



# VERIFICATION REPORT

for the CDM Project Activity

## Jangi 91.8 MW wind farm in Gujarat

In  
India

Report No. 01 997 9105080250

Version 02, 2014-12-16

Designated Operational Entity (DOE)

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**I. Project data:**

<b>Project title:</b>	Jangi 91.8 MW wind farm in Gujarat	<b>Report No.: 01 997 9105080250</b>
<b>Registration No. / Date:</b>	6702/ 17-10-2012	<b>Current version No.: 02</b>
<b>Monitoring period:</b>	01/11/2012 – 31/12/2013 (Both days included)	<b>Date of current version: 2014-12-16</b>
<b>Methodology:</b>	ACM0002 ver. 12.3.0	<b>Date of first issue: 2014-08-14</b>
<b>Publication of MR:</b>	The monitoring report (version 01, 22/07/2014) was published at UNFCCC website on 06/08/2014	
<b>Average emission reductions:</b>	Estimated: 254,527*(426/365) = 297,064 tCO <sub>2</sub> e from 01/11/2012 to 31/12/2013 including both days based on annual emission reductions as indicated in the registered PDD (version 03, dated 11/10/2012) /B04/	Verified for CP1: 21,418 tCO <sub>2</sub> e from 01/11/2012 to 31/12/2012 including both days
		Verified for CP2: 202,993 tCO <sub>2</sub> e from 01/01/2013 to 31/12/2013 including both days
<b>GHG reducing measure/technology:</b>	Displacement of electricity (from grid) through renewable energy technology.	

Party	Project participants	Party considered a project participant	Contract party
India (Host)	GP Wind (Jangi) Private Limited	No	<input checked="" type="checkbox"/>
Sweden	Tricorona Carbon Asset Management Pte Ltd	No	<input type="checkbox"/>

**II. Verification Team and Technical Reviewer:**

Verification Team			Role						
Full name	Affiliation TÜV Rheinland	Appointed for Sectoral Scopes (Technical Areas)	Team leader	Acting Team Leader	Local Expert	Team Member (Auditor)	Technical Expert	Acting Tech. Expert	Trainee Auditor
Mr. Chetan Swaroop Sharma	India	1.2	X		X		X		

Technical Reviewer			Role		
Full name	Affiliation TÜV Rheinland	Appointed for Sectoral Scopes (Technical Areas)	Technical Reviewer	Expert to TR	Trainee TR
Ms. Indumathi C	India	1.2	X		

Verification Phases	Verification Status
<input checked="" type="checkbox"/> Desk Review <input checked="" type="checkbox"/> Follow up interviews <input checked="" type="checkbox"/> Resolution of outstanding issues	<input type="checkbox"/> Corrective Actions / Clarifications Requested <input checked="" type="checkbox"/> Full Approval and Submission for Issuance <input type="checkbox"/> Rejected

**III. Verification Report:**

Final approval	Released	Distribution
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<input checked="" type="checkbox"/>	<b>By: Mr. Henri Phan</b>	<input type="checkbox"/> No distribution without permission from the Client or responsible organizational unit
<b>Date: 2015-02-16</b>		<input checked="" type="checkbox"/> Unrestricted distribution

**Abbreviations**

CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reduction(s)
CL	Clarification request
CO <sub>2</sub>	Carbon dioxide
CO <sub>2e</sub>	Carbon dioxide equivalent
CP	Commitment Period
DOE	Designated Operational Entity
EB	Executive Board
ER	Emission reduction
FAR	Forward Action Request
GEDA	Gujarat Energy Development Agency
GETCO	Gujarat Energy Transmission Corporation Limited
GHG	Greenhouse Gas(es)
GUVNL	Gujarat Urja Vikas Nigam Ltd.
MP	Monitoring Plan
MR	Monitoring Report
MW	Mega Watt
MWh	Mega Watt-hour
NEWNE	Northern, Eastern, Western and North-Eastern
O&M	Operation and Maintenance
PDD	Project Design Document
PGVCL	Paschim Gujarat Vij Co. Ltd.
PP	Project Participant
PPA	Power Purchase Agreement
QA/QC	Quality Assurance/Quality Control
TUV R	TUV Rheinland (China) Ltd
UNFCCC	United Nations Framework Convention on Climate Change
VVS	Validation And Verification Standard
WTG	Wind Turbine Generator

## Verification opinion — summary

The verification team assigned by the DOE (TÜV Rheinland (China) Ltd.) concludes that the CDM Project Activity “Jangi 91.8 MW wind farm in Gujarat” in India, as described in the registered PDD (version-03, date-11/10/2012) /B04/ and monitoring report (version-02, date-12/12/2014) /P02/ meets all relevant requirements of the UNFCCC for CDM project activities including article 12 of the Kyoto Protocol, the modalities and procedures for CDM (Marrakesh Accords) project activities including carbon dioxide capture and storage in geological formation and the subsequent decisions by the COP/MOP and CDM Executive Board. The verification is conducted in-line with the VVS requirements.

### Verification methodology and process

The verification has been performed as described in the VVS version 07.0 and constitutes the following steps:

- Publication of the MR on the UNFCCC website on 06/08/2014
- Desk review of the MR and the relevant documents
- On-site assessment on 11/09/2014
- Issuance of Verification Report

The project activity was correctly implemented according to selected monitoring methodology and monitoring plan. The monitoring equipment was installed, calibrated and maintained in a proper manner, while collected monitoring data allowed to verify the amount of achieved GHG emission reductions. The DOE therefore is pleased to issue a positive verification opinion expressed in the attached Certification statement.

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## 1. Introduction

The Contracting Client Organization has commissioned the DOE TÜV Rheinland (China) Ltd. to perform a verification of the CDM Project Activity “Jangi 91.8 MW wind farm in Gujarat” in India (hereafter “project activity”). This report summarises the findings of the verification of the project, performed on the basis of paragraph 62 of the CDM modalities and procedures, as well as criteria given to provide for consistent project operations, monitoring and reporting and the subsequent decisions by the CDM Executive Board. Verification is required for all registered CDM project activities intending to confirm their achieved emission reductions and proceed with request for issuance of CERs. This report contains the findings from the verification and a certification statement for the certified emission reductions.

### 1.1 Objective

Verification is the periodic independent review and *ex post* determination of both quantitative and qualitative information by a Designated Operational Entity (DOE) of the monitored reductions in GHG emissions that have occurred as a result of the registered CDM project activity during a defined monitoring period.

Certification is the written assurance by a DOE that, during a specific period in time, a project activity achieved the emission reductions as verified.

The objective of this verification was to verify and certify emission reductions reported for the “Jangi 91.8 MW wind farm in Gujarat” in country “India” for the period 01/11/2012 to 31/12/2013 (Both days included).

The purpose of verification is to review the monitoring results and verify that monitoring methodology was implemented according to monitoring plan and monitoring data, used to confirm the reductions in anthropogenic emissions by sources is sufficient, definitive and presented in a concise and transparent manner.

In particular, monitoring plan, monitoring report and the project’s compliance with relevant UNFCCC and host Party criteria are verified in order to confirm that the project has been implemented in accordance with previously registered design and conservative assumptions, as documented and also if the monitoring plan is in compliance with the registered PDD and approved monitoring methodology.

### 1.2 Scope

The scope of the verification is:

- To verify that actual monitoring systems and procedures are in compliance with the monitoring systems and procedures described in the monitoring plan.
- To evaluate the GHG emission reduction data and express a conclusion with a reasonable level of assurance about whether the reported GHG emission reduction data is free from material misstatement.
- To verify that reported GHG emission data is sufficiently supported by evidence.
- Where sampling is involved, sampling guidelines are applied to ensure the adequate sampling and survey method is followed in reaching professional judgements.

The verification shall ensure that reported emission reductions are complete and accurate in order to be certified. The verification comprises a review of the monitoring report over the monitoring period from 01/11/2012 – 31/12/2013 (Both days included) based on registered PDD in part of the monitoring parameters and monitoring plan, emission reduction calculation spreadsheet, monitoring methodology and all related evidence provided by project participant.

On-site visit and stakeholders interviews are also performed as part of the verification process.

