



Monitoring report form (Version 03.1)

Monitoring report

Title of the project activity	GEI Wind Power Project in Karnataka, India
Reference number of the project activity	4144
Version number of the monitoring report	01
Completion date of the monitoring report	22/02/2013
Registration date of the project activity	09/03/2011
Monitoring period number and duration of this monitoring period	Second, 01/10/2011-31/12/2012 (Inclusive of first and last day)
Project participant(s)	Generacion Eolica India Limited Kingdom of Spain Swedish Energy Agency Asia Pacific Carbon Fund
Host Party(ies)	Govt. of India (Host)
Sectoral scope(s) and applied methodology(ies)	Energy industries (renewable/ non-renewable sources) Consolidated baseline and monitoring methodology for “Grid -connected electricity generation renewable sources” Reference: Approved consolidated baseline methodology ACM0002 (Version 11, EB 52)
Estimated amount of GHG emission reductions or net anthropogenic GHG removals by sinks for this monitoring period in the registered PDD	Average value of CER/ year (or 365 days) as per PDD are 64095. Current monitoring period (01/10/2011-31/12/2012) covers period of 458 days, hence ex-ante estimated of CER's as per the PDD are 80426.
Actual GHG emission reductions or net anthropogenic GHG removals by sinks achieved in this monitoring period	65003 tCO ₂ (Actual GHG emission reductions under 2 nd Monitoring period, Duration: 01/10/2011-31/12/2012 (Inclusive of first and last day))

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 project activity is the successful installation and generation of 31.2 MW through efficient utilization of renewable energy source viz., wind energy at Harthi, Kurtakoti and Malasamudra villages of Gadag district in Karnataka in order to generate electricity to be fed to Southern grid.

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 (GHGs) into the atmosphere, 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 Southern grid, which are/ will be predominantly based on fossil fuels. Whereas the electricity generation from operation of WECs is emission free. As per the applicable methodology, the baseline scenario for the project activity is the grid based electricity system, which is also the pre-project scenario.

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

The project activity involves 39 WECs of Enercon 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 at the Project site and further stepped up to 220 KV at the Receiving sub- station for the purpose of interconnection with the KPTCL/HESCOM grid at the sub-station of the KPTCL/HESCOM. 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 life time of the WEC is 20 years as provided by the equipment supplier.

Enercon (India) Ltd (EIL) 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 commissioning dates of all the WTGs installed in the project activity have been provided in the table below:

Sl. No.	Location No.	No. of WTGs	Commissioning Date	Village
1	170a	4	17.12.2007.	Harthi

2	170			
3	171			
4	236			
5	229	6	17.03.2008.	Malasamudra
6	181			
7	180			
8	163			Kurthkoti
9	226			Malasamudra
10	230			
11	173	8	25.06.2008.	Harthi
12	231			Malasamudra
13	174			Harthi
14	233			
15	232			
16	234			
17	169A			
18	237			
19	168	10	07.07.2008.	Kurthkoti

20	169			Harthi
21	235			
22	136			
23	137			
24	138			
25	139			
26	140			
27	141			
28	179	4	11.09.2008.	Malasamudra
29	228			Malasamudra
30	172			Harthi
31	227			Malasamudra
32	239	4	29.09.2008.	Harthi
33	167			Kurthkoti
34	176			Harthi
35	178			Kurthkoti
36	164	3	10.10.2008.	Kurthkoti
37	165			Kurthkoti

38	166			Kurthkoti
39	177			Malasamudra
Total		39		

(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 (01/10/2011-31/12/2012) are **65003 tCO₂**.

A.2. Location of project activity

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

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

(c) *City/Town/Community, etc.;*
The project activity is located at Harthi, Kurthkoti & Malasamudra villages in Gadag district of Karnataka state in India.

