



VERIFICATION REPORT

- 1ST PERIODIC –

ENERCON (INDIA) LIMITED

TUNGABHADRA WIND POWER PROJECT IN KARNATAKA

UNFCCC REF. No. : 1268

Monitoring Period: 2008-10-27 to 2009-11-30

Report No: 53606309-09/452-V01

Date: 2011-09-21

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Verification Report:	Report No.	Rev. No.	Date of 1st issue:	Date of this rev.
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Project:	Title:	Registration date:	UNFCCC-No.:	
	Tungabhadra wind power project in Karnataka	2008-10-27	1268	
Project Participant(s):	Host party:	Other involved parties:		
	India	-		
Applied methodology/ies:	Title:	No.:	Scope:	
	Consolidated methodology for grid-connected electricity generation from renewable sources	ACM0002 ver.6	01	
Monitoring:	Monitoring period (MP):	No. of days:	MP No.	
	2008-10-27 to 2009-11-30 both days included	400	1	
Monitoring report:	Title:	Draft version:	Final version:	
	Tungabhadra wind power project in Karnataka	2009-12-30	Ver 05: 2011-08-03	
Verification team / Technical Review and Final Approval	Verification Team:	Technical review:	Final approval:	
	Ma.Paa.Puratchikkanal (TL/TE) Manjari Chandra (TM) R. Murali (TM) C. Indumathi (TM)	Sabine Meyer, Ingo Klein	Stefan Winter	
Emission reductions: [t CO_{2e}]	Verified amount	As per draft MR:	As per PDD:	
	53,951 t	54,066 t	49,331 t/a	
Summary of Verification Opinion:	<p>Enercon (India) Limited has commissioned the TÜV NORD JI/CDM Certification Program to carry out the 1st periodic verification of the project: “Tungabhadra wind power project in Karnataka Project”, with regard to the relevant requirements for CDM project activities. The project reduces GHG emissions due to the generation of electricity from wind energy. The project involves the operation of 38 WEGs of total capacity of 22.8 MW generating electricity to be supplied to the Southern Grid. This verification covers the period from 2008-10-27 to 2009-11-30 (including both days).</p> <p>In the course of the verification 3 Corrective Action Requests (CAR) and 4 Clarification Requests (CL) were raised and successfully closed. The verification is based on the draft monitoring report, revised monitoring report, the monitoring plan as set out in the registered PDD and the revised monitoring plan, the validation report, emission reduction calculation spreadsheet and supporting documents made available to the TÜV NORD JI/CDM CP by the project participant.</p> <p>As a result of this verification, the verifier confirms that:</p> <ul style="list-style-type: none">all operations of the project are implemented and installed as planned and described in the validated project design document.the monitoring plan is in accordance with the applied approved CDM methodology ,ie, ACM0002 Ver 6.0the installed equipment essential for measuring parameters required for calculating emission reductions are calibrated appropriately.the monitoring system is in place and functional. The project has generated GHG emission reductions. <p>As the result of the 1st periodic verification, the verifier confirms that the GHG emission reductions are calculated without material misstatements in a conservative and appropriate manner. TÜV NORD JI/CDM CP herewith confirms that the project has achieved emission reductions in the above mentioned reporting period as follows:</p> <p>Emission reductions: 53,951 t CO_{2e}</p>			
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Abbreviations:

CA	Corrective Action / Clarification Action
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
CO₂	Carbon dioxide
CO_{2eq}	Carbon dioxide equivalent
CL	Clarification Request
Discom	Distribution company
EIL	Enercon (India) Limited
ER	Emission Reduction
FAR	Forward Action Request
GHG	Greenhouse gas(es)
HESCOM	Hubli Electricity Supply Company Limited
JMR	Joint Meter Reading Report
KPTCL	Karnataka Power Transmission Corporation Limited
MESCOM	Mangalore Electricity Supply Company Limited
MoEF	Ministry of Environment and Forests
MP	Monitoring Plan
MR	Monitoring Report
PDD	Project Design Document
PP	Project Participant
PPA	Power Purchase Agreement
QA/QC	Quality Assurance / Quality Control
SEB	State Electricity Board
UNFCCC	United Nations Framework Convention on Climate Change
XLS	Emission Reduction Calculation Spread Sheet

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1. INTRODUCTION

M/s. Enercon (India) Limited has commissioned the TÜV NORD JI/CDM Certification Program (CP) to carry out the 1st periodic verification of the project

“Tungabhadra wind power project in Karnataka”

with regard to the relevant requirements for CDM project activities. The verifiers have reviewed the implementation of the monitoring plan (MP) in the registered CDM project number 1268¹.

GHG data for the monitoring period covering 2008-10-27 to 2009-11-30 was verified in detailed manner applying the set of requirements, audit practices and principles as required under the Validation and Verification Manual ^{/VVM/} of the UNFCCC.

This report summarizes the findings and conclusions of this 1st periodic verification of the above mentioned UNFCCC registered project activity.

1.1. Objective

The objective of the verification is the review and ex-post determination by an independent entity of the GHG emission reductions. It includes the verification of the:

- implementation and operation of the project activity as given in the PDD,
- compliance with applied approved methodology and the provisions of the monitoring plan,
- data given in the monitoring report by checking the monitoring records, the emissions reduction calculation and supporting evidence,
- accuracy of the monitoring equipment,
- quality of evidence,
- significance of reporting risks and risks of material misstatements.

1.2. Scope

The verification of this registered project is based on the validated project design document ^{/PDD/}, the validation report ^{/FValR/}, the monitoring report ^{/MR1/, /MR2/, /MR3/, /MR4/ /MR5/}, emission reduction calculation spread sheet ^{/XLS1/, /XLS2/, /XLS3/, /XLS4/}, supporting documents made available to the verifier and information collected through performing interviews and during the on-site assessment. Furthermore publicly available information was considered as far as available and required.

The verification is carried out on the basis of the following requirements, applicable for this project activity:

- Article 12 of the Kyoto Protocol ^{/KP/},

¹<http://cdm.unfccc.int/Projects/DB/DNV-CUK1185867846.4/view>



- guidelines for the implementation of Article 12 of the Kyoto Protocol as presented in the Marrakech Accords under decision 3/CMP.1 ^{/MA/}, and subsequent decisions made by the Executive Board and COP/MOP,
- other relevant rules, including the host country legislation,
- CDM Validation and Verification Manual ^{/VVM/},
- monitoring plan as given in the registered PDD ^{/PDD/},
- Approved CDM Methodology ACM0002 ver.6: Consolidated methodology for grid-connected electricity generation from renewable sources.

2. GHG PROJECT DESCRIPTION

2.1. Project Characteristics

Essential data of the project is presented in the following Table 2-1.

Table 2-1: Project Characteristics

Item	Data
Project title	Tungabhadra wind power project in Karnataka
Project size	<input checked="" type="checkbox"/> Large Scale <input type="checkbox"/> Small Scale
Project Scope (according to UNFCCC sectoral scope numbers for CDM)	<input checked="" type="checkbox"/> 1 Energy Industries (renewable- /non-renewable sources)
	<input type="checkbox"/> 2 Energy distribution
	<input type="checkbox"/> 3 Energy demand
	<input type="checkbox"/> 4 Manufacturing industries
	<input type="checkbox"/> 5 Chemical industry
	<input type="checkbox"/> 6 Construction
	<input type="checkbox"/> 7 Transport
	<input type="checkbox"/> 8 Mining/Mineral production
	<input type="checkbox"/> 9 Metal production
	<input type="checkbox"/> 10 Fugitive emissions from fuels (solid, oil and gas)
	<input type="checkbox"/> 11 Fugitive emissions from production and consumption of halocarbons and hexafluoride
	<input type="checkbox"/> 12 Solvents use
	<input type="checkbox"/> 13 Waste handling and disposal
	<input type="checkbox"/> 14 Afforestation and Reforestation
	<input type="checkbox"/> 15 Agriculture
Applied Methodology	ACM0002; version 06
Technical Area(s)	1.2: Energy generation from renewable sources
CDM registration No.	1268
Crediting period	<input type="checkbox"/> Renewable Crediting Period (7 y) <input checked="" type="checkbox"/> Fixed Crediting Period (10 y)

2.2. Project Verification History

Essential events since the registration of the project are presented in the following Table 2-2.

Table 2-2: Project verification history

#	Item	Time	Status
1	Date of registration	2008-10-27	Registered
2	Start of crediting period	2008-10-27	Registration date
3	1 st Monitoring period	2008-10-27 to 2009-11-30	Awaiting Issuance Request
4	Request for revision of monitoring plan	2011-02-18	Approved

2.3. Involved Parties and Project Participants

The following parties to the Kyoto Protocol and project participants are involved in this project activity (Table 2-3).

Table 2-3: Project Parties and project participants

Characteristic	Party	Project Participant
Host party	India	Enercon (India) Limited
Other involved party/ies	-	

2.4. Project Location

The details of the project location are given in table 2-4:

Table 2-4: Project Location

No.	Project Location
Host Country	India
Region:	Karnataka
Project location address:	Singatalur, Koralahalli and Hammigi Villages, Mundargi Taluk, Gadag District
Latitude:	15° 3' 0.6" N to 15° 5' 58.1 N
Longitude:	75° 50' 0.7" E to 75° 52' 58.9 E

Project Proponent	Unique Identification No.	Site :- Kappatgudda, Gadag.						
		Loc. No.	Latitude			Longitude		
			Degree	Minutes	Seconds	Degree	Minutes	Seconds
Enercon Ltd. (India)	EILKGS 1	1	15	3	27.4	75	52	4.0
	EILKGS 2	2	15	3	30.0	75	52	2.0
	EILKGS 3	3	15	3	29.9	75	51	57.9
	EILKGS 4	4	15	3	32.4	75	51	51.3
	EILKGS 5	5	15	3	36.1	75	51	43.0
	EILKGS 6	6	15	3	37.3	75	51	39.6
	EILKGS 7	7	15	3	38.3	75	51	34.1
	EILKGS 8	8	15	3	45.3	75	51	40.0
	EILKGS 9	9	15	3	49.2	75	51	39.1
	EILKGS 10	10	15	3	52.2	75	51	36.7
	EILKGS 11	11	15	3	54.1	75	51	32.7
	EILKGS 12	12	15	3	54.3	75	51	16.4
	EILKGS 13	13	15	3	58.1	75	51	15.3
	EILKGS 14	14	15	4	4.2	75	51	17.2
	EILKGS 15	15	15	4	7.5	75	51	14.4
	EILKGS 16	16	15	4	5.7	75	51	4.8

Project Proponent	Unique Identifi cation No.	Site :- Kappatgudda, Gadag.						
		Loc. No.	Latitude			Longitude		
			Degree	Minutes	Seconds	Degree	Minutes	Seconds
	EILKGS 17	17	15	4	9.5	75	51	1.6
	EILKGS 18	18	15	4	20.9	75	51	0.7
	EILKGS 19	19	15	4	23.2	75	50	58.1
	EILKGS 20	20	15	4	27.2	75	50	54.0
	EILKGS 21	21	15	4	34.3	75	51	5.4
	EILKGS 22	22	15	4	36.7	75	50	58.9
	EILKGS 23	23	15	4	38.9	75	50	51.6
	EILKGS 24	24	15	4	38.1	75	50	40.6
	EILKGS 25	25	15	4	37.1	75	50	30.2
	EILKGS 26	26	15	4	42.4	75	50	38.5
	EILKGS 27	27	15	4	45.6	75	50	35.0
	EILKGS 28	28	15	4	48.0	75	50	30.7
	EILKGS 29	29	15	4	51.0	75	50	26.8
	EILKGS 30	30	15	4	54.5	75	50	22.4
	EILKGS 31	31	15	4	57.0	75	50	19.9
	EILKGS 32	32	15	5	0.6	75	50	16.6
	EILKGS 33	33	15	4	16.5	75	51	3.5
	EILKGS 34	34	15	5	4.8	75	50	33.7
	EILKGS 35	35	15	5	8.0	75	50	30.8
	EILKGS 36	36	15	5	11.5	75	50	26.1
	EILKGS 37	37	15	5	12.7	75	50	19.3
	EILKGS 38	38	15	5	15.5	75	50	16.3

2.5. Technical Project Description

Technical Project Description Pt.1

The key parameters for the project are given in table 2-5:

Table 2-5: Technical data of the plant

Parameter	Unit	Value
Model	-	E-40
Generator type	-	Synchronous
Rated power	kW	600
Hub height	m	46
Rotor diameter	m	44

Parameter	Unit	Value
Turbine type	-	Gearless horizontal axis
Power regulation	-	Independent electromagnetic pitch system
Design lifetime	yr	20
Cut-in wind speed	m/s	3
Rated wind speed	m/s	11.6
No of blades	-	3
Output voltage	V	400

Technical Project Description Pt.2

The project activity comprises of 38 numbers of WEGs with a capacity of 600 kW each. The model used in the project activity is E-40 supplied by Enercon (India) Limited.

The net electricity supplied to the grid is measured by the energy meters installed by Karnataka Power Transmission Corporation Limited (KPTCL). The plant supplied net 57893.008. MW of electricity to the grid during the monitoring period 2008-10-27 to 2009-11-30.

The details of the energy meters are as follows:

At the 33 kV metering point:

	Main meter	Check meter
Type	Tri-vector meter	Tri-vector meter
Make	L & T	L & T
Accuracy class	0.2s	0.2s
Serial No.	06767626	06767637
Dates of Calibration (annual)	2008-02-11, 2009-02-28 and 2009-12-08	

At the 110 kV metering point: Line I

	Main meter	Check meter
Type	Tri-vector meter	Tri-vector meter
Make	L & T	L & T
Accuracy class	0.2s	0.2s



Serial No.	06607369	06606801
Dates of Calibration (annual)	2007-02-05, 2009-03-30 and 2010-05-25	

At the 110 kV metering point: Line II

	Main meter	Check meter
Type	Tri-vector meter	Tri-vector meter
Make	L & T	L & T
Accuracy class	0.2s	0.2s
Serial No.	06605135	06607373
Dates of Calibration (annual)	2007-02-05, 2009-03-30 and 2010-05-25	

3. METHODOLOGY AND VERIFICATION SEQUENCE

3.1. Verification Steps

The verification consisted of the following steps:

- Contract review
- Appointment of team members and technical reviewers
- Publication of the monitoring report
- A desk review of the Monitoring Report^{/MR1/, /MR2/, /MR3/, /MR4/, /MR5/} and ER reduction sheet^{/XLS1/, /XLS2/, /XLS3/, /XLS4/} submitted by the client and additional supporting documents with the use of customised verification protocol^{/CPM/} according to the Validation and Verification Manual^{/VVM/},
- Verification planning,
- On-Site assessment,
- Background investigation and follow-up interviews with personnel of the project developer and its contractors,
- Draft verification reporting
- Resolution of corrective actions (if any)
- Final verification reporting
- Technical review
- Final approval of the verification.

The sequence of the verification is given in the table 3.1 below:

Table 3.1: Verification sequence

Topic	Time
Assignment of verification	2009-10-16
Uploading of Monitoring Report	2010-02-08
On-site visit	2010-02-24 and 2010-02-25
Approval of revised monitoring plan	2011-02-18
Draft reporting finalised	2011-04-22
Final reporting finalised	2011-08-08
Technical review finalised	2011-08-08

3.2. Contract review

To assure that

- the project falls within the scopes for which accreditation is held,
- the necessary competences to carry out the verification can be provided,
- Impartiality issues are clear and in line with the CDM accreditation requirements

a contract review was carried out before the contract was signed.

3.3. Appointment of team members and technical reviewers

On the basis of a competence analysis and individual availabilities a verification team, consisting of one team leader and 3 additional team members, was appointed. The team was assisted by a Technical Expert. Furthermore also the personnel for observation, the technical review and the final approval was determined.

The list of involved personnel, the tasks assigned and the qualification status are summarized in the table 3-1 below.

Table 3-1: Involved Personnel

	Name	Company	Function ¹⁾	Qualification Status ²⁾	Scheme competence ³⁾	Technical competence ⁴⁾	Verification competence	Host country Competence	Team Leading competence
<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Ma. Paa. Puratchikkanal	TÜV India Pvt. Ltd. ,Bangalore	TL/TE ^{A)}	SA	<input checked="" type="checkbox"/>	1.2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/> Mr. <input checked="" type="checkbox"/> Ms.	Manjari Chandra	TÜV India Pvt. Ltd. ,Bangalore	TM ^{A)}	A	<input checked="" type="checkbox"/>	1.2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	R. Murali	TÜV India Pvt. Ltd. ,Bangalore	TM ^{A)}	LA	<input checked="" type="checkbox"/>	-	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/> Mr. <input checked="" type="checkbox"/> Ms.	C. Indumathi	TÜV India Pvt. Ltd. ,Bangalore	TM ^{A)}	A	<input checked="" type="checkbox"/>	1.2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Mr.	Sabine Meyer	TÜV NORD	TR ^{B)}	A	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	Name	Company	Function ¹⁾	Qualification Status ²⁾	Scheme competence ³⁾	Technical competence ⁴⁾	Verification competence	Host country Competence	Team Leading competence
<input checked="" type="checkbox"/> Ms.		CERT, Germany							
<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Klein Ingo	TÜV NORD CERT, Germany	TR ^{B)}	SA	<input checked="" type="checkbox"/>	1.2.2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Stefan Winter	TÜV NORD CERT, Germany	FA ^{B)}	SA	<input checked="" type="checkbox"/>	1.2.2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

¹⁾ TL: Team Leader; TM: Team Member, TR: Technical review; OT: Observer-Team; OR: Observer-TR; FA: Final approval

²⁾ GHG Auditor Status: A: Assessor; LA: Lead Assessor; SA: Senior Assessor; T: Trainee; TE: Technical Expert

³⁾ GHG auditor status (at least Assessor)

⁴⁾ As per S01-MU03 or S01-VA070 A2 (such as 1.1, 1.2.,)

^{A)} Team Member: GHG auditor (at least Assessor status), Technical Expert (incl. Host Country Expert or Verification Expert), not ETE

^{B)} No team member

Statements of competence for the above mentioned team members are enclosed in annex 6 of this report.

3.4. Publication of the Monitoring Report

In accordance with the CDM M&P (§ 62) the draft monitoring report, as received from the project participants, has been made publicly available on the dedicated UNFCCC CDM website prior to the verification activity commenced. No comments were received during the course of the verification.

3.5. Verification Planning

In order to ensure a complete, transparent and timely execution of the verification task the team leader has planned the complete sequence of events necessary to arrive at a substantiated final verification opinion.

Various tools have been established in order to ensure an effective verification planning.

Risk analysis and detailed audit testing planning

For the identification of potential reporting risks and the necessary detailed audit testing procedures for residual risk areas table A-1 is used. The structure and content of this table is given in table 3-2 below.

Table 3-2: Table A-1; Identification of verification risk areas

Table A-1: GHG calculation procedures and management control testing / Detailed audit testing of residual risk areas and random testing				
Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks	Additional verification testing performed	Conclusions and Areas Requiring Improvement (including Forward Action Requests)
<i>The following potential risks were identified and divided and structured according to the possible areas of occurrence.</i>	<i>The potential risks of raw data generation have been identified in the course of the monitoring system implementation. The following measures were taken in order to minimize the corresponding risks.</i> <i>The following measures are implemented:</i>	<i>Despite the measures implemented in order to reduce the occurrence probability the following residual risks remain and have to be addressed in the course of every verification.</i>	<i>The additional verification testing performed is described. Testing may include:</i> <ul style="list-style-type: none"> - Sample cross checking of manual transfers of data - Recalculation - Spreadsheet 'walk throughs' to check links and equations - Inspection of calibration and maintenance records for key equipment - Check sampling analysis results <i>Discussions with process engineers who have detailed knowledge of process uncertainty/error bands.</i>	<i>Having investigated the residual risks, the conclusions should be noted here. Errors and uncertainties are highlighted.</i>

The completed table A-1 is enclosed in the annex 1 (table A-1) to this report.

Project specific periodic verification checklist

In order to ensure transparency and consideration of all relevant assessment criteria, a project specific verification protocol has been developed. The protocol shows, in a transparent manner, criteria and requirements, means and results of the verification. The verification protocol serves the following purposes:

- It organises, details and clarifies the requirements a CDM project is expected to meet for verification
- It ensures a transparent verification process where the verifying DOE documents how a particular requirement has been proved and the result of the verification.

The basic structure of this project specific verification protocol for the periodic verification is described in table 3-3.

Table 3-3: Structure of the project specific periodic verification checklist

Table A-2: Periodic verification checklist				
Checklist Item	Reference	Verification Team Comments	Draft Conclusion	Final Conclusion
<i>The checklist items in Table A-2 are linked to the various requirements the monitoring of the project should meet. The checklist is organised in various sections as per the requirements of the topic and the individual project activity. It further includes guidance for the verification team.</i>	<i>Gives reference to the information source on which the assessment is based on.</i>	<i>The section is used to elaborate and discuss the checklist item in detail. It includes the assessment of the verification team and how the assessment was carried out. The reporting requirements of the VVM shall be covered in this section.</i>	<i>Assessment based on evidence provided if the criterion is fulfilled (OK), or a CAR, CL or FAR (see below) is raised. The assessment refers to the draft verification stage.</i>	<i>In case of a corrective action or a clarification the final assessment at the final verification stage is given.</i>

The periodic verification checklist (verification protocol) is the backbone of the complete verification starting from the desk review until final assessment. Detailed assessments and findings are discussed within this checklist and not necessarily repeated in the main text of this report.

The completed verification protocol is enclosed in the annex (table A-2) to this report.

3.6. Desk review

During the desk review all documents initially provided by the client and publicly available documents relevant for the verification were reviewed. The main documents are listed below:

- the last revision of the PDD including the monitoring plan^{/PDD/},
- the last revision of the validation report^{/VAL/},
- documentation of previous verifications^{/VER/}
- the monitoring report, including the claimed emission reductions for the project^{/MR1/, /MR2/, /MR3/, /MR4/, /MR5/}
- the emission reduction calculation spreadsheet^{/XLS1/, /XLS2/, /XLS3/, /XLS4/}

Other supporting documents, such as publicly available information on the UNFCCC website and background information were also reviewed.

3.7. On-site assessment

As most essential part of the verification exercise it is indispensable to carry out an inspection on site in order to verify that the project is implemented in accordance with the applicable criteria. Furthermore the on-site assessment is necessary to check the monitoring data with respect to accuracy to ensure the calculation of emission reductions. The main tasks covered during the site visit include, but are not limited to:

- The on-site assessment included an investigation of whether all relevant equipment is installed and works as anticipated.
- The operating staff was interviewed and observed in order to check the risks of inappropriate operation and data collection procedures.
- Information processes for generating, aggregating and reporting the selected monitored parameters were reviewed.
- The duly calibration of all metering equipment was checked.
- The monitoring processes, routines and documentations were audited to check their proper application.
- The monitoring data were checked completely.
- The data aggregation trails were checked via spot sample down to the level of the meter recordings.

Two members of the verification team attended the site visit.

Before and during the on-site visit the verification team performed interviews with the project participants to confirm selected information and to resolve issues identified in the document review.

Representatives of Enercon (India) Limited including the operational staff of the plant were interviewed. The main topics of the interviews are summarised in Table 3-4.

Table 3-4: Interviewed persons and interview topics

Interviewed Persons / Entities	Interview topics
1. Projects & Operations Personnel, Enercon (India) Limited, /IM01/ 2. CDM Division-consultant, Enercon (India) Limited - /IM02/	<ul style="list-style-type: none">- General aspects of the project- Technical equipment and operation- Changes since validation/ previous verification- Monitoring and measurement equipment- Remaining issues from validation/ previous verification- Calibration procedures- Quality management system- Involved personnel and responsibilities- Training and practice of the operational personnel- Implementation of the monitoring plan- Monitoring data management

Interviewed Persons / Entities	Interview topics
	<ul style="list-style-type: none">- Data uncertainty and residual risks- GHG calculation- Procedural aspects of the verification- Maintenance- Environmental aspect- Document review

3.8. Draft verification reporting

On the basis of the desk review, the on-site visit, follow-up interviews and further background investigation the verification protocol is completed. This protocol together with a general project and procedural description of the verification and a detailed list of the verification findings form the draft verification report. This report is sent to the client for resolution of raised CARs, CLs and FARs.

3.9. Resolution of CARs, CLs and FARs

Nonconformities raised during the verification can either be seen as a non-fulfilment of criteria ensuring the proper implementation of a project or where a risk to deliver high quality emission reductions is identified.

Corrective Action Requests (CARs) are issued, if:

- Non-conformities with the monitoring plan or methodology are found in monitoring and reporting, or if the evidence provided to prove conformity is insufficient;
- Mistakes have been made in applying assumptions, data or calculations of emission reductions which will impair the estimate of emission reductions;
- Issues identified in a FAR during validation or previous verifications requiring actions by the project participants to be verified during verification have not been resolved.

The verification team uses the term Clarification Request (CL), which is issued if:

- information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met.

Forward Action Requests (FAR) indicate essential risks for further periodic verifications. Forward Action Requests are issued, if:

- the monitoring and reporting require attention and / or adjustment for the next verification period.

For a detailed list of all CARs, CLs and FARs raised in the course of the verification pl. refer to chapter 4.

3.10. Final reporting

Upon successful closure of all raised CARs and CLs the final verification report including a positive verification opinion can be issued. In case not all essential issues could finally be resolved, a final report including a negative verification opinion is issued.

The final report summarizes the final assessments w.r.t. all applicable criteria.

3.11. Technical review

Before submission of the final verification report a technical review of the whole verification procedure is carried out. The technical reviewer is a competent GHG auditor being appointed for the scope this project falls under. The technical reviewer is not considered to be part of the verification team and thus not involved in the decision making process up to the technical review.

As a result of the technical review process the verification opinion and the topic specific assessments as prepared by the verification team leader may be confirmed or revised. Furthermore reporting improvements might be achieved.

3.12. Final approval

After successful technical review an overall (esp. procedural) assessment of the complete verification will be carried out by a senior assessor located in the accredited premises of TÜV NORD.

After this step the request for issuance can be started.

4. VERIFICATION FINDINGS

In the following paragraphs the findings from the desk review of the monitoring report^{/MR1/, /MR2/, /MR3/, /MR4/, /MR5/}, the calculation spreadsheet^{/XLS1/, /XLS2/, /XLS3/, /XLS4/}, PDD^{/PDD/}, the Validation Report^{/VAL/} and other supporting documents, as well as from the on-site assessment and the interviews are summarised.

The summary of CAR, CL and FAR issued are shown in Table 4-1:

Table 4-1: Summary of CAR, CL and FAR

Verification topic	No. of CAR	No. of CL	No. of FAR
H - Project history	0	0	0
U - Update on Changes and Incidents	0	0	0
R - Monitoring Report – General	0	2	0
P - Monitoring Parameters	2	0	0
C - Emission Reduction Calculation	1	1	0
Q - Quality Management	0	1	0
SUM	3	4	0

The following tables include all raised CARs, CLs and FARs and the assessments of the same by the verification team. For an in depth evaluation of all verification items it should be referred to the verification protocols (see Annex).

Finding:	R1		
Classification	<input type="checkbox"/> CAR	<input checked="" type="checkbox"/> CL	<input type="checkbox"/> FAR

Finding:	R1
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	<p>The following are the editorial issues identified w.r.t the MR version 1, and the ER sheet.</p> <ol style="list-style-type: none"> 1) The project site address is missing on the cover page. 2) The project coordinates are not consistent with that of the MR. 3) The PP's name is not consistent with the registered PDD. 4) Title, reference number, and units of all parameters are missing in the ER sheet.
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<ol style="list-style-type: none"> 1) The address of the project site is included in the cover page of the monitoring report. 2) The project location can be cross checked from the PPA and the commission certificate. The error in the coordinates is regretted. The inconsistency is addressed in the revised MR. 3) The PP's name is consistently applied to the MR as given in the registered PDD. 4) Title, reference number, and units of monitored parameters are incorporated in the ER calculation sheet.
DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<p>The version 2.0 of the MR^{MR2/} dated 2010-05-10 includes project location address and the exact geographical coordinates. However, it is shall be noted that the project coordinates are not in agreement with that of the registered PDD.</p> <p>The revised emission reduction calculation sheet^{XLS2/} contains the title of the project along with the UNFCCC reference number. The units of the parameters monitored have been included in the revised MR and emission reduction spreadsheet.</p> <p>The PP's name is not consistently mentioned in the MR. Therefore, CL R1 remains open.</p>
Corrective Action #2	<p>The MR has been made consistent. Enercon (India) Limited has been used throughout the MR. Coordinates altered as per the clarification provided by UNFCCC. The coordinates were inadvertently mentioned wrongly in the PDD by Enercon personnel while handling several other projects. Typological error in lat-long can be established from the fact that all other details mentioned in PDD pertaining to the location of the project such as name of village, Taluk, district etc. are correct. The same has been verified by the DOE during the site visit and documentation check.</p>

Finding:	R1
DOE Assessment #2	<p>3) PP's name Enercon (India) Limited, which is as per the registered PDD has been used throughout the revised MR.</p> <p>2) The email response from EB^{/email/} to the clarification sought by the PP has been verified. The email states that "With regard to your query below, kindly be informed that typographical errors as the one mentioned below may be addressed by the DOE in the verification report once verified as such". The verification team concludes that the erratum occurred while typing/copying the coordinates into the PDD, and hence the clarification from EB applies in this case.</p> <p>The coordinates were verified against the Satellite Signals web tool ^{/satsig/}. The project WTGs are located in the villages of Koralahalli, Singatalur and Hammagi in the district of Gadag. The same was verified during the site visit.</p> <p>In light of the email response, CL R1 was closed. Revised MR was verified and it was found that project coordinates have been corrected.</p>
Conclusion <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the next periodic verification <input type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements

Finding:	R2
Classification	<input type="checkbox"/> CAR <input checked="" type="checkbox"/> CL <input type="checkbox"/> FAR
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	The differences between the monitored ER and the ex-ante ER have not been justified in the MR.
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<p>The total emission reduction in the registered PDD was assumed to be 53442 tCO₂e (13 months equivalent of annually 49,331 emission reductions estimated in the registered PDD) whereas the actual calculated total emission reduction as per this MR is 53,951 tCO₂e. There is very minor change of 0.96% in the expected and annual emission reductions. The registered PDD also captures the change in PLF to the extent of +/-10% and therefore the change of 0.94% is within the range of sensitivity mentioned in the registered PDD. The same justification has been incorporated in the MR in section E.6 "Remarks on difference from estimated value in the PDD" on page no. 18.</p>
DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<p>The monitoring period is from 2008-10-27 to 2009-11-30, a period of 13 months. The annual estimation of emission reductions in the registered PDD^{/PDD/} is 49,331 tCO₂e.</p> <p>If the PP were to consider 12 months of monitoring period, i.e. from 2008-10-27 to 2009-10-30, the total emission reductions would be 50,996 tCO₂e. From the emission reduction calculation spreadsheet</p>

Finding:	R2
	<p>it is evident that the annual increase in the emission reduction when compared to that of the registered PDD is due to the increased generation in the months of June, July and August of 2009. The verification team has verified the joint meter readings^{/JMR/} for all the months of the monitoring period including June, July and August 2009. The PP's contention that the increase in PLF (0.94%), is well below the +10% presented in the additionality section of the PDD is acceptable. The change does not affect the project additionality. Hence CL R2 is closed.</p>
Conclusion <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the next periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements

Finding:	P1
Classification	<input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	<p>Under point no 7.3 of Article 7 (Metering and communication) of the PPA, it is mentioned that the monthly meter readings will be taken at the project site and the receiving substation for billing purpose. Please explain in detail about the procedure by which the meter readings are taken.</p>
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<p>As mentioned in the PDD and the PPA (Article 7.3) the Net electricity supplied to the grid is recorded by taking a Joint Meter Reading (JMR) in the presence of Officials from off-taking Utility and Enercon (India) Limited.</p> <p>Meter readings are taken, one for the main and check meters located at the site and the other for the main and check meters located at the substation.</p> <p>The JMRs are carried out in the presence of officials from Enercon and HESCOM, Form B of the respective JMRs carries the signatures of the respective officials. The date of JMR is also mentioned in the Form B. The date of JMR of the site main and check meters is the same as the JMR for the substation main and check meters for the corresponding month.</p> <p>Energy export and imports are calculated based on meter readings as of 00:00 hours on the first day of the following month. The metering equipment used for measuring energy export and import provide for time-stamping of meter-reading data thereby enabling the officials to record the readings of the project and substation meters, simultaneously.</p> <p>The same procedure of metering has been incorporated in the revised MR.</p>

Finding:	P1
DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<p>This is not in agreement with the registered PDD. Please clarify.</p>
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<p>PP applied for revision in Monitoring plan. The same has been approved by EB on 18-Feb-2011. The revised monitoring plan has been incorporated in the MR version 4. The monitoring plan mentioned in the DVR response here is same as mentioned in the MR version 4.</p>
DOE Assessment #2 <i>The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<p>In light of the recent development of a revision sought in the monitoring plan of the PDD to include the correct metering procedures as described in "Corrective Action #1", the CAR P1 is closed. In this regard, the approved MP dated 2011-02-18 was verified against the MR, version 4. The Power purchase agreement^{/PPA/}, joint meter readings^{/JMR/}, technical details of the energy meters^{/CAL/} have been verified. Based on the above documents and the site visit interviews^{/INT/}, the verification team confirms that the metering arrangement and procedures in the MR are in line with the actual site conditions. The detailed procedure is available in Article 7-Metering and Communication of the PPA. The JMRs for the monitoring period have been verified. The JMRs include the energy import, export and transmission losses calculation. The invoices raised to the HESCOM by the PP have been verified against the JMRs and found to be OK. The procedure has been included in the revised MR^{/MR4/}. CAR P1 is closed.</p>
Conclusion <i>Tick the appropriate checkbox</i>	<p> <input type="checkbox"/> To be checked during the next periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements </p>

Finding:	P2
Classification	<input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	<p>The PP is requested to explain in detail the procedure for calculation of net electricity supplied to the grid w.r.t the bulk meter and calculation of transmission loss.</p>
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<p>We draw attention to the Monitoring Plan in the PDD, which clearly states that the procedure for metering and meter reading will be as per the provisions of the Provisions of Power Purchase Agreement. The PDD also states that the information provided in Annex 4 is only an illustration of such procedures.</p> <p>The installation of bulk meter as well as the procedure for</p>

Finding:	P2
	<p>apportioning the transmission losses to individual wind projects is spelt out in Article 6 of the PPA.</p> <p>Net electricity supplied to the grid from the project is calculated by deducting the transmission losses from the quantity of energy exports calculated from JMR records. It is important to note that the transmission loss and its allocation to different projects are determined by the Discom unilaterally on the basis of bulk meter readings. The bulk meter is owned and operated by the Discom and is beyond the purview of the project proponent.</p> <p>Since the project doesn't involve monitoring of transmission loss (the loss value is provided by Discom), the same has not been included in the Monitoring plan.</p> <p>The procedure for calculation of net electricity supplied to the grid as defined in the PPA is set-out below:</p> <p>Calculation of Net Electricity Supplied to the grid: $E_{JMR1,Export}$ = Electricity exported, as recorded by the main meter - data from JMR 1 (project site) $E_{JMR1,Import}$ = Electricity imported, as recorded by the main meter – data from JMR 1 (project site)</p> <p>$E_{Project,Export}$ = Net Electricity exports = $E_{JMR1,Export} - E_{JMR1,Import}$</p> <p>$E_{Project,ExportGRID} = E_{Project,Export} \times (1 - E_{TransmissionLoss} \%)$</p> <p>$E_{TransmissionLoss} \% = \frac{E_{JMR1,Export} + E_{JMR2,Export} + E_{JMR3,Export} - E_{Grid Export}}{E_{JMR1,Export} + E_{JMR2,Export} + E_{JMR3,Export}}$</p> <p>Where: $E_{JMR1,Export}$, $E_{JMR2,Export}$ etc. are electricity exports, measured at the project site, for different wind projects connected to the substation $E_{Grid Export}$ - Exports measured at the substation main meter - data from JMRGrid (Substation)</p>
<p>DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i></p>	<p>This is not in agreement with the registered PDD. Please clarify.</p>
<p>Corrective Action #1 <i>This section shall be filled by</i></p>	<p>PP applied for revision in Monitoring plan. The same has been</p>

Finding:	P2
<p><i>the PP. It shall address the corrective action taken in details.</i></p>	<p>approved by EB on 18-Feb-2011. The revised monitoring plan has been incorporated in the MR version 4. The procedure for calculation of transmission loss, and net electricity has been revised as per the approved revised MP.</p>
<p>DOE Assessment #2 <i>The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i></p>	<p>Article 6 (Billing and Payment) of the Power purchase agreement^{/PPA/} has been verified and it supports the argument that transmission loss on export to the grid at the bulk meter substation is factored into the JMR provided at the project site to the PP. The joint meter energy readings^{/JMR/} for the monitoring period have been verified and found to contain the parameters “export”, “import”, “transmission losses” and “net energy to be supplied/billed”. Article 6 of the PP between the MESCOM describes the equation used for calculation of transmission losses between the site and the substation. The equation as given in the PPA is:</p> $DE = X_1 - (X_1 * Z\%)$ <p>; where DE is the energy delivered by the project, X₁ is the meter installed at the project site, and Z is the percentage of transmission loss incurred in the transmission line between the project site and the substation calculated as,</p> $Z = \{(X_1 + X_2 + X_3 + \dots) - Y / (X_1 + X_2 + X_3 + \dots)\} * 100;$ <p>Where, Y is the reading on the bulk energy meter installed at the substation, X₁+X₂+X₃ are the readings of the energy meters installed at the various individual WEGs. This is in agreement with the PPA and the approved revised monitoring plan. It is evident from the PPA and the JMRs that the calculation of transmission is done by the representative of MESCOM. The revised MR^{/MR4/} contains a detailed explanation of the procedure involved in the calculation of transmission losses and the net electricity supplied and billed to MESOM. The supporting documents^{/PPA, JMR/} including the invoices raised to HESCOM by the PP^{/INV/} were verified and found to be OK. CAR P2 is closed.</p>
<p>Conclusion <i>Tick the appropriate checkbox</i></p>	<p> <input type="checkbox"/> To be checked during the next periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements </p>

Finding:	C1		
Classification	<input checked="" type="checkbox"/> CAR	<input type="checkbox"/> CL	<input type="checkbox"/> FAR
Description of finding	1) Please specify the frequency of calibration in section 2.4 of the		

Finding:	C1
<p><i>Describe the finding in unambiguous style; address the context (e.g. section)</i></p>	<p>MR.</p> <p>2) Please submit calibration reports for the year 2008.</p>
<p>Corrective Action #1</p> <p><i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i></p>	<p>1) Details on frequency of meter testing and calibration are included in section C of the revised MR (version 4). Annual calibration is undertaken.</p> <p>2) The Calibration records for the monitoring period are not available. The reports for the bulk meters for the year 2008 are not available with EIL. Calibration was not carried out by the HESCOM, inspite of repeated follow up by EIL. The latest calibration report (dated 22 December 2009) is submitted to the DOE. The certificates clearly show that both main and check meters at both the 33 kV and 110 kV sites are performing within their accuracy class.</p> <p>We refer to the Guidelines For Assessing Compliance With The Calibration Frequency Requirements – Annex 60 to EB 52, Paragraph 4(a) states that where calibration is not carried out in line with the frequency mentioned in the monitoring plan, as a conservative approach, the energy export and import values (as mentioned in the JMR) can be considered after applying the maximum possible value of error of the instrument to the measured values.</p> <p>Since the latest test certificate shows that meters are operating within their accuracy class, in accordance with Annex 60, EB 52 we have applied a correction factor of +0.2% for imports and transmission losses, and -0.2% for exports for the entire monitoring period.</p> <p>The monitoring report has been revised accordingly.</p>
<p>DOE Assessment #1</p> <p><i>The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i></p>	<p>1) The frequency of calibration has been included in the revised MR^{MR4/} as per the approved revised monitoring plan. An annual calibration is being practiced by the HESCOM. The calibration reports^{CAL/} issued by the SEB were verified and found to be OK.</p> <p>2) As the calibration frequency has not been annual-the calibration certificates for the bulk meters (main and check) situated at the 110kV substation were not available , the PP has applied the GUIDELINES FOR ASSESSING COMPLIANCE WITH THE CALIBRATION FREQUENCY REQUIREMENTS, Annex 60 of EB 52, wherein ,the errors reported in the meters were well below 0.2% and said to be negligible. In such a case, as per, the maximum permissible error of 0.2 % has been applied for the entire monitoring period and the net generation has been corrected accordingly. The same has been verified in the revised monitoring^{MR5/} and emission reduction spreadsheet^{XLS4/} and found to be OK.</p> <p>CAR C1 is closed.</p>

Finding:	C1
Conclusion <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the next periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements

Finding:	C1
Classification	<input type="checkbox"/> CAR <input checked="" type="checkbox"/> CL <input type="checkbox"/> FAR
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	In the ER calculation sheet, the “Net Generation” has not been depicted in terms of export and import values as per JMR.
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	The export and import values have been incorporated in the revised ER calculation sheet.
DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	The revised emission reduction spreadsheet ^{/XLS3/} has been verified and found to contain values of energy exported, imported, and the transmission losses incurred during the monitoring period. The cells of the spreadsheet are transparent and verifiable. The values have been crosschecked with the joint meter readings ^{/JMR/} and invoices raised to HESCOM by the PP ^{/INV/} and found to be in agreement. CL C1 is closed.
Conclusion <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the next periodic verification <input type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements

Finding:	Q1
Classification	<input type="checkbox"/> CAR <input checked="" type="checkbox"/> CL <input type="checkbox"/> FAR
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	Information on training procedures/practices are not present in the MR.
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	The information on training procedures is added in the revised monitoring report.
DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	A brief description of training procedures as mentioned in the registered PDD ^{/PDD/} and the revised monitoring plan ^{/RevMP/} were verified during the site interview. Training for all monitoring personnel is conducted in the aspects of operation and maintenance at the Enercon Training Academy. Training records ^{/TRNG/} were submitted and verified. CL Q1 is closed.
Conclusion	<input type="checkbox"/> To be checked during the next periodic verification



Finding:	Q1
<i>Tick the appropriate checkbox</i>	<input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements

5. SUMMARY OF VERIFICATION ASSESSMENTS

The following paragraphs include the summary of the final verification assessments after all CARs and CLs are closed out. For details of the assessments pl. refer to the discussion of the verification findings in chapter 4 and the verification protocol (Annex 1).

5.1. Implementation of the project

During the verification a site visit was carried out. On the basis of this site visit and the reviewed project documentation it can be confirmed that with respect to the realized technology, the project equipment, as well as the monitoring and metering equipment, the project has been implemented and operated as described in the approved revised monitoring plan². There are no major changes in the key equipment since the validation of the project. The project uses wind power to generate electricity to be supplied to the southern grid. Also no change is envisaged. These facts have been verified during site visit.

5.2. Project history

During the validation the validating DOE might have raised issues that could not be closed or resolved during the validation stage. For this purpose FARs might have been raised. No such issues were identified for this project.

All raised CARs and CLs were successfully closed during the validation of the project design. There are no remaining issues. The verification has been carried out based on the final registered PDD, the revised monitoring plan^{/RevMP/}, the validation report^{/FValR/} and CDM-UNFCCC Project registration³.

Furthermore as this is the 1st periodic verification no issues from former verifications are to be considered.

5.3. Special events

The monitoring plan was revised in order to take into account all parameters and procedures adopted during monitoring of the project activity. The same was approved on 2011-02-18. No other special events with effect to the monitoring have been observed.

² <http://cdm.unfccc.int/Projects/DB/DNV-CUK1185867846.4/view>

³ <http://cdm.unfccc.int/Projects/DB/DNV-CUK1185867846.4/view> .

5.4. Compliance with the monitoring plan

During the verification activity, it was found that the monitoring system and all applied procedures were not completely described in the registered monitoring plan⁴. The project has thus undergone a revision in the monitoring plan⁵. The submitted monitoring report^{/MR5/} which forms the basis of the verification was prepared by summarizing consolidated monthly data over the whole monitoring period in accordance with the approved revised monitoring plan^{/RevMP/}.

5.5. Compliance with the monitoring methodology

The monitoring system is in compliance with the applied monitoring methodology (ACM0002 version 6)⁶.

5.6. Monitoring parameters

During the verification all relevant monitoring parameters (as listed in section B.7 of the revised monitoring plan) have been verified with regard to the appropriateness of the applied measurement / determination method, the correctness of the values applied for ER calculation, the accuracy, and applied QA/QC measures. The results as well as the verification procedure are described parameter-wise in the project specific verification checklist.

The key monitoring parameter required to be monitored is the net electricity supplied to the grid by the project activity. The electricity supplied to the grid is measured by two way meters located at the project site and the substation. At the project site, there is a main and check meter connected to the WTGs. Apart from which, there are two set of meters, a main meter and check meter each of Lines I and II at the 110 kV Banikoppa KPTCL substation. The procedure outlined in the PPA is used to arrive at the transmission losses for individual owners. Thus the electricity generation of the project activity alone is considered for the reporting of emission reductions. The joint meter reports issued by the HESCOM are the basis for invoices raised by the PP to HESCOM.

The electricity is measured with a high accuracy and duly calibrated class 0.2 meters. The calibration reports^{/CAL1/} dated 2008-02-11, 2009-02-28 and 2009-12-08 at the 33 kV Enercon project site, and the calibration reports^{/CAL2/} dated 2007-02-05, 2009-03-30 and 2010.05.25, at the Banikoppa Substation have been verified and found to be OK. As the calibration reports for the bulk meters, both main and check, at

⁴ <http://cdm.unfccc.int/UserManagement/FileStorage/KDWHYQCFOUX90T36MLZEPI8GJ7A1V5>

⁵ <http://cdm.unfccc.int/filestorage/H/6/8/H68FLYQ524EMJ7ZP91NAX3UCVOBIDW/Tungabhadra%20Revised%20Monitoring%20plan.pdf?t=aEV8MTMwNTc5NjMzMzMC41OA==jFW0JFL5pl68edFC1rrtgXNJ2W8=>

⁶ http://cdm.unfccc.int/UserManagement/FileStorage/CDMWF_AM_BW759ID58ST5YEEV6WUCN5744MN763

Banikoppa 110kV substation for the year 2008 is not available to the PP, a correction of maximum permissible error of $\pm 0.20\%$ has been applied to the electricity electricity exported, imported and transmission losses that occurred during the monitoring period. This is in accordance with Annex 60 of EB 52 "GUIDELINES FOR ASSESSING COMPLIANCE WITH THE CALIBRATION FREQUENCY REQUIREMENTS". The emission reduction spreadsheet^{/XLS3/} has been revised and the corrected values of net electricity supplied to the grid have been found to be OK.

As per the Power purchase agreement^{/PPA/} signed between the MESCOM and the PP, the meter readings are carried out once a month by HESCOM officials. The monthly joint meter readings^{/JMR/} (B-forms) are the basis for the commercial billing. The Joint meter reading reports for the monitoring period and corresponding invoices^{/INV/} billed to the HESCOM were verified and found to be in agreement with each other. However, due to the -0.2 % correction applied to the electricity exported and +0.2 % correction on imported electricity and transmission losses incurred during the monitoring period, the net generation for the purpose of reporting the total emission reduction is lesser and hence more conservative than the energy billed to MESCOM. All relevant evidences were fully checked by the verification team during and after the site-visit. All evidences are clearly identifiable and assessed to be correct.

However CAR P1 and P2 and CL C1 were raised and successfully closed during verification.

After appropriate corrections were carried out by the project participant it can be confirmed that all monitoring parameters have been measured / determined without material misstatements and in line with all applicable standards and relevant requirements.

5.7. Monitoring report

A draft monitoring report was submitted to the verification team by the project participants. The team has made this report publicly available prior to the start of the verification activities. No comments were received.

During the verification, mistakes and needs for clarification were identified. The PP has carried out the requested corrections so that it can be confirmed that the Monitoring report^{/MR5/} is complete and transparent and in accordance with the approved revised monitoring plan and other relevant requirements.

However clarifications CL R1 and CL R2 were raised w.r.t the MR and were closed successfully. The revised MRs^{/MR4/} (version 4, dated 14 July 2011) and /MR5/ dated 2011-08-03 have been submitted for verification.

5.8. ER Calculation

The net electrical energy supplied to the grid is calculated as the difference between total energy exported and the energy imported. Transmission losses have been suitably subtracted. The applicable correction factor of -0.2% has been applied to electricity export and +0.2% to imported electricity and transmission losses, thus factored into the net electricity supplied to the grid. This is in compliance with Annex 60, EB 52 and Grid emission factor for the Southern Regional Grid times the net electrical energy supplied to the grid give the baseline emission reduction. Project emissions and leakage are deducted from this to arrive at net emission reductions. For the calculation of baseline emissions the ex-post and validated value of baseline parameters, i.e., Southern Regional Grid Emission Factor is taken into account which is a validated and registered value.

The original monitoring data to calculate the emission reductions is taken from the joint meter readings^{/JMR/} issued by HESCOM. This data is the basis for the calculation of the emission reductions as given in the spreadsheets ^{/XLS1/, /XLS2/, /XLS3/, /XLS4/}. Appropriate calculation methods (i.e. in accordance with ACM0002 Ver. 6) are applied. The grid emission factor of 0.93204 tCO₂/MWh for the Southern Regional Grid of India has been rightly applied in this monitoring period.

The accuracy of the measurements is assessed as high, because all measurement devices are duly calibrated. In order that the emission reductions remain conservative and as calibration report for the year 2008 is not available, correction of -0.2% and + 0.2 % has been applied to the electricity exported and imported values and transmission losses, respectively, for the monitoring period.

Baseline Emissions:

The formula used for the determination of baseline emissions which is consistent with the PDD is:

$$BE_y = EF_y \times EG_y$$

Where

EG_y is the net electricity export to grid in a given year (MWh)

EF_y is the emission factor for a given year (tonnes of CO₂/MWh)

The baseline emissions (BE) during the monitoring period are 53,951 tCO₂.

Project Emission:

Since the project is a wind power project, project emissions are nil.

Leakage:

Since the project is a wind power project, no leakage is considered.

Emission Reduction:

Summary of Emission Reductions using above formula during the monitoring period:

Year	Net Electricity Generated (in kWh)	Grid emission factor (tCO ₂ e/MWh)	Baseline emissions (tCO ₂ e)	Emission reductions (tCO ₂ e)
2008-10-27 to 2009-11-30	57.893,008	0.93204	53,951	53,951
Total	57.893,008		53,951	53,951

Hence the total emission reductions are 53,951 tCO₂.

During the verification mistakes in the ER calculation were identified. Corresponding CL (CL C1) was raised. A revised ER calculation sheet ^{/XLS3/} was prepared by the PP and presented to the verification team. CAR C1 was raised with respect to the calibration report for the year 2008. All raised issues were addressed appropriately and were closed out. Thus it is confirmed that the ER calculation is overall correct. The supporting documents including the calibration reports ^{/CAL1, CAL2/} were verified and found to be OK.

5.9. Quality Management

Quality Management procedures for measurements, collection and compilation of data, data storage and archiving, calibration, maintenance and training of personnel in the framework of this CDM project activity have been defined. The procedures defined can be assessed as appropriate for the purpose. No significant deviations thereof have been observed during the verification.

In this respect, CL Q1 was raised and successfully closed.

5.10. Comparison with ex-ante estimated emission reductions

Annual ex-ante emission reductions as mentioned in the registered PDD are 49,331 tCO₂e. For a period of 13 months, (which is the duration of the monitoring period of 2008-10-27 to 2009-11-30), the ex-ante emission reductions are 53,442 tCO₂e.

Therefore, the monitored emission reductions of 53,951 are slightly higher than the ex-ante value. The increase in emission reductions can be attributed to the PLF

during the monitoring period. As the PLF increase is well within the +10% increase analysed by the PP in the sensitivity analysis, the additionality remains unaffected.

5.11. Overall Aspects of the Verification

All necessary and requested documentation was provided by the project participants so that a complete verification of all relevant issues could be carried out.

Access was granted to all installations of the project which are relevant for the project performance and the monitoring activities.

No issues have been identified indicating that the implementation of the project activity and the steps to claim emission reductions are not compliant with the UNFCCC criteria and relevant guidance provided by the COP/CMP and the CDM EB (clarifications and/or guidance).

5.12. Hints for next periodic Verification

No comments.

6. VERIFICATION OPINION

M/s. Enercon (India) Limited has commissioned the TÜV NORD JI/CDM Certification Program to carry out the 1st periodic verification of the project: "Tungabhadra wind power project in Karnataka", with regard to the relevant requirements for CDM project activities. The project reduces GHG emissions due to the generation of electricity from wind energy. The project involves the operation of 38 WEGs of total capacity of 22.8 MW generating electricity to be supplied to the Southern Grid of India. This verification covers the period from 2008-10-27 to 2009-11-30 (including both days).

In the course of the verification 3 Corrective Action Requests (CAR) and 4 Clarification Requests (CL) were raised and successfully closed. No FAR was raised. The verification is based on the draft monitoring report, revised monitoring report, the monitoring plan as set out in the approved revised monitoring plan, registered PDD, the validation report, emission reduction calculation spreadsheets and supporting documents made available to the TÜV NORD JI/CDM CP by the project participant.

As a result of this verification, the verifier confirms that:

- all operations of the project are implemented and installed as planned and described in the validated project design document.
- the monitoring plan is in accordance with the applied approved CDM methodology, ie, ACM0002 Ver 6.0.
- the installed equipment essential for measuring parameters required for calculating emission reductions are calibrated appropriately.
- the monitoring system is in place and functional. The project has generated GHG emission reductions.

As the result of the 1st periodic verification, the verifier confirms that the GHG emission reductions are calculated without material misstatements in a conservative and appropriate manner. TÜV NORD JI/CDM CP herewith confirms that the project has achieved emission reductions in the above mentioned reporting period as follows:

Emission reductions: **53,951** t CO_{2e}

Bangalore, 2011-09-21



Ma Paa Puratchikkanal
TÜV NORD JI/CDM Certification
Program
Verification Team Leader

Essen, 2011-09-21



Stefan Winter
TÜV NORD JI/CDM Certification
Program
Senior Assessor

7. REFERENCES

Table 7-1: Documents provided by the project participant(s)

Reference	Document
/APP/	Approval letters [(CEE P&C/SEE(PLG)/AEE-1/F-280/CYS-09), (CEE (P&C)/SEE (PLG)/EEE (PSS)/AEE-1/F-280/CYS-68) and (CEE (P&C)/SEE (PLG)/EEE(PSS)/AEE-1/F-280/CGS-127) from KPTCL for the interconnection of WEGs of the project activity via the Banikoppa pooling station, Gadag, dated 2007-04-09.
/CAL1/	Calibration report (EE/MT/HBL/T-21/2230-35) for the energy meters 06767626 (M) and 06767637 (C) located at the 33 kV Enercon project site dated 2008-02-11, 2009-02-28 and 2009-12-08 issued by the Executive Engineer, HESCOM, Hubli.
/CAL2/	Calibration reports issued by the Executive Engineer, KPTCL, Hubli, dated 2007-02-05, 2009-03-30 and 2010-05-25 for the energy meters (serial numbers): 06607369(M) 06606801(C), 06605135 (M) and 06607373 (C) located at the 110 k V Banikoppa Substation.
/CR/	Commissioning certificates (EEE/TL&SS/GDG/406-417) (EEE/TL&SS/GDG/1288-98) and (EEE/ TL&SS/GDG/31/12/2007) dated 2007-04-23, 2007-09-12 and 2007-12-31 of 10 WEGs, 19 WEGs and remaining 9 WEGs respectively.
/EIK/	Approval letters [(CEIG/DEI1/27414-19/07-08), (CEIG/DEI1/63-68/07-08), and (CEIG/DE-1/57-62/07-08)/DEI1/14702-7/07-08) for the installed electrical equipments including all 38 WEGs, transformers, 33 KV line, from the Electrical Inspectorate of the Govt. Of Karnataka dated 2007-12-06.
/email/	Email response from EB dated 2010-09-12 to the clarification sought by the PP w.r.t the erratum in geographical coordinates in the registered PDD.
/INT/	Internal audit report of M/s. Enercon (India) Limited dated 2010-02-08
/INV/	Invoices raised by M/s. EIL to HESCOM for generated electricity as per JMR for the entire monitoring period.
/ISO/	ISO 9001:2008 certificate of M/s. EIL as certified by The Germanischer Lloyd Certification GmbH on 2010-02-08 valid till 2013
/JMR/	Statements for electricity generation/joint meter readings of meters 06767626 and 06767637 located at the 33 KV metering point of M/s EIL issued by

Reference	Document
	HESCOM for the entire monitoring period 2008-10-27 to 2009-11-30
/JMR1/	Statements for electricity generation/joint meter readings for meters 06607369(M) 06606801(C), 06605135 (M) and 06607373 located at the 110 k V Banikoppa Substation issued by HESCOM for the entire monitoring period 2008-10-27 to 2009-11-30.
/LAND/	Lease agreement for allotment of land for the project activity for a period of 30 years from the revenue Forest Department, Gadag Division, Govt. of Karnataka dated 2006-09-23.
/LOG/	Records of monitored data maintained at scheduled intervals in the form of log books
/MR1/	1. Monitoring Report "Tungabhadra wind power project in Karnataka" for the period 2008-10-27 to 2009-11-30, version 1.0 dated 2009-12-30.
/MR2/	2. Monitoring Report "Tungabhadra wind power project in Karnataka" for the period 2008-10-27 to 2009-11-30, version 2.0 dated 2010-05-10.
/MR3/	3. Monitoring Report "Tungabhadra wind power project in Karnataka" for the period 2008-10-27 to 2009-11-30, version 3.0 dated 2010-05-25.
/MR4/	4. Monitoring Report "Tungabhadra wind power project in Karnataka" for the period 2008-10-27 to 2009-11-30, version 4.0 dated 2011-07-14.
/MR5/	5. Monitoring Report "Tungabhadra wind power project in Karnataka" for the period 2008-10-27 to 2009-11-30, version 5.0 dated 2011-08-03.
/ORG/	Organisational Structure and responsibility chart of M/s. EIL
/PPA/	Power purchase agreement between MESCOM and M/s. EIL dated 2006-08-16 for the 22.8 MW windmill power project at Singatalur, Koralahalli and Hammigi Villages in Mundarsi Taluk, Gadag District.
/PHOTOS/	Photograph taken at the project site during the site visit on 2010-02-24 and 2010-02-25.
/TD/	<ul style="list-style-type: none"> - Technical specifications of the Enercon make E-40 model, 600 kW from Annexure -1 of the purchase order. - Technical particulars of transformers
/TRNG/	Training records for monitoring personnel in the inspection and working of electrical equipment, and safety conducted by M/s. EIL.

Reference	Document
/XLS1/	1. Emission reduction calculation sheet in relation to /MR1/.
/XLS2/	2. Revised emission reduction calculation sheet in relation to /MR2/ , /MR3/.
/XLS3/	3. Emission reduction calculation sheet in relation to /MR4/.
/XLS4/	4. Emission reduction calculation sheet in relation to /MR5/.

Table 7-2: Background investigation and assessment documents

Reference	Document
/ACM0002/	Approved CDM Methodology ACM0002, version 6.0: “Consolidated methodology for grid-connected electricity generation from renewable sources ”
/CPM/	TÜV NORD JI / CDM CP Manual (incl. CP procedures and forms)
/KP/	Kyoto Protocol (1997)
/MA/	Decision 3/CMP. 1 (Marrakesh – Accords)
/PDD/	Project Design Document for CDM project: “ <i>Tungabhadra wind power project in Karnataka</i> ” version 5, dated 2008-10-01
/VAL/	Validation Report for CDM project “ <i>Tungabhadra wind power project in Karnataka</i> ” version 3, dated 2008-10-21
/VER/	Documents of previous verifications (Monitoring report, verification report, ER calculation sheet)
/VVM/	UNFCCC Validation and Verification Manual (Version 1.2, EB 55, Annex 1)
/Annex 60 EB 52/	Guidelines for assessing compliance with the calibration frequency requirements; Version 01, 2010-02-12

Table 7-3: Websites used

Reference	Link	Organisation
/dna-HP/	http://cdmindia.nic.in/	MoEF, DNA of India

Reference	Link	Organisation
/unfccc/	http://cdm.unfccc.int	UNFCCC
/1268/	http://cdm.unfccc.int/Projects/DB/DNV-CUK1185867846.4/view	UNFCCC
/moef/	http://moef.nic.in/modules/project-clearances/environment-clearances/ http://envfor.nic.in/legis/eia/so1533.pdf	Ministry of Environment and Forests

Table 7-4: List of interviewed persons

Reference	Mol ¹		Name	Organisation / Function
/IM01/	V	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms	Mohammad Rafi	Supervisor, O&M, M/s. EIL
/IM01/	V	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Ravi Kumar A.M.	Assitant Engineer, O&M, M/s. EIL
/IM02/	V	<input type="checkbox"/> Mr. <input checked="" type="checkbox"/> Ms	Anushree Mishra	Officer, CDM Corporate, M/s. EIL
/IM02/	V	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms	Himanshu Bhatnagar	Assistant Manager, CDM Corporate, M/s. EIL

¹⁾ Means of Interview: (Telephone, E-Mail, Visit)

ANNEX

- A1:** Verification Protocol
- A2:** Appointment / Authorisation
statements

ANNEX 1: VERIFICATION PROTOCOL

Table A-1: GHG calculation procedures and management control testing / detailed audit testing of residual risk areas and random testing

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks	Additional verification testing	Conclusions and Areas Requiring Improvement (including <i>Forward Action Requests</i>)
Raw data generation				
<ul style="list-style-type: none"> • Installation of measuring equipment • Dysfunction of installed equipment • Maloperation by operational personnel • Downtimes of equipment • Exchange of equipment • Change of measurement equipment characteristic • Insufficient accuracy • Change of 	<ul style="list-style-type: none"> • Installation of modern and state of the art equipment • Process control automation • Internal data review • Regular visual inspections of installed equipment • Only skilled and trained personnel operates the relevant equipment • Daily raw data checks • Immediate exchange of dysfunctional equipment 	<ul style="list-style-type: none"> • Inadequate installation / operation of the monitoring equipment • Inadequate exchange of equipment • Change of personnel • Undetected measurement errors • Inappropriateness of Management system procedures w.r.t. monitoring plan requirements (e.g. substitute value strategies) • Non-application of management system procedures 	<ul style="list-style-type: none"> • Site – visit (maintenance dept., gas supplier) • Check of equipment • Check of technical data sheets • Check of suppliers information / guarantees • Check of calibration records, if applicable • Check of maintenance records • Counter-check of raw data and commercial data • Check of CDM management system 	<ul style="list-style-type: none"> • See Table A-2

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks	Additional verification testing	Conclusions and Areas Requiring Improvement (including <i>Forward Action Requests</i>)
<ul style="list-style-type: none"> technology Accuracy of values supplied by Third Parties 	<ul style="list-style-type: none"> Stand-by duty is organized Training Internal audit procedures Internal check of QA/QC measures of involved Third Parties 	<ul style="list-style-type: none"> Insufficient accuracy Inappropriate QA/QC measures of Third Parties 	<ul style="list-style-type: none"> Check of CDM related procedures Application of CDM management system procedures Check of trainings Check of responsibilities Check of QA/QC documentation / evidences of involved Third Parties 	
Raw data collection and data aggregation				
<ul style="list-style-type: none"> Wrong data transfer from raw data to daily and monthly aggregated reporting forms IT Systems Spread sheet programming Manual data transmission 	<ul style="list-style-type: none"> Cross-check of data Plausibility checks of various parameters. Appropriate archiving system Clear allocation of responsibilities Application of CDM Management system procedures 	<ul style="list-style-type: none"> Unintended usage of old data that has been revised Incomplete documentation Ex-post corrections of records Ambiguous sources of information Non-application of management system procedures 	<ul style="list-style-type: none"> Check of data aggregation steps Counter-calculation Data integrity checks by means of graphical data analysis and calculation of specific performance figures Check of management system certification 	<ul style="list-style-type: none"> See Table A-2

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks	Additional verification testing	Conclusions and Areas Requiring Improvement (including <i>Forward Action Requests</i>)
<ul style="list-style-type: none"> Data protection Responsibilities 	<ul style="list-style-type: none"> Usage of standard software solutions (Spreadsheets) Limited access to IT systems Data protection procedures 	<ul style="list-style-type: none"> Manual data transfer mistakes Unintended change of spread sheet programming or data base entries Problems caused by updating/upgrading or change of applied software 	<ul style="list-style-type: none"> Check of data archiving system Check of application of Management system procedures 	
Other calculation parameters				
<ul style="list-style-type: none"> Emission factors, oxidation factors, coefficients 	<ul style="list-style-type: none"> The values and data sources applied are defined in the PDD and monitoring plan 	<ul style="list-style-type: none"> Unintended or intended Modification of calculation parameters Wrong application of values Misinterpretations of the applied methodology and/ or the PDD Missing update of applicable regulatory framework (e.g. IPCC values) 	<ul style="list-style-type: none"> Update-check of regulatory framework Countercheck of the applied MP in the MR against the methodology and the PDD 	<ul style="list-style-type: none"> See Table A-2
Calculation Methods				

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks	Additional verification testing	Conclusions and Areas Requiring Improvement (including <i>Forward Action Requests</i>)
<ul style="list-style-type: none"> Applied formulae Miscalculation Mistakes in spread-sheet calculation 	<ul style="list-style-type: none"> Advanced calculation and reporting tools A CDM coordinator is in charge of the CDM related calculations Usage of tested / counterchecked Excel spreadsheets Involvement of external consultants 	<ul style="list-style-type: none"> The danger of miscalculation can only be minimized. 	<ul style="list-style-type: none"> Countercheck on the basis of own calculation. Spread sheet walk-through. Plausibility checks Check of plots 	<ul style="list-style-type: none"> See Table A-2
Monitoring reporting				
<ul style="list-style-type: none"> Data transfer to the author of the monitoring report Data transfer to the monitoring report Unintended use of outdated versions 	<ul style="list-style-type: none"> An experienced CDM consultant is responsible for monitoring reporting. CDM QMS procedures are defined 	<ul style="list-style-type: none"> The danger of data transfer mistakes can only be minimized Inappropriate application of QMS procedures 	<ul style="list-style-type: none"> Counter check with evidences provided. Audit of procedure application 	<ul style="list-style-type: none"> See Table A-2

Table A-2: (Project specific) Periodic Verification Checklist

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
1. Project history				
1.1 Open issues from validation (EB 55 Annex 1, §§ 181-183, 188c, 190c) <i>Check (esp. in case of 1st periodic verification) whether there are any open issues indicated in the validation report (e.g. FAR)?</i>	/PDD/ /VAL/ /unfccc/	<p><i>Description:</i></p> <p>All raised CARs and CLs were successfully closed during the validation of the project design. There are no remaining issues indicated in the validation report.</p> <p><i>Justification of evidences:</i></p> <p>The project documents including the final validation report have been verified. No FARs were found. All issues were closed during the validation. http://cdm.unfccc.int/Projects/DB/DNV-CUK1185867846.4/view</p> <p>http://cdm.unfccc.int/UserManagement/FileStorage/KDWHYQCFOUX90T36MLZEPI8GJ7A1V5</p> <p>http://cdm.unfccc.int/UserManagement/FileStorage/7E8P6MH4DKQBSW0NXFROJL12ZT5AVG</p> <p><i>Conclusion:</i></p> <p>There are no open issues, including FARs from validation. The verification has been carried out based on the registered PDD. A total of 3 CARs and 4 CLs were raised and successfully closed out during this verification.</p>	OK	OK
1.2 Open issues from previous verification (EB 55 Annex 1, § 193) <i>Check in case of further periodic verifications whether</i>	/unfccc/	This is the first periodic verification of the project activity. Hence not applicable.	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<i>there are any open issues indicated in previous verification reports (FAR) and take into consideration the guidance as specified in VVM.</i>				
1.3 Requests for Deviations / Revisions of MP (EB 55 Annex 1, §§ 201, 203, 212, 219) <i>Check if there have been any requests for deviations from the registered monitoring plan or requests for revisions of the monitoring plan. If any, make sure that the monitoring report reflects the application of the approved guidance from the CDM EB regarding the Rfdev. and that those issues are subject to verification?</i>	/unfccc/ /RevMP/ /ACM000 2/ /IM01/	<p>Description:</p> <p>The MP was revised to reflect actual practices of monitoring and recording of electricity generated, at the project site. The MP was approved by the EB on 2011-02-18. CARs P1 and P2 were raised,</p> <p>Justification of evidences:</p> <p>http://cdm.unfccc.int/Projects/DB/DNV-CUK1185867846.4/view</p> <p>Conclusion:</p> <p>The approved revised MP is in line with the applicable methodology ACM0002, Version 06. The MR is in line with the approved revised MP which reflects the best and accurate monitoring of electricity generated by the project activity. CARs P1 and P2 were closed.</p>	CAR P1 CAR P2	OK
1.4 Initial verification <i>In case an initial verification has been carried out, check if all FARs, recommendations etc. have been addressed appropriately.</i>	/IM01/	No initial verification has been carried out.	OK	OK
1.5 Initial project implementation (EB 55 Annex 1, §§ 182, 195-201) <i>In case of first periodic verification: Assess whether the project has been implemented and operated as</i>	/IM01/ /PDD/ /ACM000 2/	<p>Description:</p> <p>By means of document review and the on-site visit it was verified, that the PDD did not describe the actual monitoring plan being implemented by the PP. In This regard, revision of MP</p>	CAR P1 CAR P2	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<p><i>per the registered PDD and are all physical features of the project in place? Further focus on the potential phase wise implementation and report on the corresponding statuses and starting dates accordingly.</i></p> <p><i>Also, discuss – if applicable – any approvals of the necessary request of notification or request for approval of changes from the project activity as described in the registered PDD (EB 48 Annex 66/67).</i></p> <p><i>In case of further periodic verifications: Go to next chapter.</i></p>	/CR/	<p>was applied, and the revised plan was approved by UNFCCC on 2011-02-18. . CARs P1 and P2 were raised,</p> <p><i>Justification of evidences:</i></p> <p>The registered PDD was verified and the monitoring plan was confirmed to be not in line the PDD description. The site visit interview was conducted on 2010-02-24 and 2020-02-25. However, the validation team confirms that the physical features of the project were in place, as stated in the registered PDD. The commissioning certificates were verified. The monitoring plan is in conformance with the applied methodology and the revised MP. http://cdm.unfccc.int/Projects/DB/DNV-CUK1185867846.4/view</p> <p><i>Conclusion:</i></p> <p>It was confirmed during the site visit interview and review of documents such as the commissioning certificates that the project has been implemented and operated as per the registered PDD and that the monitoring plan is in line with the revised MP.</p> <p>Thus CARs P1 and P2 were closed.</p>		
2. Update on Changes and Incidents (during the Monitoring Period)				
<p>1.1 Technical equipment (EB 55 Annex 1, § 187)</p> <p><i>Check if relevant technical equipment of the project activity has been exchanged or modified during the monitoring period. Further ensure that consistent</i></p>	/IM01/ /MR5/ /TD/ /EIK/ /CAL1/	<p><i>Description:</i></p> <p>By means of instrument specifications and during the audit it was evidenced, that no relevant equipment was exchanged or modified within the monitoring period.</p> <p><i>Justification of evidences:</i></p>	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<p><i>designations of key equipment (meters etc.) in PDD, MR and calculation spreadsheet are applied</i></p> <p><i>Consider e.g. interviews with operational personnel, QMS records, maintenance records, instrument specifications.</i></p> <p><i>In case of changes, check whether the project is still in line with the registered PDD and assure that these changes have been considered in the monitoring report and the emission reduction calculation.</i></p> <p><i>Also, discuss –if applicable- any approvals of the necessary request of notification or request for approval of changes from the project activity as described in the registered PDD (EB 48 Annex 66/67).</i></p>	<p>/CAL2/ /APP/ /CR/ /LAND/</p>	<p>This was confirmed during the site visit. No documented evidence was found in this regard.</p> <p><i>Conclusion:</i></p> <p>There have been no special occurrences/incidents or changes to the project design and implementation during the monitoring period. No relevant equipment was exchanged or modified during the monitoring period. All supporting documents, such as the certificates and approvals for interconnection and the electrical inspectorate calibration reports and technical particulars were found to be in agreement with the equipment verified during the site visit.</p> <p>All energy meters and their details including the make and serial numbers have been correctly mentioned in the MR. The same has been confirmed during the site visit.</p>		
<p>1.2 Operation modes (EB 55 Annex 1, § 195)</p> <p><i>Check if relevant operation modes of the project activity have been exchanged or modified during the monitoring period.</i></p> <p><i>Consider e.g. interviews with operational personnel, operation log sheets, data management system records.</i></p> <p><i>In case of changes, check whether the project is still in line with the registered PDD and assure that these changes have been considered in the monitoring report and the emission reduction calculation.</i></p>	<p>/IM01/ /LOG/</p>	<p><i>Description:</i></p> <p>By means of interviews with the operational personnel it was evidenced that no relevant operation modes were changed within the monitoring period.</p> <p><i>Justification of evidences:</i></p> <p>This was confirmed during the site. The log books were checked in this regard.</p> <p><i>Conclusion:</i></p> <p>No relevant operation modes were changed within the monitoring period. The monitoring operations are managed by M/s. EIL which is a ISO 9001 certified company. The data is managed and recorded as per QMS procedures. During the site visit interview it was confirmed that there have not been</p>	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<i>Also, discuss – if applicable – any approvals of the necessary request of notification or request for approval of changes from the project activity as described in the registered PDD (EB 48 Annex 66/67).</i>		changes in the mode of operation of monitoring equipment /procedure.		
2.3 Incidents (EB 55 Annex 1, § 187, 208a) <i>Identify if there have been any significant incidents, deviant operation modes and / or downtimes of the equipment?</i> <i>Consider e.g. interviews with operational personnel, operational log sheets, analysis of performance data.</i>	/IM01/ /JMR/ /INV /CAL1/ /CAL2/	Description: It was verified during the site visit that no significant incidents have occurred during the monitoring period. This was also backed up by the data integrity check. Justification of evidences: This was confirmed during the site visit and a document review of the monthly joint meter readings, invoices, and calibration reports. Conclusion: No significant incidents have occurred during the monitoring period w.r.t the operation modes, downtimes in equipment , etc.	OK	OK
2.4 Personnel <i>Identify, if relevant personnel w.r.t. monitoring has been exchanged?</i> <i>In case of changes, assure that the implemented monitoring procedures have not been affected.</i>	/IM01/	Description: The persons in charge of the monitoring and maintenance of the WEGs and monitoring equipment and central monitoring system of M/s. EIL have not been changed during the monitoring period. Justification of evidences: This was confirmed during the site visit interview with the Plant Supervisor. Conclusion: The persons responsible for monitoring of the project activity	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		have remained the same during the monitoring period. Hence, the operating modes have not been altered during the monitoring period		
2.5 Legislation Find out whether relevant legislation with effect on the project activity in the host country has been changed. In any case data source shall be referenced.	/IM01/ /PPA/ /moef/	<p><i>Description:</i></p> <p>Relevant legislation was considered, No relevant changes since the previous verification were identified.</p> <p>Host country legislation (Ministry of Environment and Forests) remains unchanged since 2006. As the project is a renewable energy wind project, an EIA is not required as per host country legislation.</p> <p><i>Justification of evidences:</i></p> <p>Article 2 of the PPA states the legal obligations including all statutory permits and clearances to be undertaken by the PP before and after having signed the PPA. Any non-compliance renders the PPA null and void.</p> <p>As the PPA remains the same as that signed during validation, it can be deemed that there have been no relevant changes since validation of the project.</p> <p>The latest EIA clearances notification from the MoEF was published in September 2006. http://moef.nic.in/modules/project-clearances/environment-clearances/ http://envfor.nic.in/legis/eia/so1533.pdf</p> <p><i>Conclusion:</i> It can be concluded that no relevant changes in legislation have occurred since validation.</p>	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
3. Monitoring Report – General				
3.1 Monitoring period <i>Check if the monitoring period is in line with a) the crediting period and/or b) previous monitoring periods?</i>	/unfccc/ /PDD/ /MR5/	<i>Description:</i> This is the first periodic verification. The monitoring period lasts from 2008-10-27 to 2009-11-30. Both days are included. <i>Justification of evidences:</i> The registered PDD and the monitoring report were verified. <i>Conclusion:</i> The monitoring period lasts from 2008-10-27 to 2009-11-30. Both days are included. The first day of the monitoring period is the date of registration of the project activity, which is in this case the start of the crediting period. Hence crediting period is in line with the crediting period.	OK	OK
3.2 Publication of the Monitoring Report <i>Check if the monitoring report has been made publicly available on the UNFCCC website before the verification commenced.</i> <i>Check if comments have been received and if yes, how they have been addressed.</i>	/unfccc/	<i>Description:</i> The monitoring report was made available publicly for global stakeholder comments on the 2010-02-08. No comments were received during the global stakeholder commenting period. <i>Justification of evidences:</i> http://cdm.unfccc.int/Issuance/MonitoringReports/index.html http://cdm.unfccc.int/Projects/DB/DNV-CUK1185867846.4/view <i>Conclusion:</i> The draft monitoring report, as received from the project participants, has been made publicly available prior to the start of the verification activities. No comments have been received.	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
3.3 References <i>Check if the monitoring report provides the correct references, in detail: project title, UNFCCC registration No., applied methodology/ies, meth tools.</i>	/MR5/ /unfccc/	<i>Description:</i> All references are given in the monitoring report. All references are correct. <i>Justification of evidences:</i> All references were checked and found to be correct. <i>Conclusion:</i> All references are given in the monitoring report. All references are correct.	OK	OK
3.4 Completeness (EB 55 Annex 1, §§ 182, 195, 202, 206) <i>Assess if the monitoring report is complete, i.e. have all relevant issues been addressed? The MR shall include: (i) The implementation status of the project during the monitoring period (ii) Monitoring systems and procedures incl. QA/QC system employed (iii) all parameters to be monitored and reported at the intervals required by the MP and the Meth (iv) information on calibration of monitoring instruments (v) Emission factors, IPCC default values etc. (vi) reference to any deviation request approved by the EB, (vii) calculation of ER including reference to formulae and methods used (viii) comparison of the actual ER claimed in the MP with the estimate in the registered PDD and explanation in case of significant increase.</i>	/MR5/ /PDD/ /XLS4/ /CAL1/ /CAL2/ /unfccc/ /JMR/ /INV/	Yes all relevant issues are covered; in detail: <input checked="" type="checkbox"/> (i) Implementation status <input checked="" type="checkbox"/> (ii) Monitoring systems and procedures (esp. QA/QC) <input checked="" type="checkbox"/> (iii) All parameters and corresponding intervals <input checked="" type="checkbox"/> (iv) Information on calibration of monitoring instruments <input checked="" type="checkbox"/> (v) Emission factors, IPCC default values etc. <input type="checkbox"/> (vi) Reference to deviations, if applicable <input checked="" type="checkbox"/> (vii) Calculation of emission reductions <input checked="" type="checkbox"/> (viii) Comparison of actual ER with estimated ER as per PDD However, CARs R2, P1, P2, C1 and CLs R2, C1 and Q1 were raised and closed our during the verification process. Please refer Section 4 of this report for details.	CAR R2 CAR P1 CAR P2 CAR C1 CL-R2 CL-C1 CL-Q1	OK
3.5 Comparison of estimated and actual ER	/PDD/	<i>Description:</i>	CL-R2	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<p>(EB 55 Annex 1, § 198c)</p> <p><i>Have differences between the monitored ER and the ex-ante ER been reported and appropriately justified? Please assess potential impacts on baseline and additionality.</i></p>	<p>/MR5/ /XLS4/ /JMR/</p>	<p>As per the registered PDD, the estimated annual ER are 49,331t CO₂e. The ER reported in the monitoring report for the monitoring period of 2008-10-27 to 2009-11-30 (13 months) are 53,951 t CO₂e.</p> <p>However, the differences between the monitored ER and the ex-ante ER have not been justified in the MR. CL R2 was raised</p> <p><i>Justification of evidences:</i></p> <p>The registered PDD and the MR were compared. Sections E.5 and E.6 of the MR gives a brief comparison of the estimated ER and the actual ER achieved during this crediting period.</p> <p><i>Conclusion:</i></p> <p>The emission reductions reported and verified for the first monitoring period are 53,951 t CO₂e.</p> <p>From the emission reduction calculation spreadsheet it is evident that the annual increase in the emission reduction when compared to that of the registered PDD is due to the increased generation in the months of June, July and August of 2009. The verification team has verified the joint meter readings for all the months of the monitoring period including June, July and August 2009. The plant load factor in these months was 43.65%, 68.79% and 38.56% respectively. The increase in the emission reductions reported in the revised MR is thus justified.</p> <p>CL R2 is closed.</p>		
<p>3.6 Transparency</p> <p><i>Assess if the monitoring report is transparent, i.e. clear and unequivocal in all respect?</i></p>	<p>/MR5/</p>	<p><i>Description:</i></p> <p>The monitoring report can be assessed to be transparent. No ambiguous statements have been identified.</p>		OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		<p><i>Justification of evidences:</i></p> <p>The revised MR was verified by the verification team.</p> <p><i>Conclusion:</i></p> <p>The monitoring report can be assessed to be transparent. No ambiguous statements have been identified.</p>		
<p>3.7 Misstatements on general issues</p> <p><i>Assess whether the monitoring report is free of material misstatements regarding issues other than the monitoring parameters.</i></p> <p><i>Discuss the monitoring parameters in detail in chapter "Monitoring Parameters".</i></p>	<p>/MR5/ /PDD/ /XLS4/</p>	<p><i>Description:</i></p> <p>The following issues have been identified and CL R1 was raised:</p> <ul style="list-style-type: none"> <i>The project location has not been mentioned on the cover page</i> 	CL R1	OK
		<ul style="list-style-type: none"> <i>The project coordinates provided on pg 5 are not in agreement with those in table "Details of WEGs"</i> 		
		<ul style="list-style-type: none"> <i>The PP's name is not consistent with the registered PDD</i> 		
		<ul style="list-style-type: none"> <i>Title, reference number, and units of all parameters are missing of the project is missing in the ER sheet</i> <p><i>Justification of evidences:</i></p> <p>The revised MR was checked and coordinates found to be OK. The PP's name was crosschecked with that in the PDD.</p> <p><i>Conclusion:</i></p> <p>The project location and coordinates have been included in the revised MR. The PP's name has been kept consistent with the registered PDD. The ER sheet has been revised to include the units of parameters used in calculating the emission reductions, and project details. Hence CL R1 is closed.</p>		

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<p>3.8 Deviations from the validated monitoring plan (EB 55 Annex 1, §§ 196-197, 204-206, 211-212)</p> <p>Assess whether the MR is in line with the validated monitoring plan?</p> <p>In case of intended changes: Have they been approved by the UNFCCC?</p>	<p>/MR1/- /MR5/ /PDD/ /unfccc/</p>	<p><i>Description:</i></p> <p>The MP was revised to reflect actual practices of monitoring and recording of electricity generated at the project site. The MP was approved by the EB on 2011-02-18. The MR is in line with the approved MR.</p> <p><i>Justification of evidences:</i></p> <p>The MR is in line with the revised MP</p> <p>http://cdm.unfccc.int/Projects/DB/DNV-CUK1185867846.4/view</p> <p><i>Conclusion:</i></p> <p>The MR is in line with the revised monitoring plan. The revised MP was approved by the UNFCCC. All monitoring parameters as listed in the validated revised MP have been taken into account in the MR.</p>	OK	OK
<p>3.9 Deviations from the approved methodology (EB 55 Annex 1, §§ 200, 201, 203)</p> <p>Assess whether the MR in line with the applied monitoring methodology?</p>	<p>/MR5/ /PDD/ /ACM0002/ /JMR/ /IM01/</p>	<p><i>Description:</i></p> <p>The MR is in line with the approved methodology – ACM0002, Version 6.0.</p> <p><i>Justification of evidences:</i></p> <p>Version 6.0 of the approved methodology ACM0002 was verified and the monitoring report was found to be in line with the methodology.</p> <p>http://cdm.unfccc.int/UserManagement/FileStorage/CDMWF_A_M_BW759ID58ST5YEEV6WUCN5744MN763</p> <p><i>Conclusion:</i></p> <p>The approved methodology requires that the EG_v (net electricity</p>	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		supplied to the grid) be measured hourly and recorded monthly. The hourly data is recorded by the CMS or central monitoring system managed by EIL. The monthly data is recorded by HESCOM officials into joint meter readings. The JMRs for the monitoring period have been verified and found to be OK.		
4. Monitoring Parameters (List all parameters of the PDD chapter B.7.1; pl. copy the 6 lines below for each parameter)				
4.1. EG_y		Description: Net electricity supplied to the grid by the Project		
a) Measurement / Determination method (EB 55 Annex 1, §§ 184-185, 202-203) Describe how the monitoring parameter was measured / determined. Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements. Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.	/IM01/ /PDD/ /ACM000 2/ /MR5/ /JMR/ /JMR1/ /INV/ /CAL1/ /CAL2/ /PPA/	Description: The approved methodology requires that the EG _y (net electricity supplied to the grid) be measured hourly and recorded monthly. The hourly data is recorded by the CMS or central monitoring system managed by EIL. The monthly data is recorded by HESCOM officials into joint meter readings. The main parameter to be monitored for a wind project is the electricity supplied to the grid. In this case, the parameter EG _y "Net electricity supplied to the grid by the Project". The parameter is measured as electricity export, import and transmission loss at the 33 kV metering point at the project site and calculated by HESCOM officials and recorded in the JMR issued monthly to the PP. These monthly reports for the entire monitoring period form the basis to report the emission reductions achieved due to the project activity. The PP in turn raises invoices to the HESCOM for the electricity supplied to the grid. The frequency of measurements, the energy meters, and QA/QC procedures are as per the PPA signed between	CAR P1 CAR P2	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		<p>MESCOM and the PP. Calibration of energy meters is conducted annually by the HESCOM.</p> <p>The meter readings are taken at the bulk meter facility and at the project site by the HESCOM officials. The transmission loss is calculated as per Article 6 of the PPA and factored into the JMR issued to the PP.</p> <p>The JMR at the 33 kV metering point is the source of data for EG_y</p> <p>The electricity is measured by two way energy meters of an accuracy class of 0.2s which are calibrated annually by officials from the HESCOM.</p> <p>The monitoring report is as per the approved methodology and in line with the revised MP. However, CARs P1 and P2 were raised in the course of this verification.</p> <p><i>Justification of evidences:</i></p> <p>The JMRs at the 33kV project site and the 110 kV bulk metering station and invoices were verified and found to be OK. The calibration reports were verified and found to be OK. The JMRs and calibration reports are issued by the HESCOM and not in the control of the PP.</p> <p><i>Conclusion:</i></p> <p>The net electricity reported for the monitoring period 2008-10-27 to 2009-11-30 is 57,893,008 kWh, as sourced from the JMRs at the 33 kV metering point.</p> <p>Thus, CARs P1 and P2 are closed.</p> <p>All supporting documents have been verified and found to be OK.</p>		

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
b) Correctness (EB 55 Annex 1, §§ 202, 206, 221e) <i>Determine whether the value given in the monitoring report is correct and sufficiently justified.</i> <i>In case of mistakes pl. provide details and descriptions of the CARs raised.</i>	/MR5/ /PDD/ /XLS4/ /INV/ /JMR/ /Annex 60 EB 52/	<input checked="" type="checkbox"/> Correct <input type="checkbox"/> Not correct <p>The values given in the monitoring report and the corresponding ER sheet are correct. Monthly invoices raised to HESCOM along with the energy meter readings of import and export attested by HESCOM representative, for the entire monitoring period were submitted and the same has been verified. The transmission loss calculated by HESCOM is as per the PPA. Due to the unavailability of calibration report for the year 2008, a correction of -0.2 % was applied to the electricity exported and +0.2% was applied to the imported electricity and transmission losses during the monitoring period. This is as per Annex 60 of EB 52.</p> <p>CL C1 was raised</p> <p><i>Justification of evidences:</i></p> <p>Monthly invoices raised to HESCOM were found to be in line with the JMRs issued by HESCOM representative, for the entire monitoring period. The transmission loss calculated by HESCOM is as per the PPA. The revised ER spreadsheet was verified.</p> <p><i>Conclusion:</i></p> <p>The energy billed after was found to tally with the net energy supplied to the grid as reported in the MR. CL C1 was closed out.</p> <p>The revised ER spreadsheet was verified and the correction applied is acceptable and the ER reported transparent and conservative.</p> <p>Accordingly, the value of net electricity supplied to the grid was</p>	CL C1	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		found to be correct and justified with suitable evidences.		
c) QA/QC Procedure (EB 55 Annex 1, §§ 184b (vii), 205c, 206) <i>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration and maintenance of the monitoring equipment has been carried out by competent personnel.</i>	/CAL1/ /CAL2/ /INV/ /JMR/ /IM01/ /TRNG/ /ORG/	<p><i>Description:</i></p> <p>The readings are jointly recorded in the presence of the power producer and the power purchasing authority (MESCOM). The meters are calibrated annually and are on par with the industry standards. The meters are sealed by the authorities and are rendered tamper proof. It was confirmed during the site visit that training was conducted for monitoring personnel by EIL in monitoring and safety aspects as part of their QMS procedures.</p> <p>Data availability and management – It was confirmed during the site visit that all data pertaining to the CDM project activity was available at the EIL office at the site. All data will be stored for an additional two years after completion of crediting period.</p> <p>The monitoring plan is in line with the revised MP and the approved methodology.</p> <p>The monitoring personnel have been trained w.r.t monitoring procedures, handling of equipment and safety aspects. It was noted that M/s. EIL is an ISO9001 certified establishment and all QA/QC, data management and training procedures are integrated with the QMS of the company.</p> <p>All supporting documents have been verified and found to be OK.</p> <p>However, CAR C1 was raised in the course of this verification as the calibration frequency has not been annual-the calibration certificates for the bulk meters (main and check) situated at the 110kV substation were not available.</p>	CAR C1 CL-Q1	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		<p><i>Justification of evidences:</i></p> <p>The same was verified at the site visit.</p> <p>Calibration records for the 33Kv energy meters for the years 2008, 2009 and 2010 and calibration reports of 2009, and 2010 reports for the bulk meters have been verified.. Training records were submitted and verified.</p> <p><i>Conclusion:</i></p> <p>The energy meters were not calibrated annually as per the procedure. The calibration was not performed for the main and check) situated at the 110kV substation in the year 2008. Subsequently, a correction of 0.2 (+0.2% for import and transmission loss, and -0.2 % for export) was applied for the monitoring period. The calibration reports for the remaining meters were checked and found to be on par with the industry standards. The meters are sealed by the authorities and are rendered tamper proof. Applicable QA/QC procedures have been applied.</p> <p>Thus, CAR C1 was closed as correction was duly applied for the entire monitoring period. CL Q1 was closed.</p>		
<p>d) Accuracy</p> <p>(EB 55 Annex 1, §§ 205c, 206a)</p> <p><i>In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have</i></p>	<p>/CAL1/ /CAL2/ /PPA/ /MR5/ /XLS4/ /JMR/ /INV/</p>	<p><i>Description:</i></p> <p>No significant inaccuracies have been identified for this parameter. The energy readings are taken from energy meters of accuracy 0.2S. The readings are jointly recorded in the presence of the power producer and the power purchasing authority (MESCOM). The meters are calibrated annually. Due to the unavailability of calibration report for the year 2008 of -0.2 % was applied to the electricity exported and +0.2% was applied</p>	CAR C1	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<i>been made for calculating ERs.</i>	/Annex60 EB 52/	<p>to the imported electricity and transmission losses during the monitoring period. This is as per Annex 60 of EB 52. The meters are sealed by the authorities and are rendered tamper proof.</p> <p>The transmission loss calculated by HESCOM is as per the PPA.</p> <p>However the following CAR C1 was raised</p> <p><i>Justification of evidences:</i></p> <p>Calibration records have been verified and found satisfactory. Monthly invoices raised to HESCOM along with the energy meter readings of import and export attested by MESCOM representative, for the entire monitoring period were submitted and the same has been verified.</p> <p><i>Conclusion:</i></p> <p>The revised ER spreadsheet¹ was verified and the correction applied is acceptable, and the ER reported transparent accurate and conservative.</p>		
<p>e) Verification</p> <p>(EB 55 Annex 1, §§ 184a, 184b, 186, 203, 205, 206b)</p> <p><i>Describe how the information flow (from data generation, aggregation, to recording, calculation and reporting) for these parameters including the value was verified. Consider the measurement / determination procedure, accuracies, QA/QC procedures. Consider as well plausibility checks as far as possible. Check if the applied value could be backed up by corresponding evidences (external /</i></p>	<p>/CAL1/ /CAL2/ /PPA/ /MR5/ /XLS2/ /JMR/ /INV/ /Annex60 EB 52/</p>	<p><i>Description:</i></p> <p>The readings are jointly recorded in the presence of the power producer and the power purchasing authority (MESCOM). The meters are calibrated on an annual basis. The value of EG_y was verified through the meter joint readings issued by HESCOM at the project site. The JMRs issued at the 110kV were cross checked. The invoices raised to HESCOM were cross checked with the joint meter readings and were found to tally. Calibration reports have been verified and are according to the PPA with MESCOM.</p> <p>Due to the unavailability of calibration report for the year 2008,a</p>	<p>CAR P1 CAR P2 CAR C1</p>	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<i>internal, oral or documented). Further whether sufficient evidence is available, both in terms of frequency (time period between evidence) and in covering the full monitoring period.</i>		<p>correction of -0.2 % was applied to the electricity exported and +0.2% was applied to the imported electricity and transmission losses during the monitoring period. This is as per Annex 60 of EB 52.</p> <p>The monitoring plan is in line with the methodology and the revised MP.</p> <p>CARs P1, P2 and C1 and CL Q1 were raised during the course of the verification.</p> <p><i>Justification of evidences:</i></p> <p>The invoices, joint meter readings and calibration reports were verified.</p> <p><i>Conclusion:</i></p> <p>The PP has provided verifiable evidence and the ER reported for the entire monitoring period are traceable and conservative. CARs P1, P2 and C1 were successfully closed.</p>		
4.2. EG_{export} and EG_{import}		Description: Electricity Export recorded at the 33 kV meters connecting 38 machines of the project activity, and Electricity Import recorded at the 33 kV meters connecting 38 machines of the project activity, respectively.		
<p>a) Measurement / Determination method (EB 55 Annex 1, §§ 184-185, 202-203)</p> <p><i>Describe how the monitoring parameter was measured / determined.</i></p> <p><i>Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard</i></p>	<p>/IM01/ /unfccc/ /MR5/ /JMR/ /CAL1/ /PPA/</p>	<p><i>Description:</i></p> <p>The electricity exported and imported by the project activity is recorded by two way tri vector meters of accuracy class of 0.2s, one man and one check, situated at the project site. The meter records the export and import for the 38 WTGs of the project. The recorded values of G_{import} and EG_{export} are sourced from the</p>	<p>CAR P1 CAR P2</p>	<p>OK</p>

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<p><i>equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.</i></p> <p><i>Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</i></p>		<p>JMRs issued each month by the HESCOM. The meters used for the first monitoring period are 06767626 (main) and 06767637 (check).</p> <p>These monthly reports for the entire monitoring period form the basis to report the emission reductions achieved due to the project activity. The frequency of measurements and the energy meters are as per the PPA signed between MESCOM and the PP. The meters are calibrated annually by the HESCOM. The monitoring report is as per the approved methodology and in line with the revised MP.</p> <p>However, CARs P1 and P2 were raised in the course of this verification.</p> <p><i>Justification of evidences:</i></p> <p>The JMRs at the 33kV project site were found to be OK. The calibration reports have been verified and errors in the meters were found to be within the permissible limit.</p> <p>The JMRs and calibration reports are issued by the HESCOM and not in the control of the PP.</p> <p><i>Conclusion:</i></p> <p>The electricity exported and the electricity imported for the monitoring period 2008-10-27 to 2009-11-30 as sourced from the JMRs at the 33 kV metering point was found to be 59,382,996 kWh and 31,112 kWh, respectively.</p> <p>Thus, CARs P1 and P2 are closed. All supporting documents have been verified and found to be OK.</p>		
b) Correctness	/MR5/	<input checked="" type="checkbox"/> Correct <input type="checkbox"/> Not correct	GL-C1	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<p>(EB 55 Annex 1, §§ 202, 206, 221e)</p> <p><i>Determine whether the value given in the monitoring report is correct and sufficiently justified.</i></p> <p><i>In case of mistakes pl. provide details and descriptions of the CARs raised.</i></p>	<p>/XLS4/ /JMR/ /CAL1/ /Annex 60 EB 52/</p>	<p>The values given in the monitoring report and the corresponding ER sheet are correct. Monthly energy meter readings of import and export attested by HESCOM representative, for the entire monitoring period were submitted and the same has been verified. Due to the unavailability of calibration report for the year 2008, a correction of -0.2 % was applied to the electricity exported and that of +0.2% to the imported electricity and transmission losses during the monitoring period. This is as per Annex 60 of EB 52.</p> <p>However, CL C1 was raised.</p> <p><i>Justification of evidences:</i></p> <p>Monthly JMRs issued by HESCOM representative, for the entire monitoring period crosschecked against the revised ER spreadsheet. The values were found to tally.</p> <p><i>Conclusion:</i></p> <p>The energy billed after was found to tally with the net energy supplied to the grid as reported in the MR The revised ER spreadsheet was verified and the correction applied is acceptable and the ER reported transparent and conservative.</p> <p>Thus CL C1 was closed out.</p>		
<p>c) QA/QC Procedure</p> <p>(EB 55 Annex 1, §§ 184b (vii), 205c, 206)</p> <p><i>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration and maintenance of the monitoring equipment has been carried out by competent personnel.</i></p>	<p>/CAL1/ /JMR/ /IM01/ /TRNG/ /ORG/</p>	<p><i>Description:</i></p> <p>The readings are jointly recorded in the presence of the power producer and the power purchasing authority (MESCOM). The energy meters were not calibrated annually as per the procedure. The calibration was not performed for the main and check) situated at the 110kV substation in the year 2008.</p>	<p>CAR C1 CL C1</p>	<p>OK</p>



Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		<p>Subsequently, a correction of 0.2 (+0.2% for import and transmission loss, and -0.2 % for export) was applied for the monitoring period. The calibration reports for the remaining meters were checked and found to be on par with the industry standards. The meters are sealed by the authorities and are rendered tamper proof. It was confirmed during the site visit that training was conducted for monitoring personnel by EIL in monitoring and safety aspects as part of their QMS procedures.</p> <p>Data availability and management – It was confirmed during the site visit that all data pertaining to the CDM project activity was available at the EIL office at the site. All data will be stored for an additional two years after completion of crediting period.</p> <p>Monitoring personnel have been trained w.r.t monitoring procedures, handling of equipment and safety aspects. It was noted that M/s. EIL is an ISO9001 certified establishment and all QA/QC, data management and training procedures are integrated with the QMS of the company.</p> <p><i>Justification:</i></p> <p>Calibration records for the 33Kv energy meters for the years 2008, 2009 and 2010 and calibration reports of 2009, and 2010 reports for the bulk meters have been verified</p> <p>All other supporting documents have been verified and found to be OK. The monitoring plan is in line with the revised MP.</p> <p>However, CAR C1 and CL Q1 were raised in the course of this verification. CAR C1 was raised in the course of this verification as the calibration frequency has not been annual-the calibration certificates for the bulk meters (main and check) situated at the 110kV substation were not available.</p>		

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		<p><i>Conclusion:</i></p> <p>The energy meters were not calibrated annually as per the procedure. The calibration was not performed for the main and check) situated at the 110kV substation in the year 2008. Subsequently, a correction of 0.2 (+0.2% for import and transmission loss, and -0.2 % for export) was applied for the monitoring period. The calibration reports for the remaining meters were checked and found to be on par with the industry standards. The meters are sealed by the authorities and are rendered tamper proof. Applicable QA/QC procedures have been applied.</p> <p>Thus, CAR C1 was closed.</p>		
<p>d) Accuracy (EB 55 Annex 1, §§ 205c, 206a)</p> <p><i>In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.</i></p>	<p>/CAL1/ /PPA/ /MR5/ /XLS4/ /JMR/ /Annex60 EB 52/</p>	<p><i>Description:</i></p> <p>No significant inaccuracies have been identified for this parameter. The energy readings are taken from energy meters of accuracy 0.2S. The readings are jointly recorded in the presence of the power producer and the power purchasing authority (MESCOM). The meters are calibrated annually. Due to the unavailability of calibration report for the year 2008, a correction of -0.2 % was applied to the electricity exported and that of +0.2% to the electricity imported and transmission losses incurred during the monitoring period. This is as per Annex 60 of EB 52. The meters are sealed by the authorities and are rendered tamper proof.</p> <p>However CAR C1 was raised.</p> <p><i>Justification of evidences:</i></p> <p>Calibration records have been verified and found satisfactory.</p>	<p>CAR C1</p>	<p>OK</p>

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		<p>Monthly invoices raised to HESCOM along with the energy meter readings of import and export attested by HESCOM representative, for the entire monitoring period were submitted and the same has been verified.</p> <p><i>Conclusion:</i></p> <p>The revised ER spreadsheet¹ was verified and the correction applied is acceptable, and the ER reported transparent accurate and conservative.</p>		
<p>e) Verification</p> <p>(EB 55 Annex 1, §§ 184a, 184b, 186, 203, 205, 206b)</p> <p><i>Describe how the information flow (from data generation, aggregation, to recording, calculation and reporting) for these parameters including the value was verified. Consider the measurement / determination procedure, accuracies, QA/QC procedures. Consider as well plausibility checks as far as possible. Check if the applied value could be backed up by corresponding evidences (external / internal, oral or documented). Further whether sufficient evidence is available, both in terms of frequency (time period between evidence) and in covering the full monitoring period.</i></p>	<p>/IM01/ /unfccc/ /MR5/ /JMR/ /CAL1/ /PPA/</p>	<p><i>Description:</i></p> <p>The electricity exported and imported by the project activity is recorded by two way tri vector meters of accuracy class of 0.2s, one man and one check, situated at the project site. The meter records the export and import for the 38 WTGs of the project. The recorded values of G_{import} and E_{export} are sourced from the JMRs issued each month by the HESCOM. The meters used for the first monitoring period are 06767626 (main) and 06767637 (check).</p> <p>These monthly reports for the entire monitoring period form the basis to report the emission reductions achieved due to the project activity. The frequency of measurements and the energy meters are as per the PPA signed between MESCOM and the PP. The meters are calibrated annually and are on par with the industry standards. The meters are sealed by the authorities and are rendered tamper proof.</p> <p>The monitoring report is as per the approved methodology and in line with the revised MP.</p> <p>However, CARs P1, P2, C1 and CL Q1 were raised in the</p>	<p>CAR P1</p> <p>CAR P2</p> <p>CAR C1</p> <p>CL Q1</p>	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		<p>course of this verification.</p> <p><i>Justification of evidences:</i></p> <p>The JMRs at the 33kV project site were found to be OK. The available calibration reports (2009 and 2010 for 110kV meters, and 2008 to 2010 for 33 kV meters have been verified and errors in the meters were found to be within the permissible limit.</p> <p>The JMRs and calibration reports are issued by the HESCOM and not in the control of the PP.</p> <p><i>Conclusion:</i></p> <p>The electricity exported and the electricity imported for the monitoring period 2008-10-27 to 2009-11-30 as sourced from the JMRs at the 33 kV metering point was found to be 59,382,996 kWh and 31,112 kWh, respectively.</p> <p>Thus, CARs P1, P2, C1 and CL Q1 were closed. All supporting documents have been verified and found to be OK.</p>		
4.3. T_E		Description: Transmission loss of electricity between the metering location at 33 kV point and the 110 kV Enercon substation		
<p>a) Measurement / Determination method (EB 55 Annex 1, §§ 184-185, 202-203)</p> <p><i>Describe how the monitoring parameter was measured / determined.</i></p> <p><i>Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the</i></p>	<p>/MR5/ /XLS4/ /PPA/ /JMR/ /JMR1/</p>	<p>Transmission loss of electricity when exported between the 33 kV and 110 kV metering points has been included as a parameter to be monitored. The transmission loss percentage (Z) that occurs when electricity is transmitted from the project metering site to the Banikoppa substation is calculated as per the procedure defined in the PPA; therefore</p> $Z = \frac{(X1+X2+X3...+Xn)-Y}{(X1+X2+X3...+Xn)} \times 100,$	CAR P2	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<p><i>frequency of measurements as per the requirements.</i></p> <p><i>Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</i></p>		<p>X₁, X₂.. represent the meters installed at the 33 kV metering point, and Y represents the energy readings at the 110 kV Banikoppa substation.</p> <p>The transmission loss percentage arrived at is used for the calculation of EG_y and is sourced from the JMR at the 33 k V metering site. Thus $EG_y = EG_{\text{export}} - 115\% * EG_{\text{import}} - \text{Transmission Loss (T}_E)$</p> <p>The state utility in Karnataka applies an addition of 115% import, which is not in control of the PP. This 115% import is reflected in the JMRs.</p> <p>CAR P2 was raised in the regard.</p> <p><i>Justification of evidences:</i></p> <p>The JMRs both at the 33kV project site and the 110kV substation were found to tally with the ER sheet. The transmission losses presented in the ER sheet were found to tally with the JMRs.</p> <p><i>Conclusion:</i></p> <p>The total transmission loss accounted for during the monitoring period 2008-10-27 to 2009-11-30 as sourced from the JMRs at the 33 kV metering point was found to be 14,55,964 kWh.</p> <p>The determination of transmission loss is in line with the PPA and the revised MP. CAR P2 was closed.</p>		
<p>b) Correctness</p> <p>(EB 55 Annex 1, §§ 202, 206, 221e)</p>	<p>/MR5/ /XLS4/</p>	<p><i>Description:</i></p> <p>The value of transmission losses (14,55,964 kWh) given in the</p>	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<p><i>Determine whether the value given in the monitoring report is correct and sufficiently justified.</i></p> <p><i>In case of mistakes pl. provide details and descriptions of the CARs raised.</i></p>	<p>/PPA/ /JMR/ /JMR1/</p>	<p>MR tallies with those in the JMRs for the entire monitoring period.</p> <p><i>Justification of evidences:</i></p> <p>The JMRs both at the 33kV project site and the 110k V substation were verified and the transmission loss found to tally with the ER sheet.</p> <p><i>Conclusion:</i></p> <p>The value given in the MR is thus correct and justified.</p>		
<p>c) QA/QC Procedure (EB 55 Annex 1, §§ 184b (vii), 205c, 206)</p> <p><i>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration and maintenance of the monitoring equipment has been carried out by competent personnel.</i></p>	<p>/MR5/ /XLS4/ /PPA/ /JMR/ /JMR1/ /CAL1/ /CAL2/</p>	<p><i>Description:</i></p> <p>As the procedures for the calculation and reporting of transmission loss depends on the correctness of the E_{Gy} values, the same QA/QC procedures apply. The readings are jointly recorded in the presence of the power producer and the power purchasing authority (MESCOM).). The energy meters were not calibrated annually as per the procedure. The calibration was not performed for the main and check) situated at the 110kV substation in the year 2008. Subsequently, a correction of 0.2 (+0.2% for import and transmission loss, and -0.2 % for export) was applied for the monitoring period. The calibration reports for the remaining meters were checked and found to be on par with the industry standards.. The meters are sealed by the authorities and are rendered tamper proof. Data availability and management – It was confirmed during the site visit that all data pertaining to the CDM project activity was available at the EIL office at the site. All data will be stored for an additional two years after completion of crediting period.</p> <p>Monitoring personnel have been trained w.r.t monitoring</p>	<p>CAR C1 CLQ1</p>	<p>OK</p>

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		<p>procedures, handling of equipment and safety aspects. It was noted that M/s. EIL is an ISO9001 certified establishment and all QA/QC, data management and training procedures are integrated with the QMS of the company.</p> <p>All supporting documents have been verified and found to be OK. The monitoring plan is in line with the revised MP. CAR C1 and CL Q1 were raised.</p> <p><i>Justification of evidences:</i></p> <p>The JMRs both at the 33kV project site and the 110k V substation were verified and the transmission loss found to tally with the ER sheet. The procedure for calculation of transmission loss in the MR was found to be as per the PPA.</p> <p>It was confirmed during the site visit that training was conducted for monitoring personnel by EIL in monitoring and safety aspects as part of their QMS procedures.</p> <p><i>Conclusion:</i></p> <p>The energy meters were not calibrated annually as per the procedure. The calibration was not performed for the main and check) situated at the 110kV substation in the year 2008. Subsequently, a correction of 0.2 (+0.2% for import and transmission loss, and -0.2 % for export) was applied for the monitoring period. The calibration reports for the remaining meters were checked and found to be on par with the industry standards. CAR C1 and CL Q1 were closed.</p>		
<p>d) Accuracy (EB 55 Annex 1, §§ 205c, 206a)</p>	<p>/CAL1/ /CAL2/</p>	<p><i>Description:</i></p> <p>No significant inaccuracies have been identified for this</p>	<p>CAR C1</p>	<p>OK</p>

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<i>In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.</i>	/PPA/ /MR5/ /XLS4/ /JMR/ /Annex60 EB 52/	<p>parameter. The accuracy of the calculated transmission loss value depends on the energy readings taken at the project site as well as the substation. The energy meters are of accuracy 0.2s. The readings are jointly recorded in the presence of the power producer and the power purchasing authority (MESCOM). The meters are calibrated annually. Due to the unavailability of calibration report for the year 2008, a correction of -0.2 % was applied to the electricity exported and that of +0.2% was applied to the electricity imported and the transmission losses incurred during the monitoring period. This is as per Annex 60 of EB 52. The meters are sealed by the authorities and are rendered tamper proof.</p> <p>However CAR C1 was raised.</p> <p><i>Justification of evidences:</i></p> <p>Calibration records have been verified and found satisfactory. Monthly invoices raised to HESCOM along with the energy meter readings of import and export attested by HESCOM representative, for the entire monitoring period were submitted and the same has been verified.</p> <p><i>Conclusion:</i></p> <p>The revised ER spreadsheet¹ was verified and the correction applied is acceptable, and the ER reported transparent accurate and conservative.</p>		
<p>e) Verification</p> <p>(EB 55 Annex 1, §§ 184a, 184b, 186, 203, 205, 206b)</p> <p><i>Describe how the information flow (from data</i></p>	/MR5/ /XLS4/ /PPA/ /JMR/	<p>Transmission loss of electricity when exported between the 33 k V and 110 k V metering points has been included as a parameter to be monitored. The transmission loss percentage (Z) that occurs when electricity is transmitted from the project metering site to the Banikoppa substation is calculated as per</p>	<p>CAR P1 CAR</p>	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<i>generation, aggregation, to recording, calculation and reporting) for these parameters including the value was verified. Consider the measurement / determination procedure, accuracies, QA/QC procedures. Consider as well plausibility checks as far as possible. Check if the applied value could be backed up by corresponding evidences (external / internal, oral or documented). Further whether sufficient evidence is available, both in terms of frequency (time period between evidence) and in covering the full monitoring period.</i>	/JMR1/	<p>the procedure defined in the PPA; therefore</p> $Z = \frac{(X_1+X_2+X_3...+X_n)-Y}{(X_1+X_2+X_3...+X_n)} \times 100,$ <p>X₁, X₂.. represent the meters installed at the 33 kV metering point, and Y represents the energy readings at the 110 kV Banikoppa substation.</p> <p>The transmission loss percentage arrived at is used for the calculation of EG_y and is sourced from the JMR at the 33 k V metering site. Thus EG_y = EG_{export} – 115%*EG_{import} – Transmission Loss (T_E)</p> <p>The state utility in Karnataka applies an addition of 115% import, which is not in control of the PP. This 115% import is reflected in the JMRs.</p> <p>The ER sheet was verified and the transmission loss reported found to be in line with the JMRs. For crosschecking purposes, the JMR at the 110 k V have been verified too.</p> <p>Calibration of meters at the 33 k V site and the Banikoppa substation has been performed annually. Due to the unavailability of calibration report for the year 2008, a correction of -0.2 % was applied to the electricity exported and +0.2% was applied to the imported electricity and transmission losses during the monitoring period. This is as per Annex 60 of EB 52.</p> <p>CARs C1, P1 P2 and CL Q1 were raised in the regard.</p> <p><i>Justification of evidences:</i></p> <p>The JMRs both at the 33kV project site and the 110k V</p>	<p>P2</p> <p>CAR</p> <p>C1</p> <p>CL Q1</p>	

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		<p>substation were found to tally with the ER sheet. The transmission losses presented in the ER sheet were found to tally with the JMRs. Available calibration reports were verified and found to be OK.</p> <p><i>Conclusion:</i></p> <p>The total transmission loss accounted for during the monitoring period 2008-10-27 to 2009-11-30 as sourced from the JMRs at the 33 kV metering point was found to be 14,55,964 kWh.</p> <p>The determination of transmission loss is in line with the PPA and the revised MP. CARs C1, P1, P2 and CL Q1 were closed.</p>		
5. ER Calculation				
5.1 Traceability (EB 55 Annex 1, § 182) <i>Assess if the calculation is fully traceable. In case of complex calculations an Excel calculation spreadsheet shall be used. All applied formulae must be visible.</i>	/XLS4/ /MR5/ /JMR/ /INV/ /Annex 60 of EB 52/	<p><i>Description:</i></p> <p>An excel spreadsheet was used for calculating the emission reductions achieved during the monitoring period. The calculation is completely traceable. All applied formulae are visible. No information gaps have been identified.</p> <p>The emission reductions reported were found to be in agreement with the MR, Joint meter reading and invoices billed to the HESCOM, KPTCL.</p> <p>Due to the unavailability of calibration report for the year 2008, a correction of -0.2 % was applied to the electricity exported and +0.2% was applied to the imported electricity and transmission losses during the monitoring period. This is as per Annex 60 of EB 52.</p> <p>The ER sheet was revised to include the correction applied in order to comply with guidelines on calibration frequency.</p> <p>The total emission reductions by the project activity as per the</p>	GLC4	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		<p>revised MR and excel sheet are 53,951 tCO₂e.</p> <p><i>However CL C1 was raised.</i></p> <p><i>Justification of evidences:</i></p> <p>The revised excel spreadsheet with emission reductions for the monitoring period of 2008-10-027 to 2009-11-30, both days included was verified. JMRs and invoices were verified. Both were found to tally.</p> <p><i>Conclusion:</i></p> <p>An excel calculation sheet was used. The calculation is completely traceable. All applied formulae are visible. No information gaps have been identified. CL C1 was closed.</p>		
<p>5.2 Parameter consistency (EB 55 Annex 1, § 186)</p> <p><i>Assess whether all internal and external parameters and data used for calculation are applied consistently in the monitoring report and the calculation spreadsheet?</i></p> <p><i>Consider only the correct data exchange between the monitoring report and the calculation spreadsheet (if any). Further ensure that consistent designations for parameters in PDD, MR, calculation spreadsheet are applied. The evaluation of the correctness of the parameter values itself should be discussed in the chapter "Monitoring Parameters".</i></p>	/XLS4/ /MR5/	<p><i>Description:</i></p> <p>The revised excel spreadsheet is in line with the MR. No deviant parameter values have been used in the calculation sheet.</p> <p>The parameters in the MR are in line with the revised MP.</p> <p><i>However CL C1 was raised.</i></p> <p>.</p> <p><i>Justification of evidences:</i></p> <p>The revised excel spreadsheet with emission reductions for the monitoring period of 2008-10-027 to 2009-11-30, both days included was verified. JMRs and invoices were verified. Both were found to tally.</p>	CL C1	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		<p><i>Conclusion:</i></p> <p>The excel sheet reports the emission reductions for the monitoring period. No mistakes have been made in applying assumptions, data or calculations of emission reductions that will impair the estimate of emission reductions. It is in line with the MR.</p>		
<p>5.3 Applied formulae (EB 55 Annex 1, §§ 204-206)</p> <p><i>Check if the applied formulae and methods for calculating baseline emissions, project emissions and leakage are in accordance with the monitoring plan and / or the approved methodology.</i></p>	<p>/XLS2/ /MR5/ /ACM000 2/ /JMR/</p>	<p><i>Description:</i></p> <p>All applied formulae are in accordance with the monitoring plan and the approved methodology as well. The formula applied in the ER sheet for calculation of transmission loss is as per the PPA, and in line with the MR.</p> <p>Similarly, the correction applied for exported, imported energy and transmission losses has been checked and found to be OK.</p> <p>Information provided in the monitoring report and ER sheet has been cross-checked with the Joint Meter readings.</p> <p>In due course, CL C1 was raised.</p> <p><i>Justification of evidences:</i></p> <p>The revised excel spreadsheet with emission reductions for the monitoring period of 2008-10-027 to 2009-11-30 was verified. The monitoring report values were found to tally with the transmission loss in the joint meter readings.</p> <p><i>Conclusion:</i></p> <p>GHG emission reductions achieved are calculated as per the applicable methodology. A complete set of data for the specified monitoring period is available. No assumptions were made. All</p>	CL C1	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		the values are traceable. CL C1 were successfully closed.		
5.4 Completeness of calculation (EB 55 Annex 1, § 205a) <i>Assess whether the provided calculations are complete and reflect all requirements of the monitoring plan.</i> <i>Check especially that no standard or old values have been used for calculation where calculations based on up-to-date data is required.</i>	/XLS2/ /MR5/ /RevMP/	<p><i>Description:</i></p> <p>The calculation is completely traceable. No information/calculation gaps have been identified. A complete set of data for the specified monitoring period is available. Joint meter readings reports and invoices, and calibration reports for for the entire monitoring period have been verified and found to be tally with the MR and the ER sheet. Annual calibration has been performed by HESCOM, KPTCL and the reports verified and found to be OK. The transmission loss (calculated as per the PPA) sourced from the JMRs have been verified The ER sheet has been checked and all values found to be traceable.</p> <p>However, CL C1 was raised.</p> <p><i>Justification of evidences:</i></p> <p>The revised excel spreadsheet with emission reductions for the monitoring period of 2008-10-027 to 2009-11-30 was verified. The values were found to tally with the joint meter readings. The transmission loss values were verified and found to be OK.</p> <p><i>Conclusion:</i></p> <p>The calculations in the ER sheet are complete and in line with the monitoring plan. CL C1 was closed.</p>	CL C1	OK
6. Quality Management; defined organisational structure, responsibilities and competencies Internal QA/QC and document control				

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<p>6.1 Management System (EB 55 Annex 1, § 184 a (iii))</p> <p>Check if the GHG data monitoring system is embedded in a (certified) company quality management system, if so, check if all CDM monitoring procedures been fully integrated in the project participant's quality management system. If not how the GHG management system has been implemented.</p>	/IM01/ /TRNG/ /MR5/	<p><i>Description:</i> The company M/s. EIL is an ISO 9001 certified company. The O & M activities for WTGs are carried out by EIL. EIL has a standard training procedure which is part of their QMS. The PP has incorporated quality management procedures effectively with regard to the CDM project activity. The same has been verified during the site visit. Relevant documents have been submitted for verification. Sufficient evidence is available, both in terms of frequency and for the entire full monitoring period.</p> <p><i>Nevertheless, CL Q1 was raised.</i></p> <p><i>Justification of evidences:</i> All CDM related evidence and documents were verified during the site visit at the EIL office. Training documents were reviewed.</p> <p><i>Conclusion:</i> The revised MR contains the training procedures followed for the monitoring team of EIL. Hence, CL Q1 was successfully closed out.</p>	CL Q1	OK
<p>6.2 Roles and Positions</p> <p>Check if all roles and positions of each person in the GHG data management process are clearly defined and implemented as stated in the monitoring plan. Please consider the complete data trail from raw data generation to submission of the final data.</p> <p>Check further if only duly qualified personnel is involved in the monitoring procedures.</p>	/IM01/ /ORG/	<p><i>Description:</i> M/s. Enercon (India) Limited has adequate and technically qualified site engineers trained from the Enercon Training Academy to ensure constant monitoring of the turbines installed. Thus, they have the necessary competence to carry out the relevant tasks with sufficient accuracy. All necessary monitored and measured raw data were checked during on-site verification. M/s Enercon (India) Limited has the responsibility to supervise and monitor the parameters and emission reduction</p>	OK	OK


Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		<p>calculations and the joint meter readings were provided by HESCOM. All roles and positions of each person are clearly defined and implemented with regard to the CDM project activity, and in line with the monitoring plan.</p> <p>Refer also 6.1</p> <p><i>Justification of evidences:</i></p> <p>This was evidenced during the site visit interviews with the Plant Supervisor and other operation in charge.</p> <p><i>Conclusion:</i></p> <p>All roles and positions of each person are clearly defined and implemented with regard to the CDM project activity</p>		
<p>6.3 Trainings</p> <p><i>Check if initial trainings have been carried out, in case deemed necessary.</i></p>	<p>/MR5/ /IM01/ ./TRNG/</p>	<p><i>Description:</i></p> <p>It was confirmed during the site visit that training was conducted for monitoring personnel by EIL in monitoring and safety aspects as part of their QMS procedures. Training for all monitoring personnel is conducted in the aspects of operation and maintenance at the Enercon Training Academy. Nevertheless, CL Q1 was raised.</p> <p><i>Justification of evidences:</i></p> <p>Training records were submitted and verified.</p> <p><i>Conclusion:</i></p> <p>Monitoring personnel were interviewed during the site visit. It was confirmed that they are qualified and experienced. Training records were verified.</p>	CL Q1	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		CL Q1 was closed successfully.		
6.4 Troubleshooting procedures <i>Describe relevant troubleshooting measures and assess whether these troubleshooting procedures have been implemented.</i>	/IM01/ /PPA/	<i>Description:</i> During verification site visit it was evidenced that energy readings are taken from the main meters. In case of malfunction or repair of main meter, the energy readings are recorded from the Check meter installed. <i>Justification of evidences:</i> This was verified during site visit interviews. This procedure is as per the PPA. <i>Conclusion:</i> Trouble shooting procedures are in place.	OK	OK
6.5 Maintenance procedures Are appropriate maintenance procedures in place?	/IM01/ /TRNG/	<i>Description:</i> Yes, proper maintenance procedures are in place. All hired personnel have been trained in the same. The company M/s. EIL is an ISO 9001 certified company. The PP has incorporated quality management procedures effectively with regard to the CDM project activity. The same has been verified during the site visit. <i>Justification of evidences:</i> This was verified during site visit interviews and review training records. <i>Conclusion:</i> Proper maintenance procedures are in place. Training, operation and maintenance procedures are part of the QMS of M/s. EIL.	CL Q1	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		CL C1 was closed.		
6.6 Internal QA/QC <i>Assess whether there are any procedures in place on when, where and how checks and reviews of relevant monitoring parameters as well as further processing of the same are to be carried out. Please determine the evidences to be documented. (This might include spot checks by a second person not performing the calculations over manual data transfers, changes in assumptions and the overall reliability of the calculation processes.)</i>	/IM01/ /INT/	<i>Description:</i> Yes, internal audits are conducted regularly. All procedures are reviewed during the Management Review meetings. All reports of electricity generation are prepared in one level and reviewed at the next level assuring adequate level of QA/QC. <i>Justification of evidences:</i> This was verified during the site visit interview with the Plant Supervisor and the CDM In charge. Also EIL is an ISO-9001 certified company. Internal audits are mandatory in such a case. Audit reports were verified during the site visit, <i>Conclusion:</i> As M/s. EIL is an ISO 9001 certified company. Internal audit procedures exist and are being implemented. This is an integral part of the QMS of the PP.	OK	OK
6.7 Data archive Check whether all records of monitoring parameters are archived according to the monitoring plan.	/IM01/ /MR5/	<i>Description:</i> The monitoring related records and documents were archived in forms of hard and softcopy and are managed by the O&M team and the CDM Corporate office of M/s. EIL. All documents shall be archived for 2 years beyond the crediting period. Copies are maintained at the corporate office, as back up, and updated regularly. All documents are physically available. <i>Justification of evidences:</i> This was verified during the site visit. During the site visit all	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		<p>CDM related documents were available.</p> <p><i>Conclusion:</i></p> <p>The monitoring related records and documents were archived in forms of hard and softcopy and are managed by CDM Division, M/s. EIL and available at the project site.</p>		
<p>6.8 Data protection</p> <p>Assess whether appropriate measures have been taken in order to avoid unintended or intended manipulation of the measured data.</p>	/IM01/	<p><i>Description:</i></p> <p>All data stored at the plant are archived in both forms of hardcopy and softcopy. The plant data is saved in computers with periodic back up on-site as well as in the corporate office. Computers and backup discs have elementary password protection.</p> <p><i>Justification of evidences:</i></p> <p>The same was verified during the site visit.</p> <p><i>Conclusion:</i></p> <p>There is limited scope for intended manipulation of data.</p>	OK	OK

ANNEX 2: STATEMENTS OF COMPETENCE OF ALL INVOLVED PERSONNEL



Statement of Competence
Appointment and authorization according to the procedures of the TÜV NORD JI/CDM Certification Program

Mr. Ma Paa Puratchikkanal


SCHEME	STATUS	VALID UNTIL
CDM	Senior Assessor	2013-09-09
VCS	Senior Assessor	2013-09-09

Authorization status for technical areas within sectoral scopes:

CODE	TECHNICAL AREA
1.2	Energy generation from renewable energy sources
3.1	Energy demand
6.1	Construction
13.1	Waste handling and disposal
15.1	Agriculture

079 – Rev. 1, Date: 2011-07-05

079_001-F003_2011-07-05_rev1 001-F003 rev0 / 2010-04-19



Statement of Competence
Appointment and authorization according to the procedures of the TÜV NORD JI/CDM Certification Program

Ms. C. Indumathi

SCHEME	STATUS	VALID UNTIL
CDM	Assessor	2013-03-16
VCS	Assessor	2013-03-16

Authorization status for technical areas within sectoral scopes:

CODE	TECHNICAL AREA
1.2	Renewable Energies

134 – Rev. 0, Date: 2011-05-31

134_001-F003_2011-05-31_rev0 001-F003 rev0 / 2010-04-19



Statement of Competence
Appointment and authorization according to the procedures
of the TÜV NORD JI/CDM Certification Program

Mr. Murali Ramalingam

SCHEME	STATUS	VALID UNTIL
CDM	Lead Assessor	2014-06-15
VCS	Lead Assessor	2014-06-15

094 – Rev. 2, Date: 2011-06-16

094_001-F003_2011-06-16_JRW2

001-F003 NW / 2010-01-19



Statement of Competence
Appointment and authorization according to the procedures
of the TÜV NORD JI/CDM Certification Program

Mr. Ingo Klein

SCHEME	STATUS	VALID UNTIL
CDM	Senior Assessor (Validation, Verification) Technical Reviewer	2014-08-03
VCS	Senior Assessor Technical Reviewer	2014-08-03

Authorization status for technical areas within sectoral scopes:

CODE	TECHNICAL AREA	TR SUBCATEGORIES
1.2	Renewable Energies	1.2.1 Hydro 1.2.2 Wind 1.2.3 Geothermal 1.2.4 Solar 1.2.5 Tidal

122 - Rev. 2, Date: 2011-08-04

122_001-F003_2011-08-04_JRW2

001-F003 rev1 / 2011-06-02



Statement of Competence

Appointment and authorization according to the procedures
of the TÜV NORD JI/CDM Certification Program

Mr. Stefan Winter

SCHEME	STATUS	VALID UNTIL
CDM	Senior Assessor (Validation, Verification)	2014-06-30
	Technical Reviewer	
VCS	Senior Assessor (Validation, Verification)	2014-06-30
	Technical Reviewer	

Authorization status for technical areas within sectoral scopes:

CODE	TECHNICAL AREA	TR SUBCATEGORIES
1.1	Thermal energy generation	
1.2	Renewable Energy	1.2.1 Hydro
		1.2.2 Wind
		1.2.3 Geothermal
		1.2.4 Solar
		1.2.5 Tidal
2.2	Heat distribution	
3.1	Energy demand	
13.1	Waste handling and disposal	13.1.1 Waste management
		13.1.2 Waste water management
13.2	Animal waste management	
15.2	Animal waste management	

163 – Rev. 2, Date: 2011-08-10



Statement of Competence

Appointment and authorization according to the procedures
of the TÜV NORD JI/CDM Certification Program

Ms. Sabine Meyer

SCHEME	STATUS	VALID UNTIL
CDM/JI	Assessor	2013-10-27
VCS	Assessor	2013-10-27

197 – Rev. 1, Date: 2011-07-08



Statement of Competence

Appointment and authorization according to the procedures
of the TÜV NORD JI/CDM Certification Program

Ms. Manjari Chandra

SCHEME	STATUS	VALID UNTIL
CDM	Assessor	2013-03-16
Validation, Verification		
VCS	Assessor	2013-03-16

Authorization status for technical areas within sectoral scopes:

CODE	TECHNICAL AREA
1.2	Renewable Energies

092 — Rev. 1, Date: 2011-06-29