## 2. Methodology

The verification consists of the following four phases:

1. Completeness check and webhost of the Monitoring report for UNFCCC public commenting;
2. Desk review of the monitoring plan, monitoring report, monitoring methodology, project design document, applicable tools in particular attention to the frequency of measurements, quality of metering equipment's including calibration requirements, QA/QC procedures and other relevant documents;
3. On-site visit (including follow-up interviews with project stakeholders, when deemed necessary). The on-site assignment includes the following:
  - An assignment of implementation and operation of project activity with respect to registered PDD or approved revised PDD;
  - Review of information flows for generating, aggregating and reporting the monitoring parameters;
  - Interview with relevant personals to determine whether the operational and data collection procedures are implemented and in accordance with monitoring plan of the PDD;
  - Cross check of information and data provided in the monitoring report with plant logbooks, inventories, purchase records or similar data sources;
  - Check of monitoring equipment's, calibration frequency and monitoring practice in-line with methodology and PDD;
  - Review of assumptions made in calculating the emission reduction;
  - Implementation of QA/QC procedure in-line with the PDD and methodology requirement.
4. Resolution of outstanding issues and the issuance of the final Verification report and Certification statement.

The following sections outline each step in more detail.

### 2.1 Desk review

The following table outlines the documentation reviewed during the verification:

Ref no.	Reference Document
/P01/	Monitoring Report [webhosted version], Version-01, dated 22/07/2014
/P02/	Monitoring report [final version], Version-02, dated 12/12/2014
/P03/	ER calculation spread sheet corresponding to /P01/
/P04/	Final ER calculation spread sheet corresponding to /P02/
/P05/	Calibration certificate of all the meters including back-up meter (meter at the substation and meter at the individual turbine) covering the reported monitoring period.
/P06/	Copy of commissioning certificates of all the WTGs of the project activity.
/P07/	Copy of Power Purchase Agreements covering each of the WTG of the project activity.
/P08/	Monthly share certificate covering the reported monitoring period.
/P09/	Copy of monthly invoices raised by PP to State electricity company covering the reported monitoring period.
/P10/	Copy of Joint Meter Reading (JMR) reports covering reported monitoring period.
/P11/	Valid Operation and Maintenance Contract for all the WTGs of the project activity.
/P12/	Site layout plan for the project activity WTGs, showing the Sub-station, feeders and other WTGs (Non PPs) for each of the sub-station feeders to which the WTGs of the project is connected.
/P13/	Photographs of the following: <ol style="list-style-type: none"> <li>1. All WTGs of the project activity with unique identification numbers.</li> <li>2. Meters at Substation and individual turbine (S. No., make and accuracy class should be clearly readable) corresponding to the WTGs of the project activity.</li> <li>3. Evacuation systems with which each of the WTGs of the project activity are connected.</li> </ol>

<b>/P14/</b>	Training records of O & M team.
<b>/P15/</b>	Copy of Purchase orders with technical specifications of the WTGs implemented in the project activity.
<b>/P16/</b>	Details of Meters (Main and back-up at the individual turbine and at the Substation) with a track of change covering details - make, meter serial number, accuracy class and feeder/SS for all the connected feeders to which WTGs of the project activity is connected.
<b>/P17/</b>	Proof of date of change of meters during this monitoring period and the calibration certificates of the new meters.
<b>/P18/</b>	GEDA permission for setting up of 91.8 MW Windfarm

Background investigation and other referred documents/websites:

Reference	Document
<b>/B01/</b>	Approved CDM Methodology ACM0002 version 12.3.0: “Consolidated baseline methodology for grid-connected electricity generation from renewable sources”
<b>/B02/</b>	Kyoto Protocol (1997)
<b>/B03/</b>	Decision 3/CMP.1, Decision 4/CMP.1 and Decision 1/CMP.2, paragraph 28
<b>/B04/</b>	Project Design Document (version 03, dated 11/10/2012) for the CDM project: “Jangi 91.8 MW wind farm in Gujarat” registered on 17/10/2012, UNFCCC project reference no. 6702.
<b>/B05/</b>	Validation Report for CDM project “Jangi 91.8 MW wind farm in Gujarat” UNFCCC project reference no 6702
<b>/B06/</b>	CDM Validation and Verification Standard, version 07.0
<b>/B07/</b>	Websites referred 1. <a href="http://cdm.unfccc.int/index.html">http://cdm.unfccc.int/index.html</a> 2. <a href="http://cdm.unfccc.int/methodologies/PAmethodologies/approved">http://cdm.unfccc.int/methodologies/PAmethodologies/approved</a> 3. <a href="http://www.cea.nic.in/reports/planning/cdm_co2/user_guide_ver6.pdf">http://www.cea.nic.in/reports/planning/cdm_co2/user_guide_ver6.pdf</a> 4. <a href="http://www.itouchmap.com/latlong.html">http://www.itouchmap.com/latlong.html</a>
<b>/B08/</b>	E-mail from CDM Secretariat confirming the monitoring report /P01/ made publically available from 06/08/2014
<b>/B09/</b>	CDM Project Standard, version 07
<b>/B10/</b>	Clean Development Mechanism Project Cycle Procedure (version 07)
<b>/B11/</b>	CDM Executive Board, Guidelines on the Application of Materiality in Verifications, Version 01.0

## 2.2 On-site visit and follow-up interviews with project stakeholders

TÜV Rheinland verification team carried out an on-site visit dated (11/09/2014) and performed interviews with the project representatives and stakeholders.

Prior to the interview salient points to be discussed were planned. Date of interview, interviewee and points discussed are given in the following table.

	Date	Name	Organization	Topic
/i/	11/09/2014	N Prasanth	GP Wind (Jangi) Private Limited	Data recording, Monitoring of operation, Project Operation, Monitoring plan, Calibration, data archiving system, organisational structure, Information flow.
/ii/	11/09/2014	Jignesh V	Vestas Wind Technology	

Verification Team along with onsite observation, objective evidence collections, data generation and recording analysis also considered the views obtained in these interviews while arriving at Verification Opinion.

## 2.3 Resolution of outstanding issues

The objective of this phase of the verification is to resolve any outstanding issues (issues that require further elaboration, research or expansion) which have to be clarified prior to final DOE's conclusions on the project implementation, monitoring practices and achieved emission reductions. In order to ensure transparency a verification protocol is completed for the project activity. The protocol shows in transparent manner criteria (requirements), means of verification and resulting statements on verification actual project activity against identified criteria.

The verification protocol serves the following purposes:

- It organises in a table form, details and clarifies the requirements, which CDM project is expected to meet CDM requirements;
- It ensures a transparent verification process where the DOE will document how a particular requirement has been verified and the result of the verification.
- It ensures that the issues are accurately identified, formulated, discussed and concluded in the validation report.
- It ensures the determination of achieving credible emission reductions from the project activity.

The verification protocol consists of three tables. Table 1 reflects the verification requirements and reference to the materials used to verify the project activity against those requirements, as well as means of verification, reference to Table 2 and preliminary and final opinion of the DOE on every particular requirement. Table 3 reflects the carry forward actions initiated by the verification team if the monitoring and reporting require attention and/or adjustment for the next verification period. The completed verification protocol for this project is enclosed in Appendix A to this report.

Findings during the verification can be interpreted as a non-compliance with CDM criteria or a risk to the compliance. Corrective action requests (CARs) are raised, in case:

- (a) Non-conformities with the monitoring plan or methodology are found in monitoring and reporting and has not been sufficiently documented by the project participants, or if the evidence provided to prove conformity is insufficient;
- (b) Modifications to the implementation, operation and monitoring of the registered project activity has not been sufficiently documented by the project participants;
- (c) Mistakes have been made in applying assumptions, data or calculations of emission reductions which will impair the estimate of emission reductions;
- (d) Issues identified in a FAR during validation/previous verification(s) that are not been resolved by the project participant(s) to be verified during current verification.

Requests for clarification (CLs) are raised, if information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met.

A forward action request (FAR) is raised during verification to highlight issues related to project implementation/monitoring that require review during the subsequent verification of the project activity. FARs shall not relate to the CDM requirements for issuance.

## 2.4 Internal quality control

The final verification report underwent a technical review by a qualified independent reviewer before requesting issuance of the project activity. The technical review was performed by a technical reviewer qualified in

accordance with TÜV Rheinland's qualification scheme for CDM validation and verification that meets the criteria of EB guidelines for qualification.

## 2.5 Verification Team and Technical Reviewer

Before the assessment begins, members of the verification team are ensured to cover the technical area(s), sectoral scope(s) and relevant host country experience including local language ability for evaluating the CDM verification activity. The qualification of the team is as per the criterias defined by the EB guidelines for qualification.

Verification Team			Type of Involvement					
Full name	Affiliation TÜV Rheinland	Appointed for Sectoral Scopes (Technical Areas)	Supervising the work	Desk review	Site Visit + Interview	Report and protocol Writing	Technical Expert Input	Reporting Support
Mr. Chetan Swaroop Sharma	India	1.2	X	X	X	X	X	X

Technical Reviewer			Type of Involvement		
Full name	Affiliation TÜV Rheinland	Appointed for Sectoral Scopes (Technical Areas)	Technical Reviewer	Expert to Technical Reviewer	Trainee TR
Ms. Indumathi C	India	1.2	X		

## 3. Verification findings

The findings of the verification are described in the following sections. The verification criteria (requirements), the means of verification and the results of verification are documented in detail in the verification protocol in Appendix A.