(d) *Physical/ Geographical location.*

Sl. No.	Location No.	No. of WTGs	Village	Longitude	Latitude
1	170a	4	Harthi	15°20'53"	75°34'29.2"
2	170			15°20'59"	75°34'27.5"
3	171			15°21'5.8"	75°34'26.1"
4	236			15°21'14.3"	75°34'38.8"
5	229	6	Malasamudra	15°21'59.9"	75°34'23"
6	181			15°22'16.6"	75°33'57.8"

	7	180			15°22'10.4"	75°34'0.9"
	8	163		Kurthkoti	15°22'8.3"	75°33'44.8"
	9	226		Malasamudra	15°22'19.2"	75°34'13.5"
	10	230			15°21'52.7"	75°34'23.9"
	11	173	8	Harthi	15°21'19.4"	75°34'19.9"
	12	231		Malasamudra	15°21'46.8"	75°34'27.7"
	13	174		Harthi	15°21'31.5"	75°34'15.5"
	14	233			15°21'33.3"	75°34'30.6"
	15	232			15°21'39.6"	75°34'28.6"
	16	234			15°21'27.8"	75°34'33.5"
	17	169A			15°21'20"	75°34'3.7"
	18	237			15°21'8.1"	75°34'41.3"
	19	168	10	Kurthkoti	15°21'35.7"	75°33'56.8"
	20	169		Harthi	15°21'29.5"	75°34'1.5"
	21	235			15°21'21.3"	75°34'39.2"

	22	136			15°20'26.5"	75°34'5.7"
	23	137			15°20'32.6"	75°34'4.6"
	24	138			15°20'39.9"	75°34'4.9"
	25	139			15°20'44.8"	75°33'57.3"
	26	140			15°20'50.9"	75°33'57.3"
	27	141			15°20'59.2"	75°33'56.9"
	28	179		Malasamudra	15°22'3.6"	75°34'2.6"
	29	228		Malasamudra	15°22'6.2"	75°34'18.1"
	30	172		Harthi	15°21'11"	75°34'22.3"
	31	227	4	Malasamudra	15°22'15.2"	75°34'25.2"
	32	239		Harthi	15°20'52.8"	75°34'41.2"
	33	167	4	Kurthkoti	15°21'42.8"	75°33'54.3"

34	176		Harthi	15°21'44.5"	75°34'9.5"
35	178		Kurthkoti	15°21'58.1"	75°34'5.6"
36	164		Kurthkoti	15°22'2.8"	75°33'48.1"
37	165	3	Kurthkoti	15°21'55.3"	75°33'50.5"
38	166		Kurthkoti	15°21'49.3"	75°33'51.3"
39	177		Malasamudra	15°21'51.4"	75°34'8.1"
Total		39			

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)
Government of India (Host)	Generacion Eolica India Limited	No
Spain	Kingdom of Spain	Yes
Sweden	Swedish Energy Agency	Yes

A.4. Reference of applied methodology

>> Title: Consolidated baseline and monitoring methodology for “Grid -connected electricity generation renewable sources”

Reference: Approved consolidated baseline methodology ACM0002 (Version 11, EB 52)

ACM0002 draws upon the following tools which have been used for ex-ante Emission Reduction calculation:

- Tool to calculate the emission factor for an electricity system - Version 02, EB 50
- Tool for the demonstration and assessment of additionality - Version 05.2, EB 39

A.5. Crediting period of project activity

>> The length of the Crediting period of the project activity as per registered PDD is 10 years (Fixed). The crediting period start date is 01/04/2011 and length of crediting period is 10 years (from 01/04/2011 to 31/03/2021).

SECTION B. Implementation of project activity

B.1. Description of implemented registered project activity

>> The start date of the project activity is 24/08/2006, which is the date of placement of purchase order for the WECs. The first WTG under this project activity was commissioned on 17/12/2007 and the last WTG was commissioned on 10/10/2008. All 39 WTGs are Enercon make (E-53), having a capacity of 800 kW each. There is no such event occurred during the monitoring period, which may impact the applicability of the methodology.

