned on 29/09/2012. During the current monitoring period, the project activity has been operated and monitored in-line with the provisions of the applied methodology, ACM0002, v13.0.0 and registered CDM-PDD.

The project activity involves installation of 125 WEGs of Wind World (I) Ltd. (*previously Enercon (I) Ltd*) make (E – 53, 800kW) distributed among different villages in Haveri and Dharwad district of Karnataka, India. The WEGs generates 3 – phase power at 400V, stepped – up to 33kV. The average lifetime of the project activity is 20 years. The technical details of the equipment has already been mentioned in section A.1 of CDM-MR-FORM.

The commissioning schedule of all the WEGs included in the project activity has been detailed in section A.1 of CDM-MR-FORM and in <Introduction> workbook of ER spreadsheet.

There are no changes that happened in project activity which may impact the applicability of the methodology. Wind World (I) Ltd (*previously Enercon (I) Ltd*) operation and maintenance activities are ISO certified and all the events are recorded in the log book available at the project site. Referring to the data available it can be inferred that there have not been any major events for any of the machines that are included in the project activity.

### **B.2. Post registration changes**

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

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Project Participant (PP) would like to confirm that the project activity has not temporarily deviated from either of the registered monitoring plan and applied methodology for the current monitoring period.

#### **B.2.2. Corrections**

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The location numbers and geographical coordinates of 12 WEGs have not been correctly stated in the registered F-CDM-PDD, v02 dated 23/11/2012. Consequently, the location numbers and geo-coordinates have changed from the previous validated values, which was based on the information provided by the service provider at the time of validation. The geographical coordinates of 02 WEGs were not correctly mentioned in the registered F-CDM-PDD, v02 dated 23/11/2012. These corrections are now incorporated in Appendix 8 of revised CDM-PDD-FORM, v03.0, in-line with the requirement of §1 of Appendix 1 of CDM Project Standard, v07.0. In addition, location numbers of 03 WEGs were not correctly stated in the registered F-CDM-PDD, v02 dated 23/11/2012. Same has also been corrected in Appendix 8 of revised CDM-PDD-FORM, v03.0.

#### **B.2.3. Permanent changes from registered monitoring plan, applied methodology or applied standardized baseline**

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PP would like to confirm that the no permanent changes from either of the registered monitoring plan and applied methodology has been approved during this monitoring period or submitted with the present monitoring report.

#### **B.2.4. Changes to project design of registered project activity**

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PP would like to confirm that the no changes to the design of the project activity has been approved during this monitoring period or submitted with the present monitoring report.

#### B.2.5. Changes to start date of crediting period

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PP would like to confirm that no changes to the start date of the crediting period has been approved during this monitoring period or submitted with the present monitoring report.

#### B.2.6. Types of changes specific to afforestation or reforestation project activity

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Since, the project does not fall under the category of afforestation or reforestation; therefore, the section is not applied to the project activity.

### SECTION C. Description of monitoring system

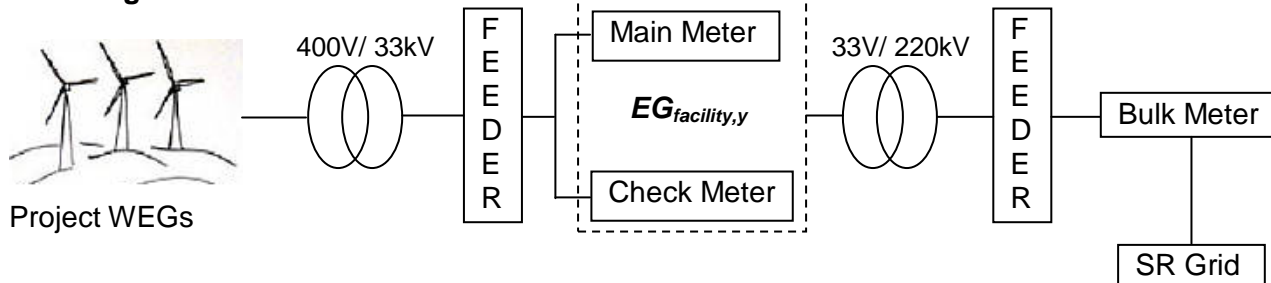
>>

PP applied approved monitoring methodology ACM0002, v13.0.0 in order to monitor the emission reductions from the registered CDM project activity.

**Monitoring system of the project activity:** As per the applied monitoring methodology, PP is required to monitor the electricity supplied to the grid and grid emission factor. However, the methodology is based on the ex-ante determination of the baseline and therefore, monitoring of grid emission factor is not required. Therefore, PP monitored the electricity supplied to the grid by the project activity.