### 3.1 Project implementation

#### 3.1.1 The implementation of the project activity

<b>Project Participants:</b>	GP Wind (Jangi) Private Limited, Tricorona Carbon Asset Management Pte Ltd
<b>Project Parties:</b>	Tricorona Carbon Asset Management Pte Ltd (Sweden)
<b>Title of project activity:</b>	Jangi 91.8 MW wind farm in Gujarat
<b>UNFCCC registration No:</b>	6702
<b>Baseline and monitoring methodology:</b>	ACM0002 ver. 12.3.0
<b>Project Type:</b>	Renewable energy
<b>Project Scale:</b>	Large Scale
<b>Location of the project activity:</b>	Town - Jangi, District - Kutch, State - Gujarat, India

	The project is located about 20 km 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.
<b>Project's crediting period:</b>	01/11/2012 – 31/10/2022 (Fixed)
<b>Total Duration of the project:</b>	10 years (fixed)
<b>Period verified in this verification:</b>	01/11/2012 to 31/12/2013 (including both the days)

As part of the site visit the verification team was able to confirm that the project implementation is in accordance with the project description contained in registered PDD (version 03, dated 11/10/2012) /B04/. The verification took cognizance of § 238, 239 & 240 of CDM Project Standard /B09/.

CDM project activity involves installation of 51 numbers of WTGs (Vestas make, V100 Class 3 model no.) of 1.8 MW capacity each at Town - Jangi, District - Kutch, State - Gujarat, India. The make, capacity and WTG location no. of all the WTGs implemented under the project activity has been verified from onsite visit /P13/ and the commissioning certificate /P06/. Also the commissioning dates of the project activity WTGs have been verified from commissioning certificate /P06/. The total installed capacity of the project activity is 91.8 MW (= 51\*1.8 MW). All the 51 number of WTGs of the project activity owned by the Project Participants as verified from commissioning certificate /P06/ and PPA /P07/.

During the site visit, the verification team has verified the location of the installed WTGs and also checked the metering system and found that the installed WTGs and the metering system is in place and according to the registered PDD /B04/. The details of the installed WTGs under the project activity are given below:

S. No.	WTG ID No. /P06/ /P07/ /P18/	WTG Location no. /P06/ /P10/ /P18/	Commissioning date /P06/	S. No.	WTG ID No. /P06/ /P07/ /P18/	WTG Location no. /P06/ /P10/ /P18/	Commissioning date /P06/
1	VWT/1800/11-12/2233	VW08	31/08/2011	26	VWT/1800/11-12/2258	JW39	20/10/2011
2	VWT/1800/11-12/2234	VW44	31/08/2011	27	VWT/1800/11-12/2259	JW40	29/09/2011
3	VWT/1800/11-12/2235	VW57	01/10/2011	28	VWT/1800/11-12/2260	JW41	20/10/2011
4	VWT/1800/11-12/2236	JW03	31/08/2011	29	VWT/1800/11-12/2261	JW42	20/12/2011
5	VWT/1800/11-12/2237	JW06	31/08/2011	30	VWT/1800/11-12/2262	JW43	30/09/2011
6	VWT/1800/11-12/2238	JW07	31/08/2011	31	VWT/1800/11-12/2263	JW44	30/11/2011
7	VWT/1800/11-12/2239	JW21	18/11/2011	32	VWT/1800/11-12/2264	JW45	23/11/2011
8	VWT/1800/11-12/2240	JW17	19/11/2011	33	VWT/1800/11-12/2265	JW46	24/10/2011
9	VWT/1800/11-12/2241	JW18	19/11/2011	34	VWT/1800/11-12/2266	JW47	24/10/2011
10	VWT/1800/11-12/2242	JW19	19/11/2011	35	VWT/1800/11-12/2267	JW48	30/11/2011
11	VWT/1800/11-	JW20	19/11/2011	36	VWT/1800/11-	JW49	24/10/2011

	12/2243				12/2268		
12	VWT/1800/11-12/2244	JW22	18/11/2011	37	VWT/1800/11-12/2269	JW50	13/12/2011
13	VWT/1800/11-12/2245	JW26	31/08/2011	38	VWT/1800/11-12/2270	JW51	13/12/2011
14	VWT/1800/11-12/2246	JW28	31/08/2011	39	VWT/1800/11-12/2271	JW52	23/12/2011
15	VWT/1800/11-12/2247	JW32	23/12/2011	40	VWT/1800/11-12/2272	JW53	21/12/2011
16	VWT/1800/11-12/2248	VW59	23/12/2011	41	VWT/1800/11-12/2273	JW54	13/12/2011
17	VWT/1800/11-12/2249	VW61	31/08/2011	42	VWT/1800/11-12/2274	JW55	20/12/2011
18	VWT/1800/11-12/2250	VW70	23/12/2011	43	VWT/1800/11-12/2275	JW56	17/12/2011
19	VWT/1800/11-12/2251	JW24	30/09/2011	44	VWT/1800/11-12/2276	JW57	20/12/2011
20	VWT/1800/11-12/2252	JW31	31/08/2011	45	VWT/1800/11-12/2277	JW58	20/12/2011
21	VWT/1800/11-12/2253	JW33	03/09/2011	46	VWT/1800/11-12/2278	JW59	17/12/2011
22	VWT/1800/11-12/2254	JW34	03/09/2011	47	VWT/1800/11-12/2279	JW60	20/12/2011
23	VWT/1800/11-12/2255	JW35	01/10/2011	48	VWT/1800/11-12/2280	JW61	20/12/2011
24	VWT/1800/11-12/2256	JW36	29/09/2011	49	VWT/1800/11-12/2281	JW62	20/12/2011
25	VWT/1800/11-12/2257	JW37	23/11/2011	50	VWT/1800/11-12/2282	JW63	12/11/2011
				51	VWT/1800/11-12/2283	JW64	23/11/2011

All the WTGs of the project activity have been commissioned before the starting of this monitoring period and also has started the commercial generation/export of electricity to the grid from the commissioning date of the corresponding WTGs of the project activity.

It was also verified that the project activity is a grid connected wind power project /P07/ and the generated electricity from the project is being supplied /P08/, /P09/ to the state electricity utility GETCO which is a part of NEWNE Grid of India /B07-3/.

The meter details for all the main and check meters along with the connected feeders were verified during the onsite visit. There was no change in the meters and the connected feeders corresponding to the WTGs of the project activity during this monitoring period except for few individual main meters corresponding to the WTG Location No. JW33, JW55 and JW53 which has been verified by the verification team from the document review /P17/ and found OK. CAR-02 was raised in this respect and successfully closed.

The verification team has verified the implementation of the project activity as per para § 262 (b) (i), 270(a), 271, 272 and 273 of VVS ver 7.0 /B06/ and found correct. The project activity has been implemented and operated as stated in the registered PDD /B04/ which has been verified during the site visit.

There was no diversion from the implementation details given in the registered PDD during this reported monitoring period.

The PP has opted fixed crediting period of 10 years starting from 01/11/2012 to 31/10/2022 /B07-1/. The monitoring period for this verification is from 01/11/2012 to 31/12/2013 (including both the days) hence the monitoring period is within the crediting period limit.

Herewith, the Verification Team summarizes *major* changes between webhosted Monitoring Report and final version of Monitoring Report for submission as follows:

Subject	Webhosted Monitoring Report (MR)	Correction to webhosted MR in the final MR submission for issuance with DOE assessment and reason of acceptance.
<b>Consistency</b>		
MR (project title / participants involved/ project location / reference numbers / report date and version etc.)	<b>Project title:</b> Jangi 91.8 MW wind farm in Gujarat  UNFCCC Ref. – 6702  Monitoring Report (version 01, dated 22/07/2014)	No Change except Monitoring Report (version 02, dated 12/12/2014)
Methodologies ( title and version numbers) PDD and its version	<b>Methodology:</b> ACM0002, “Consolidated baseline methodology for grid-connected electricity generation from renewable sources” version 12.3.0  Registered PDD: (version 03, dated 11/10/2012)	No change
CER calculations (formula applied/ amount of emission reduction)	ERy =224,411 tCO <sub>2</sub>	ERy = 224,411 tCO <sub>2</sub>  There is no change of emission reduction with respect to hosted MR.
Registration date, consistent/logical sign - off dates	Registration Date : 17/10/2012	No Change
Monitoring (period dates / parameters / frequency )	01/11/2012 – 31/12/2013 (including both the days)	No Change
Crediting period ( type / start date)	Crediting Date: 01/11/2012 – 31/10/2022 (Fixed)	No Change

Please refer to Appendix A of this report for details of each change between webhosted MR and the final MR for submission. The Verification Team has carried out the verification process based on the Webhosted MR and raised CARs/CLs against the project by issuing the verification protocol.