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

Table-2:

Sl. No.	Commissioning Date	No. of WTGs	Location No. of WTGs
1	17.12.2007.	4	170a
2			170
3			171
4			236
5	17.03.2008.	6	229
6			181
7			180
8			163
9			226
10			230
11	25.06.2008.	8	173
12			231
13			174
14			233

15			232
16			234
17			169A
18			237
19	07.07.2008.	10	168
20			169
21			235
22			136
23			137
24			138
25			139
26			140
27			141
28			179
29	11.09.2008.	4	228
30			172
31			227
32			239
33	29.09.2008.	4	167
34			176
35			178
36			164
37	10.10.2008.	3	165
38			166
39			177

B.2. Post registration changes**B.2.1. Temporary deviations from registered monitoring plan or applied methodology**

>> Not applicable.

B.2.2. Corrections

>> Not applicable.

B.2.3. Permanent changes from registered monitoring plan or applied methodology

>> Not applicable.

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

>> Not applicable.

B.2.5. Changes to start date of crediting period

>> Not applicable.

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

>> Not applicable.

SECTION C. Description of monitoring system

>> Approved monitoring methodology ACM0002 Version 11 Sectoral Scope: 1, “Consolidated monitoring methodology for zero-emissions grid-connected electricity generation from renewable sources”, by CDM – Meth Panel is proposed to be used to monitor the emission reductions.

This approved monitoring methodology requires monitoring of the following:

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

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.

There is one main and check meter dedicated to the machines of the project activity at 33 kV metering point (billing point) as shown in the line diagram below. The 33 kV metering points are further connected to step up transformers and subsequently to the bulk meters (there are three sets of main and check meters as bulk meter) at 220 kV metering point for the machines of the project activity.

In order to determine the net electricity supplied to the grid by the project, the State utility applies the transmission loss to the meter reading recorded at 33 kV metering point. The reading at 33 kV metering point will be taken by the representatives of Enercon and the State utility. This reading is recorded in the form of JMR (Form B) and is signed by the representatives of Enercon and State Utility. Both electricity export and import are metered at this metering point.

The electricity supplied to the grid is apportioned based on transmission Loss. The Joint meter reading contains the following data:-

1. Electricity Export
2. Electricity Import
3. Transmission Loss (Between the 33 kV metering point and 220 kV pooling substation)

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

$$\begin{aligned} \text{EGy} &= \text{Gp} - \text{Li} \\ &= (\text{Gpe} - 115\% * \text{Gpi}) - \text{Li} \end{aligned}$$

Where,

EGy : Net Electricity supplied to grid by the project activity

$$\text{Gp} = (\text{Gpe} - 115\% * \text{Gpi})$$

Where,

Gpe : Electricity Export recorded at the meter(s) connected 39 machines of the project activity

Gpi : Electricity Import recorded at the meter(s) connected 39 machines of the project activity.

Li : Transmission loss

Transmission loss is certified by the state utility in the JMR (Form B). The procedure for calculation of transmission loss by the State utility is as follows:

$$L = \sum jGj - N$$

Where,

$\sum jGj$ = Summation of electricity generation data measured at all the feeders connected to pooling substation

N = Electricity generation data measured at substation from the feeders emanating from the pooling substation

L = Total transmission loss

$$\text{Li} : \text{Gp} * (\text{L} / \sum \text{Gj})$$

Where,

Gp = Generation of electricity by the project activity recorded at the feeder connected to 39 turbines of the project activity [Export (Gpe) – 115%* Import (Gpi)]

Transmission Loss is directly applied from the Joint Meter Report (Form B) for the project activity and the JMR (Form B) is signed jointly by the representatives of the Company (Enercon) and the state utility.

Therefore, Energy Supplied to the Grid after adjustment of transmission loss is as follows:

$$\text{EGy} = \text{EG export} - 115\% * \text{EG import} - \text{Transmission Loss}$$

The meter readings (both export and import), transmission loss and net electricity supplied to the grid are recorded in the JMR (Form B). Hence, all these values are sourced from the JMR for the calculation emission reduction. Please refer to section D.2 for details on calibration and QA/QC procedures.

The net electricity supplied to the grid can be cross checked from the invoices raised on the state utility for supply of net electricity supplied to the grid.

