



**Monitoring report form
(Version 04.0)**

MONITORING REPORT

Title of the project activity	Jangi 91.8 MW wind farm in Gujarat
Reference number of the project activity	6702
Version number of the monitoring report	02
Completion date of the monitoring report	12/12/2014
Registration date of the project activity	17/10/2012
Monitoring period number and duration of this monitoring period	1 st monitoring period: 01/11/2012-31/12/2013 (both days inclusive)
Project participant(s)	GP Wind (Jangi) Private Limited Tricorona Carbon Asset Management Pte Ltd
Host Party(ies)	India
Sectoral scope and selected methodology(ies), and where applicable, applied standardized baseline(s)	Sectoral scope: 01 Energy industries (renewable - / non-renewable sources Selected methodology: ACM0002 Version 12.3.0
Estimated amount of GHG emission reductions or net anthropogenic GHG removals by sinks for this monitoring period in the registered PDD	297,064 tCO ₂ (426 days)
Actual GHG emission reductions or net anthropogenic GHG removals by sinks achieved in this monitoring period	224,411 tCO ₂
Actual GHG emission reductions or net anthropogenic GHG removals by sinks achieved during the period up to 31 December 2012(if applicable)	21,418 tCO ₂
Actual GHG emission reductions or net anthropogenic GHG removals by sinks achieved during the period from 1 January 2013 onwards (if applicable).	202,993 tCO ₂

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 2/12/2010¹. The 1st turbine was commissioned and put into operation on 31/08/2011 and the project was fully operational on 23/12/2011 (i.e. commissioning date of the last wind turbine). The total GHG emission reductions achieved in this monitoring period are 224,411 tCO₂.

S. No.	WTG Location no.	Commissioning date	S. No.	WTG Location no.	Commissioning date
1	VW08	31/08/2011	26	JW39	20/10/2011
2	VW44	31/08/2011	27	JW40	29/09/2011
3	VW57	01/10/2011	28	JW41	20/10/2011
4	JW03	31/08/2011	29	JW42	20/12/2011
5	JW06	31/08/2011	30	JW43	30/09/2011
6	JW07	31/08/2011	31	JW44	30/11/2011
7	JW21	18/11/2011	32	JW45	23/11/2011
8	JW17	19/11/2011	33	JW46	24/10/2011
9	JW18	19/11/2011	34	JW47	24/10/2011
10	JW19	19/11/2011	35	JW48	30/11/2011
11	JW20	19/11/2011	36	JW49	24/10/2011
12	JW22	18/11/2011	37	JW50	13/12/2011
13	JW26	31/08/2011	38	JW51	13/12/2011
14	JW28	31/08/2011	39	JW52	23/12/2011
15	JW32	23/12/2011	40	JW53	21/12/2011
16	VW59	23/12/2011	41	JW54	13/12/2011
17	VW61	31/08/2011	42	JW55	20/12/2011
18	VW70	23/12/2011	43	JW56	17/12/2011
19	JW24	30/09/2011	44	JW57	20/12/2011
20	JW31	31/08/2011	45	JW58	20/12/2011
21	JW33	03/09/2011	46	JW59	17/12/2011
22	JW34	03/09/2011	47	JW60	20/12/2011
23	JW35	01/10/2011	48	JW61	20/12/2011
24	JW36	29/09/2011	49	JW62	20/12/2011
25	JW37	23/11/2011	50	JW63	12/11/2011

¹ on which EPC contract was signed

			51	JW64	23/11/2011
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A.2. Location of project activity

>>The project is located about 20km South East from Samakhiyali 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 additionality (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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Moe Moe Oo, Tricorona Carbon Asset Management Pte Ltd, moe@tricorona.com
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 net electricity supplied to grid by the project activity for this monitoring period is 236,446.941 MWh.

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

There are no events or situations that occurred during the monitoring period that impacted the applicability of the applied methodology. PP confirms that there are no changes to the registered CDM 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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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 1st June 2013 to 1st November 2012.