With the updated information and corrections done on final MR, the PP has addressed all the CARs /CLs that were raised by the Verification Team.

It is concluded that the Verification Team has reviewed the project in line with the VVS (version 07.0) and all the evidence, corrections, justifications and updating done on the final MR with respect to CARs /CLs raised are accepted and closed by the Verification Team, issuing the positive verification opinion for project registration.

TÜV Rheinland verification team considers the project description of the project contained in the registered PDD to be complete and accurate. The PDD complies with the relevant methodology, tools, forms and guidance at the time of PDD submission for registration.

### 3.1.2 The actual operation of the CDM project activity

The verification team has verified during the site visit and from the document review /P08/, /P09/ and /P10/ that the project activity has been operated as per the registered PDD and all the physical features of the project

activity are in place during this reported monitoring period (01/11/2012 to 31/12/2013 (including both the days)).

During this monitoring period from 01/11/2012 to 31/12/2013 (Both the days inclusive), the project activity has supplied a total of 236,446.941 MWh of electricity to the state electricity utility namely GETCO which falls under NEWNE grid of India and thus leads to CO<sub>2</sub> emission reduction due to the displacement of equivalent amount of electricity from the grid and thus the total baseline emission comes to 224,411 tCO<sub>2</sub>e.

It was also verified that the operation and maintenance of all the WTGs (=of the project activity) during this monitoring period was done by Vestas Wind Technology India Private Limited with whom PP has signed operation and maintenance contract /P11/.

Verification team has also checked that the PPA /P07/ has signed between GP Wind (Jangi) Private Limited and GUVNL. The agreement is in full force and effective for 25 years from the commercial operation date of the WTGs of the project activity, hence the PPAs are valid during this monitoring period.

Also the verification team has insured that there is a clear audit trail of all GHG data monitored and collected and having the sufficient evidence during this monitoring period. The monitoring parameter was monitored according to the monitoring plan given under the registered PDD /B04/ as verified from the document review /P08/, /P09/, /P10/ and found OK.

Also the training of the employees of the PP representative (Vestas) was conducted during this monitoring period. The verification team has checked the training document /P14/ and found OK.

Variation in actual operation of the project activity during this monitoring period against registered CDM-PDD /B04/ and the validation report have been assessed and summarized below:

Key Parameters	Registered PDD /B04/ and Validation report /B05/	Actual implementation and operation	Assessment
Total installed capacity of the project activity	91.8 MW	91.8 MW	Total installed capacity of the project activity is 91.8 MW having 51 numbers of WTGs (Vestas make). There is no variation in the installed capacity and has been checked and verified through onsite visit and document review /P06/, /P07/, /P08/, /P10/, /P11/, /P13/. Hence this is OK.
Emission Reductions from the Project activity during this monitoring period (tons of CO <sub>2</sub> e)	$(254,527 * 426 / 365) = 297,064$ tCO <sub>2</sub> e	224,411 tCO <sub>2</sub> e	The achieved emission reduction from the project during this monitoring period is within the limit of the estimated value of the emission reduction in the registered CDM-PDD. Hence this is OK.
Grid Emission factor (tCO <sub>2</sub> /GWh)	0.9491 tCO <sub>2</sub> /MWh	0.9491 tCO <sub>2</sub> /MWh	The value of the emission factor in fixed Ex-ante for the crediting period.

Thus the verification team has ensured that the project activity has been operated as per the registered PDD and also the actual monitoring systems and procedures comply with the monitoring systems and procedures described in the registered PDD /B04/ and approved methodology.

<b>Project physical features ( technology, project equipment, monitoring and metering equipment)</b>	CDM project activity involves installation of 51 numbers of WTGs (Vestas make, V100 Class 3 model no.) of 1.8 MW capacity each at Town - Jangi, District - Kutch, State - Gujarat, India. The make, capacity and WTG location no. of all the WTGs implemented under the project activity has been verified from onsite visit /P13/ and the commissioning certificate /P06/. Also the
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	commissioning dates of the project activity WTGs have been verified from commissioning certificate /P06/. The total installed capacity of the project activity is 91.8 MW (= 51*1.8 MW). All the 51 number of WTGs of the project activity owned by the Project Participants as verified from commissioning certificate /P06/ and PPA /P07/.	
<b>Any Project Design Change been sought and approved by EB for the project?</b>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	N/A
<b>Any Revision in Monitoring plan is sought and approved by EB for the project?</b>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	N/A
<b>Does the monitoring report provide line diagram showing all relevant monitoring points?</b>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Yes, monitoring report provide line diagram showing all relevant monitoring points.

The timeline of the project's implementation is as follow:

Milestone of the project activity	Timeline	Assessment by the verification team
<b>Starting date of operation:</b>	All the WTGs of project activity were commissioned and synchronised with the grid on 23/12/2011.	Verification team has verified the same from the commissioning certificate /P06/
<b>Registration of the project activity</b>	17/10/2012	Verification team has checked the same from the UNFCCC website /B07-1/
<b>Crediting period- 01/11/2012 – 31/10/2022 (Fixed)</b>		
<b>1<sup>st</sup> monitoring period</b>	01/11/2012 to 31/12/2013 (including both the days)	Verification team has checked the same from the UNFCCC website /B07-1/

In summary, the monitoring period is reasonable and the actual implementation of the project activity is appropriate to its CDM development. The verification took cognizance of § 240,241 and 242 of CDM Project Standard /B09/.

### 3.2 Compliance of the monitoring plan with the monitoring methodology including applicable tool(s)

According to § 274 of VVS, version 7.0 /B06/, the verification team confirms that the monitoring plan /B04/ and the monitoring system implemented are in compliance to the applied monitoring methodology, ACM0002, version 12.3.0 /B01/.

The compliance of the monitoring plan with the applied meth (ACM 0002, version 12.3.0) is given below:.

<b>Applied Methodology</b>	ACM 0002 Version 12.3.0
<b>Requirement of the monitoring methodology</b>	<p>Quantity of net electricity generation supplied by the project plant/unit to the grid in year y</p> <p>Continuous measurement through electricity meters and at least monthly recording</p>

<b>Compliance of monitoring plan of the project activity w.r.t. monitoring methodology</b>	<p>The parameter that needs to be monitored as per the methodology is the Electricity generation from project activity.</p> <p>There are two meters (Main and Check Meter) at each WTG. Also there are two main and two check meters at the substation. These installed meters do the continuous measurement. PP's representative and the state electricity utility (GEDA) representative monitor the electricity export and import jointly every month on the individual turbine and the substation. Based on the measured electricity data, state electricity utility (GETCO) issue the share certificate /P08/ on monthly basis. Verification team confirms that PP has appropriately delineated the monitoring plan to monitor the electricity generated by the renewable energy technology.</p> <p>Verification team confirms that monitoring plan is in compliance with the applied meth. This has been verified from the site visit and checked through documents review /P08/, /P09/ and /P10/ submitted by the PP.</p>
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Hence it is concluded that the monitoring plan /B04/ is in accordance with the monitoring methodology applied (ACM0002, Version 12.3.0) by the project activity in accordance with the requirement of § 274 of the VVS version 7.0 /B06/.

The verification team determined against all the information provided in MR, whether in-line with the applied monitoring methodology.

Determination Requirements	Criteria fulfilled	Determination and reporting by the verification team
Any Deviation been sought and approved by EB for the project.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	N/A
Is complete set of data for the specified monitoring period is available	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Complete set of data for the specified monitoring period is available.
Is the required information provided in the monitoring report has been cross-checked with other sources (ex – plant logbooks, inventories, purchase records, laboratory analysis)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	The monitoring parameters given in the monitoring report /P02/ are cross checked as per the requirements of the monitoring plan /B04/.
Is the calculation of baseline emissions and project activity emissions and leakage been in accordance with the formulae and methods described in monitoring plan and the applied methodology?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Yes, the calculations of baseline emissions and project activity emissions and leakage are in accordance with the formulae and methods described in monitoring plan and the applied methodology.
Is all assumptions used for emission calculation have been justified	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Yes
Is appropriate emission factors, IPCC default values and other reference values have been correctly applied	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Yes

The DOE verification team is able to confirm that the monitoring plan contained in the registered PDD (version 03, dated 11/10/2012) is in accordance with the approved methodology applied by the project activity, i.e. ACM0002 ver. 12.3.0 /B01/.