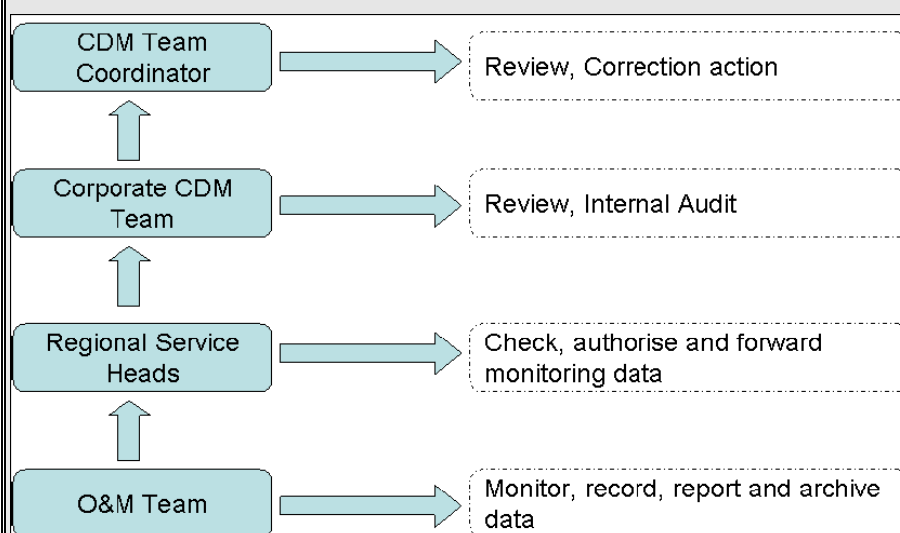
The Project is operated and managed by GEI. The operational and maintenance contract for the project is with Enercon. Enercon is an ISO 9001:2000 certified Quality Management system from Germanischer Lloyd. Enercon (India) Limited follows the documentation practices to ensure the reliability and availability 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. All the meters will be tested for accuracy once every year. The project will adhere to all the mandatory regulatory and statutory requirements at the state as well as national level. Enercon is Operation and Maintenance contractor for the project activity and provides the daily generation report to the project proponent.

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 Enercon's staffs that are positioned to take care all the activities starting from project construction to operation and maintenance, Enercon Training Academy provides need based periodical training to meet the requirements of the project. The training is contemporary, which results in imparting focused knowledge leading to value addition to the attitude and skills of all the trainees. The training facility is located at Daman and is fully functional and equipped with qualified trainers, training equipments, classrooms and hostel facilities.

The operational and management structure implemented is as follows:



Metering details & QA/ QC procedures

Metering Equipments: Metering system for the project activity consists of one main and one check meter at 33 kV metering point & three sets of main & check meters (bulk meters) at 220 kV sub-station end. Both the meters are two-way tri-vector meters of accuracy class 0.2s capable of recording import and export of electricity. The metering equipment is calibrated annually.

Meter Readings: The Net electricity supplied to the grid is recorded in the form of Joint Meter Reading (JMR) (Form B) in the presence of State Utility and the representative of the Project proponent (Enercon). The Joint meter reading contains the value of energy imported and exported and the net supply to the grid during the recording period. This JMR is certified by the Authorized representative of the state utility and representative of the Company (Enercon). These certified readings are then used to prepare the invoices to be raised on State Utility. Therefore, the net electricity supplied to the grid as mentioned in the JMR can be cross-checked with the invoices.

