



**Monitoring report form  
(Version 04.0)**

**MONITORING REPORT**

<b>Title of the project activity</b>	Jangi 91.8 MW wind farm in Gujarat
<b>Reference number of the project activity</b>	6702
<b>Version number of the monitoring report</b>	01
<b>Completion date of the monitoring report</b>	22/07/2014
<b>Registration date of the project activity</b>	17/10/2012
<b>Monitoring period number and duration of this monitoring period</b>	1 <sup>st</sup> monitoring period: 01/11/2012-31/12/2013
<b>Project participant(s)</b>	GP Wind (Jangi) Private Limited Tricorona Carbon Asset Management Pte Ltd
<b>Host Party(ies)</b>	India
<b>Sectoral scope and selected methodology(ies), and where applicable, applied standardized baseline(s)</b>	1: Energy industries (renewable - / non-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>	297,064 tCO <sub>2</sub> (426 days)
<b>Actual GHG emission reductions or net anthropogenic GHG removals by sinks achieved in this monitoring period</b>	224,411 tCO <sub>2</sub>
<b>Actual GHG emission reductions or net anthropogenic GHG removals by sinks achieved during the period up to 31 December 2012(if applicable)</b>	21,418 tCO <sub>2</sub>
<b>Actual GHG emission reductions or net anthropogenic GHG removals by sinks achieved during the period from 1 January 2013 onwards (if applicable).</b>	202,993 tCO <sub>2</sub>

## SECTION A. Description of project activity

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

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The purpose of Jangi 91.8 MW wind farm in Gujarat (hereafter referred to as “the project”) is to utilise the wind resources for power generation to alleviate electricity shortage in Northern, Eastern, Western, and North-Eastern (hereafter referred to as “NEWNE”) regions. The generated electricity is delivered to NEWNE grid, which is dominant of fuel-fired power plants.

The project is a wind farm project with installed capacity 91.8 MW, consisting of 51 sets 1.8 MW V100 class 3 turbines which are manufactured by Vestas Denmark. The annual net electricity generation of the project is forecast to be 268,177 MWh.

The project implementation was started on 2<sup>nd</sup> December 2010. The 1<sup>st</sup> turbine was put into operation on 31<sup>st</sup> August 2011 and the project was fully operational on 23<sup>rd</sup> December 2011. The total GHG emission reductions achieved in this monitoring period are 224,411 tCO<sub>2</sub>.

### A.2. Location of project activity

>>The project is located about 20km South East from Samakhiali town. The access to the project site is through village roads of Vandhiya, Modpar, Lakhapar and Jangi, situated along the National Highway No.8A. It is situated between Latitudes 23°15'02.0" and 23°11'22.0" North and between Longitudes 70°30'12.0" and 70°38'26.0" East.

### 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)	GP Wind (Jangi) Private Limited	No
Sweden	Tricorona Carbon Asset Management Pte Ltd	No

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

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ACM0002-Consolidated baseline and monitoring methodology for grid connected electricity generation from renewable sources (Version 12.3.0)

Tool for the demonstration and assessment of addtionality (Version 06.1.0)

Tool to calculate the emission factor for an electricity system (Version 02.2.1)

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

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Fixed crediting period: 01/11/2012-31/10/2022

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

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Hanson Xu, Tricorona Carbon Asset Management Pte Ltd, hanson.xu@tricorona.se  
Sundar Rajan, GP Wind (Jangi) Private Limited, ssundarrajan@gentingenergy.com

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

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The project is a wind farm project, the installed capacity of the project is 91.8 MW, consisting of 51 sets 1.8 MW turbines. The annual net electricity generation of the project is forecast to be 268,177 MWh.

The project implementation was started on 2<sup>nd</sup> December 2010 and the project was fully put into operation on 23<sup>rd</sup> December 2011. The project was under normal and continued operation status until now. The 1<sup>st</sup> monitoring period of the project is 01/11/2012-31/12/2013.

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

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None.

**B.2.2. Corrections**

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None.

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

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None.

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

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None.

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

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The start date of crediting period was changed from 1<sup>st</sup> June 2013 to 1<sup>st</sup> November 2012.

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

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None.