### 3.3 Compliance of the Actual monitoring with monitoring plan in the PDD

The monitoring has been carried out in accordance with the monitoring plan contained in the registered PDD (version 03, dated 11/10/2012) /B04/.

Referring to the § 270 (c), § 278, § 280 and § 281 of VVS version 7.0, the verification team confirmed through on-site verification and from the document review /P02/, /P08/, /P09/, /P10/ that the actual monitoring system complies with the requirements of the monitoring plan /B04/.

There are two meters (Main and Check Meter) at each WTG. Also there are two main and two check meters at the substation. These installed meters do the continuous measurement. A joint meter reading (JMR) /P10/ is taken every month jointly by the GETCO personnel and representative of PP for the meters installed at each turbine and at the substation, which are capable of measuring both export and import by the connected WTGs. Based on the measured electricity data, state electricity utility (GETCO) issue the share certificate /P08/ on monthly basis.

Also the monitoring parameter is checked against various criteria in context with monitoring plan /B04/ and is given in the section 3.3.1 of this verification report. The monitoring parameter was found to be in compliance with the criteria of the registered monitoring plan.

### 3.3.1 Monitored parameters

During this verification the monitoring parameter (as listed in monitoring plan /B04/) has been verified. The verification team has also confirmed that the monitoring parameter was monitored according to the requirement of the monitoring plan.

Referring to § 259, § 260, § 262 (a, b), § 281 of VVS ver 7.0 /B06/, the below tables provide a short summary on the verification of parameter listed in the monitoring plan. For further details the Section 4 of the Table 1 (project specific verification checklist) in this report can be referred for the following monitoring parameter:

#### Ex-Post Parameters:

Monitoring Parameter Requirement	Assessment/ Observation by the DOE
Data / Parameter: (as in monitoring plan of PDD):	EG <sub>Facility,y</sub> - Net electricity supplied by the project activity to the grid in year y
Measuring frequency/Time Interval:	Continuous measurement, monthly recording.  Data is monitored continuously by Main and Check meter located at individual turbine and at sub-station. The data is recorded monthly basis jointly by the officials of the state electricity department (GETCO) and representatives of PP at the individual turbine and at the substation.
Reporting frequency:	Monthly
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Type of monitoring equipment:	Two meters (brand: L&T Ltd) owned by the electricity purchaser are installed at the substation. 51 meters (brand: Secure Meters Ltd) are installed at the individual turbines. All meters have back-up meters installed. The meter arrangement is in-line with the monitoring plan /B04/.  The accuracy class of all the Meters is 0.5 or higher which is as per the registered monitoring plan /B04/.  Refer section 3.3.3 of this report for the calibration details.
Is accuracy of the monitoring equipment as stated in the PDD? If the PDD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	Yes
Calibration frequency /interval: Is it Board guidance / local or national standards / manufacturers specification	Calibration frequency of all the meters (i.e. at the individual turbine and the substation) is once in three year which is as per the registered monitoring plan /B04/.
Is the calibration interval in line with the monitoring	Yes

plan of the PDD? If the PDD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	
Company performing the calibration:	Calibration agency for Individual turbine main and check meter: PGVCL Calibration agency for Substation main and check meter: GETCO
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	Yes
Is (are) calibration(s) valid for the whole reporting period?	Yes, the records of calibration /P05/ have been verified by the verification team and found OK. However the calibration of the substation check meter was not done during this monitoring period instead of payment done and is pending from the state electricity utility, CL-01 is raised in this respect and successfully closed.
If applicable, has the reported data been cross-checked with other available data?	The value of the data has been cross-checked with the monthly invoices against sale of power raised by PP /P09/ and found OK.
How were the values in the monitoring report verified?	236,446.941 MWh  Verification team has checked the values of the parameter from the Share certificate /P08/ and found OK.
Does the data management (from monitoring equipment to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	N/A

In summary, verification team confirms that the ex-post parameter is monitored in accordance to the approved monitoring plan /B04/ and applied methodology /B01/. The verification took cognizance of § 243,244 and 245 of CDM Project Standard.

### Ex-Ante Parameter:

**EF<sub>grid,CM</sub>** - Combined margin CO2 emission factor for grid connected power generation

Default values used:	0.9491 tCO2/MWh
Source and Verification of the source:	CEA website Version :06 Verification team has verified the data from CEA database and found OK.

Verification team confirms that ex-ante parameter claimed is in accordance to the approved monitoring plan /B04/ and applied methodology /B01/.

### 3.3.2 Monitoring responsibility

During the on-site interview (refer section 2.2 of the report), it was found that the responsible personnel are clearly aware of their roles and responsibilities and are able to carry on their responsibility. Also the actual monitoring system presently practiced complies with the monitoring plan /B04/ and the monitoring methodology /B01/.

The PP has signed Operation and Maintenance contract with Vestas Wind Technology India Private Limited. The performance of the turbines, safety in operation and scheduled /breakdown maintenances is responsibility of Vestas and are organized and monitored by them.

The Management and Operational systems implemented by Vestas on behalf of PP have ensured that sufficient evidence be presented for the reported net emission reductions. The calibration certificates of the meters /P05/ used for data monitoring and emission reduction calculation were also verified during the site visit. Also training has been provided to personnel according there responsibility with in organization. The verification team has verified the Training document /P14/ during the site visit.

### 3.3.3 Accuracy of equipment

During the site visit photographs /P13/, verification team has verified the accuracy of measure of both the energy meters (main and check meter) corresponding to the individual WTG and the substation of the project activity involved during this monitoring period and found as a good monitoring practice.

The meter details for all the main and check meters along with the connected feeders were also verified during the onsite visit. There was no change in the meters and the connected feeders corresponding to the WTGs of the project activity during this monitoring period except for few individual main meters corresponding to the WTG Location No. JW33, JW55 and JW53 which has been verified by the verification team from the document review /P17/ and found OK. CAR-02 was raised in this respect and successfully closed. Also there was no change in the substation meters during this monitoring period.

The records of calibration /P05/ have been verified by the verification team and found that the calibration of main meters (at the individual turbine and substation) corresponding to the project activity was valid for this monitoring period. However the calibration of the substation check meter was not done during this monitoring period instead of payment done and is pending from the state electricity utility, CL-01 is raised in this respect and successfully closed.

The calibration performance was also checked for both the energy meters (i.e. main and check meter) involved in the project activity during this monitoring period and found that the calibration result for all the meters was within error limit.

The monitoring equipment's have been installed in the project activity according to registered monitoring plan /B04/.

In summary, the verification team is able to verify that the accuracy the monitoring equipment's were set according to the registered monitoring plan. Furthermore, all calibration procedures were carried out according to the monitoring plan. Therefore, accuracy of monitoring equipment's is assured. The verification took cognizance of § 244 of CDM Project Standard.

### 3.3.4 Deviation from and/or Revision of the registered monitoring plan

In this monitoring period, no any deviation and revision required. As the monitoring plan is in accordance with the approved monitoring methodology; the actual monitoring systems and procedures comply with the monitoring plan; data for all monitoring parameters are available and reported; the calibration of all monitoring equipment are carried out at the frequency specified in the MP. The need of requesting deviation or revision of MP is not sought.

## 3.4 Assessment of data and calculation of greenhouse gas emission reductions

The parameter and corresponding data was monitored in accordance with the monitoring plan and was available for verification for this monitoring period.

Against the Guidelines on the Applicability of Materiality in Verifications, version 01, the verification team further assessed the materiality in verification on the project activity and interpreted as follows:

Reference	Requirement	Verification team assessment
Section 10	The CMP materiality decision prescribes the thresholds for the application of materiality in verifications, by defining that information is	As per registered PDD /B04/, the estimated CERs of the project is 254,527 tCO <sub>2</sub> e annually, thus meets the item (c) of the para 10 in the