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

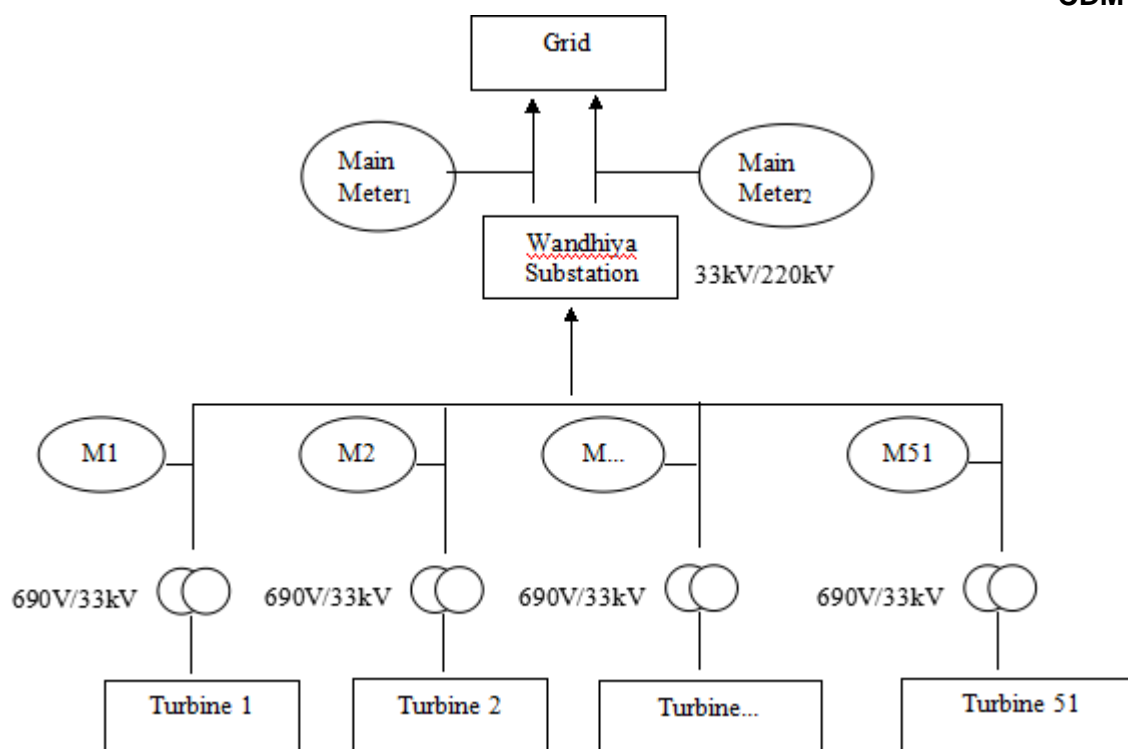
>>
None.

SECTION C. Description of monitoring system

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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 Meter₁ and Main Meter₂) 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:



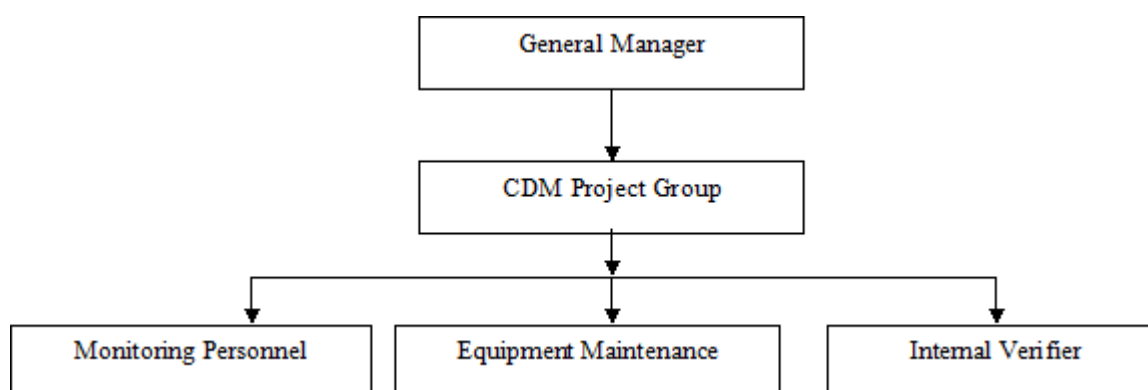
Data collection procedures:

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.)

Data / Parameter:	$EF_{grid,CM}$
Unit:	tCO ₂ /MWh
Description:	Combined margin CO ₂ emission factor for grid connected power generation
Source of data:	"CO ₂ 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:	$EG_{Facility,y}$
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:	236,446.941
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

>>

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 tCO₂e/MWh.

Therefore, the baseline emission reductions (BE_y) are calculated as follows:

$$BE_y = EG_{Facility,y} * EF_{grid,CM,y} = 236,446.941 \text{ MWh} * 0.9491 \text{ tCO}_2/\text{MWh} = 224,411 \text{ tCO}_2$$

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 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	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 ₂ 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 tCO₂/365 days*426 days= 297,064 tCO₂.