Inspection of Energy Meters: All main and check energy meters (export and import) are of 0.2s 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: All the main & check meters will be tested for accuracy with a standard

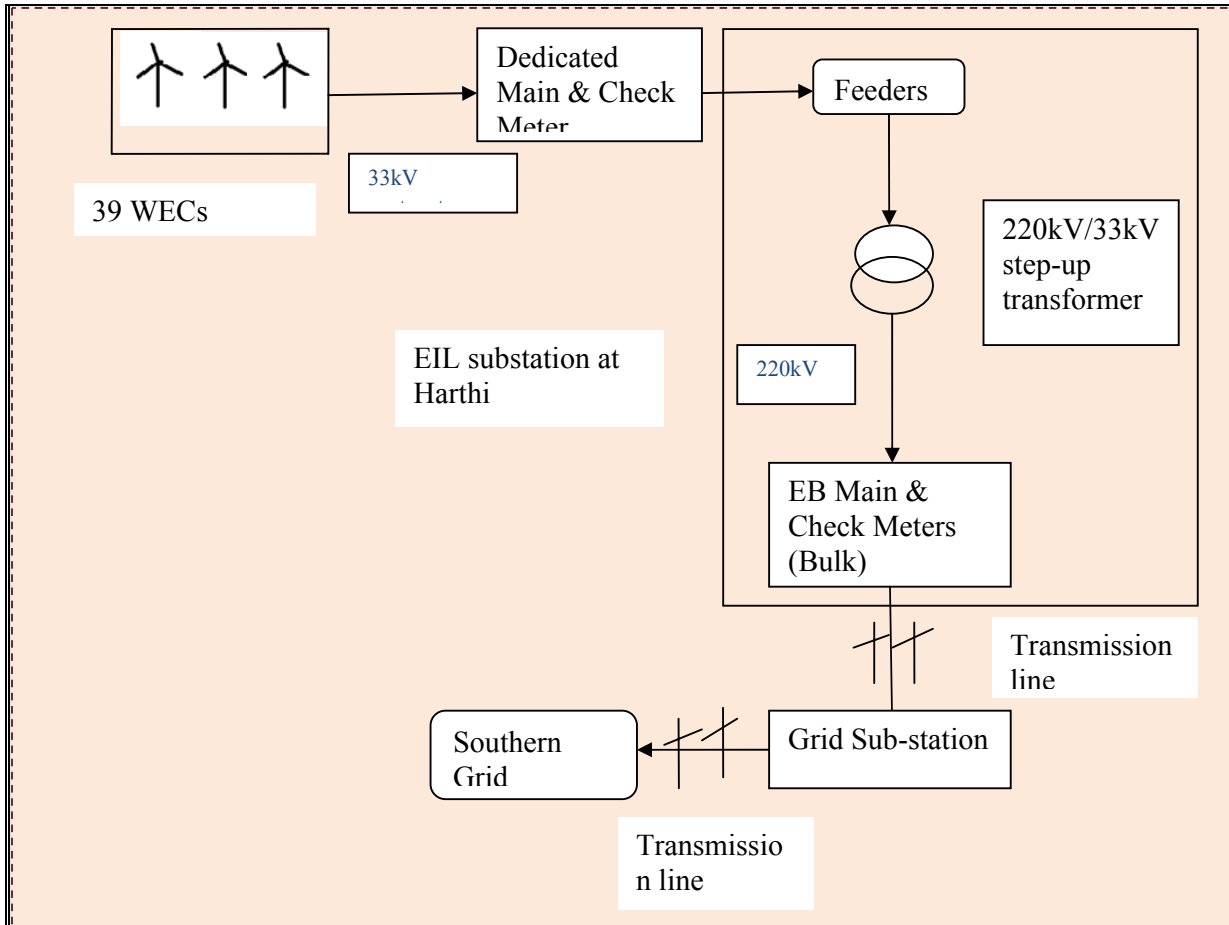
meter by the KPTCL's testing Division. The KPTCL will carry out the calibration, periodical testing, sealing and maintenance of meters. The KPTCL will provide a copy of the test reports.

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. The main meter shall be calibrated immediately and meter reading for the period thereafter till the next monthly meter reading shall be as per the calibrated main meter.
- 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 the 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.

The line diagram of the metering system for the project activity is as follows:



The calibration reports for the meters (both main & check meter) at 33 kV metering point have been shown below:

Meter Type	Meter Sr. no.	Accuracy class	Make	Past Calibration done	Latest Calibration done	Calibration due on
Main Meter	05389382	0.2	L&T	28/04/2011	12/01/2012	11/01/2013
Check Meter	07022924	0.2	L&T	28/04/2011	12/01/2012	11/01/2013

From the above table, it can be seen that calibration of the meters at 33 kV metering points have been done on annual basis and the calibration results show the error within the permissible limits.