**SECTION C. Description of monitoring system**

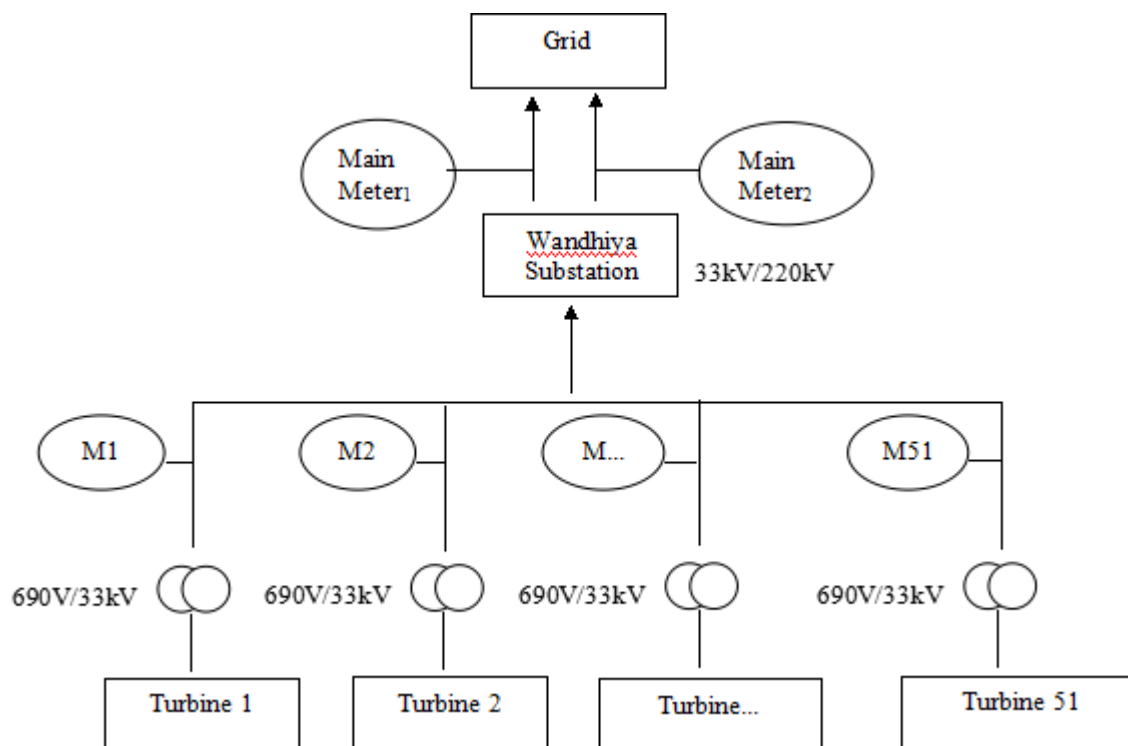
&gt;&gt;

The generated electricity from the project is transmitted to the substation and then delivered to the grid through line 1 and line 2 respectively.

There are two bidirectional electronic meter (Main Meter<sub>1</sub> and Main Meter<sub>2</sub>) installed at substation for line 1 and line 2 to monitor the power exported to power grid and power imported from power

grid. Furthermore, there are also two backup meters with same accuracy and function for main meters to ensure the monitoring purpose if the main meter is found malfunction.

Besides the main meters and backup meters, there are 51 meters and their backup meters installed for each turbine to monitor the power generation of the project. The power electric connection diagram is as follow:



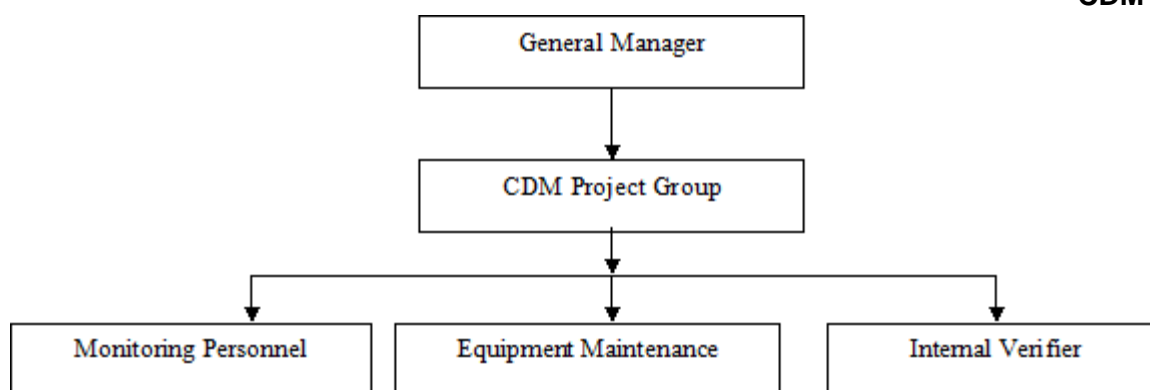
#### Data collection procedures:

The net electricity supplied to power grid data were measured continuously by 51 turbine meters and were recorded jointly by grid company & the Monitoring Personnel from project entity monthly. For monitoring data, based on the readings of meters and after accounting for line losses and grid imports, the power grid company provided the meter readings of 51 meters to project owner and the power grid company provided the net electricity supply data in the second/ third week of early of each month ('Share Certificate'). The Monitoring Personnel from project entity checked and confirmed the net electricity supply data mentioned in the Share Certificate. The Internal Verifier from finance department of project entity issued the electricity sales receipts ('Invoices') after approval of general manager.

All the electronic (scanned documents of meter calibration records, scanned documents of sales receipts and electricity transaction notes) and paper monitoring documents will be archived during the crediting period and two years after and also two years after last issuance of CERs.

#### Organizational structure:

The monitoring organizational structure is as follow:



### Roles and responsibilities of personnel:

**General Manager:** General Manager is responsible for the overall management of the monitoring plan and for the internal verification of the monitored data.

**CDM Project Group:** It is consisted of Monitoring Personnel, Equipment Maintenance and Internal Verifier.

**Monitoring Personnel:** To conduct the monitoring task strictly based on the monitoring manual and registered PDD. The staffs are responsible for recording required monitored parameters, for reporting the monitoring results and for reporting the abnormal situation of the project. Each shift is responsible for the works.

**Equipment Maintenance:** To conduct the regular check and maintenance of equipments.

**Internal Verifier:** Internal Verifier is appointed from financial department. The verifier is responsible for calculating the emission reductions regularly and for preparing the sales receipts of electricity transaction.

### Training:

The project staffs have been trained respectively regarding operational regulations, quality control, data monitoring & archive and CDM knowledge.

### Emergency procedures:

The backup meters will be used for monitoring when main meters are in malfunction status. The emergency report will be prepared by Monitoring Personnel and Equipment Maintenance together for reference.

During the given monitoring period, the meters were in well functions and no emergency situation happened.

## 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.)*

<b>Data / Parameter:</b>	$EF_{grid,CM}$
<b>Unit:</b>	tCO <sub>2</sub> /MWh
<b>Description:</b>	Combined margin CO <sub>2</sub> emission factor for grid connected power generation

Source of data:	"CO <sub>2</sub> Baseline Database for the Indian Power Sector" version 6 published by the Central Electricity Authority, Ministry of Power, Government of India.
Value(s) applied:	0.9491
Purpose of data:	Used for emission reductions calculation
Additional comment:	N/A

## D.2. Data and parameters monitored

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

Data / Parameter:	<b>EG<sub>Facility,y</sub></b>
Unit:	MWh
Description:	Net electricity supplied by the project to the grid in year y.
Measured/ Calculated / Default:	Measured
Source of data:	Electricity meters
Value(s) of monitored parameter:	236446.941
Monitoring equipment:	Please refer to Annex 1 for the details of electricity meters.
Measuring/ Reading/ Recording frequency:	Continuous measurement, monthly recording.
Calculation method (if applicable):	None
QA/QC procedures:	Data are cross checked by sales invoices.
Purpose of data:	Used for calculation of baseline emission reductions.
Additional comment:	None.

## D.3. Implementation of sampling plan

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Not applicable.

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

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

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The baseline emission during the monitoring period is:

$$BE_y = EG_{Facility,y} * EF_{grid,CM,y}$$

Where:

$EG_{Facility,y}$  is electricity supplied by the project activity to the grid in year y, in MWh;

$EF_{grid,CM,y}$  is baseline emission factor in year y, in tCO<sub>2</sub>e/MWh.

Therefore, the baseline emission reductions (BE<sub>y</sub>) are calculated as follows:

$$BE_y = EG_{Facility,y} * EF_{grid,CM,y} = 236446.941 \text{ MWh} * 0.9491 \text{ tCO}_2/\text{MWh} = 224,411 \text{ tCO}_2$$

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

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According to ACM0002, the project emissions are zero.