	<p>material if it might lead, at an aggregated level, to an overestimation of the total emission reductions or removals achieved by a CDM project activity equal to or higher than:</p> <p>(a) 0.5 per cent of the emission reductions or removals for project activities achieving a total emission reduction or removal of equal to or more than 500,000 tons of carbon dioxide equivalent per year;</p> <p>(b) 1 per cent of the emission reductions or removals for project activities achieving a total emission reduction or removal between 300,000 and 500,000 tons of carbon dioxide equivalent per year;</p> <p>(c) 2 per cent of the emission reductions or removals for large-scale project activities achieving a total emission reduction or removal of 300,000 tons of carbon dioxide equivalent per year or less;</p> <p>(d) 5 per cent of the emission reductions or removals for small-scale project activities other than project activities covered under subparagraph (e) below;</p> <p>(e) 10 per cent of the emission reductions or removals for the type of project activities referred to in decision 3/CMP.6, paragraph 38 (referred to as microscale project activities).</p>	<p>Materiality guideline /B11/.</p> <p>Therefore, the threshold for the application of materiality in this verification is 2 per cent as per guideline /B11/.</p>
<b>Section 24</b>	<p>The DOE should describe in its certification/certification report the risks, the risk assessment undertaken and how the verification and sampling plans were designed to respond to these risks and ensure that all material errors, omissions or misstatements were detected.</p>	<p>The risk assessment has been undertaken by the verification team by means of onsite physical inspection, stakeholder's interview and document review to all the raw data /P08/, /P10/ and cross-check data /P09/. Monthly share certificate /P08/ (source used for calculating ERs) is authorised and issued by State Govt Agency (GETCO). Also all the meters involved are sealed and calibrated annually /P05/.</p> <p>For details please refer to section 3.3 of this report. No sampling plan is required in the monitoring plan /B04/ and the verification team is able to confirm that the parameter is properly monitored by the electricity meters automatically, the accuracy and the calibration of the meters is assured, all the data reported in the ER spread sheet /P04/ has been completely verified against the raw data /P08/ and cross-check with data invoices /P09/, the data management system and QA/QC process are carried out appropriately. Thus no material errors, omissions or misstatements were detected by the verification team during the risk assessment.</p>
<b>Section 25</b>	<p>The DOE should also describe whether and how the verification and sampling plans were revised to take into account the need for</p>	<p>N/A, no sampling plan is required in the monitoring plan /B04/</p>

	further audit procedures due to the nature/type of errors, omissions or misstatements detected.	
<b>Section 26</b>	The DOE should also document how materiality was applied in determining whether a detected error, omission or misstatement was material or immaterial either individually or in aggregate.	N/A, as verified before, no material errors, omissions or misstatements were detected by the verification team during the risk assessment.
<b>Section 27</b>	The DOE should state in its certification/certification opinion that the claimed emission reductions or removals are free from material errors, omissions or misstatements, with a reasonable level of assurance.	Refer to Certification statement of this report.

The methods and formula used to obtain the baseline emissions are appropriate and in accordance with the monitoring plan.

Emission Reduction Due to Project Activity

Emission reduction = Baseline emission – Project emission – Leakage

According to ACM0002, the project emissions are zero.

According to ACM0002, there are no leakage emissions.

So, Emission Reduction = Baseline Emission

The baseline emission ( $BE_y$  in  $tCO_2e$ ) is the product of the baseline emission factor ( $EF_{grid,CM,y}$  in  $tCO_2e/MWh$ ) times the electricity supplied to the grid by the project activity to the grid ( $EG_{Facility,y}$  in  $MWh$ ).

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

*All the formulas used in the Spread sheet has been checked and found correct.*

The verification team confirms that the emission reductions are real and measurable. All the monitored data is archived in electronic form. The data will be kept for the whole crediting period and additional 2 years as given in the monitoring plan /B04/.

All the figures as per the monitoring plan were cross-checked by the verification team against basic monitored data (refer section 3.3.1 of this report) and the calculations were found to be correct.

The closure of all CARs and CLs does not result any change in ER. There is no overestimation of the emission reduction and the decrease in emission reduction is OK.

Verified emission in this monitoring period:

Project emissions: 0  $tCO_2$  equivalents  
 Leakage Emissions: 0  $tCO_2$  equivalents  
 Baseline emissions: 224,411  $t CO_2$  equivalents  
 Emission reductions: 224,411  $t CO_2$  equivalents (round down)

The verification team confirms the total emission reduction by the project activity for this monitoring period is 224,411  $tCO_2$

### 3.4.1 Assessment of actual emission reductions with the estimate emission reductions in PDD

<b>Estimated Emission Reduction as per Registered/Approved PDD:</b>	254,527*(426/365) = 297,064 tCO <sub>2</sub>
<b>Actual Emission Reduction for the Monitoring Period</b>	224,411 tCO <sub>2</sub>
<b>Is any increase of CER's occurred?</b>	No
<b>Reason for Increase of CER's</b>	N/A

In summary, verification team confirms that actual emission reduction is lower than the estimate of the registered PDD for the current monitoring period.

The verification took cognizance of § 247 & 248 of CDM Project Standard.

### 3.5 Issues remaining from the validation

This is the 1<sup>st</sup> periodic verification of the project activity. All raised CARs and CLs were successfully closed during the validation of the project activity. No FAR was raised during the validation of the project activity

## **Appendix A**

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### **CDM Verification protocol**

Jangi 91.8 MW wind farm in Gujarat  
in  
India

to Report No. 01 997 9105080250

Checklist question	Ref.	MoV <sup>1</sup>	Findings, comments, references, data sources	Draft conclusion	Final conclusion
<b>1. Implementation</b>					
1.1 Have all physical features proposed in the registered PDD been implemented at the project site? § 239 of CDM Project Standard	/P01/ /B04/ /B05/	DR,I	Yes, all the physical features (technology, project equipment and metering equipment) proposed in the registered PDD have been implemented at the project site. This was verified during onsite visit.	OK	OK
1.2 Has the project activity been operated in accordance with the project scenario described in the registered PDD and relevant guidance? Reference: < <a href="http://cdm.unfccc.int/EB/033/eb33rep.pdf">http://cdm.unfccc.int/EB/033/eb33rep.pdf</a> >, §75 § 237 of CDM Project Standard	/P01/ /P08/ /P09/ /P10/ /B04/	DR,I	Yes, the project has been operated in accordance with the project scenario described in the registered PDD and relevant guidance. This has been verified from the site visit interview and from document review /P08/, /P09/, /P10/. However CL-01 is raised.	<del>CL-01</del>	OK
1.3 If the project activity is implemented on a number of different locations, has the Monitoring report provided the verifiable starting dates for each site? § 240 of CDM Project Standard	/P01/ /P06/ /B04/	DR, I	There are total 51 WTGs in the project activity implemented. The start (=commercial operation start date) date for all the WTGs of the project activity has been provided in the monitoring report which is verifiable /P06/.	OK	OK
1.4 Is the start date of monitoring period consistent?	/P01/	DR	Yes, the start date of the monitoring period consistent throughout the monitoring report.	OK	OK
1.5 Is the monitoring report consistently filled with respect to all sections as required by its guideline of filling the monitoring report?	/P01/	DR	Subject to closure of CAR-01.	<del>CAR-01</del>	OK
1.6 Does the CER's obtained for the monitoring period within the limit of estimate in the registered PDD?	/P01/	DR	Yes, the CER's obtained for the monitoring period are less than the estimated in the registered PDD and justifiable.	OK	OK

<sup>1</sup> MoV = Means of Verification, DR = Document Review, I = Interview, www = internet search.

Checklist question	Ref.	MoV <sup>1</sup>	Findings, comments, references, data sources	Draft conclusion	Final conclusion
1.7 Is the monitoring system provided in line diagrams showing all relevant monitoring points?	/P01/	DR	Yes	OK	OK
<b>2. Monitoring plan and methodology</b>					
2.1 Is the monitoring plan established in accordance with the monitoring methodology? § 238 of CDM Project Standard	/B01/, /B04/	DR, I	Yes, the monitoring plan as described in section B.7 of the monitoring plan is in accordance with the monitoring methodology.	OK	OK
2.2 In case the implemented monitoring plan defers from the monitoring methodology, has any requests for revision to or deviation from the monitoring methodology been officially communicated to the CDM EB? Reference: § 258,259,260 of CDM Project Standard ( for temporary deviation) § 261,262 of CDM Project Standard ( for permanent change)	-	DR	Not applicable	OK	OK
2.2.1 Have the above changes to the monitoring plan been approved by the CDM EB?	-	DR	Not applicable	OK	OK
<b>3. Monitoring and the monitoring plan</b>					
3.1 Is monitoring established in full compliance with the monitoring plan, contained in the registered PDD (or new monitoring plan approved by the CDM EB)? § 264 of CDM Validation and Verification Standard	/P01/, /P08/, /P09/, /P10/, /B04/, /B05/	DR, I	The monitoring is established in full compliance with the monitoring plan.	OK	OK