The calibration reports for the bulk meters (both main & check meters) at 220 kV sub-station have been shown below:

Substation	Meter Type	Meter Sr. no.	Accuracy class	Make	Past Calibration done	Latest Calibration done	Calibration due on
220 kV Sub-station	Main Meter	07022944	0.2	L&T	22/06/2011	25/09/2012	24/09/2013

	Check Meter	07022903	0.2	L&T	22/06/2011	25/09/2012	24/09/2013
	Main Meter	07022908	0.2	L&T	22/06/2011	25/09/2012	24/09/2013
	Check Meter	07022915	0.2	L&T	22/06/2011	25/09/2012	24/09/2013
	Main Meter	06760786	0.2	L&T	22/06/2011	25/09/2012	24/09/2013
	Check Meter	06767587	0.2	L&T	22/06/2011	25/09/2012	24/09/2013

Since there was delay in Meter Calibration at substation, a conservative error factor is applied to Transmission losses from months of June to Sep-2012.

SECTION D. Data and parameters

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

(Copy this table for each piece of data and parameter.)

Data / Parameter:	$EF_{grid,OM,y}$
Unit:	tCO ₂ e/MWh
Description:	Operating Margin Emission Factor of Southern Regional Electricity Grid
Source of data:	“CO ₂ Baseline Database for Indian Power Sector” Version 04, published by the Central Electricity Authority, Ministry of Power, Government of India. The “CO ₂ Baseline Database for Indian Power Sector” is available at www.cea.nic.in
Value(s) applied:	0.998157
Purpose of data:	To calculate Baseline Emissions Factor
Additional comment:	The value is calculated on ex-ante basis and it will remain same throughout the crediting period.

Data / Parameter:	$EF_{grid,BM,y}$
Unit:	tCO ₂ e/MWh
Description:	Build Margin Emission Factor of Southern Regional Electricity Grid
Source of data:	“CO ₂ Baseline Database for Indian Power Sector” Version 04, published by the Central Electricity Authority, Ministry of Power, Government of India. The “CO ₂ Baseline Database for Indian Power Sector” is available at www.cea.nic.in
Value(s) applied:	0.71332
Purpose of data:	To calculate Baseline Emissions Factor
Additional comment:	The value is calculated on ex-ante basis and it will remain same throughout the crediting period.

Data / Parameter:	$EF_{grid,CM,y}$
Unit:	tCO ₂ e/MWh
Description:	Combined Margin Emission Factor of Southern Regional Electricity Grid
Source of data:	“CO ₂ Baseline Database for Indian Power Sector” Version 04, published by the Central Electricity Authority, Ministry of Power, Government of India. The “CO ₂ Baseline Database for Indian Power Sector” is available at www.cea.nic.in Calculated
Value(s) applied:	0.92694
Purpose of data:	To calculate Baseline Emissions
Additional comment:	The value is calculated on ex-ante basis and it will remain same throughout the crediting period.

D.2. Data and parameters monitored

(Copy this table for each piece of data and parameter.)

Data / Parameter:	EGy
Unit:	MWh (Mega-watt hour)
Description:	Net electricity supplied to the grid by the Project
Measured/ Calculated / Default:	Calculated
Source of data:	Electricity supplied to the grid as per Joint Meter Reading (Form B) taken at 33 kV metering point. This value can be cross-checked by the tariff invoices raised on KPTCL/HESCOM.
Value(s) of monitored parameter:	70135.250
Monitoring equipment:	Refer section C for an illustration of the provisions for measurement methods.
Measuring/ Reading/ Recording frequency:	Monitored on continuous basis Frequency of recording data: Monthly Recording: The values of electricity supplied to the grid are sourced from JMR for the sub projects at 33 kV metering point.
Calculation method (if applicable):	$EGy = Gpe - 115\% * Gpi - Li$
QA/QC procedures:	Refer section C for an illustration of the provisions for QA/QC procedures.
Purpose of data:	To calculate emission reduction.
Additional comment:	The data will be archived for crediting period + 2 years.

Data/Parameter	Gpe
Unit	MWh (Mega-Watt hour)

Description	Electricity Export recorded at the meter(s) connected 39 machines of the project activity.
Measured/Calculated /Default	Measured
Source of data	Electricity export to the grid as per Joint Meter Reading (Form B) taken at 33 kV metering point. This value can be cross-checked by the tariff invoices raised on HESCOM.
Value(s) of monitored parameter	70664.100
Monitoring equipment	L&T Make; accuracy class: 0.2s. The meters are calibrated once in a year. Last calibration done: 12/01/2012 ; valid till 11/01/2013 Serial numbers of the meters: Main Meter: 05389382 Check Meter: 07022924
Measuring/Reading/ Recording frequency	Monitored on continuous basis Frequency of recording data: Monthly Recording: The values of electricity exports to the grid are sourced from JMR for the sub projects at 33 kV metering point.
Calculation method (if applicable)	NA
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 Import recorded at the meter(s) connected 39 machines of the project activity.
Measured/Calculated /Default	Measured
Source of data	Electricity import from the grid as per Joint Meter Reading (Form B) taken at 33 kV metering point. This value can be cross-checked by the tariff invoices raised on HESCOM.
Value(s) of monitored parameter	40.95
Monitoring equipment	L&T Make; accuracy class: 0.2s. The meters are calibrated once in a year. Last calibration done: 12/01/2012 ; valid till 11/01/2013 Serial numbers of the meters: Main Meter: 05389382 Check Meter: 07022924

Measuring/Reading/Recording frequency	Monitored on continuous basis Frequency of recording data: Monthly Recording: The values of electricity exports to the grid are sourced from JMR for the sub projects at 33 kV metering point.
Calculation method (if applicable)	NA
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 feeding the pooling substation of Enercon and the metering point at EB Substation.
Measured/Calculated /Default	Calculated as per the formula described in section C.
Source of data	Transmission Loss will be directly applied from the Form B for the project activity.
Value(s) of monitored parameter	481.757
Monitoring equipment	Refer section C for an illustration of the provisions for measurement methods.
Measuring/Reading/Recording frequency	Frequency of recording data: Monthly Recording: The value of transmission loss is sourced from JMR
Calculation method (if applicable)	EB 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. 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 Enercon and the state utility.
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
 >> No sampling plan is followed by PP.

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

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

>> As described in the registered PDD, the baseline emission $BE_y = EG_y * EF_y$

Where,

BE_y = Baseline emissions in year y, tCO₂e

EG_y = Net electricity supplied to the grid in year y and is applied directly from JMR (Form B) certified by state utility. This value can also be cross checked from the invoice..

EF_y = CO₂ emission factor of the grid (0.92694 tCO₂e/ MWh; fixed ex-ante).

Therefore, Baseline Emission for the monitoring period 01/10/2011 to 31/12/2012 is

$$\begin{aligned} BE_y &= EG_y * EF_y \\ &= 70135.250 \text{ (MWh)} * 0.92694 \text{ (tCO}_2\text{/MWh)} \\ &= 65003 \text{ tCO}_2 \end{aligned}$$

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 ACM0002.

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 (t CO ₂ e)	Project emissions or actual net GHG removals by sinks (t CO ₂ e)	Leakage (t CO ₂ e)	Emission reductions or net anthropogenic GHG removals by sinks (t CO ₂ e)
Total	65003	0	0	65003

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 (t CO₂e)	80426	65003

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

>> The Emission Reduction (ER) value in the monitoring period is 19.17 % lower as compared to the value estimated in the registered PDD, which is due to low PLF observed during monitoring period.

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 CO₂e)	65003 (From 01/10/2011 to 31/12/2012)	Not Applicable

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Document information

<i>Version</i>	<i>Date</i>	<i>Description</i>
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 anthropogenic 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.
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