**E.3. Calculation of leakage**

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According to ACM0002, there are no leakage emissions.

**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 <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)	Emission reductions or net anthropogenic GHG removals by sinks (t CO <sub>2</sub> e)
Total	224,411	0	0	224,411

**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 CO <sub>2</sub> e)	297,064*	224,411

\*The value is calculated based on number of dates in monitoring period. There are 426 days during monitoring period, the ex-ante estimation of emission reductions is calculated as  $254,527 \text{ tCO}_2 / 365 \text{ days} * 426 \text{ days} = 297,064 \text{ tCO}_2$ .

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

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The CERs achieved during the monitoring period is lower than estimation in registered PDD. No explanation needed as per guideline.

**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)	21,418	202,993

**Anne 1: Details of electricity meters**

The details of 51 turbine meters are as follows:

No.	Serial No.	Calibration date	No.	Serial No.	Calibration date
1	GJU61839	23/06/2011	27	GJU63767	11/02/2011
2	GJU61840	23/06/2011	28	GJU63768	11/02/2011
3	GJU61853	25/06/2011	29	GJU62535	07/04/2011
4	GJU61841	23/06/2011	30	GJU64190	11/08/2011
5	GJU61843	24/06/2011	31	GJU64192	11/09/2011
6	GJU61842	23/06/2011	32	GJU62532	07/04/2011
7	GJU61849	23/06/2011	33	GJU64194	11/09/2011
8	GJU61851	25/06/2011	34	GJU64188	11/09/2011
9	GJU61850	25/06/2011	35	GJU64204	11/10/2011
10	GJU61848	25/06/2011	36	GJU64201	11/10/2011
11	GJU62537	07/05/2011	37	GJU64203	11/10/2011
12	GJU61833	23/06/2011	38	GJU64200	11/10/2011
13	GJU62538	07/06/2011	39	GJU64171	29/11/2011
14	GJU62536	07/04/2011	40	GJU64202	11/10/2011
15	GJU56316	01/01/2011	41	GJU64173	12/07/2011
16	GJU61828	07/04/2011	42	GJU64207	29/11/2011
17	GJU62539	07/06/2011	43	GJU64170	29/11/2011
18	GJU62533	07/04/2011	44	GJU64205	11/10/2011
19	GJU61846	25/06/2011	45	GJU64198	11/10/2011
20	GJU62534	07/04/2011	46	GJU64197	11/10/2011
21	GJU62521	07/01/2011	47	GJU64206	11/10/2011
22	GJU62531	07/02/2011	48	GJU64199	11/10/2011
23	GJU63766	11/02/2011	49	GJU64168	29/11/2011
24	GJU64195	11/09/2011	50	GJU64167	28/11/2011
25	GJU63770	11/02/2011	51	GJU64169	29/11/2011
26	GJU63769	11/02/2011			
Accuracy: 0.5S Type: Trivector Meter Calibration entity: Paschim Gujarat Vij Co.Ltd (PGVCL) Calibration validity: 3 years					

The details of main meters are as follows:

No.	Serial Number	Calibration date
Main Meter <sub>1</sub>	GJ-0670-A	17/01/2012
Main Meter <sub>2</sub>	GJ-0671-A	17/01/2012
Accuracy: 0.2S Type: Availability Based Tariff (ABT) Calibration entity: Gujarat Energy Transmission Company Ltd. (GETCO) Calibration validity: 3 years		



## 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>	GP Wind (Jangi) Private Limited
<b>Street/P.O. Box</b>	
<b>Building</b>	
<b>City</b>	
<b>State/Region</b>	
<b>Postcode</b>	
<b>Country</b>	India
<b>Telephone</b>	
<b>Fax</b>	
<b>E-mail</b>	ssundarrajan@gentingenergy.com
<b>Website</b>	
<b>Contact person</b>	Sundar Rajan
<b>Title</b>	
<b>Salutation</b>	
<b>Last name</b>	Rajan
<b>Middle name</b>	
<b>First name</b>	Sundar
<b>Department</b>	
<b>Mobile</b>	
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<b>Personal e-mail</b>	ssundarrajan@gentingenergy.com

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## Document information

<i>Version</i>	<i>Date</i>	<i>Description</i>
04.0	25 June 2014	<p>Revisions to:</p> <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 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.
Decision Class: Regulatory Document Type: Form Business Function: Issuance Keywords: monitoring report		