Checklist question	Ref.	MoV <sup>1</sup>	Findings, comments, references, data sources	Draft conclusion	Final conclusion
3.2 Are all baseline emission parameters monitored and updated in accordance with monitoring plan, monitoring methodology and relevant CDM EB decisions?	/P01/ /P08/ /P09/ /P10/ /B04/ /B05/	DR, I	Yes, all the baseline emission parameters monitored and updated in accordance with monitoring plan, monitoring methodology and relevant CDM EB decisions.	OK	OK
3.2.1 Was the monitoring equipment for baseline emission parameters controlled and monitoring results recorded as per approved frequency?	/P01/ /P05/ /B04/ /B05/	DR, I	Yes, the Monitoring equipments for baseline emission parameters are controlled and the monitoring results recorded as per the approved frequency as described in monitoring plan.	OK	OK
3.2.2 Was the monitoring equipment for baseline emission parameters calibrated in accordance with QA&QC procedures described in the registered monitoring plan?	/P01/ /P05/ /B04/	DR, I	Yes all the monitoring equipment for baseline emission parameters calibrated in accordance with QA&QC procedures described in the monitoring plan. However CAR-02 and CL-01 are raised in this respect.	<del>CAR-02,</del> <del>CL-01</del>	OK
3.3 Are all project emission parameters monitored and updated in accordance with monitoring plan, monitoring methodology and relevant CDM EB decisions?	/B01/ /B04/	DR, I	Not applicable, there is no project emission from the Wind Power Project	OK	OK
3.3.1 Was the monitoring equipment for project emission parameters controlled and monitoring results recorded as per approved frequency?	/B01/ /B04/	DR, I	Not applicable, there is no project emission from the Wind Power Project	OK	OK
3.3.2 Was the monitoring equipment for project emission parameters calibrated in accordance with QA&QC procedures described in the registered monitoring plan?	/B01/ /B04/	DR, I	Not applicable, there is no project emission from the Wind Power Project	OK	OK

Checklist question	Ref.	MoV <sup>1</sup>	Findings, comments, references, data sources	Draft conclusion	Final conclusion
3.4 Are all leakage emission parameters monitored and updated in accordance with monitoring plan, monitoring methodology and relevant CDM EB decisions?	/B01/, /B04/	DR, I	Not applicable, there is no leakage emission from the Wind Power Project.	OK	OK
3.4.1 Was the monitoring equipment for leakage emission parameters controlled and monitoring results recorded as per approved frequency?	/B01/, /B04/	DR, I	Not applicable, there is no leakage emission from the Wind Power Project.	OK	OK
3.4.2 Was the monitoring equipment for leakage emission parameters calibrated in accordance with QA&QC procedures described in the registered monitoring plan?	/B01/, /B04/	DR, I	Not applicable, there is no leakage emission from the Wind Power Project.	OK	OK
3.5 Were all monitoring parameters available and verifiable through the whole monitoring period?	/B01/, /B04/	DR, I	Yes, all the monitoring parameters are available and verifiable for the whole monitoring period, same has been verified from onsite visit and document review.	OK	OK
3.5.1 In case, only partial monitoring data is available and PP(s) provide estimations or assumptions for the rest of data, was it possible to verify those estimations and assumptions? Reference: < <a href="http://cdm.unfccc.int/EB/026/eb26rep.pdf">http://cdm.unfccc.int/EB/026/eb26rep.pdf</a> >,	--	--	Not applicable, as discussed above all the monitored data is available for the monitoring parameter.	OK	OK
3.6 Was management and operation system established and operated in accordance with the monitoring plan?	/P11/, /B04/, /B05/	DR, I	Yes, the management and operation system are established and operated in accordance with the monitoring plan. This was verified during site visit and from series of interview with various plant personnel.	OK	OK

Checklist question	Ref.	MoV <sup>1</sup>	Findings, comments, references, data sources	Draft conclusion	Final conclusion
3.7 Was is it possible to verify that involved management and operation personal is fully aware of the responsibilities and perform all operations according to the registered monitoring plan and internally developed manuals?	/P11/ /B04/ /B05/	DR, I	Yes, the onsite interview with PP reveals that the management representatives are aware of their roles and responsibility with respect to the CDM project activity.	OK	OK
3.8 Does the monitoring system provide organizational structure, role and responsibilities, emergency procedures?	/P01/ to /P18/ /B04/	DR, I	Yes	OK	OK
3.9 Does any uncertainties identified and addressed?	/P01/ to /P18/ /B04/	DR, I	No uncertainties identified	OK	OK
<b>4. Parameters</b>					
<b>4.1 Monitored parameter</b> Title: Net electricity supplied by the project to the grid in year y. Indication: EG <sub>Facility,y</sub> Units: MWh Measured value ( <i>ex-post</i> ): 236446.941	/B04/ /P01/ /P02/ /P05/ /P08/ /P09/	DR, I	Data is monitored continuously by Main and Check meter located at individual turbine and at the sub-station.  The electricity data is recorded on monthly basis jointly by the officials of the state electricity department (GETCO) and representatives of PP at the turbine and at the substation. Bi-directional energy meter, capable of measuring import and export has used for the measurement of the parameter which is also in-line with the registered CDM-PDD.  Verification team has checked the values from share certificare /P08/ and found OK.  Also the value of the parameter has been cross-checked from the invoices /P09/ and found OK.	OK	OK
<b>5. Calculations</b>					

Checklist question	Ref.	MoV <sup>1</sup>	Findings, comments, references, data sources	Draft conclusion	Final conclusion
5.1 Have all the calculations related to the baseline emissions been carried according to the formulae and methods described in the registered PDD and applied methodology? § 246 of CDM Project Standard	/B01/, /B04/, /P01/, /P02/, /P04/, /P08/	DR	Yes all the formulae and the methods referred in the MR and the spread sheet for estimation of GHG reduction comply with the corresponding formulae and methods in the monitoring plan and applied methodology.	OK	OK
5.2 Have all the calculations related to the project emissions been carried according to the formulae and methods described in the registered PDD and applied methodology?	--	--	Not applicable, refer comment of section 3.3 of this table.	OK	OK
5.3 Have all the calculations related to the leakage emissions been carried according to the formulae and methods described in the registered PDD and applied methodology?	--	--	Not applicable, refer comment of section 3.3 of this table.	OK	OK

Table 2: List of Requests for Corrective Action (CAR) and Clarification (CL)

No.	Type of request	Observation	Reference (Table 1)	Summary of project owner response	Verification team conclusion
1.	CAR-01	<p>Requirement as per attachment “Instructions for filling out the monitoring report form” at the end of Monitoring report form (Version 04.0)</p> <ol style="list-style-type: none"> <li>The heading “<b>Sectoral scope and selected methodology(ies), and where applicable, applied standardized baseline(s)</b>” on page no. 1 of the MR is not correctly filled.</li> <li>Relevant dates for the project activity (e.g. construction, commissioning, continued operation periods, etc.) in the section A.1 of the hosted MR /P01/ are missing.</li> <li>Section B.1 of the Hosted MR /P01/ is not filled as per the <b>requirement</b>.</li> <li>Details presented in Annex 1 of the hosted MR /P01/ don’t <b>contain</b> information for calibration frequency.</li> <li>In the annex 1 of the MR, Project WTGs and the corresponding connected feeder information is missing.</li> <li>Appendix 1 of the hosted MR /P01/ is not filled as per the requirement.</li> </ol>		<ol style="list-style-type: none"> <li>Selected methodology is added.</li> <li>Relevant dates are now defined in the revised MR.</li> <li>Section is revised accordingly.</li> <li>Calibration frequency is once in 3 years for all meters (Main &amp; Check). The same is added in the revised MR.</li> <li>The project WTGs and the corresponding connected feeder information is presented in the revised MR.</li> <li>Tricorona Carbon Asset Management Pte Ltd is now added in the Appendix 1.</li> </ol>	<ol style="list-style-type: none"> <li>Required correction has been done and found OK. Hence this part of CAR is closed.</li> <li>Required correction has been done and found OK. Hence this part of CAR is closed.</li> <li>Required correction has been done and found OK. Hence this part of CAR is closed.</li> <li>Defined calibration frequency is as per the registered monitoring plan /B04/. Hence this part of CAR is closed.</li> <li>Verification team has checked the same from JMR /P10/ and found OK. Hence this part of CAR is</li> </ol>

