



# VALIDATION REPORT KHIVRAJ MOTORS PRIVATE LIMITED

## VALIDATION OF THE FUEL FREE ELECTRICITY TO GRID

REPORT NO. INDIA-VAL/9649/2007  
REVISION NO. 01

BUREAU VERITAS CERTIFICATION

## VALIDATION REPORT

Date of first issue: 13/08/2007	Organizational unit: Bureau Veritas Certification Holding SA
Client: Khivraj Motors Private Limited	Client ref.: V Rajamanickam

### Summary:

Bureau Veritas Certification has made the validation of the Fuel Free Electricity to Grid project of Khivraj Motors Private Limited located in Tamil Nadu on the basis of UNFCCC criteria for the CDM, as well as criteria given to provide for consistent project operations, monitoring and reporting. UNFCCC criteria refer to Article 12 of the Kyoto Protocol, the CDM rules and modalities and the subsequent decisions by the CDM Executive Board, as well as the host country criteria.

The validation scope is defined as an independent and objective review of the project design document, the project's baseline study, monitoring plan and other relevant documents, and consisted of the following three phases: i) desk review of the project design and the baseline and monitoring plan; ii) follow-up interviews with project stakeholders; iii) resolution of outstanding issues and the issuance of the final validation report and opinion. The overall validation, from Contract Review to Validation Report & Opinion, was conducted using Bureau Veritas Certification internal procedures.

The first output of the validation process is a list of Clarification and Corrective Actions Requests (CL and CAR), presented in Appendix A. Taking into account this output, the project proponent revised its project design document.

In summary, it is Bureau Veritas Certification's opinion that the project correctly applies the baseline and monitoring methodology Type I D Ver 11 "Grid connected renewable electricity generation" and meets the relevant UNFCCC requirements for the CDM and the relevant host country criteria.

Report No.: INDIA - val/9649/2007	Subject Group: CDM
Project title:  <b>FUEL FREE ELECTRICITY TO GRID</b>	
Work carried out by: R Sankaranarayanan – Team Leader P Srinivas – Team Member HB Muralidhar – Sector Specialist S Bhudia – Financial Specialist	
Work verified by: Dr Ashok Mammen	
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### Indexing terms

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**Abbreviations change / add to the list as necessary**

CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reductions
CL	Clarification Request
CO <sub>2</sub>	Carbon Dioxide
DOE	Designated Operational Entity
GHG	Green House Gas (es)
I	Interview
IETA	International Emissions Trading Association
MoV	Means of Verification
NGO	Non Government Organization
PCF	Prototype Carbon Fund
PDD	Project Design Document
UNFCCC	United Nations Framework Convention for Climate Change
WEG	Wind Energy Generator



<b>Table of Contents</b>	<b>Page</b>
1 INTRODUCTION .....	5
1.1 Objective	5
1.2 Scope	5
1.3 GHG Project Description	5
1.4 Validation team	6
2 METHODOLOGY.....	6
2.1 Review of Documents	9
2.2 Follow-up Interviews	10
2.3 Resolution of Clarification and Corrective Action Requests	10
3 VALIDATION FINDINGS .....	10
3.1 Project Design	11
3.2 Baseline	12
3.3 Monitoring Plan	13
3.4 Calculation of GHG Emissions	14
3.5 Environmental Impacts	15
3.6 Comments by Local Stakeholders	16
4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS.....	16
5 VALIDATION OPINION .....	17
6 REFERENCES .....	18

Appendix A: Validation Protocol

Appendix B: Explanation of how due account of comments was taken by the validation team.

Appendix C: Verifiers CV's



## 1 INTRODUCTION

Khivraj Motors Private Limited has commissioned Bureau Veritas Certification to validate its CDM project Fuel Free Electricity to Grid (hereafter called “the project”) at Villages Karunkulam, Keelaveeranam, Panagudi and Thandiyarkulam in Tirunelveli District and Village Chinnaputhur in Erode district of Tamil Nadu state.

This report summarizes the findings of the validation of the project, performed on the basis of UNFCCC criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

### 1.1 Objective

The validation serves as project design verification and is a requirement of all projects. The validation is an independent third party assessment of the project design. In particular, the project's baseline, the monitoring plan (MP), and the project's compliance with relevant UNFCCC and host country criteria are validated in order to confirm that the project design, as documented, is sound and reasonable, and meets the stated requirements and identified criteria. Validation is a requirement for all CDM projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of certified emission reductions (CERs).

UNFCCC criteria refer to Article 12 of the Kyoto Protocol, the CDM rules and modalities and the subsequent decisions by the CDM Executive Board, as well as the host country criteria.

### 1.2 Scope

The validation scope is defined as an independent and objective review of the project design document, the project's baseline study and monitoring plan and other relevant documents. The information in these documents is reviewed against Kyoto Protocol requirements, UNFCCC rules and associated interpretations.

The validation is not meant to provide any consulting towards the Client. However, stated requests for clarifications and/or corrective actions may provide input for improvement of the project design.

### 1.3 GHG Project Description

The project activity involves the effective utilization of the available wind energy to generate electricity by the installation of Wind Energy Generators (WEGs). The purpose of the project activity is to generate electricity using the fossil fuel free and emission free wind energy and contributes towards mitigation of greenhouse gas effects.



The project activity comprises of 22 WEGs of various capacities, which are located in two districts of Tamil Nadu State, India. The total rated power generation capacity of the project activity is 14.96 MW. The WEGs are expected to generate around 32.53 Million kWhs of electricity per year and displace an equivalent quantity of electricity from the southern regional power grid of India.

The WEGs are owned by different promoter entities of which Khivraj Motors Private Limited (KMPL) will act as the CDM project participant. The promoters have given their accent to the project proponent m/s Khivraj Motors Private Limited to act as the contact point for all communications with UNFCCC.

The promoters have ventured into the wind power generation as a strategy of business diversification and contribution to sustainable development. Consideration of Clean Development Mechanism (CDM) incentives as a revenue source has helped the promoters to successfully implement the wind power project activity.

#### **1.4 Validation team**

The validation team consists of the following personnel:

R Sankaranarayanan

Bureau Veritas Certification Team Leader, Climate Change Verifier

P Srinivas - Bureau Veritas Certification, Climate Change Verifier

H B Muralidhar - Bureau Veritas Certification – Sector Specialist

Sushil Bhudia - Financial Specialist

Dr Ashok Mammen Bureau Veritas Certification, Internal reviewer

## **2 METHODOLOGY**

The overall validation, from Contract Review to Validation Report & Opinion, was conducted using Bureau Veritas Certification internal procedures.

In order to ensure transparency, a validation protocol was customized for the project, according to the Validation and Verification Manual (IETA/PCF). The protocol shows, in a transparent manner, criteria (requirements), means of verification and the results from validating the identified criteria. The validation protocol serves the following purposes:

- It organizes, details and clarifies the requirements a CDM project is expected to meet;
- It ensures a transparent validation process where the validator will document how a particular requirement has been validated and the result of the validation.



The validation protocol consists of five tables. The different columns in these tables are described in Figure 1.

The completed validation protocol is enclosed in Appendix A to this report.

Validation Protocol Table 1: Mandatory Requirements			
Requirement	Reference	Conclusion	Cross reference
The requirements the project must meet.	Gives reference to the legislation or agreement where the requirement is found.	This is either acceptable based on evidence provided (OK), a <b>Corrective Action Request (CAR)</b> or a <b>Clarification Request (CL)</b> of risk or non-compliance with stated requirements. The CAR's and CL's are numbered and presented to the client in the Validation Report.	Used to refer to the relevant protocol questions in Tables 2, 3 and 4 to show how the specific requirement is validated. This is to ensure a transparent validation process.

Validation Protocol Table 2: Requirements checklist				
Checklist Question	Reference	Means of verification (MoV)	Comment	Draft and/or Final Conclusion
The various requirements in Table 1 are linked to checklist questions the project should meet. The checklist is organized in several sections. Each section is then further subdivided. The lowest level constitutes a checklist question.	Gives reference to documents where the answer to the checklist question or item is found.	Explains how conformance with the checklist question is investigated. Examples of means of verification are document review (DR) or interview (I). N/A means not applicable.	The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached.	This is either acceptable based on evidence provided (OK), or a <b>Corrective Action Request (CAR)</b> due to non-compliance with the checklist question. (See below). <b>Clarification Request (CL)</b> is used when the validation team has identified a need for further clarification.

Validation Protocol Table 3: Baseline and Monitoring Methodologies				
Checklist Question	Reference	Means of verification (MoV)	Comment	Draft and/or Final Conclusion
The various requirements of baseline and monitoring methodologies should be met. The checklist is organized in several sections. Each section is then further subdivided. The lowest level constitutes a checklist question.	Gives reference to documents where the answer to the checklist question or item is found.	Explains how conformance with the checklist question is investigated. Examples of means of verification are document review (DR) or interview (I). N/A means not applicable.	The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached.	This is either acceptable based on evidence provided (OK), or a <b>Corrective Action Request (CAR)</b> due to non-compliance with the checklist question. (See below). <b>Clarification Request (CL)</b> is used when the validation team has identified a need for further clarification.

Validation Protocol Table 4: Legal requirements				
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Checklist Question	Reference	Means of verification (MoV)	Comment	Draft and/or Final Conclusion
The national legal requirements the project must meet.	Gives reference to documents where the answer to the checklist question or item is found.	Explains how conformance with the checklist question is investigated. Examples of means of verification are document review (DR) or interview (I). N/A means not applicable.	The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached.	This is either acceptable based on evidence provided (OK), or a <b>Corrective Action Request (CAR)</b> due to non-compliance with the checklist question. (See below). <b>Clarification Request (CL)</b> is used when the validation team has identified a need for further clarification.

Validation Protocol Table 5: Resolution of Corrective Action and Clarification Requests			
Report clarifications and corrective action requests	Ref. to checklist question in tables 2/3	Summary of project owner response	Validation conclusion
If the conclusions from the Validation are either a Corrective Action Request or a Clarification Request, these should be listed in this section.	Reference to the checklist question number in Tables 2, where the Corrective Action Request or Clarification Request is explained.	The responses given by the Client or other project participants during the communications with the validation team should be summarized in this section.	This section should summarize the validation team's responses and final conclusions. The conclusions should also be included in Tables 2, under "Final Conclusion".

**Figure 1 Validation protocol tables**

## 2.1 Review of Documents

The Project Design Document (PDD) submitted by Khivraj Motors Private Limited and additional background documents related to the project design and baseline, i.e. country Law, Guidelines for Completing the Project Design Document (CDM-PDD), Approved methodology, Kyoto Protocol, Clarifications on Validation Requirements to be Checked by a Designated Operational Entity were reviewed.

To address Bureau Veritas Certification corrective action and clarification requests Khivraj Motors Private Limited revised the PDD and resubmitted it on 11/2007.

The validation findings presented in this report relate to the project as described in the PDD version 06.



## 2.2 Follow-up Interviews

On 27/02/2007 and 28/02/2007 Bureau Veritas Certification performed interviews with project stakeholders to confirm selected information and to resolve issues identified in the document review. Representatives of Khivraj Motors Private Limited were interviewed (see References). The main topics of the interviews are summarized in Table 1.

**Table 1 Interview topics**

Interviewed organization	Interview topics
Khivraj Motors Private Limited	<ul style="list-style-type: none"> <li>➤ Operational aspects</li> <li>➤ Government Approvals</li> <li>➤ Internal review / verification mechanism</li> <li>➤ Stake holders meetings / response to stake holders comments</li> </ul>
Local Stake Holders of the villages of Erode and Tirunelveli districts where these WEGs are located	<ul style="list-style-type: none"> <li>➤ Stake holders meetings</li> <li>➤ Social and economical benefits due to Project</li> </ul>
Ernst & Young Pvt Limited – Project developers	<ul style="list-style-type: none"> <li>➤ Baseline &amp; Additionality</li> <li>➤ Stake holders meetings / response to stake holders comments</li> <li>➤ Monitoring Methodology</li> <li>➤ QA / QC procedures</li> <li>➤ Operational aspects.</li> </ul>

## 2.3 Resolution of Clarification and Corrective Action Requests

The objective of this phase of the validation is to raise the requests for corrective actions and clarification and any other outstanding issues that needed to be clarified for Bureau Veritas Certification positive conclusion on the project design.

To guarantee the transparency of the validation process, the concerns raised are documented in more detail in the validation protocol in Appendix A.

## 3 VALIDATION FINDINGS

In the following sections, the findings of the validation are stated. The validation findings for each validation subject are presented as follows:

- 1) The findings from the desk review of the original project design documents and the findings from interviews during the follow up visit are summarized. A more detailed record of these findings can be found in the Validation Protocol in Appendix A.
- 2) Where Bureau Veritas Certification had identified issues that needed clarification or that represented a risk to the fulfillment of the project objectives, a Clarification or Corrective Action Request, respectively, have been issued. The Clarification and Corrective Action Requests are



stated, where applicable, in the following sections and are further documented in the Validation Protocol in Appendix A. The validation of the Project resulted in **03** Corrective Action Requests and **18** Clarification Requests.

3) The conclusions for validation subject are presented.

### 3.1 Project Design

Bureau Veritas Certification recognizes that Fuel free Electricity to grid project by Khivraj Motors Private Limited is helping country fulfill its goals of promoting sustainable development. The project is expected to be in line with host-country specific CDM requirements because –

The project activity involves effective utilization of the available wind energy to generate electricity by installing Wind Energy Generators (WEGs). The purpose of the project activity is to generate electricity using fossil free and emission free wind energy and thereby contribute towards mitigation of greenhouse gas effects.

The project activity consists of 22 WEGs installed in Tirunelveli and Erode districts of Tamil Nadu out of which two nos are of NEG Micon make and rest of Enercon make. All WEGs are of similar design having three rotor blades, usually made of fibreglass, which rotates around a horizontal hub connected to a generator. They have no gearboxes or drive train, which make them much quieter than the conventional gearbox turbines.

The socio – economic benefits envisaged because of the project range from

1. Improved road conditions resulting in better road connectivity to near by villages,
2. Employment opportunities to the local population during construction operational phase resulting in bringing down migration of labour to urban areas,
3. Better power availability benefiting the local agricultural community with improved irrigation facilities.
4. In the absence of the project activity, electricity would have been generated using a fossil fuel based thermal power plants. This would have resulted in higher GHG emissions than those emitted in the project activity
5. No hazardous solid waste disposal and noxious gas emissions.
6. Above all, wind is one of the cleanest sources of renewable energy..

The Project Scenario is considered additional in comparison to the baseline scenario, and therefore eligible to receive Certified Emissions Reductions (CERs) under the CDM, based on an analysis, presented by the PDD, of investment barrier and other practice.



The project design is sound and the geographical Chinnaputhur in Erode district and Pangudi, Karunkulam, Keelaveeranam and Thandiyarkulam in Tirunelveli district of Tamil Nadu state in India and temporal (20 years) boundaries of the project are clearly defined.

CAR 1 and CLs 1,2 & 3 were issued applicable to project design which have been satisfactorily resolved Refer Appendix A

### **3.2 Baseline and Additionality**

The Fuel free electricity to grid project uses the approved small - scale baseline methodology AMS I D (Grid connected renewable electricity generation, version 11).

The project involves installation of 22 WEGs of capacities varying from 330 kW to 950 kW totaling to 14.96 MW which is lower than 15 MW limit for it to be applicable under the small scale category. The WEGs are located in two districts of Tirunelveli and Erode in Tamil Nadu state.

The validation team investigated whether this project satisfies the condition – The small - scale project activity is not a debundled component of large project activity. It has been verified that the project proponent has not initiated a project of similar nature within 1 Km range in the last 2 years and the distance between the two districts is more than 300 Kms.

Evidence of CDM consideration could be ascertained from the extract of board resolution dated 30 August 2002 and subsequently the project activity start with the first PO for 2 nos of 950 Kw WEGs placed on M/s NEG Micon

The PDD details different ownership of WEGs, all have given an undertaking that Khivraj Motors Private Limited will act as the CDM project participant, same has been made available to the validation team

The alternatives considered for determination of the baseline scenario in the context of the project activity include generation of electricity by various power plants connected to grid

The possible alternative baseline scenarios are the following:

- (a) Proposed project activity without CDM;
- (b) Electricity generation from power plants connected to grid .

The baseline options considered do not include those options that:

- do not comply with legal and regulatory requirements; or
- depend on key resources such as fuels, materials or technology that are not available at the project site.



The most economically attractive alternative among the alternatives mentioned above has been selected as the baseline scenario, since such alternative is not expected to face any prohibitive barriers that could have prevented it from being taken up as the project activity.

The project scenario is considered additional in comparison to the baseline scenario and therefore eligible to receive CERs under the CDM based on an analysis, presented in the PDD, of investment and other barriers.

Although wind power generation is encouraged, the state has not provided adequate and effective infrastructure for evacuation of power

The plant load factor normally around 20 - 30 % in Tamil Nadu which is comparatively better than Andhra Pradesh, the non-availability of grid evacuation facilities is still a major concern particularly during the peak season have resulted in lower IRR for the project activity.

The validation team has gone through the financial analysis of the project independently and based on the actual data analysis of the project participant it is evident that the CDM revenue is essential for the project to be economically viable. In the IRR computation, the analysis has considered both the cases – the IRRs without CDM revenue ranging from 6.57% to 10.32% and with CDM revenue, the same is projected in the range of 9.48% and 13.78 % respectively.

CLs 4 & 5 were issued applicable to baseline and additionality, which has been satisfactorily resolved. Refer Appendix A.

### 3.3 Monitoring Plan

The Project uses the approved monitoring methodology AMS I D (Grid connected renewable electricity generation) version 11 along with ACM 0002 version 6 dated 19, May 2006 for computation of emission factors.

The adopted monitoring methodology has been chosen based on the following reasons:

- Installed capacity of Project is 14.96 MW, which is below threshold limit of 15 MW for small scale Projects.
- Project is Generation of electricity from renewable energy i.e. wind Electricity generated is connected to Grid – Southern grid in this case.

The main objective of having a monitoring system is to have a constant check on the emission reductions. The delivered energy is metered by project proponents in co-ordination Tamil Nadu Electricity Board (TNEB) The project activity is supplying electricity to southern grid. Metering equipment is electronic trivector meters with 0.2 % accuracy class. The main meter is installed at the individual WEGs and has been sealed by



TNEB. The metering equipments are being maintained in accordance with electricity standards. The parties take the monthly meter readings at the project sites jointly.

Net electricity generation is calculated after deducting energy imports from the grid if any.

Meter Test Checking: The consistency of TNEB meter's data is crosschecked with the individual WEGs energy meter data. The individual WEG's energy meters are calibrated periodically.

- The validation team could access a CDM manual, which addresses procedures for data collection, reporting and archiving. Annex 4 of PDD also addresses the same

CL 6 to 15 was issued applicable to monitoring plan, which have been satisfactorily resolved. Refer Appendix A

As per the approved additionality tool version 3, alternatives to the project activities consistent with current laws and regulations shall be identified.

Following baseline scenarios have been identified as the possible alternatives.

- The current project activity would have been executed without considering CDM revenue.
- Power from grid-connected fossil fuel based power plants.

The barriers analysis has identified those barriers namely Investment, and Regulatory risk that would prevent the implementation of the proposed project activity.

PP has provided evidences for the investment risk due to debt liabilities. This was reviewed and accepted considering that the WEGs require high initial investment and the internal rate of return has been calculated with and without CDM incentives have been provided to the validation team. It is accepted that CDM revenue can act as risk mitigation,

Validation team could access to the relevant documents and records. Based on review of these records the team has accepted these barriers.

### **3.4 Calculation of GHG Emissions**

As per Type AMS1 D, the baseline emission sources considered are fossil fuel fired power plants connected to the relevant electricity system (grid). The relevant grid considered for the calculation of baseline emissions is the southern region grid and not the state or the National grid. The reason for such exclusion of the latter grids is the zone wise Central Electricity Authority (CEA) in accordance with the ACM 0002 has prepared data.





As required under Type AMS 1 D, the baseline emissions are calculated as per combined margin approach, both in terms of relevant grid definitions and the emission factors. The combined margin calculation is based on weighted average of operating and build margin. The detailed algorithms are described under Annex 3 of PDD based on CEA data

As described in ACM 0002, the project emissions result due to combustion of auxiliary fuel (furnace oil) in the project activity. No fossil fuel is used in the project activity. The project is not expected to lead to emissions. With reference to ACM0002 therefore, project does not lead to any leakage.

Since the project activity is a small-scale wind energy project, there are no anthropogenic emissions by sources of greenhouse gases within the project boundary.

The estimated annual average of approximately **30251tCO<sub>2</sub>e** over the ten-year crediting period of emission reduction represents a reasonable estimation using the assumptions given by the project and based on the CEA data considering an emission factor of 0.93 (as per CEA data for wind farms using 75% of Build margin and 25 % of operating margin) for Southern grid.

Calculations for the same are verified and observed to be conservative and correct.

CAR 2 & 3 were issued applicable to calculation of GHG emissions, which have been satisfactorily resolved. Refer Appendix A.

### 3.5 Sustainable Development Impacts

No significant environmental impacts have been identified from the project activity. Being a small-scale project the Environment Impact assessment is also not required by the local regulation. The other normal (negative/ positive) environmental impacts assessed due to the activity are summarized below:

- Project activity does not involve installation of major structure requiring changes in the topography.
- No trans-boundary impacts due to emissions from the project activity have been identified. Hence trans-boundary impacts or major stress on the environment are not anticipated.

No significant noise impacts were identified to areas within and outside the project boundary.

The project proponent has also analyzed the socio – economic benefits of the project activity. The analysis does not identify any significantly adverse social impacts.

The socio – economic benefits envisaged because of the project range from



- Improved road conditions resulting in better road connectivity to near by villages,
- Employment opportunities to the local population during construction operational phase resulting in binging down migration of labour to urban areas,
- Better power availability benefiting the local agricultural community with improved irrigation facilities.
- In the absence of the project activity, electricity would have been generated using a fossil fuel based thermal power plants. This would have resulted in higher GHG emissions than those emitted in the project activity
- No hazardous solid waste disposal and noxious gas emissions.

Minimum amount of land and water is required for a wind farm when compared to other conventional as well as non-conventional power plants. In view of above positive impacts and contribution towards the country's goal of sustainable development and improvement in quality of life of local population, the development and implementation of systems for the CDM project 14.96 MW Wind Power Project in Tirunelveli and Erode districts, Tamil Nadu by Khivraj Motors Private Limited management. The clearance of this CDM initiative by Khivraj Motors Private Limited would facilitate the process of sustainable energy production.

CLs 16 to 18 were issued applicable to sustainable development impacts, which has been satisfactorily resolved. Refer Appendix A

### **3.6 Comments by Local Stakeholders**

Local stakeholder consultation meeting to discuss stakeholder concerns on the proposed Clean Development Mechanism (CDM) project – Fuel free electricity to grid on 27/03/2007 by Khivraj Motors Private Limited was held at Chinnaputhur village in Erode district and on 05/11/2006 Panagudi village in Tirunelveli district of Tamil Nadu state, India

The list of participants, notice-inviting participation to interested stakeholders, and record of the stakeholder meeting proceedings is maintained by the project participants.

The stakeholders viewed Fuel free electricity to grid project as contributing to local environmental benefits and socio-economy. Overall, there was agreement that the project activity was a beneficial project from the local sustainable development. The local stakeholders interviewed during the site visit of the validation activity also endorsed these views.

## **4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS**

According to the modalities for the Validation of CDM projects, the DOE shall make publicly available the project design document and receive, within 30 days; comments from Parties, stakeholders and UNFCCC





accredited non-governmental organizations and make them publicly available.

Bureau Veritas Certification published the project documents on the UNFCCC CDM website (<http://cdm.unfccc.int>) on 28/01/2007 and invited comments within 26/02/2007 by Parties, stakeholders and non-governmental organizations.

Comments were received from 01 person.

The project participant has provided response to these comments. Due account of these comments and the respective responses was taken while making the validation opinion. The details of these comments received, responses by the project participant/s and the explanation of how due account of these is taken by the validation team are attached as Appendix B with this validation report.

## **5 VALIDATION OPINION**

Bureau Veritas Certification has performed a validation of the Fuel free electricity to grid Project in India. The validation was performed on the basis of UNFCCC criteria and host country criteria and also on the criteria given to provide for consistent project operations, monitoring and reporting.

The validation consisted of the following three phases: i) a desk review of the project design and the baseline and monitoring plan (Jan 2007); ii) follow-up interviews with project stakeholders; (Feb 2007) iii) the resolution of outstanding issues and the issuance of the final validation report and opinion.

Project participant/s has demonstrated the additionality as per Attachment A to Appendix B of the simplified modalities and procedures for small-scale CDM project activities Indicative simplified baseline and monitoring methodologies in line with the guidelines for small-scale methodology and the PDD provides analysis of investment and other barriers to determine that the project activity itself is not the baseline scenario.

By generating electricity from wind, the project is likely to result in reductions of GHG emissions partially. An analysis of the investment and other barriers demonstrates that the proposed project activity is not a likely baseline scenario. Emission reductions attributable to the project are hence additional to any that would occur in the absence of the project activity. Given that the project is implemented and maintained as designed, the project is likely to achieve the estimated amount of emission reductions.



The review of the project design documentation (Ver 01 dated 23/01/2007, which was subsequently revised to Ver 06 dated 30/11/2007) and the follow-up interviews has provided Bureau Veritas Certification with sufficient evidence to determine the fulfillment of stated criteria. In our opinion, the project correctly applies and meets the relevant UNFCCC requirements for the CDM and the relevant host country criteria.

The validation is based on the information made available to us and the engagement conditions detailed in this report.

## 6 REFERENCES

### Category 1 Documents:

Documents provided by Type the name of the company that relate directly to the GHG components of the project.

- /1/ Host country approval – 4/2/2007 – CCC dated 4 June 2007.
- /2/ Project Design Document Version 01 dated 23 / 01 / 2007 subsequently revised to 06 on 30 / 11 / 2007
- /3/ Extract of the Board meeting minutes of Khivraj Motors Private Ltd., dated 30 August 2002 for CDM consideration
- /4/ Excel sheet showing the details about the WEG owners mentioning PO. O & M agreement as well PPA details. All these have been supported by documentary evidences. First PO for 2 Nos of 950 Kw WEGs placed on M/s NEG Micon
- /5/ Power Purchase Agreement for all the WEGs
- /6/ IRR calculations for the project activity
- /7/ CER calculations excel sheet
- /8/ CER agreement by each promoter nominating M/s Khivraj Motors Private Limited as the contact person

### Category 2 Documents:

Background documents related to the design and/or methodologies employed in the design or other reference documents.

- /1/ Communication regarding the stake holder meeting held on 05 / 11 / 2006 and 26 / 03 / 2007
- /2/ CDM manual of Khivraj for WEGs operation and maintenance
- /3/ O & M agreements for the WEGs between the owners and Enercon
- /4/ CEA data
- /5/ Kyoto Protocol to the United Nations Framework Convention on Climate Change, United Nations, 1997
- /6/ Approved Small Scale Methodology – AMS I D - Version 11
- /7/ Statement on modalities of communication with Executive Board and UNFCCC



Secretariat dated 15/06/2007

**Persons interviewed:**

List persons interviewed during the validation or persons that contributed with other information that are not included in the documents listed above.

- /1/ Mr Ajit Chordia - Khivraj Motors Private Limited
- /2/ Mr Rajendran - Khivraj Motors Private Limited
- /3/ Mr Suresh - Khivraj Motors Private Limited
- /4/ Mr V Senthil kumar – Ernst & Young – Project Developers
- /5/ Mr. P Sankaralingam – Local Stakeholder at Panagudi
- /6/ Mr NS Viswanathan - Local Stakeholder at Panagudi
- /7/ Mr Doraisamy Local Stakeholder at Chinnaputhur
- /8/ Mr Dhiraj Patil – Enercon WEG Site In charge at Chinnaputhur
- /9/

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**APPENDIX A:**

**PROJECT VALIDATION PROTOCOL**



## VALIDATION REPORT

**Table 1 Mandatory Requirements for Small Scale Clean Development Mechanism (CDM) Project Activities**

REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference/ Comment
1. The project shall assist Parties included in Annex I in achieving compliance with part of their emission reduction commitment under Art. 3	Kyoto Protocol Art. 12.2	See Table 2, Section A.3.3	Table 2, Section E.4.1
2. The project shall assist non-Annex I Parties in achieving sustainable development and shall have obtained confirmation by the host country thereof	Kyoto Protocol Art. 12.2, Simplified Modalities and Procedures for Small Scale CDM Project Activities §23a	Project proponent has obtained Host country approval (India).	Table 2, Section A.3
3. The project shall assist non-Annex I Parties in contributing to the ultimate objective of the UNFCCC	Kyoto Protocol Art. 12.2.	See Table 2, Section A.3.3	Table 2, Section E.4.1
4. The project shall have written approval of voluntary participation from the designated national authorities of each party involved	Kyoto Protocol Art. 12.5a, Simplified Modalities and Procedures for Small Scale CDM Project Activities §23a	Project proponent has received Host country approval (India) from the Ministry of Environment and Forests which is the DNA for India	Written approval of voluntary participation from the DNA is obtained. Ref: Letter 4/2/2007 – CCC dated 4 June 2007
5. The emission reductions should be real, measurable and give long-term benefits related to the mitigation of climate change	Kyoto Protocol Art. 12.5b	See Table 2, Section E.4.1	Table 2, Section E.1 to E.4
6. Reduction in GHG emissions must be additional to any that would occur in absence of the project activity, i.e. a CDM project activity is additional if anthropogenic emissions of greenhouse gases by sources are reduced below those that would have occurred in the absence of the registered CDM project activity	Kyoto Protocol Art. 12.5.c, Simplified Modalities and Procedures for Small Scale CDM Project Activities §26	Yes. See Table 2, B.2.1	Table 2, Section B.2.1



## VALIDATION REPORT

REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference/ Comment
7. Potential public funding for the project from Parties in Annex I shall not be a diversion of official development assistance	Marrakech Accords (Decision 17/CP.7)	The Project will not receive any public funding from parties included in Annex I	Declaration by the Project Proponent in Annex. 2 of PDD.
8. Parties participating in the CDM shall designate a national authority for the CDM	Marrakesh Accords (CDM modalities§ 29)	Ministry of Environment and Forest (MOEF) is the Designated National Authority (DNA) of India	Government of India has designated the National Clean Development Mechanism (CDM) Authority under Ministry of Environment & Forest to act as DNA.  Source <a href="http://cdm.unfccc.int/DNA">http://cdm.unfccc.int/DNA</a>
9. The host country shall be a Party to the Kyoto Protocol	Marrakesh Accords (CDM modalities§ 30)	Yes	Date of accession – 22 August 2002  Source <a href="http://unfccc.int/parties_and_observers/parties/items/2109.php">http://unfccc.int/parties_and_observers/parties/items/2109.php</a>
10. The proposed project activity shall meet the eligibility criteria for small scale CDM project activities set out in § 6 (c) of the Marrakesh Accords and shall not be a debundled component of a larger project activity	Simplified Modalities and Procedures for Small Scale CDM Project Activities §12a,c	Yes	Table 2, Section A.1
11. The project design document shall conform with the Small Scale CDM Project Design Document format	Simplified Modalities and Procedures for Small Scale CDM Project Activities, Appendix A	The Project Design Document meets the UNFCCC requirements.	PDD Version 06 dated 3011/2007



## VALIDATION REPORT

REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference/ Comment
12. The proposed project activity shall confirm to one of the project categories defined for small scale CDM project activities and uses the simplified baseline and monitoring methodology for that project category	Simplified Modalities and Procedures for Small Scale CDM Project Activities §22e	Yes. Type I, Category I D	Table 2, Section A.1.3 and B.1
13. Comments by local stakeholders are invited, and a summary of these provided	Simplified Modalities and Procedures for Small Scale CDM Project Activities §22b	Yes See Table 2, Section G.1.1	Table 2, Section G
14. If required by the host country, an analysis of the environmental impacts of the project activity is carried out and documented	Simplified Modalities and Procedures for Small Scale CDM Project Activities §22c	Not required by Host Country See Table 2, Section F.1.1	Table 2, Section F
15. Parties, stakeholders and UNFCCC accredited NGOs have been invited to comment on the validation requirements and comments have been made publicly available	Simplified Modalities and Procedures for Small Scale CDM Project Activities §23b,c, d	Project Design Document (PDD) was made publicly available on UNFCCC Website for the period of 30 days from 28 January 2007 to 26 February 2007.	Source <a href="http://cdm.unfccc.int/Projects/Validation">http://cdm.unfccc.int/Projects/Validation</a>

**Table 2 Requirements Checklist**

CHECKLIST QUESTION	Ref.	MoV <sup>a</sup>	COMMENTS	Draft Concl.	Final Concl.
<b>A. Project Description</b> The project design is assessed.					
<b>A.1. Small scale project activity</b> It is assess whether the project qualifies as small scale CDM project activity.					
A.1.1. Does the project qualify as a small scale CDM project activity as defined in paragraph 6 (c) of decision 17/CP.7 on the modalities and procedures for the CDM?	1	DR	Yes, the project qualifies as a small scale CDM activity as the capacity is 14.96 Mwh generated from 22 WEGs of capacities ranging from 0.33 to 0.95 Mwh	OK	OK
A.1.2. The small scale project activity is not a debundled component of a larger project activity?	1	DR	It is not clear from the PDD whether the project proponent M/s Khivraj Motors Pvt Ltd. has registered another small-scale project in the last two years. Refer A.4.5 of PDD	CL 1	OK
A.1.3. Does proposed project activity confirm to one of the project categories defined for small scale CDM project activities?	1	DR	Yes, Project Type I – Renewable energy project Category ID: Renewable electricity generation for a grid. Version 11 EB 31	OK	OK

\* MoV = Means of Verification, DR= Document Review, I= Interview





## VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
<b>A.2. Project Design</b> Validation of project design focuses on the choice of technology and the design documentation of the project.					
A.2.1. Are the project's spatial (geographical) boundaries clearly defined?	1	DR	Project boundary is defined in PDD as: Country :India, State: Tamil Nadu; District: Tirunelveli; Villages: Karunkulam, Panagudi Keelaveeranam and Thandiyarkulam Latitude = 8 44' N Longitude = 77 44'E District: Erode; Village: Chinnaputhur Latitude = 11 20' N Longitude = 77 46'E Project boundaries for individual village inter connections need to be defined in B 3 of PDD	CL 2	OK
A.2.2. Are the project's system (components and facilities used to mitigate GHG's) boundaries clearly defined?	1	DR	Refer B.4 of PDD; The project evacuates the power to the Southern Region Grid. The twenty two WEGs comprising the project activity i. Power evacuation facilities including the power conditioning systems and internal transmission ii. Lines created as part of the project activity iii. Civil structures constructed as part of the project activity	OK	OK
A.2.3. Does the project design engineering reflect current good practices?	1	DR	The WEGs are of Enercon and NEG Micon make, which have proven design.	OK	OK
A.2.4. Will the project result in technology transfer to the host country?	1	DR	No. The project design is well developed in India.	OK	OK
A.2.5. Does the project require extensive initial	1	DR	Section B 7.2 of PDD indicates an organisational	CL 3	OK

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## VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
training and maintenance efforts in order to work as presumed during the project period? Does the project make provisions for meeting training and maintenance needs?			CDM team for operation and monitoring. However the PDD is silent about the training and maintenance needs.		
<b>A.3. Contribution to Sustainable Development</b> The project's contribution to sustainable development is assessed					
A.3.1. Will the project create other environmental or social benefits than GHG emission reductions?	1	DR	Yes. Contribution to sustainable development has been indicated in A 2 of PDD.	OK	OK
A.3.2. Will the project create any adverse environmental or social effects?	1	DR	No adverse environmental or social effects are envisaged.	OK	OK
A.3.3. Is the project in line with sustainable development policies of the host country?	1	DR	Yes	OK	OK
A.3.4. Is the project in line with relevant legislation and plans in the host country?	1	DR	Indian legislation allows windmill operations. India has plans under which 10% of the total power generated would be from the renewables by 2012, there is no enforced law for realizing this objective. Host Country approval not available	CAR 1	OK

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## VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
<b>B. Project Baseline</b> The validation of the project baseline establishes whether the selected baseline methodology is appropriate and whether the selected baseline represents a likely baseline scenario.					
<b>B.1. Baseline Methodology</b> It is assessed whether the project applies an appropriate baseline methodology.					
B.1.1. Is the selected baseline methodology in line with the baseline methodologies provided for the relevant project category?	1	DR	Yes, approved methodology For Type I Cat. 1 D Ver 11. The simplified methods & Procedures for small scale CDM project – Appendix B	OK	OK
B.1.2. Is the baseline methodology applicable to the project being considered?	1	DR	Yes this methodology is applicable to grid connected renewable electricity generation as it is a Wind Electricity Generator project	OK	OK
<b>B.2. Baseline Determination</b> It is assessed whether the project activity itself is not a likely baseline scenario and whether the selected baseline represents a likely baseline scenario.					
B.2.1. Is it demonstrated that the project activity itself is not a likely baseline scenario due to the existence of one or more of the following barriers: investment barriers, technology barriers, barriers due to prevailing practice or other barriers?	1	DR	Investment barrier and other barriers have been discussed in B 5 of PDD. The IRR calculations not provided.	CL 4	OK

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## VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
B.2.2. Is the application of the baseline methodology and the discussion and determination of the chosen baseline transparent and conservative?	1	DR	CEA values have been taken and the calculations are based on 75% of OM and 25% of BM as per ACM 0002 Ver 6	OK	OK
B.2.3. Are relevant national and/or sectoral policies and circumstances taken into account?	1	DR	There are no national and /or sectoral policies restricting such type of project activities	OK	OK
B.2.4. Is the baseline selection compatible with the available data?	1	DR	Yes. The baseline is compatible with CEA data for Southern Grid	OK	OK
B.2.5. Does the selected baseline represent the most likely scenario describing what would have occurred in absence of the project activity?	1	DR	Yes, refer B 5 of PDD	OK	OK
<b>C. Duration of the Project / Crediting Period</b> It is assessed whether the temporary boundaries of the project are clearly defined.					
C.1.1. Are the project's starting date and operational lifetime clearly defined?	1	DR	Yes. The project starting date is 16/12/2002. Refer C1 of PDD. Operational Lifetime is to be verified.	CL 5	OK
C.1.2. Is the crediting period clearly defined (seven years with two possible renewals or 10 years with no renewal)?	1	DR	Yes. Fixed 10 year crediting period has been chosen refer C 2 of PDD	OK	OK

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## VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
<b>D. Monitoring Plan</b> The monitoring plan review aims to establish whether all relevant project aspects deemed necessary to monitor and report reliable emission reductions are properly addressed.					
<b>D.1. Monitoring Methodology</b> It is assessed whether the project applies an appropriate monitoring methodology.					
D.1.1. Is the selected monitoring methodology in line with the monitoring methodologies provided for the relevant project category?	1	DR	Yes, The monitoring methodology is as per "Metering the electricity generated" as indicated in Appendix B of simplified modalities and procedures for small-scale CDM projects.	OK	OK
D.1.2. Is the monitoring methodology applicable to the project being considered?	1	DR	The monitoring methodology is as per Type 1 D. though the data to be monitored is indicated in B 7.1 of PDD, the Annex 4 of PDD is blank	CL 6	OK
D.1.3. Is the application of the monitoring methodology transparent?	1	DR	The data is being monitored by TNEB, which is purchasing the generated electricity. The electricity is metered at the grid inter-connection point.	OK	OK
D.1.4. Will the monitoring methodology give opportunity for real measurements of achieved emission reductions?	1	DR	This methodology is reliable as long the energy meter provided by the state electricity board is in un-interrupted operation. .	OK	OK
<b>D.2. Monitoring of Project Emissions</b> It is established whether the monitoring plan provides for reliable and complete project emission data over time.					
D.2.1. Are the choices of project emission	1	DR	Not applicable – No project emission in case of	OK	OK

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Page A-6-10



## VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
indicators reasonable?			Wind Energy Generator project.s		
D.2.2. Will it be possible to monitor / measure the specified project emission indicators?	1	DR	Not applicable.	OK	OK
D.2.3. Do the measuring technique and frequency comply with good monitoring practices?	1	DR	Not applicable.	OK	OK
D.2.4. Are the provisions made for archiving project emission data sufficient to enable later verification?	1	DR	Not applicable.	OK	OK
<b>D.3. Monitoring of Leakage</b> It is assessed whether the monitoring plan provides for reliable and complete leakage data over time.					
D.3.1. If applicable, are the choices of leakage indicators reasonable?	1	DR	Not applicable.	OK	OK
D.3.2. If applicable, will it be possible to monitor / measure the specified leakage indicators?	1	DR	Not applicable.	OK	OK
D.3.3. If applicable, do the measuring technique and frequency comply with good monitoring practices?	1	DR	Not applicable.	OK	OK
D.3.4. If applicable, are the provisions made for archiving leakage data sufficient to enable later verification?	1	DR	Not applicable.	OK	OK

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## VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
<b>D.4. Monitoring of Baseline Emissions</b> It is established whether the monitoring plan provides for reliable and complete project emission data over time.					
D.4.1. Is the choice of baseline indicators, in particular for baseline emissions, reasonable?	1	DR	Reasonable. The base line emissions are derived from the CEA values	OK	OK
D.4.2. Will it be possible to monitor / measure the specified baseline emission indicators?	1	DR	Yes as per the CEA data	OK	OK
D.4.3. Do the measuring technique and frequency comply with good monitoring practices?	1	DR	Periodicity of calibration of the energy meters is not indicated Moreover the calibration of the energy meters of individual WEGS is also not indicated in the PDD	CL 7	OK
D.4.4. Are the provisions made for archiving baseline emission data sufficient to enable later verification?	1	DR	Though an organisation structure has been defined in section B 7.2 of the PDD, the archiving of the electricity generated is not defined	CL 8	OK
<b>D.5. Project Management Planning</b> It is checked that project implementation is properly prepared for and that critical arrangements are addressed.					
D.5.1. Is the authority and responsibility of project management clearly described?	1	DR	Yes. Indicated in B 7.2 of PDD	OK	OK
D.5.2. Is the authority and responsibility for registration monitoring measurement and reporting clearly described?	1	DR	Yes. Indicated in B 7.2 of PDD	OK	OK

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## VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
D.5.3. Are procedures identified for training of monitoring personnel?	1	DR	Procedures for training of monitoring personnel not identified.	CL 9	OK
D.5.4. Are procedures identified for emergency preparedness for cases where emergencies can cause unintended emissions?	1	DR	In WEGs projects no such emergencies	OK	OK
D.5.5. Are procedures identified for calibration of monitoring equipment?	1	DR	The procedure for calibration of the monitoring equipment has been identified. Calibration of the energy meters of individual WEGs is not indicated	CL 10	OK
D.5.6. Are procedures identified for maintenance of monitoring equipment and installations?	1	DR	Procedures for maintenance of monitoring equipment and installations not identified.	CL 11	OK
D.5.7. Are procedures identified for monitoring, measurements and reporting?	1	DR	Yes, an organisation structure is in place Refer B 7.2 of PDD	OK	OK
D.5.8. Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation)	1	DR	Net electricity output is being monitored by TNEB and KMPL.	OK	OK
D.5.9. Are procedures identified for dealing with possible monitoring data adjustments and uncertainties?	1	DR	Data logging method not defined	CL 12	OK
D.5.10. Are procedures identified for internal audits of GHG project compliance with operational requirements as applicable?	1	DR	Procedures for dealing with possible monitoring data adjustments and uncertainties are not identified.	CL 13	OK
D.5.11. Are procedures identified for project performance reviews?	1	DR	Yes refer B 7.2	OK	OK
D.5.12. Are procedures identified for corrective	1	DR	Procedure for corrective actions not defined	CL 14	OK

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## VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
actions?					
<b>E. Calculation of GHG emission</b> It is assessed whether all material GHG emission sources are addressed and how sensitivities and data uncertainties have been addressed to arrive at conservative estimates of projected emission reductions.					
<b>E.1. Project GHG Emissions</b> The validation of predicted project GHG emissions focuses on transparency and completeness of calculations.					
E.1.1. Are all aspects related to direct and indirect project emissions captured in the project design?	1	DR	Not applicable	OK	OK
E.1.2. Have all relevant greenhouse gases and sources been evaluated?	1	DR	Not applicable	OK	OK
E.1.3. Do the methodologies for calculating project emissions comply with existing good practice?	1	DR	Not applicable	OK	OK
E.1.4. Are the calculations documented in a complete and transparent manner?	1	DR	Not applicable	OK	OK
E.1.5. Have conservative assumptions been used?	1	DR	Not applicable	OK	OK
E.1.6. Are uncertainties in the project emissions estimates properly addressed?	1	DR	Not applicable	OK	OK

\* MoV = Means of Verification, DR= Document Review, I= Interview



## VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
<b>E.2. Leakage</b> It is assessed whether there leakage effects, i.e. change of emissions which occurs outside the project boundary and which are measurable and attributable to the project, have been properly assessed.					
E.2.1. Are leakage calculation required for the selected project category and if yes, are the relevant leakage effects assessed?	1	DR	Not applicable	OK	OK
E.2.2. Are potential leakage effects properly accounted for in the calculations (if applicable)?	1	DR	Not applicable	OK	OK
E.2.3. Do the methodologies for calculating leakage comply with existing good practice (if applicable)?	1	DR	Not applicable	OK	OK
E.2.4. Are the calculations documented in a complete and transparent manner and (if applicable)?	1	DR	Not applicable	OK	OK
E.2.5. Have conservative assumptions been used (if applicable)?	1	DR	Not applicable	OK	OK
E.2.6. Are uncertainties in the leakage estimates properly addressed (if applicable)?	1	DR	Not applicable	OK	OK

\* MoV = Means of Verification, DR= Document Review, I= Interview



## VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
<b>E.3. Baseline GHG Emissions</b> The validation of predicted baseline GHG emissions focuses on transparency and completeness of calculations.					
E.3.1. Are the baseline emission boundaries clearly defined and do they sufficiently cover sources for baseline emissions?	1	DR	The baseline boundaries are as per CEA data	OK	OK
E.3.2. Are all aspects related to direct and indirect baseline emissions captured in the project design?	1	DR	CEA data has been considered for capturing baseline emissions	OK	OK
E.3.3. Have all relevant greenhouse gases and sources been evaluated?	1	DR	Yes	OK	OK
E.3.4. Do the methodologies for calculating baseline emissions comply with existing good practice?	1	DR	Yes $BE_y(tCO_2/yr) = EG_y \times EF_y$ as per appendix B	OK	OK
E.3.5. Are the calculations documented in a complete and transparent manner?	1	DR	Calculations for baseline emissions not provided	CAR 2	OK
E.3.6. Have conservative assumptions been used?	1	DR	Calculations for conservative assumptions not provided	CAR 3	OK
E.3.7. Are uncertainties in the baseline emissions estimates properly addressed?	1	DR	Uncertainties not addressed in the calibration plan	CL 15	OK

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## VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
<b>E.4. Emission Reductions</b> Validation of baseline GHG emissions will focus on methodology transparency and completeness in emission estimations.					
E.4.1. Will the project result in fewer GHG emissions than the baseline case?	1	DR	Yes	OK	OK
<b>F. Environmental Impacts</b> It is assessed whether environmental impacts of the project are sufficiently addressed.					
F.1.1. Does host country legislation require an analysis of the environmental impacts of the project activity?	1	DR	Not required	OK	OK
F.1.2. Does the project comply with environmental legislation in the host country?	1	DR	Not required	OK	OK
F.1.3. Will the project create any adverse environmental effects?	1	DR	NO	OK	OK
F.1.4. Have environmental impacts been identified and addressed in the PDD?	1	DR	Not applicable	OK	OK
<b>G. Comments by Local Stakeholder</b> Validation of the local stakeholder consultation process.					
G.1.1. Have relevant stakeholders been consulted?	1	DR	As per E 1 of PDD stake holder meeting was held on 04 <sup>th</sup> and 05 <sup>th</sup> of Nov /2006. Details of the meeting not available	CL 16	OK
G.1.2. Have appropriate media been used to	1	DR	As per the E 1 of PDD, formal Invitations have	OK	OK

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## VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
invite comments by local stakeholders?			been sent		
G.1.3. If a stakeholder consultation process is required by regulations/laws in the host country, has the stakeholder consultation process been carried out in accordance with such regulations/laws?	1	DR	There are no regulations.	OK	OK
G.1.4. Is a summary of the comments received provided?	1	DR	Summary of comments is not available	CL 17	OK
G.1.5. Has due account been taken of any comments received?	1	DR, I	As per E 2 of PDD no negative comments have been received. To be verified	CL 18	OK

**TABLE 3 BASELINE AND MONITORING METHODOLOGIES: AMS – ID VERSION 11**

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
1. Baseline Methodology					
1. 1. Applicability					
1.1.1. Does the project activity generate electricity from a renewable source like such as photovoltaics, hydro, tidal/wave, wind, geothermal and renewable biomass	3	DR I	Yes. The project activity generates electricity from renewable source- wind.	OK	OK
1.1.2. Is the power connected to the grid or displace electricity from electricity distribution system?	3	DR I	The generated power is connected to the Southern grid	OK	OK
1.1.3 Is the project activity has two components both renewable and non-renewable?	3	DR I	Not applicable since only wind energy is used.	OK	OK
1.1.4 If answer to question 1.1.3 above is yes, then is renewable portion is within small scale limits?	3	DR I	Not applicable.	OK	OK
1.1.5 Is the project activity involves the addition of	3	DR	No	OK	OK

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## VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
renewable energy generation units at an existing renewable power generation facility,		I			
1.1.6 Does the project is of type retrofit or modification of an existing facility ?	3	DR I	No	OK	OK
1.1.3 What is the sub-type of the project activity?	3	DR I	AMS I D, Grid connected renewable electricity generation.	OK	OK
1.1.4 Is the baseline methodology used in conjunction with the approved monitoring methodology ACM0002	3	DR I	Yes. Approved indicative simplified baseline & monitoring methodology for selected small scale projects AMS I D is used and is in conjunction with ACM0002	OK	OK
<b>1. 2. Project boundary</b>					
1.2.1. Does the project boundary encompasses the physical, geographical site of the renewable generation source ?	3	DR	Yes the project boundary encompasses the physical, geographical site of the renewable generation source and is defined in B 3 of PDD	OK	OK
1.2.2. Does the spatial extent of the project boundary include the project site and all power plants connected physically to the electricity system that the CDM project power plant is connected to?	3	DR	Refer 1.2.1 above	-	OK
1.2.4. Is the regional project electricity system identified by the spatial extent of the power plants that can be dispatched without significant transmission constraints?	3	DR	Refer 1.2.1	-	OK
1.2.5. Are the assumptions made in determining the project electricity system defined and justified?	3	DR	There are no assumptions made in defining the project electricity system,	OK	OK
1.2.6. Does the application of this methodology result in a clear grid boundary?	3	DR	Yes	OK	OK
1.2.7. If answer to question is no whether DNA	3	DR	No. CEA guidelines available for all the grids.	OK	OK

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## VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
guidance is available for defining the boundary.					
1.2.8. If answer to question is no and if the host country has a layered dispatch system (e.g. state/provincial/regional/national), which is the regional grid used?	3	DR	Southern Grid is considered	OK	OK
1.2.9. If the regional grid is not used whether the national grid is used.	3	DR	Not applicable	OK	OK
1.2.10. Have the electricity transfers from connected electricity systems to the project electricity system are defined as electricity imports?	3	DR	Yes.		OK
1.2.11. Have the electricity transfers to connected electricity systems to the project electricity system are defined as electricity exports?	3	DR	Yes.		OK
1.2.12. For the purpose of build margin, Is the spatial extent to the project boundary limited to project electricity system?	3	DR	Yes. CEA guidelines available.	OK	OK
1.2.13. Are recent or likely future additions to transmission capacity likely to significantly increase imported electricity?	3	DR I	CEA guidelines available.	OK	OK
1.2.14. If answer to question is yes whether transmission capacity is considered a build margin source with the emission factor determined as for the OM imports.	3	DR	Emission factors are defined for all the regional Grids taking in to consideration the OM and BM.	OK	OK
1.2.15. Is the emission factor determined as one of the four options for the OM imports?	3	DR	CEA values publicly available	OK	OK
1.2.16. For determining the operating margin, is	3	DR	CEA values publicly available	OK	OK

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## VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
one of the four options chosen to determine the CO <sub>2</sub> emission factors for net electricity imports within the same host country?					
1.2.17. If the import of electricity is from another country, is the CO <sub>2</sub> emission factors for net electricity imports considered as 0 t CO <sub>2</sub> per MWh.	3	DR	Not applicable		OK
1.3. Identification of alternative baseline scenarios					
1.3.1. Does the project involves recovered methane for power generation?	3	DR	Not applicable		OK
1.3.2 Does the system involves all generators using exclusively fuel oil and/or diesel fuel?	3	DR I	Not applicable		OK
1.3.3 If answer to all the above questions are no, then is the baseline is the kWh produced by the renewable generating unit multiplied by an emission coefficient (measured in kg CO <sub>2</sub> e/kWh) calculated in a transparent and conservative manner as described in methodology ( as per latest version of approved methodology ACM 0002 )?	3	DR I	Yes. The energy produced in kWh is multiplied with the emission factor as published by CEA to arrive at the baseline in a conservative manner.	OK	OK
1.3.4. Whether a minimum of three years data is referred and used in case the project is non-hydro?	3	DR	Yes		
1.3.5 Whether the typical average technical lifetime of the type equipment is determined and documented taking into account common practices in the sector and country e.g. based on industry surveys, statistics, and technical literature?	3	DR	Operational lifetime is taken as 20 years. However the basis on which the same is arrived is not evident in PDD.	CL 5	OK
1.3.6 Whether the baseline emission factor is calculated as a combined margin consisting of the combination of operating margin (OM) and build	3	DR	Yes. CEA emission factors are in line with the methodology ACM0002.	OK	OK

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## VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
margin factors according to three steps indicated in the methodology ACM0002?					
1.3.7. Whether the weighted average applied by project participant is fixed for a crediting period.	3	DR	Yes	OK	OK
1.3.8. If the project is generation of electricity from wind or solar, whether weighted average takes in to account the default weights as wOM = 0.75 and wBM = 0.25 as required by Version 6 of ACM 0002?	3	DR	Weighted average is calculated giving weightage of 75% for OM and 25% for BM as per Version 6 of ACM 0002	OK	OK
1.3.9. Whether operating margin emission factors calculations are based on one of the four methods described in the methodology ACM 0002?	3	DR	Yes. The simple operating margin method is used for calculating the operating margin emission factor. The simple OM is considered to be calculated using the ex-ante approach and fixed for the crediting period.	OK	OK
1.3.10. Is the most likely baseline scenario 'electricity production from other sources feeding into the grid ?	3	DR	Most likely baseline scenario is the electricity production using fossil fuels and feeding in to the grid.	OK	OK
1.3.11. Did the project participant provide evidence and supporting documents to exclude baseline options that do not comply with legal and regulatory requirements; or depend on key resources such as fuels, materials or technology that are not available at the project site?	3	I	Project participant has considered the options that are permitted by law and therefore this is not applicable.	OK	OK
1.4. Additionality					
1.4.1. Was the additionality of the project activity demonstrated and assessed using - Attachment A to Appendix B for demonstration and Assessment of Additionality – version 6, dated 30/09/2005	3	DR	Yes	OK	OK
1.5 Project Emissions					
1.5.1. Are the project emissions considered as zero [0]?	3	DR	Yes. There is no project emission as it is a wind energy generator	OK	OK

\* MoV = Means of Verification, DR= Document Review, I= Interview

Page A-6-22



## VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
1.6. Baseline Emissions	3				
1.6.1. Are the baseline emissions determined according to the formula $BE_y = EG_y \times EF_y$ ? in case of project activities using renewable sources but without retrofit / modification ?	3	DR	Yes.	OK	OK
1.6.2. Were the Emissions Factor for displaced electricity calculated as in ACM0002?	3	DR	Yes and as per the latest CEA data which publicly available.	OK	OK
1.7. Leakage					
1.7.1. Is the leakage considered if any equipment transfer is evident ?	3	DR	No leakages as there is no equipment transfer.	OK	OK
1.8. Emission Reduction					
1.8.1. Did the emissions reductions were determined according to the formula $ER_y = BE_y$ ?	3	DR	Emissions reductions are determined according to the formula $ER_y = BE_y$	OK	OK
1.8.2. Were all values chosen in a conservative manner and was the choice justified?	3	DR I	All values were chosen in a conservative manner and the choice was justified	OK	OK
1.8.3. Whether an estimate of likely project emission reductions for the proposed crediting period is prepared as part of the PDD?	3	DR	No project emissions since it is a wind mill.	OK	OK
1.8.4. Whether the emission factor is determined ex-post during monitoring?	3	DR	No	OK	OK
2. Monitoring Methodology					
2.1. Applicability					
2.1.1. Does the project activity generate electricity from a renewable source?	3	DR I	Yes. Renewable source-Wind	OK	OK
2.1.2. Is the power connected to the grid?	3	DR I	Yes, the power is connected to a southern grid.	OK	OK
2.1.3. Does the project activity relate to electricity capacity additions from renewable sources?	3	DR I	Yes, the project relates to capacity additions from wind energy source.	OK	OK

\* MoV = Means of Verification, DR= Document Review, I= Interview

Page A-6-23



## VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
2.1.4 Can the geographic and system boundaries for the relevant electricity grid be clearly identified ?	3	DR I	Yes, the geographic and system boundaries for the relevant electricity grid can be clearly identified.	OK	OK
2.1.5. Is the information on the characteristics of the grid available?	3	DR I	The information on the characteristics of the grid is available	OK	OK
<b>2.2. Monitoring Methodology</b>					
2.2.1. Does the monitoring plan include monitoring of electricity generation from the proposed project activity?	3	DR	Yes. Monitoring plan includes monitoring of electricity generation.	OK	OK
2.2.2 Does monitoring plan include monitoring of biomass or biomass and fossil fuel where only biomass or biomass and fossil fuel e co-firing done ?	3	DR I	Not applicable.	OK	OK
2.2.3 Does the methodology requires monitoring of Data needed to recalculate the operating margin emission factor, if needed, based on the choice of the method to determine the operating margin (OM), consistent with ACM0002?	3	DR	Not applicable as the option of 3-year average, based on the most recent statistics available is chosen	OK	OK
2.2.4. Does the monitoring plan require monitoring of Data needed to recalculate the build margin emission factor, if needed, consistent with ACM0002 ?	3	DR	Not applicable as the option of ex ante is chosen.	OK	OK
2.2.5 Does the monitoring plan require monitoring of data needed to calculate fugitive carbon dioxide and methane emissions and carbon dioxide emissions from combustion of fossil fuels required to operate the geothermal power plant ?	3	DR	Not applicable.	OK	OK
<b>2.3. Quality Control (QC) and Quality Assurance (QA) Procedures</b>					
2.3.1. Did all measurements use calibrated measurement equipment that is regularly checked	3	I	Periodic calibration of the energy meters by the state utility is indicated. However the calibration	<b>CL 7</b>	OK

\* MoV = Means of Verification, DR= Document Review, I= Interview

Page A-6-24



## VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
for its functioning?			state utility is indicated. However the calibration frequency is not defined in the PDD.		
2.3.2. Are the data double-checked against commercial data?	3	DR I	Refer 2.3.1	OK	OK

**TABLE 4    LEGAL REQUIREMENTS**

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
<b>1. Legal requirements</b>					
1.1. Is the project activity environmentally licensed by the competent authority?	2	DR	Not applicable.	OK	OK
1.2. Are the conditions of the environmental license being met?	2	DR	Yes	OK	OK
1.3 Are the conditions of the Designated National Authority being met?	2	DR	DNA approval is not available	<b>CAR 1</b>	OK

\* MoV = Means of Verification, DR= Document Review, I= Interview

**Table 5 Resolutions of Corrective Action and Clarification Requests**

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2/3/4	Summary of project owner response	Validation team conclusion
<b>CAR.1</b> Host Country approval not available	A 3.4 Table 4 – 1.3	Host country approval letter issued by the DNA of India – Ministry of Environment and Forests – 4/2/2007 dated 4 June 2007	Copy of the HCA has been verified and found to be in order. Hence this CAR is closed
<b>CAR 2</b> Calculations for baseline emissions not provided	E 3.5	The formula used and values applied in the calculation of baseline emissions and emission reductions are provided in Section B.6.1 and B.6.3 of the CDM PDD. A detailed calculation sheet (in Microsoft Excel) is submitted to the DOE for reference	Verified the calculations. Same is also available in the revised PDD Ver 06
<b>CAR 3</b> Calculations for conservative assumptions not provided	E 3.6	Conservative assumptions have been used in the estimation of baseline emissions. The expected annual generation from the project activity is taken as only 80% of the manufacturer estimated generation for the wind energy generators. A detailed calculation sheet (in Microsoft Excel) is submitted to the DOE for reference.	The energy generation guaranteed by WEG manufactures is based on the studied conducted at those locations where these WEGs are installed. However in reality the actual generation is based on factors such as power evacuation infrastructure, grid and WEG availability. Hence the annual generation estimation at 80 % of the estimate carried out by WEG manufacturers is accepted as conservative. Hence this CAR is closed.



## VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2/3/4	Summary of project owner response	Validation team conclusion
<b>CL 1.</b> It is not clear from the PDD whether the project proponent M/s Khivraj Motors Pvt Ltd. has registered another small-scale project in the last two years. Refer A.4.5 of PDD	A 1.2	M/s Khivraj Motors Pvt Ltd. (KMPL) has not registered or attempted to register another small-scale wind power project in the last two years within 1 kms of this project activity boundary. The same has been included in section A.4.5 of the revised version 04 of PDD.	Revision to this effect has been carried out in the PDD Ver 06. Hence the CL is closed
<b>CL 2</b> Project boundaries for individual village inter connections need to be defined in B 3 of PDD.	A 2.1	The project boundary definition has been modified appropriately to include individual village interconnections in the revised version 04 of the PDD	Revision to this effect has been carried out in the PDD Ver 06. Hence the CL is closed.
<b>CL 3</b> Section B 7.2 of PDD indicates an organisational CDM team for operation and monitoring. However the PDD is silent about the training and maintenance needs.	A 2.6	The responsibility of Operation and Maintenance (O&M) of the WEGs has been handed to the WEG equipment suppliers themselves. The WEG suppliers, being experts in this field, have the necessary trained and skilled manpower to perform the operation and maintenance.	Copies of O&M agreements are provided to the validation team. Also the Project proponent has a CDM manual in place Moreover both NEG Micon and Enercon are ISO certified organisation and have procedures for training and maintenance in place. Validation team was able to access to the relevant records during the site visit. Hence the CL is closed
<b>CL 4</b> Investment barrier and other barriers have been discussed in B 5 of PDD. The IRR calculations not provided.	B 2.1	Detailed IRR calculations with reference to support documents are submitted to the DOE	The IRR calculations have been verified by the validation team and found to have been carried out in a conservative Manner. Hence the CL is closed.
<b>CL 5</b> Yes. The project starting date is 16/12/2002.	C 1.1 Table 3 –	The operational lifetime of the WEGs is around 20 years as indicated by the	The POs of the WEGs verified and the operational lifetime guaranteed by the



## VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2/3/4	Summary of project owner response	Validation team conclusion
Refer C1 of PDD. Operational Lifetime is to be verified	1.3.5	equipment suppliers.	suppliers is observed to be 20 years. Hence the CL is closed.
<b>CL 6</b> The monitoring methodology is as per Type 1 D. though the data to be monitored is indicated in B 7.1 of PDD, the Annex 4 of PDD is blank	D 1.2	A detailed monitoring protocol for the project activity covering various aspects of monitoring has been included in the Annex 4 of the revised PDD	Details are included in PDD Ver 06, which has been provided to the validation team. Hence the CL is closed.
<b>CL 7</b> Periodicity of calibration of the energy meters is not indicated Moreover the calibration of the energy meters of individual WEGs is also not indicated in the PDD	D 4.3 Table 3 2.3.1	The procedures for calibration of energy meters have been now defined and are included in Annex 4 of the PDD under "Monitoring information".  The Project Promoter (PP)'s energy meters at individual WEGs would be calibrated yearly. The TNEB energy meter would be calibrated on a need basis whenever there are any significant errors identified while crosschecking readings with the PP's meters. Refer Annex 4 of the PDD for details.	Details are included in PDD Ver 06, which has been provided to the validation team. Hence the CL is closed.
<b>CL 8</b> Though an organisation structure has been defined in section B 7.2 of the PDD, the archiving of the electricity generated is not defined	D 4.4	The procedures for archiving of data have been now defined and are included in Annex 4 of the PDD under "Monitoring information". The archived data would be maintained for a period of 2 years after the end of the crediting period	Details are included in PDD Ver 06, which has been provided to the validation team. Hence the CL is closed.



## VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2/3/4	Summary of project owner response	Validation team conclusion
<b>CL 9</b> Procedures for training of monitoring personnel not identified.	D 5.3	The procedures for training of monitoring personnel have been now defined and are included in Annex 4 of the PDD under "Monitoring information"	Details are included in PDD Ver 06, which has been provided to the validation team. Hence the CL is closed.
<b>CL 10</b> The procedure for calibration of the monitoring equipment has been identified. Calibration of the energy meters of individual WEGs is not indicated	D 5.5	The procedures for calibration of energy meters have been now defined and are included in Annex 4 of the PDD under "Monitoring information". The Project Promoter (PP)'s energy meters at individual WEGs would be calibrated yearly. The TNEB energy meter would be calibrated on a need basis whenever there are any significant errors identified while crosschecking readings with the PP's meters. Refer Annex 4 of the PDD for details.	Details are included in PDD Ver 06, which has been provided to the validation team. Hence the CL is closed.
<b>CL 11</b> Procedures for maintenance of monitoring equipment and installations not identified.	D 5.6	The procedures for maintenance of monitoring equipment have been now formalised and are included in Annex 4 of the PDD under "Monitoring information"	Details are included in PDD Ver 06, which has been provided to the validation team. Hence the CL is closed.
<b>CL 12</b> Data logging method not defined	D 5.9	The data logging method is now defined clearly in the Annex 4 of the revised PDD.	Details are included in PDD Ver 06, which has been provided to the validation team. Hence the CL is closed.





## VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2/3/4	Summary of project owner response	Validation team conclusion
<b>CL 13</b> Procedures for dealing with possible monitoring data adjustments and uncertainties are not identified.	D 5.10	The procedures for dealing with possible monitoring data adjustments and uncertainties have been now defined and are included in Annex 4 of the PDD under "Monitoring information"	Details are included in PDD Ver 06, which has been provided to the validation team. Hence the CL is closed.
<b>CL 14</b> Procedure for corrective actions not defined	D 5.12	The procedures for corrective actions have been now defined and are included in Annex 4 of the PDD under "Monitoring information"	Details are included in PDD Ver 06, which has been provided to the validation team. Hence the CL is closed
<b>CL 15</b> Uncertainties not addressed in the calibration plan	E 3.7	The procedures for dealing with possible monitoring data adjustments and uncertainties have been now defined and are included in Annex 4 of the PDD under "Monitoring information"	Details are included in PDD Ver 06, which has been provided to the validation team. Hence the CL is closed
<b>CL 16</b> As per E 1 of PDD stake holder meeting was held on 04 <sup>th</sup> and 05 <sup>th</sup> of Nov /2006. Details of the meeting not available	G 1.1	Project participants conducted a local stakeholder consultation meeting involving all relevant stakeholders on 4 <sup>th</sup> and 5 <sup>th</sup> November 2006 (in Tirunelveli and Coimbatore) and also on 27 March 2007 (in Erode). Formal invitations were sent to all the stakeholders more than a week in advance indicating the date, time and venue of the meeting. During the stakeholder meeting, the stakeholders were appraised about the project activity in English and the local	The validation team was provided with the relevant details and observed to be factual. Hence the CL is closed.



## VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2/3/4	Summary of project owner response	Validation team conclusion
		language (Tamil). The stakeholders' views and response on the project activity have been documented and is provided to the DOE.	
<b>CL 17</b> Summary of comments is not available	G 1.3	Copies of comments received from the stakeholders meeting are submitted to the DOE.	The validation team accessed copies of the comments received. Hence this CL is closed.
<b>CL 18</b> As per E 2 of PDD no negative comments have been received. To be verified	G 1.4	Copies of comments received from the stakeholders meeting are being submitted to the DOE.	The validation team accessed copies of the comments received. No negative comments observed. Hence this CL is closed



**APPENDIX B**  
**DUE ACCOUNT OF COMMENTS TAKEN**



## COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS

According to the modalities for the Validation of CDM projects, the DOE shall make publicly available the project design document and receive, within 30 days, comments from Parties, stakeholders and UNFCCC accredited non-governmental organizations and make them publicly available.

Bureau Veritas Certification published the project documents on the UNFCCC CDM website (<http://cdm.unfccc.int>) on 28/01/2007 and invited comments within 26/02/2007 by Parties, stakeholders and non-governmental organizations. The table below describes how due account of the comments received for the CDM project Fuel free electricity to grid by M/s Khivraj Motors Private Limited was taken by Bureau Veritas Certification:

Sr. No.	Details of the commenter	Date of the comment	Comment	Response by the project participants	Explanation on how account is taken by the DOE
01	Latha Sriramoju.  Email Id: slatha20@yahoo.com	25/02/2007	In PDD, Baseline Emission factor of 0.93 kgCO <sub>2</sub> e/KWh is considered for calculating emission reductions. 0.93 kgCO <sub>2</sub> e/KWh Value cannot be seen anywhere in the provided source (CEA's CO <sub>2</sub> Baseline Database). PP should give justification how that figure had been computed. I believe Baseline Emission Factor of 0.86 kgCO <sub>2</sub> e/KWh (given in same source) has to be used for estimating the CFRs	The methodology applied to this CDM project activity (AMS I.D) prescribes two options for the calculation of baseline emission factor. Option (a) – “A <i>combined margin (CM)</i> , consisting of the combination of operating margin (OM) and build margin (BM) according to the procedures prescribed in the approved methodology ACM0002” has been adopted for this project activity. As per ACM0002, the Combined Margin (CM) baseline emission	The justification provided for the baseline emission factor is found to be in line with the CEA data. Hence it is accepted.



## VALIDATION REPORT

Sr. No.	Details of the commenter	Date of the comment	Comment	Response by the project participants	Explanation on how account is taken by the DOE
			for estimating the CERs	<p>factor shall be calculated as follows:</p> $BEF_y = w_{OM} \cdot EF_{OM, y} + w_{BM} \cdot EF_{BM, y}$ <p>Where,</p> <p><math>w_{OM}</math> Weight of the operating margin emission factor (0.75 for wind power projects – page 10 of ACM0002)</p> <p><math>EF_{OM, y}</math> Operating margin emission factor</p> <p><math>w_{BM}</math> Weight of the build margin emission factor (0.25 for wind power projects - page 10 of ACM0002)</p> <p><math>EF_{BM, y}</math> Build margin emission factor</p> <p><math>BEF_y</math> Combined margin baseline emission factor of the grid</p> <p><b>Operating margin (OM):</b> ACM0002 provides four options for calculating OM. Option (a) – Simple OM has been adopted here and the value for the same have been adopted from Central Electricity Authority (CEA)'s latest</p>	



## VALIDATION REPORT

Sr. No.	Details of the commenter	Date of the comment	Comment	Response by the project participants	Explanation on how account is taken by the DOE
				<p>CO<sub>2</sub> baseline database. CEA has calculated the simple OM as per formula prescribed by ACM0002. A data vintage of 3 years (2002-03, 2003-04 and 2004-05) has been chosen. The relevant simple OM for the project would be:  CEA Simple operating margin  2002-03: 1.00 tCO<sub>2</sub>e/MWh  2003-04: 1.01 tCO<sub>2</sub>e/MWh  2004-05: 1.00 tCO<sub>2</sub>e/MWh  Average: 1.003 tCO<sub>2</sub>e/MWh  <b>Simple OM = 1.003 tCO<sub>2</sub>e/MWh</b></p> <p><b>Build Margin (BM):</b>  ACM0002 provides formula for calculating BM. CEA has calculated the BM as per formula prescribed by ACM0002. CEA's BM value has been adopted here.  CEA Build Margin  2004-05: 0.72 tCO<sub>2</sub>e/MWh  <b>BM = 0.72 tCO<sub>2</sub>e/MWh</b></p> <p><b>Combined Margin Baseline Emission Factor:</b>  <math>BEF_y = w_{OM} \cdot EF_{OM, y} + w_{BM} \cdot EF_{BM, y}</math>  Applying values from above</p>	



## VALIDATION REPORT

Sr. No.	Details of the commenter	Date of the comment	Comment	Response by the project participants	Explanation on how account is taken by the DOE
				<p>paragraphs in the formula,  <math>BEF_y = 0.75 * 1.003 + 0.25 * 0.72</math>  <b><math>BEF_y = 0.932 \text{ tCO}_2\text{e/MWh}</math></b></p> <p>The combined margin baseline emission factor provided in the CEA database considers a weight of 0.5 for operating margin and build margin. Though this is correct for other project activities, for wind projects, the weights are 0.75 for OM and 0.25 for BM. Thus there is a mis-match between the calculated data in the PDD and that in the CEA database. The Annex 3 of the PDD has been revised to make the calculations more transparent.</p>	
02	-- do ---	-- do ---	Annex 4 is not addressed properly	A detailed monitoring plan has been made for the CDM parameters (kWh of energy exported) of the project and the same has been included in the Annex – 4 of the revised version of the PDD.	The revised version 05 of the PDD provided to the validation team was verified and Annex 4 now addresses the detailed monitoring plan.



## **APPENDIX C – VALIDATION TEAM PROFILE**





## VALIDATION REPORT

Mr. R Sankaranarayanan	Bureau Veritas Certification India Private Limited	GHG Lead Validator B Tech (Chemical) graduate with 23 years of experience in manufacturing industries and 9 years in Management system auditing He has been involved in validation of more than 15 CDM projects.
Mr. P Srinivas	Bureau Veritas Certification India Private Limited	GHG Validator BE (Mechanical) graduate with 12 years of experience in Pharmaceutical & Chemical industries, in Projects, Operation & Maintenance. Involved in many improvement projects in the plant, which are related to Energy conservation, Steam and power saving projects, Air cleaners. Involved in validation / Verification of about 14 CDM projects
Mr H B Muralidhar	Bureau Veritas Certification India Private Limited	Sector Specialist BE (Electrical) graduate Total of 25 years of experience power generation and distribution related fields as well as in management system auditing. He has been involved in validation of more than 50 CDM projects
Dr. Ashok Mammen	Bureau Veritas Certification India Private Limited	Internal Reviewer Ph.D (Oils & Lubricants), M.Sc (Analytical chemistry, Over 20 years of experience in petrochemical sector. He has been involved validation / review of more than 50 CDM projects.
Mr. Sushil Budhia	Sushil Budhia & Associates, Mumbai	Financial Analysts, Mr. Budhia is a Chartered Accountant and has extensive experience for conducting statutory and tax audits. He has experience in internal audits and taxation matters