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 ₂ e)	21,418	202,993

Annex 1: Details of electricity meters

A. The details of 51 turbine Main meters are as follows:

S.No	Feeder No	Turbine ID	Energy Meter S.No	Calibration date
1	1	JW28	GJU61839	23/6/2011
2	1	JW03	GJU61840	23/6/2011
3	2	VW61	GJU61853	25/6/2011
4	4	VW57	GJU61841	23/6/2011
5	1	JW06	GJU61843	24/6/2011
6	1	JW07	GJU61842	23/6/2011
7	2	JW26	GJU61849	25/6/2011
8	2	VW08	GJU61851	25/6/2011
9	2	JW31	GJU61850	25/6/2011
10	8	JW33	GJU61848 ²	25/6/2011
			GJU62545 (new meter)	7/7/2011
11	8	JW34	GJU62537	5/7/2011
12	2	VW44	GJU61833	23/6/2011
13	8	JW40	GJU62538	6/7/2011
14	8	JW36	GJU62536	4/7/2011
15	8	JW43	GJU56316	1/1/2011
16	8	JW35	GJU61828	10/5/2011
17	8	JW24	GJU62539	6/7/2011
18	8	JW39	GJU62533	4/7/2011
19	8	JW41	GJU61846	25/6/2011
20	9	JW46	GJU62534	4/7/2011
21	9	JW47	GJU62521	1/7/2011
22	9	JW49	GJU62531	2/7/2011
23	11	JW17	GJU63766	2/11/2011
24	11	JW18	GJU64195	9/11/2011
25	11	JW19	GJU63770	2/11/2011
26	11	JW20	GJU63769	2/11/2011
27	11	JW21	GJU63767	2/11/2011
28	11	JW22	GJU63768	2/11/2011
29	8	JW63	GJU62535	4/7/2011
30	8	JW64	GJU64190	8/11/2011
31	2	JW37	GJU64192	9/11/2011
32	9	JW45	GJU62532	4/7/2011
33	9	JW44	GJU64194	9/11/2011
34	9	JW48	GJU64188	9/11/2011
35	9	JW50	GJU64204	10/11/2011
36	10	JW51	GJU64201	10/11/2011
37	10	JW54	GJU64203	10/11/2011

² This meter was replaced by GJU62545 on 19/03/2013

38	10	JW56	GJU64200	10/11/2011
39	10	JW59	GJU64171	29/11/2011
40	10	JW55	GJU64202 ³	10/11/2011
			GJU64206 (new meter)	10/11/2011
41	10	JW61	GJU64173	7/12/2011
42	10	JW60	GJU64207	29/11/2011
43	10	JW58	GJU64170	29/11/2011
44	10	JW57	GJU64205	10/11/2011
45	10	JW62	GJU64198	10/11/2011
46	9	JW42	GJU64197	10/11/2011
47	9	JW53	GJU64206 ⁴	10/11/2011
			GJU62541 (new meter)	6/7/2011
48	11	JW32	GJU64199	10/11/2011
49	9	JW52	GJU64168	29/11/2011
50	5	VW70	GJU64167	28/11/2011
51	5	VW59	GJU64169	29/11/2011
Accuracy: 0.5S Type: Trivector Meter Calibration entity: Paschim Gujarat Vij Co.Ltd (PGVCL) Calibration frequency: Once in three (3) years Calibration validity: 3 years				

B. The details of sub-station main meters are as follows:

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

C. The details of 51 turbine Back-up meters are as follows:

S.No	Feeder No	Turbine ID	Energy Meter S.No	Calibration date
1	1	JW28	GJB56484	16/07/2011
2	1	JW03	GJB56485	16/07/2011
3	2	VW61	GJB56505	19/07/2011

³ This meter was replaced by GJU64206 on 19/11/2013

⁴ This meter was replaced by GJU62541 on 24/12/2012

4	4	VW57	GJB56515	16/07/2011
5	1	JW06	GJB56514	16/07/2011
6	1	JW07	GJB56504	16/07/2011
7	2	JW26	GJB56506	16/07/2011
8	2	VW08	GJB56508	19/07/2011
9	2	JW31	GJB56507	16/07/2011
10	8	JW33	GJB56510	16/07/2011
11	8	JW34	GJB56509	19/07/2011
12	2	VW44	GJB56516	15/07/2011
13	8	JW40	GJB56512	15/07/2011
14	8	JW36	GJB56511	16/07/2011
15	8	JW43	GJB56503	16/07/2011
16	8	JW35	GJB56501	16/07/2011
17	8	JW24	GJB56486	16/07/2011
18	8	JW39	GJB56488	16/07/2011
19	8	JW41	GJB56489	16/07/2011
20	9	JW46	GJB56490	16/07/2011
21	9	JW47	GJB56502	14/07/2011
22	9	JW49	GJB56482	16/07/2011
23	11	JW17	GJB56521	19/07/2011
24	11	JW18	GJU64177	5/11/2011
25	11	JW19	GJB56478	16/07/2011
26	11	JW20	GJB56491	16/07/2011
27	11	JW21	GJB56522	16/07/2011
28	11	JW22	GJB56483	16/07/2011
29	8	JW63	GJB56480	16/07/2011
30	8	JW64	GJB56479	16/07/2011
31	2	JW37	GJB56476	16/07/2011
32	9	JW45	RJB78165	3/3/2012
33	9	JW44	GJU64143	5/11/2011
34	9	JW48	GJU64144	5/11/2011
35	9	JW50	GJU64140	5/11/2011
36	10	JW51	GJU64181	5/11/2011
37	10	JW54	GJU64176	5/11/2011
38	10	JW56	GJU64175	5/11/2011
39	10	JW59	GJU64184	5/11/2011
40	10	JW55	GJU64137	5/11/2011
41	10	JW61	GJU64180	5/11/2011
42	10	JW60	GJU64183	5/11/2011
43	10	JW58	GJU64179	5/11/2011
44	10	JW57	GJU64141	5/11/2011
45	10	JW62	GJB56477	16/07/2011
46	9	JW42	GJU64139	5/11/2011
47	9	JW53	GJU64178	5/11/2011
48	11	JW32	GJU64182	5/11/2011
49	9	JW52	GJU64186	5/11/2011
50	5	VW70	GJU64185	5/11/2011

51	5	VW59	GJU64142	5/11/2011
Accuracy: 0.2S Type: Availability Based Tariff (ABT) Meter Calibration entity: Paschim Gujarat Viji Co.Ltd (PGVCL) Calibration frequency: Once in three (3) years Calibration validity: 3 years				

D. The details of sub-station back-up meters are as follows:

No.	Serial Number	Calibration date
back-up Meter ₁	GJB 01664	NA
back-up Meter ₂	GJB 01665	NA
Accuracy: 0.2S Type: Trivector Meter Calibration entity: Gujarat Energy Transmission Company Ltd. (GETCO) Calibration frequency: Once in three (3) years Calibration validity: 3 years		

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

Project participant and/or responsible person/ entity	<input checked="" type="checkbox"/> Project participant <input type="checkbox"/> Responsible person/ entity for completing the CDM-MR-FORM
Organization name	GP Wind (Jangi) Private Limited
Street/P.O. Box	6-3-252/1/7/1A
Building	APM Square, II Floor, Erra Manzil, Banjara Hills
City	Hyderabad
State/Region	Telangana
Postcode	500082
Country	India
Telephone	+91 40 2330 7111
Fax	
E-mail	ssundarrajan@gentingenergy.com
Website	
Contact person	Sundar Rajan
Title	
Salutation	Mr.
Last name	Rajan
Middle name	
First name	Sundar
Department	
Mobile	
Direct fax	
Direct tel.	+91 40 2330 7111
Personal e-mail	ssundarrajan@gentingenergy.com

Project participant and/or responsible person/ entity	<input checked="" type="checkbox"/> Project participant <input checked="" type="checkbox"/> Responsible person/ entity for completing the CDM-MR-FORM
Organization name	Tricorona Carbon Asset Management Pte Ltd
Street/P.O. Box	
Building	50 Raffles Place # 35-01, Singapore Land Tower, Singapore
City	
State/Region	
Postcode	048623
Country	Singapore
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Fax	+65 6499 1299
E-mail	moe@tricorona.com
Website	
Contact person	Moe Moe Oo
Title	
Salutation	Mr.
Last name	Oo
Middle name	
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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"> • Include the Attachment: Instructions for filling out the monitoring report form (these instructions supersede the "Guideline: Completing the monitoring report form" (Version 04.0)); • Include provisions related to standardized baselines; • Add contact information on a responsible person(s)/entity(ies) for completing the CDM-MR-FORM in A.6 and Appendix 1; • Change the reference number from <i>F-CDM-MR</i> to <i>CDM-MR-FORM</i>; • Editorial improvement.
03.2	5 November 2013	Editorial revision to correct table in page 1.
03.1	2 January 2013	Editorial revision to correct table in section E.5.
03.0	3 December 2012	Revision required to introduce a provision on reporting actual emission reductions or net 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		