The electricity is generated at 400V and is stepped-up to 33kV for transmission of electricity. The meters (main and check) are installed at 33kV line. Joint Meter Reading is taken at these meters by the representative of State Electricity Supply Company Limited and PP. The voltage is further stepped-up to 220kV and electricity is supplied to the Southern regional grid.

#### Line Diagram



**Data Collection Procedure:** The only data to be monitored as per the monitoring methodology is electricity supplied to the grid by the project activity. Primarily, the data is collected by Wind World (India) Limited (*previously known as Enercon (India) Ltd.*), who are the supplier of WEGs. PP entered into comprehensive O&M contract with Wind World (India) Limited and therefore, they are responsible for primary data collection.

#### Metering System:

- There is LCS reading panel at WEG end and one set of main and check meter at 33kV line;
- A Joint Meter Reading shall be taken by the representatives of respective DISCOM [Hubli Electricity Supply Company Limited (HESCOM)] and Wind Word (I) Ltd. at the high voltage side of the step up transformer at a particular date;
- In case the main metering system is not in service, then the check metering system shall be used until the main system is back to service;
- Joint Meter Reading is taken by the representatives of DISCOM [Hubli Electricity Supply Company Limited (HESCOM)] and Wind World (India) Ltd. (representative of PP) at 33kV line on a particular date;
- Main meter and check meter shall be sealed in presence of representative of DISCOM [Hubli Electricity Supply Company Limited (HESCOM)], Wind World (India) Ltd. and PP;

- When any of these metering systems is found to be outside acceptable limits of accuracy or otherwise not functioning properly, it shall be repaired, recalibrated or replaced;
- Monthly energy bill/statement shall be raised on the basis of JMR/ credit note at the end of each calendar month. Payment of the sale of electricity is based on JMR/ credit note. The billing and payment record shall be maintained by PP;
- Calibration and Testing of Meters will be done as per State Board norms or annually.

**Calculation of monthly generation:** Monthly invoice shall be calculated based on the formula provided below:

$$DE = X_i - (X_i \times Z\%)$$

Where:

DE Delivered energy pertaining to the project activity

$X_i$  Reading of energy meter installed at the project's receiving stations

Z Transmission loss (%) incurred in line between project and receiving stations

i i varies from 1 to n which is the number of receiving stations of project activity

$$Z = \frac{(X_1 + X_2 + X_3 + \dots + X_n) - Y}{(X_1 + X_2 + X_3 + \dots + X_n)} \times 100$$

Where

Y Reading of the bulk energy meter installed on the 200 KV side of receiving station  
 $X_1, X_2, X_3, \dots, X_n$  readings of the energy meters installed at the various individual wind mill power projects being developed/proposed to be set up in the area and connected to the Receiving Station

**Apportionment Procedure:** The electricity exported and imported from the grid is recorded on a monthly basis, jointly in the presence of representatives of O&M Contractor [Wind World (I) Ltd.] and distribution licensee personnel. Following the joint meter readings, the O&M Contractors provide the readings of the WEG controller to Distribution licensee. Based on the monthly export and import data as per main/check meters and the WEG controller readings, distribution licensee provides a break-up of the electricity exported and imported for each WEG.

The net electricity generation from each WEG is determined by distribution licensee as follows:

$$\text{Export from WEG (main/ check meter)} = \frac{\text{Generation at WEG controller}}{\text{Total generation at all WEG controllers for the feeder}} \times \text{Export from distribution licensee}$$

$$\text{Import from WEG (main/ check meter)} = \frac{\text{Generation at WEG controller}}{\text{Total generation at all WEG controllers for the feeder}} \times \text{Import from distribution licensee}$$

$$\text{Net electricity export from WEG} = \text{Export from WEG} - \text{Import from WEG}$$

The above calculations would be carried out solely by distribution licensee and only the final apportioned electricity export, import, and net export for each WEG would be reported by distribution licensee in the Credit Notes. The details of the joint meter readings are not reported in the credit notes issued by distribution licensee.

The dates of the monitoring period for the project activity may not coincide with the dates of the Credit Note issued by distribution licensee. In such a scenario, the net electricity generation data would have to be apportioned. For carrying out the apportioning procedures, WEG controller data (data recorded by the WEG controller software) would be utilized. The electricity generation from WEG controllers is recorded on a daily basis in the Power Generation Reports maintained by the O&M contractor. The data from Power Generation Reports would be referred for determination of the apportioning ratio. The following steps will be applied to carry out the apportioning:



$$\text{Apportioning Ratio} = \frac{\text{Generation at WEG controller for apportioning period}}{\text{Generation at WEG controller for period covered under Credit Note Period}}$$

Apportioned electricity export = Apportioning ratio × electricity export as per credit note

Apportioned electricity import = Apportioning ratio × electricity import as per credit note

Apportioned Net Electricity Supplied to Grid = Apportioned Electricity Export – Apportioned Electricity Import

**Data Archiving & Storage:** All the data items monitored under the monitoring plan will be kept for 2 years after the end of crediting period or till the last issuance of CERs for this project activity, whichever occurs later. The data will be archived both electronically and manually.

### **Roles and Responsibilities:**

ROLE	ORGANIZATION	RESPONSIBILITY
Project Manager	PP	<ul style="list-style-type: none"> <li>↪ Cross – checking of the data collected by O&amp;M Team (Site In-charge, Supervisor, Technician);</li> <li>↪ Review of the collected data;</li> <li>↪ Forwarding monitored data to corporate office.</li> </ul>
Site In-charge	Wind World (India) Ltd.	<ul style="list-style-type: none"> <li>↪ Primary collection of data;</li> <li>↪ Conducting timely periodic testing and calibration of monitoring equipment;</li> <li>↪ Monitoring, recording, reporting and archiving of data.</li> </ul>
Supervisor		
Technician		

**QA/QC Procedures:** There is a reading panel at each WEG end and 0.2s accuracy class, 3-phase, 4-wire tri-vector electronic meters at 33kV line (one main and one check meter) to measure the energy supplied by the project activity.

### **Calibration Details:**

GROUP	SERIAL No.	SERIAL No.	CALIBRATION DETAILS					
	(MAIN)	(CHECK)	2012	DUE DATE	2013	DUE DATE	2014	DUE DATE
TWEL A	12090831	12090836	05/07/2012	04/07/2013	09/04/2013 12/07/2013	08/04/2014 11/07/2014	31/01/2014 07/06/2014	30/01/2015 06/06/2015
TWEL B	12090837	12090842	08/07/2012	07/07/2013	09/04/2013 12/07/2013	08/04/2014 11/07/2014	31/01/2014 06/06/2014	30/01/2015 05/06/2015
TWEL C	11071516	11071508	03/07/2012	02/07/2013	09/04/2013 07/08/2013	08/04/2014 06/08/2014	31/01/2014 06/06/2014	30/01/2015 05/06/2015
TWEL D	12090407	11071515	05/07/2012	04/07/2013	09/04/2013 07/08/2013	08/04/2014 06/08/2014	31/01/2014 06/06/2014	30/01/2015 05/06/2015
TWEL E	12090834	12090832	05/07/2012	04/07/2013	09/04/2013 07/08/2013	08/04/2014 06/08/2014	31/01/2014 06/06/2014	30/01/2015 05/06/2015
TWEL F	12090458	12090461	05/07/2012	04/07/2013	08/04/2013 13/08/2013	07/04/2014 12/08/2014	07/02/2014 07/06/2014	06/02/2015 06/06/2015
TWEL G	12090460	12090459	05/07/2012	04/07/2013	09/04/2013 07/08/2013	08/04/2014 06/08/2014	30/01/2014 07/06/2014	29/01/2014 06/06/2015
TWEL H	12090843	12092915	16/10/2012	15/10/2013	08/04/2013 13/08/2013	07/04/2014 12/08/2014	08/01/2014 24/05/2014	07/01/2015 23/05/2015

### **Bulk Meter Calibration Details:**

SERIAL No.	TYPE	ACCURACY CLASS	CALIBRATION DETAILS			
			2012	DUE DATE	2014	DUE DATE
12090839	Main	0.2s	17/04/2012	16/04/2013	08/01/2014	07/01/2015
12090841	Check	0.2s	17/04/2012	16/04/2013	08/01/2014	07/01/2015

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

<b>Data / Parameter:</b>	<b><math>EF_{grid,OM,y}</math></b>
Unit:	tCO <sub>2</sub> / MWh
Description:	Operating Margin CO <sub>2</sub> emission factor for Southern regional grid
Source of data:	CO <sub>2</sub> baseline database for Indian Power Sector, v07.0
Value(s) applied):	0.9515
Purpose of data:	Calculation of baseline emissions
Additional comment:	-----

<b>Data / Parameter:</b>	<b><math>EF_{grid,BM,y}</math></b>
Unit:	tCO <sub>2</sub> / MWh
Description:	Build Margin CO <sub>2</sub> emission factor for Southern regional grid
Source of data:	CO <sub>2</sub> baseline database for Indian Power Sector, v07.0
Value(s) applied):	0.7339
Purpose of data:	Calculation of baseline emissions
Additional comment:	-----

<b>Data / Parameter:</b>	<b><math>EF_{grid,CM,y}</math></b>
Unit:	tCO <sub>2</sub> / MWh
Description:	Operating Margin CO <sub>2</sub> emission factor for Southern regional grid
Source of data:	CO <sub>2</sub> baseline database for Indian Power Sector, v07.0
Value(s) applied):	0.8971
Purpose of data:	Calculation of baseline emissions
Additional comment:	-----

**D.2. Data and parameters monitored**

<b>Data / Parameter:</b>	<b><math>EG_{facility,y}</math></b>
Unit:	MWh
Description:	Quantity of net electricity generation supplied by the project plant/unit to the grid in year y
Measured/ Calculated / Default:	Measured
Source of data:	Distribution Licensee report on energy delivered to grid (Credit Note/JMR)
Value(s) monitored parameter:	of 311,927.30

Monitoring equipment:	Type: 3 – phase; 4 - wire Accuracy class: 0.2s Sr. No.: Details mentioned in section C of CDM-MR-FORM Calibration frequency: State Board norms or Annual Date of last calibration and validity: Details mentioned in section C of CDM-MR-FORM
Measuring/ Reading/ Recording frequency:	Continuous measurement and monthly recording
Calculation method (if applicable):	Although the data is monitored through energy meter installed at site, the apportionment procedure and procedure for calculation of electricity supplied by WEGs adjusting for transmission loss has been discussed in detailed manner in section C of CDM-MR-FORM.
QA/QC procedures:	The meter readings can be cross checked with the invoices for sale of electricity to ensure correctness. The meter(s) shall be calibrated annually and maintained by the state utility.
Purpose of data:	Calculation of baseline emissions
Additional comment:	The data will be kept for two years after the end of the crediting period or the last issuance of CERs for this project activity, whichever occurs later.

<b>Data / Parameter:</b>	<b><math>EG_{WEG}</math></b>
Unit:	MWh
Description:	Daily electricity generation at the WEG controller
Measured/ Calculated / Default:	Measured
Source of data:	Power Generation Reports from O&M Contractor
Value(s) of monitored parameter:	321,519.40
Monitoring equipment:	WEG Controllers
Measuring/ Reading/ Recording frequency:	Continuous measurement and monthly recording
Calculation method (if applicable):	The data will be monitored via project activity WEG Controllers and will be recorded daily in Power Generation Reports by Wind World (I) Limited [ <i>previously Enercon (I) Limited</i> ]. This data will be used only for determination of apportioning ratio, and will be applied only in cases where the monitoring period does not coincide with the initial/final meter reading dates in the Credit Notes.
QA/QC procedures:	In case of any fault with the WEG Controller, the same would be immediately identified through an interlocking mechanism. In such a scenario the WEG Controller would be automatically shut down. The WEG Controller would then be replaced.
Purpose of data:	Calculation of baseline emissions
Additional comment:	The data will be kept for two years after the end of the crediting period or the last issuance of CERs for this project activity, whichever occurs later.

### D.3. Implementation of sampling plan

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This section is left blank intentionally.

**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;

In – line with the applied methodology, ACM0002, v13.0.0, baseline emission is calculated to be:

$$BE_y = EG_{PJ,y} \times EF_{grid,CM,y}$$

Where:

- $BE_y$  : Baseline emission in year  $y$  (tCO<sub>2</sub>)  
 $EG_{PJ,y}$  : Quantity of net electricity generation that is produced and fed into the grid as a result of implementation of the CDM project activity in year  $y$  (MWh)  
 $EF_{grid,CM,y}$  : Combined margin CO<sub>2</sub> emission factor for grid connected power generation in year  $y$  (tCO<sub>2</sub>/MWh)

Since, the project activity is installation of new grid – connected renewable energy power plant,  $EG_{PJ,y}$  is calculated as follows:

$$EG_{PJ,y} = EG_{facility,y}$$

Where:

$EG_{facility,y}$  : Quantity of net electricity generation supplied by the project plant/unit to the grid in year  $y$  (MWh)

$$BE_y = 311,927.30 \text{ MWh} \times 0.8971 \text{ tCO}_2/\text{MWh} = 279,829 \text{ tCO}_2\text{e}$$

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

&gt;&gt;

Since, the project activity is the installation of new – grid connected wind power project, which generates electricity using wind power; therefore, in accordance with the applied methodology, ACM0002, v13.0.0;

$$PE_y = 0.$$

**E.3. Calculation of leakage**

&gt;&gt;

In accordance with the applied methodology ACM0002, v13.0.0; no leakage emission has been considered for the project activity.

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

Item	Baseline emissions or baseline net GHG removals by sinks (tCO <sub>2</sub> e)	Project emissions or actual net GHG removals by sinks (tCO <sub>2</sub> e)	Leakage (tCO <sub>2</sub> e)	Emission reductions or net anthropogenic GHG removals by sinks (tCO <sub>2</sub> e)
Total	279,829	0	0	279,829

**E.5. Comparison of actual emission reductions or net anthropogenic 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 (tCO <sub>2</sub> e)	353,775	279,829

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

&gt;&gt;

The estimated annual emission reductions as per the registered CDM PDD corresponding to the current monitoring period are 353,775 tCO<sub>2</sub>e. The actual emission reductions achieved during the current monitoring period is 279,829 tCO<sub>2</sub>e which are 20.90% less than the estimated emission reduction. The difference is due to low wind availability during the current monitoring period leading to low plant load factor.

**E.7. Actual emission reductions or net anthropogenic GHG removals by sinks during the first commitment period and the period from 1 January 2013 onwards**

Item	Actual values achieved up to 31 December 2012	Actual values achieved from 1 January 2013 onwards
Emission reductions or GHG removals by sinks (t CO <sub>2</sub> e)	0	279,829

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## 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"/> Responsible person/ entity for completing the CDM-MR-FORM
<b>Organization name</b>	Tadas Wind Energy Private Limited ( <i>previously known as Tadas Wind Energy Limited</i> )
<b>Street/P.O. Box</b>	Plot No. C-22, G Block, Bandra-Kurla Complex, Bandra-East
<b>Building</b>	The IL&FS Financial Centre
<b>City</b>	Mumbai
<b>State/Region</b>	Maharashtra
<b>Postcode</b>	400051
<b>Country</b>	India
<b>Telephone</b>	+912226593728
<b>Fax</b>	+912226593728
<b>E-mail</b>	<a href="mailto:rohil.kudtarkar@ilfsindia.com">rohil.kudtarkar@ilfsindia.com</a>
<b>Website</b>	<a href="http://www.ilfsindia.com">www.ilfsindia.com</a>
<b>Contact person</b>	Rohil Kudtarkar
<b>Title</b>	Authorized Signatory
<b>Salutation</b>	Mr.
<b>Last name</b>	Kudtarkar
<b>Middle name</b>	-
<b>First name</b>	Rohil
<b>Department</b>	Finance
<b>Mobile</b>	+919892655948
<b>Direct fax</b>	+912226593728
<b>Direct tel.</b>	+912226593728
<b>Personal e-mail</b>	<a href="mailto:rohil.kudtarkar@ilfsindia.com">rohil.kudtarkar@ilfsindia.com</a>

<b>Project participant and/or responsible person/ entity</b>	<input type="checkbox"/> Project participant <input checked="" type="checkbox"/> Responsible person/ entity for application of the selected methodology (ies) and, where applicable, the selected standardized baselines to the project activity
<b>Organization name</b>	IL&FS Environmental Infrastructure & Services Limited
<b>Street/P.O. Box</b>	4 <sup>th</sup> floor, 28 Barakhamba Road
<b>Building</b>	Dr. Gopaldas Bhawan
<b>City</b>	New Delhi
<b>State/Region</b>	Delhi
<b>Postcode</b>	110001
<b>Country</b>	India
<b>Telephone</b>	+91 11 4969 1000
<b>Fax</b>	+91 11 4969 1099
<b>E-mail</b>	<a href="mailto:subrata.chakrabarty@ilfsenv.com">subrata.chakrabarty@ilfsenv.com</a>

<b>Website</b>	<a href="http://www.ilfsenv.com">www.ilfsenv.com</a>
<b>Contact person</b>	Subrata Chakrabarty
<b>Title</b>	-
<b>Salutation</b>	Mr.
<b>Last name</b>	Chakrabarty
<b>Middle name</b>	-
<b>First name</b>	Subrata
<b>Department</b>	CDM
<b>Mobile</b>	-
<b>Direct fax</b>	+91 11 4969 1099
<b>Direct tel.</b>	+91 11 4969 1000
<b>Personal e-mail</b>	-