					<p>closed.</p> <p>6. Required corrections are done and found OK. Hence this part of CAR is closed. CAR 01 is closed</p>
2.	CAR-02	<p>From the review of the submitted documents and Annex 1 of the MR /P01/, verification team has found that:</p> <ol style="list-style-type: none"> <li>1. The meter serial number of few meters in Annex 1 of MR /P01/ are not consistent with the submitted calibration certificates.</li> <li>2. The calibration dates in the Annex 1 of the MR /P01/ are not consistent with the submitted calibration certificates.</li> <li>3. From the review of JMR /P10/, verification team has found that few meters have changes during this monitoring period. PP need to submit the new meter details along with the calibration certificate and also the document for the meter change date.</li> </ol>		<ol style="list-style-type: none"> <li>1. Required corrections have been done in the revised MR. Find attached updated “Energy meter details sheet”.</li> <li>2. Required corrections have been done in the revised MR. Find attached updated “Energy meter calibration dates document”</li> <li>3. We have provided required details of replaced energy meters to CDM verification team.</li> </ol>	<ol style="list-style-type: none"> <li>1. Verification team has checked the revised MR with the calibration reports /P05/, site visit photographs /P13/ and JMR /P10/ and found OK. Hence this part of CAR is closed.</li> <li>2. Verification team has checked the revised MR with the calibration reports /P05/ and found OK. Hence this part of CAR is closed.</li> <li>4. Verification team has checked the revised MR with /P17/ and found OK. Hence this part of CAR is closed. CAR 02 is closed</li> </ol>
3.	CL-01	<p>Under the heading “QA/QC procedures to be applied:” in the section B.7.1 of the registered PDD /B04/, it is mentioned that all the meters have back-up meters installed however the back-up meters calibration information is missing in the hosted MR /P01/. Also provide the</p>		<p>We have factory test certificates for all 51 WTGs back meters, provided the same to CDM verification team. Initiated Substation back meters calibration (i.e. payment for</p>	<p>Verification team has checked the individual turbine back up meter calibration with /P05/ and found OK.</p>

		<p>corresponding calibration certificates.</p> <p>Please clarify.</p>		<p>calibration is done but calibration is due), the relevant details provided to CDM verification team.</p>	<p>Moreover the payment for the substation calibration is done but the calibration from state electricity utility is pending. Since the calibration of the substation meter is under the control of the state electricity utility and not under the control of PP, the same is accepted to DOE. Further main meter is used for the billing and they were satisfactorily working during this monitoring period.</p> <p>Hence CL 01 is closed.</p>
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Table 3: List of forward action requests (FARs)				
FAR number	Observation	Reference	Summary of project participants' response	Verification team conclusion
No FAR raised	-	-	-	-

## **Appendix B**

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Certification statement  
to the Verification Report 01 997 9105080250

## Certification statement

TUV Rheinland (China) Ltd., the DOE, has performed the verification of the registered CDM project activity “UNFCCC Registration № 6702”, “Jangi 91.8 MW wind farm in Gujarat” in India. The project activity is designed to generate emission reductions by displacement of electricity (from grid) through renewable energy technology.

The project participants are responsible for the collection of data in accordance with the monitoring plan and the reporting of GHG emissions reductions from the project. It is DOE’s responsibility to express an independent verification statement on the reported GHG emission reductions from the project. The DOE does not express any opinion on the selected baseline scenario or on the validated and registered PDD. The verification is carried out in-line with the VVS requirements.

The verification was performed to identify the compliance of the project activity with implementation and monitoring requirements, and to verify the actual amount of achieved emission reductions, through obtaining evidence and information on-site that included i) checking whether the provisions of the monitoring methodology and the monitoring plan were consistently and appropriately applied, ii) the collection of evidence supporting the reported data and iii) emission reductions that are claimed is free from material errors, omissions or misstatements.

The verification is based on:

- PDD (version 03, dated 11/10/2012), registered with the CDM Executive Board on 17/10/2012 and its monitoring plan;
- Approved monitoring methodology ACM0002 ver. 12.3.0 “Consolidated baseline methodology for grid-connected electricity generation from renewable sources”;
- Approved validation report, report No: 8000395338 – 11/211 dated 15/10/2012;
- Monitoring report version 02, dated 12/12/2014.

This statement covers verification period of 426 days between 01/11/2012 to 31/12/2013 (Both days included).

The DOE has raised 1 clarification and 2 corrective action requests, all of which have been successfully resolved by PPs. No Forward action request is raised.

The DOE considers necessary to give reasonable assurance that reported GHG emission reductions were calculated correctly on the basis of the approved baseline and monitoring methodology and the monitoring plan contained in the registered PDD are fairly stated.

The breakdown of the emission reductions for the monitoring period has also been clearly demonstrated, with emission reduction for second commitment period calculated using the latest GWPs and the following is verified to be correct :

Actual emission reduction for the monitoring period up to (and including) 31 December 2012	21,418 tCO <sub>2</sub> e from 01/11/2012 to 31/12/2012 including both days
Actual emission reduction for the monitoring period from ( and including) 1 January 2013	202,993 tCO <sub>2</sub> e from 01/01/2013 to 31/12/2013 including both days

The DOE , hereby certifies that the project activity, achieved emission reductions by sources of GHG equal to 224,411 tCO<sub>2</sub> equivalent and all monitoring requirements have been fulfilled.

The DOE states that the Claimed emission reductions are free from material errors, omissions and misstatements with a reasonable level of assurance.

2015-02-16  
Date

2015-01-16  
Date

2014-12-16  
Date



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Mr. Henri Phan  
DOE Manager  
TUV Rheinland (China) Ltd.



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Ms. Indumathi C  
Technical Reviewer  
TUV Rheinland (India) Pvt. Ltd.



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Mr. Chetan Swaroop Sharma  
Team Leader  
TUV Rheinland (India) Pvt. Ltd.

## **Appendix C**

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### **CERTIFICATES OF COMPETENCE**

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## Qualification

Sharma, Chetan Swaroop /

## Emission Trading

### United Nations Framework Convention on Climate Change

Auditor No.:

(AuditorenRegNr)

Appointed:  
(Zugelassen)☒ jaQualification Level:  
(Qualifikationsstufe)

Lead Auditor

External:  
(Externer)☐ jaAdd. reviewer:  
(Zusätzlicher Prüfer)☐ yesEAC Scopes:  
(EAC Branchen)

CDM 01 - Energy industries (renewable - / non-renewable sources)

Add. qualification:  
(zus. Qualifikation)

Gold Standard Webinars

First Appointment:  
(Erstberufung)

10/20/2009

Valid to:  
(Gültig bis)

10/18/2015

Remarks:

T.A 1.2

Languages:

Hindi  
English

## Experience Exchange

Date

Location

Remarks

Accreditation(s)

## Monitoring

Latest Monitoring:  
(letzte Beurteilung)Next Monitoring:  
(nächste Beurteilung)

Remarks:

[View / Edit Monitoring](#)

## History of scope allocation

Date: 2013-01-11  
Change: EAC CDM added  
By: Praveen Urs  
Reason:

Date: 2011-05-30  
Change: Non-EAC Gold Standard Webinars added  
By: Manfred Brinkmann  
Reason:

### History

Created:	05/11/2011 02:24:02 PM	Chetan Sharma/Ind/TUV
Modified:	01/11/2013 03:05:00 PM ZE8	Praveen Urs/Chn/TUV
	11/08/2012 12:45:01 PM ZE8	Praveen Urs/Chn/TUV
	07/14/2012 12:51:08 PM ZE8	Praveen Urs/Chn/TUV
	07/14/2012 12:51:06 PM ZE8	Praveen Urs/Chn/TUV
	05/30/2011 02:58:51 PM ZE9	Manfred Brinkmann/Jpn/TUV
	05/30/2011 12:01:09 PM ZE9	Manfred Brinkmann/Jpn/TUV
	05/30/2011 12:00:57 PM ZE9	Manfred Brinkmann/Jpn/TUV
	05/11/2011 02:24:16 PM	Chetan Sharma/Ind/TUV

### Export to ICMS

Last Export:

## Qualification

C, Indumathi /

## Emission Trading

### United Nations Framework Convention on Climate Change

Auditor No.:  
(AuditorenRegNr)Appointed:  
(Zugelassen)☒ jaQualification Level:  
(Qualifikationsstufe)

Lead Auditor

External:  
(Externer)☐ jaAdd. reviewer:  
(Zusätzlicher Prüfer)☒ yesEAC Scopes:  
(EAC Branchen)

CDM 01 - Energy industries (renewable - / non-renewable sources)

Add. qualification:  
(zus. Qualifikation)First Appointment:  
(Erstberufung)

06/07/2012

Valid to:  
(Gültig bis)

05/07/2015

Remarks:

TA 1.2

Languages:

Tamil  
English  
Hindi

## Experience Exchange

Date	Location	Remarks	Accreditation(s)
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## Monitoring

Latest Monitoring:  
(letzte Beurteilung)Next Monitoring:  
(nächste Beurteilung)

Remarks:

[View / Edit Monitoring](#)

## History of scope allocation

Date: 2012-08-02  
Change: EAC CDM added  
By: Praveen Urs  
Reason:

### History

Created:	07/30/2012 12:45:55 PM	Kaustubh Rane/Ind/TUV
Modified:	08/02/2012 05:58:28 PM ZE8	Praveen Urs/Chn/TUV
	07/30/2012 12:46:56 PM	Kaustubh Rane/Ind/TUV

### Export to ICMS

Last Export: