



# VALIDATION REPORT

19.27 MW GRID CONNECTED WIND  
ELECTRICITY GENERATION PROJECT  
BY  
**KPR MILLS**  
IN TAMIL NADU, INDIA

REPORT No. BVQI/INDIA/37.49  
REVISION No. 01

BUREAU VERITAS QUALITY INTERNATIONAL

## VALIDATION REPORT

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Approved by: Ashok Mammen	Organisational unit: BVQI Holdings
Client: KPR Mills	Client ref.: A .SEKAR

### Summary:

Bureau Veritas Quality International (BVQI) has performed a validation of the 19.27 MW Grid connected wind electricity generation project by KPR Mills in Tamil Nadu (hereafter called "the project") located at various sites in Tirunelveli and Coimbatore districts of Tamilnadu, in India, 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.

This validation report summarizes the findings of the validation. The validation consisted of the following three phases: i) a desk review of the Project Design Document (October/November 2005) ii) follow-up interviews with project stakeholders (December 2005) and iii) the resolution of outstanding issues and the issuance of the final validation report and opinion (March 2007).

In summary, it is BVQI's opinion that the project ,as described in the Project Design Document (Version 03 dated 26/03/2007),correctly applies the baseline and monitoring methodology ACM0002 Version 06 (19<sup>th</sup> May, 2006), and meets the relevant UNFCCC requirements for the CDM and the relevant host country criteria. 9).

Hence, BVQI requests the registration of the "19.27 MW Grid connected wind electricity generation project by KPR Mills in Tamil Nadu" as a CDM project activity.

BVQI/INDIA/37. 49	GHG/CDM
19.27 MW Grid connected wind electricity generation project by KPR Mills in Tamil Nadu	
Mr.HB Muralidhar Mr.R Seshapathy	
Ashok Mammen	

### Indexing terms

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## VALIDATION REPORT

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VALIDATION REPORT

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

BMS	BVQI Management System
BVQI	Bureau Veritas Quality International
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CEA	Central Electricity Authority.
CER	Certified Emission Reductions
CL	Clarification Request
CO <sub>2</sub>	Carbon Dioxide
CPP	Captive Power Plant
DIS	Draft of International Standard
DNA	Designated National Authority
DOE	Designated Operational Entity
DR	Document Review
FRP	Fibre Reinforced Plastic
GHG	Green House Gas (es)
I	Interview
IETA	International Emissions Trading Association
IPCC	Intergovernmental Panel on Climate Change
IRR	Internal Rate of Return
ISO	International Organisation for Standardization
MoV	Means of Verification
MP	Monitoring Plan
mW	megaWatts
NGO	Non Government Organisation
PDD	Project Design Document
PLF	Plant Load Factor
SWSPL	Suzlon Wind Farm Services Private Limited
TNEB	Tamil Nadu Electricity Board
UNFCCC	United Nations Framework Convention for Climate Change
V	Volts
WEG	Wind Electricity Generator
WTG	Wind Turbine Generator




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 VALIDATION REPORT
 

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<i>Table of Contents</i>	<i>Page</i>
1 INTRODUCTION .....	3
1.1 Objective	3
1.2 Scope	3
1.3 GHG Project Description	4
1.4 Validation team	4
2 METHODOLOGY .....	4
2.1 Review of Documents	6
2.2 Follow-up Interviews	7
2.3 Resolution of Clarification and Corrective Action Requests	7
3 VALIDATION FINDINGS .....	8
3.1 Project Design	8
3.2 Baseline	9
3.3 Monitoring Plan	13
3.4 Calculation of GHG Emissions	14
3.5 Sustainable Development Impacts	14
3.6 Comments by Local Stakeholders	15
4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS .....	16
5 VALIDATION OPINION .....	16
6 REFERENCES .....	18
Appendix A: Validation Protocol	19-45
Appendix B: Due Accounts of Comments	46-47

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**VALIDATION REPORT**

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## **1 Introduction**

KPR Mills has commissioned Bureau Veritas Quality International (BVQI) to validate its 19.27 MW Grid connected wind electricity generation project (hereafter called “the project”) at Tirunelveli and Coimbatore districts of Tamilnadu State, India.

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 Client 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. BVQI has, based on the recommendations in the Validation and Verification Manual (IETA/PCF, v. 3.3, 2004), employed a risk-based approach in the validation, focusing on the identification of significant risks for project implementation and the generation of CERs.

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 proposed project activity involves the establishment of a wind farm of 19.27 MW installed capacity enabling generation of electricity by seven 1.25 MW Wind Electricity Generators (WEGs) supplied by Suzlon Energy Limited, sixteen 0.600 MW WEGs (supplied by Enercon) and four 0.230 MW (supplied by Enercon), in Tirunelveli and Coimbatore District in the State of Tamil Nadu in Southern India (constituting of twenty seven WEGs). The project locations at Tirunelveli and Coimbatore are included in the 40




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 VALIDATION REPORT
 

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potential wind sites identified by Ministry of Non Conventional Energy Sources (MNES), Government of India, having wind power density of  $388 \text{ W/m}^2$  and  $398 \text{ W/m}^2$  respectively at 50 m height.

The details of ownership is explained Table 1 of the PDD.

The electricity generated from the project will be initially fed into a 33 kV grid and will then be further stepped up to 110 and 230 kV grid lines.

The generated electricity from the aforesaid wind farm is evacuated to the TNEB grid under a wheeling banking agreement and the generated electricity is used for captive utilization.

During the proposed fixed 10 years crediting period, the project is expected to reduce approximately 346740 tCO<sub>2</sub>e, thereby generating equivalent amount of Certified Emission Reductions (the "CERs").

#### 1.4 Validation team

The validation team consists of the following personnel:

<b>Mr. HB Muralidhar</b>	<b>BVQI India</b>	<b>Team Leader, GHG Validator</b>
<b>Mr. R.Seshapathy</b>	<b>BVQI India</b>	<b>GHG Validator</b>
<b>Mr Sushil Budhia</b>	<b>Sushia Budhia Associates</b>	<b>Third Party Financial Expert</b>
<b>Dr. Ashok Mammen</b>	<b>BVQI India</b>	<b>Internal Technical Reviewer</b>

**Mr. H B Muralidhar** : He is the Lead auditor in for Environmental Management System, Quality Management system and Occupational Health and Safety Management System.. He has several years of Industrial work experience in the field of environmental management systems He has undergone intensive trainings on the Clean Development Mechanism. He is the technical expert & conducted Validation / Verification for more than 25 CDM Projects.

**Mr Ramaswamy Seshapathy** is a Chemical Engineer with over all 20 years of experience in the areas of Chemical and Environmental Engineering and Management as a designer, consultant and trainer. He is also a lead auditor and trainer for ISO 9001:2000, ISO 14001:2004 and OHSAS 18001 standards/specifications in Bureau Veritas Certification. He has undergone intensive training on the Clean Development Mechanism and is a qualified validator and verifier and has been involved as a team leader and verifier in several CDM projects

**Mr Sushil Budhia** who is a chartered financial and accounts expert was involved in the assessment of the investment analysis. He has supported the validation team in the assessment and verification of the financial information related to the project (such as IRR) and computation of CERs.

**Dr Ashok Mammen** is a Lead auditor in for Environment Management System, Quality Management System and Occupational Health and Safety Management System. He

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**VALIDATION REPORT**

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has a doctorate in Analytical Chemistry and has more than 20 years of industrial work experience in the field of in research and environmental management systems. He has undergone intensive training on Clean Development Mechanism. He has performed Validation/Verification for CDM projects and is a qualified verifier and reviewer for all CDM Projects.

## **2 Methodologies**

The overall validation, from Contract Review to Validation Report & Opinion, was conducted using internal procedures (BMS, September 2003) that were audited by the CDM Accreditation Team in December 2004.

In order to ensure transparency, a validation protocol was customised for the project, according to the Validation and Verification Manual (IETA/PCF, v. 3.3, 2004). 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 organises, 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 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 ( <b>OK</b> ), 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 Table 2 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 organised in several sections. Each section is then further sub-divided. 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 ( <b>OK</b> ), 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 organised in several sections. Each section is then further sub-divided. 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 ( <b>OK</b> ), 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 <del>delete this table for small scale project report</del>				
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	Explains how conformance with the checklist	The section is used to elaborate and discuss the	This is either acceptable based on evidence provided ( <b>OK</b> ), or a

## VALIDATION REPORT

	where the answer to the checklist question or item is found.	question is investigated. Examples of means of verification are document review (DR) or interview (I). N/A means not applicable.	checklist question and/or the conformance to the question. It is further used to explain the conclusions reached.	<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.
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**Validation Protocol Table 5 / 3: 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 or 3 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 summarised in this section.	This section should summarise the validation team's responses and final conclusions. The conclusions should also be included in Tables 2/3, under "Final Conclusion".

**Validation Protocol Table 4: Legal requirements**

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 or 3 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 summarised in this section.	This section should summarise the validation team's responses and final conclusions. The conclusions should also be included in Tables 2/3, under "Final Conclusion".

**Figure 1 Validation protocol tables**

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 VALIDATION REPORT
 

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## 2.1 Review of Documents

The Project Design Document submitted by KPR Mills and additional background documents related to the project design and baseline, i.e. Indian Law, Kyoto Protocol, "Consolidated baseline methodology for grid-connected electricity generation from renewable sources ACM0002 / Version 06, dated 19<sup>th</sup> May 2006\*", clarifications on Validation Requirements to be checked by a Designated Operational Entity were reviewed.

The following documents were used as references to the validation work, in addition to internal BVQI procedures: IETA/PCF – Validation and Verification Manual (v. 3.3, Mar 2004); ISO FDIS DIS 14064-3 - Greenhouse gases — Part 3: Specification with guidance for the validation and verification of greenhouse gas assertions; ISO FDIS DIS 14064-2 - Greenhouse gases — Part 2: Specification with guidance at the project level for quantification, monitoring and reporting of greenhouse gas emission reductions or removal enhancements.

To address BVQI corrective action and clarification requests KPR Mills revised the PDD and resubmitted it in March 2007.

The validation findings presented in this report relate to the project as described in the **Version 03 of the PDD, dated 26/03/2007**.

## 2.2 Follow-up Interviews

On 30<sup>th</sup> and 31<sup>st</sup> December 2005, BVQI performed interviews with project participants and stakeholders to confirm selected information and to resolve issues identified in the document review. Representatives of **KPR Mills** and their consultants were interviewed (see References). The main topics of the interviews are summarised in Table 1.

**Table 1 Interview topics**

Interviewed organisation	Interview topics
<b>Project Participant KPR Mills</b>	Commitment of organisation towards GHG emission reduction Evidence of date of starting of project activity Checking the documentation of procurements of WTGs Discussions on additionality and related evidences Control of operations for WTGs outsourced to Suzlon Wind Farm Services Limited and Enercon India Limited Wheeling and banking Agreements with state electricity board Base line emissions and the emissions reduction Record keeping and QA/QC of data Sensitivity towards local stakeholders and actions on their comments

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\* <http://cdm.unfccc.int/methodologies/PAmethodologies/approved.html>

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 VALIDATION REPORT
 

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	Monitoring methodologies.
<b>Consultant</b> Senergy Global Pvt Ltd	Project category Baseline and Additionality Source of data Monitoring Methodology
<b>Local Stakeholders</b>	Social and Economical Benefits

### 2.3 Resolution of Clarification and Corrective Action Requests

The objective of this phase of the validation was to raise the requests for corrective actions and clarification and any other outstanding issues that needed to be clarified for BVQI 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 BVQI 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 five Corrective Action Requests.

3) The conclusions for validation subject are presented.

### 3.1 Project Design

The purpose of the project activity is to harness renewable resources in the Tirunveli and Coimbatore region, in the state of Tamilnadu, and thereby enable displacement of non-renewable natural resources.

The technology to be employed, converts wind energy to electricity using a Wind Electric Generators. All the turbines installed in the wind farm are technologically advanced and latest of their kind with higher efficiency and suitability

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VALIDATION REPORT

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The expected operational lifetime of the project activity is 20 years and a fixed crediting period of ten years has been chosen. The project is seeking retroactive credits from 01/02/2005.

The real start date of the project activity is considered as 1<sup>st</sup> December 2000. The purchase order for the first four 230KW WEGs (on Enercon) were issued on this day by KPR Mills Pvt Limited.

BVQI recognises that the main purpose of this project is to generate electrical energy through sustainable means utilizing wind energy for generating electricity which otherwise would have been generated through fossil fuels. The project has led to an investment of about **Rs 945 Million** which otherwise would not have happened in that region. Also the project activities earn additional revenue for KPR Mills, enabling the organisation to partially meet its financial needs.

As per the indicators stipulated by Ministry of Environment and Forests, Govt. of India (Host country DNA), this project leads to alleviation of poverty by establishing direct and indirect employments.

The project design is sound and the geographical (the project location) and temporal (20 years) boundaries of the project are clearly defined.

### 3.2 Baseline

The KPR Mills Project uses the approved baseline methodology ACM0002 /Version 06 dated 19<sup>th</sup> May 2006. This methodology is applicable to grid-connected renewable power generation project activities under Wind sources.

The baseline methodology applies to electricity capacity additions from wind sources and hence is suitable for the project activity. The project activity considers Southern Regional Grid in India. This grid fulfils the methodology conditions like clear identification of geographic and system boundaries. The characteristics of the grid are available to the public through the Central Electricity Authority (CEA). The information provided in the PDD on the predominance of thermal generation in the state of Tamil Nadu state where the project activity is located is authentic and reliable. The installed capacity of thermal generation (coal, diesel and gas) is 6916.44 MW constituting about 72.71% as on 31<sup>st</sup> March 2005. This has been verified through data published on an annual basis by CEA.

Similarly it has been verified that the average **thermal** power generation for the last three years (2002-2005) is 79.38% in the southern regional grid and 86.18 % in the Tamil Nadu grid. Hence, in the absence of project activity, the same amount of electricity generated by the project activity would have been met from largely thermal generation with its associated GHG emissions.

Data of Operating and Build Margin for the three financial years from 2002-03 to 2005 - 06 has been obtained from - **'The CO<sub>2</sub> Baseline Database for the Indian Power**

VALIDATION REPORT

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**Sector'** Ministry of Power: Central Electricity Authority (CEA) Version 1.1 Dated: 21<sup>st</sup> December 2006

This database is prepared as per ACM0002 Version 6.

The baseline emission factor for the southern grid has been estimated to be **0.9321 tCO<sub>2</sub>/ MWh** and is fixed *ex-ante*.

**Additionality**

A structured approach has been adopted to define and analyse the barriers that have been encountered in the implementation of the project.

A Preliminary screening has been conducted before the start date of the project activity. The following documents have been provided as evidence to demonstrate that CDM incentive was considered before the start of the project.

- Consideration of Kyoto Protocol and CDM Benefits as an agenda in the Board Meetings held on 30/06/2000 (KPR Mills and KPR Spinning Mills) and 15/09/2003 (KPR Cotton Mills) while provide approval in the investment in Wind Mills.
- Interactions with manufacturers of wind turbines on the concept and benefits of CDM mechanism and carbon credits for the project activity

This is followed by the Identification of alternatives to the project activity consistent with current laws and regulations

Three alternatives to the project activity have been identified:

**Alternative 1: Continuing with the available grid connection and meeting the electrical demand through existing grid**

In this case, in absence of the project activity, an equivalent amount of electricity would be generated by the power plants comprising the TNEB grid and southern grid, both of which are predominantly thermal. An equivalent amount of carbon dioxide would be generated at the thermal power stations. This alternative is in compliance with all applicable legal and regulatory requirements and can be a part of the baseline

**Alternative 2: Installation of captive thermal unit within the industrial premises for meeting the electrical demand.**

The TUF (Technology Up gradation Fund) is available for captive installations for power generation in Tamil Nadu. This scheme is available for textile & jute industries from April 1, 1999 until the end of the 10th Five-Year Plan i.e. March 31, 2007. An attractive interest subsidy is available for upgrading technologies including setting up Captive Power Plants. The other advantages of availing financial assistance under the TUF scheme such as saving on wheeling, banking and connected load charges have been explained in the PDD. Besides a fuel based captive power plant has a higher PLF compared to WEGs. This alternative is also in compliance with all applicable legal and regulatory requirements and can be a part of the baseline.

**Alternative 3: The proposed project activity not undertaken as a CDM project activity**



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VALIDATION REPORT

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The wind power development in the country has historically been supported by government policies. However even with this support the project proponents have demonstrated that CDM funds are needed to make the project an attractive investment. The project is also not the least cost option as it faces the considerable barriers compared to new coal fired generation units which are being constructed in India with correspondingly low generation tariffs, due to abundant supplies of cheap coal. In addition to this, the share of hydro projects in Tamil Nadu is about 20%. This results availability of power at a cheaper rate compared to power generation from wind based projects.

The project proponent has then conducted an 'Investment Analysis' in accordance with Step 2 of the "Tool for the demonstration and assessment of additionality".

A benchmark analysis has been applied to analyse the investment options: Internal Rate of Return has been used as the financial indicator. The central electricity regulatory commission (CERC) has fixed the tariff for the power sold to electricity board by IPPs on the basis of 16% post-tax Return on Equity\*. Hence, 16% post tax return on equity or equity IRR is used as a benchmark for projects in public or private sector. (Source: Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2004. The post-tax equity IRR of this project is **12.36% without CDM revenue** and **14.95% with CDM revenue**. A third party chartered accountant has certified the figures and assumptions made in the financial analysis

A detailed IRR calculation spreadsheet including all the assumptions taken for the analysis has been provided as Appendix 1 to the PDD. There is no capital subsidy available for the project. Other factors such as accelerated depreciation and tax holidays have also been included as a part of the analysis.

### Sensitivity Analysis

The sensitivity analysis shows that the project is financially unattractive without CDM revenue and is robust to reasonable variations in the critical assumption and the CDM revenue could help mitigate some of the barriers to the project activity and help sustain the project activity. The analysis shows that even with a 10% increase in generation the equity IRR is still less than the benchmark IRR.

The result of the sensitivity analysis therefore substantiates and confirms that the financial internal rate of return of the project activity without CDM revenues is lower than the benchmark for the project activity. The project activity without the CDM benefits therefore cannot be considered to be attractive.

### Common Practice Analysis

From the Investment Analysis, it has been concluded that Alternative 1 (No project activity; continuation of current situation) is a status quo and does not have impediments that would prevent its implementation. However, the Alternative 3 (implementation of the project activity not undertaken as a CDM project activity) is less

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\* Reference: Central Electricity Regulatory Commission, petition no 67/2003, order hearing dated 12.11.2003, in matter of determination of terms and conditions of tariff.

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VALIDATION REPORT

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financially attractive without CDM revenue, which would prevent implementation of the project activity as explained above.

A common practice analysis as a credibility check to complement the investment analysis has also been conducted. Other activities similar to the proposed project activities have been analysed.

Tamil Nadu is one of the most industrialized states of India and hence, supply -demand gap will always exist. The state has therefore allowed private investment for generation of power through thermal stations, mini and micro hydro - electric schemes, diesel power generation, etc are by the state. As described in Section 3.2, the average thermal power generation for the last three years (2003-2005) is 79.38% in the southern regional grid and 86.18 % in the Tamilnadu grid.

The installed capacity of wind mills in Tamil Nadu is presently around 10% and was around only 6% in 2002-2003. The total generation all over India from wind sources for the year 2002-2003 (the starting period of this project) was 2477.59 million kWh out of total generation of 531,607 million kWh. The contribution from wind energy for total generation was just 0.4 %. From the above explanation, it is evident that wind energy is not a prevailing practice. **All these data is available to the public at large and has been verified.**

#### **Impact of CDM registration**

Registering the project activity as a CDM activity will provide annual cash flows and improve the financial viability of the project activity. The CDM revenues will thus assist the investor in realizing returns commensurate with the risks in development and operations of the project

The project proponent has discussed all these factors through a structured approach, which includes determination of the appropriate analysis method, application of a benchmark analysis, calculation and comparison of financial indicators and a sensitivity analysis. The analysis is transparent and exhaustive.

It is demonstrated that the project activity itself is not a likely baseline scenario due to the existence of investment, technological and other barriers due to prevailing practices.

Therefore, the Project Scenario is considered additional in comparison to the baseline scenario, and therefore eligible to receive Certified Emissions Reductions (CERs) under the CDM.

The sustainability of KPR Mills project activity and its dependence on securing the proposed carbon finance through sale of carbon credits has been demonstrated by providing relevant data.

The application of the baseline methodology is transparent and conservative. This methodology describes the requirements of metering the electricity generated.



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VALIDATION REPORT

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The project complies with the baseline requirements.

### 3.3 MONITORING PLAN

The Project uses the approved consolidated monitoring methodology ACM0002 (Consolidated monitoring methodology for zero-emissions grid-connected electricity generation from renewable sources, Version 06 dated 19/05/2006).

The monitoring plan meets the requirements of the methodology. The monitoring mechanism is mainly a joint metering report by the project participant and the electricity authority. The energy meter used for monitoring is sealed and calibrated by the authorities. Considering the provisions of calibration and alternate modes of measurement, the uncertainties in monitoring are very limited.

The authority and responsibility of project management and registration monitoring measurement is clearly described. All indicators of importance for controlling and reporting of project performance are incorporated in the Monitoring Plan. The type, variable, unit, frequency, proportion, means and period of archiving of the data are sufficiently described.

The meters are sealed by TNEB and hence no monitoring data adjustments and uncertainties are possible.

Project performance reviews are conducted periodically.

Therefore the project complies with the requirements.

### 3.4 Calculation of GHG Emissions

The project will partly displace fossil fuel-based electricity generation. While the project emissions are zero, baseline emissions are equal to the emission reductions due to the project activity and have been estimated to be **34674 tCO<sub>2</sub>** per year, based on an ex-ante fixed baseline emission factor of **0.9321 t CO<sub>2</sub>/MWh**. The baseline emission coefficient has been derived from the data, as published by the Central Electricity Authority (The Ministry of Power, Government of India), on gross annual energy generation and fuel input from all coal, gas and diesel power generation systems in the southern grid. IPCC default values have also been used, where applicable. Project emissions are zero and no leakage needs be considered for the project activity as stipulated in ACM0002.

### 3.5 Sustainable Development Impacts

No significant environmental impacts have been identified from the project activity.

As per the Indian legislation, environmental impact assessment is not required for the project activity.

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VALIDATION REPORT

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The project participants have analysed the social impacts of the project activity. The analysis of social impacts did not reveal any adversely significant social impacts. According to the PDD, this CDM initiative would contribute, among other impacts, towards:

- Meeting the electricity supply deficit in Tamil Nadu as well as the Southern Grid.
- Conserving natural resources
- Rural and infrastructure development.

In view of above positive impacts and contribution towards the country's goal of sustainable development, the KPR Mills management recommended the development and implementation of systems for grid-connected electricity generation from renewable sources at Tirunaveli and Coimbatore.

The project activity has lead to an investment of about **Rs 945 Million** to a developing region which otherwise would not have happened in the absence of project activity. This includes improvement in the quality and availability of electricity fed into a deficit local grid and development of infrastructure such as road and transportation facilities. Being a renewable resource, using wind energy to generate electricity contributes to resource conservation.

The project has contributed to the social, economical, environmental and technological well being of the rural public by improving conditions of the roads and generating employment opportunities.

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

The land on which the project activity takes place is barren and largely unfertile. The project proponents had bought the land for a worthwhile application and obtained necessary approvals for installation of windmills. No dislocation of people is involved in the course of the project activity.

In Coimbatore district, although it is not a fertile land, agriculture was still possible. In this district, wherever possible, landowners have been allowed to continue with the agriculture. Thus the landowners benefited in double ways – by selling part of the unfertile land and continuing with agriculture.

The land used for implementation of project was not used for agriculture or any other economic activities. The project promoter / their representatives have contacted the owners of the land for allotting the land for project development and detailed representations were made before the village elected governing councils for explaining the proposed usage of procured land. The agencies involved in the land acquisition also carried out meetings with the villagers (landowners and prominent people of villages) and apprised them about the proposed project activity.

The villagers and local administration had no reservations towards selling of their land for implementation of wind turbines except the following.

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VALIDATION REPORT

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Further, 'No Objection Certificates' have been obtained which certifies that the villagers along with the Gram Panchayat have no objection to the windmill installation in their village, and that the project activity has led to no significant negative impacts.

As the project is not expected to have considerable social and environmental impacts, the local stakeholder consultation process carried out for the project is deemed sufficient.

#### **4 Comments by Parties, Stakeholders and NGOs**

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

Bureau Veritas Certification published the Project Design Document on the UNFCCC CDM website (<http://cdm.unfccc.int>) on 31<sup>st</sup> December 2005 and invited comments within 30<sup>th</sup> January 2006 by Parties, stakeholders and non-governmental organizations. No comments were received.

The PDD was again re-web hosted in accordance with the guidelines provided by EB 27 (change in the version of the methodology Version 05 to Version 06 of the methodology) It was re web hosted on 29<sup>th</sup> November 2006 and comments were invited within 28<sup>th</sup> December 2006.

One comment was received. The response of the project proponent has been verified and accounted for in Section 3.2 wherein investment analysis has been verified and found to in conformance to the requirements. The 'Due Account of comments' is attached as Appendix 2 below.

#### **5: Validation opinion**

BVQI has performed a validation of the KPR Mills Wind Energy Project in the state of Tamil Nadu State 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 (October/November 2005); ii) follow-up interviews with project stakeholders (December 2005); iii) the resolution of outstanding issues and the issuance of the final validation report and opinion (March 2007).

By generating electricity from wind power, the project is likely to result in reductions of GHG emissions partially displacing electricity that would have otherwise been purchased from the grid. An analysis of the investment analysis demonstrates that the proposed project activity is not a likely baseline scenario. Emission reductions



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**VALIDATION REPORT**

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attributable to the project are hence additional to any that would occur in the absence of the project activity. Given that the project is maintained as designed, the project is likely to achieve the estimated amount of emission reductions.

BVQI has received a confirmation by the host Party (India) that the project contributes to Sustainable Development in India.

The review of the project design documentation and the subsequent follow-up interviews has provided BVQI 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.

BVQI hence recommends the KPR Mills Windmill Project for registration with the UNFCCC.

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 KPR Mills that relate directly to the GHG components of the project.

- 1 Revenue Records showing Survey Numbers and locations (HTSC/SF Nos) of all the Wind Energy Generators located in Tirunalveli and Coimbatore Districts of Tamil Nadu
- 2 Purchase Orders by the Group Companies to Suzlon and Enercon. The first PO on Enercon for four 230Kw Enercon Machines by KPR were released on 01/12/2000 by KPR Mills Pvt Limited.
- 3 Commissioning Certificates issued by the Tamil Nadu Electricity Board for all the twenty seven WTG that have been commissioned .The first four 230KW mills of KPR Mills Pvt Ltd were commissioned on 29/03/2001.
- 4 Wheeling and Banking Agreements between the group companies and the Tamil Nadu Electricity Board
- 5 Consideration of Kyoto Protocol and CDM Benefits as an agenda in the Board Meetings held on 30/06/2000 (KPR Mills and KPR Spinning Mills) and 15/09/2003 (KPR Cotton Mills) while providing approval in the investment in Wind Mills.
- 6 Authorisation letters received from group and associated companies for dealing with companies related to CDM.
- 7 No Objection Certificates obtained from the village administration for installation of Wind Mills
- 8 PDD Version 03 dated 26/03/2007

### **Category 2 Documents:**



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**VALIDATION REPORT**

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

- 1 Consolidated monitoring methodology for zero-emissions grid-connected electricity generation from renewable sources, ACM0002 Version 06 dated 19/05/2006
- 2 Guidelines for completing CDM-PDD and F-CDM-Subm, Version 01
- 3 Kyoto Protocol to the United Nations Framework Convention on Climate Change, United Nations, Dec 1997.

**Persons interviewed:**

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

**Project Owner**

Mr A.Sekar                      Manager (Projects)

**Consultant**

Dr Inderjeet Singh - Manager (CDM) Senergy Global Pvt Limited  
Ms.Kripa Jagannathan – Senior Analyst, SenergyGlobal Pvt Limited

**Local Stakeholders**

1. Mr. Anavardhanam Perumal, Panchayat Member
2. Mr.Myladurai, Panchayat Member
3. Mr Thamibidurai Panchayat Member
4. Mr M Velumurugan Panchayat Member

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 VALIDATION REPORT
 

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**Appendix 1****Table 1 Mandatory Requirements for 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.5.2.2	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, Marrakesh Accords, CDM Modalities §40a	Applied for Approval from Ministry of Environment & Forest (DNA). Approval has been obtained 26/07/2006	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.5.2.2	Table 2, Section E.4.1
4. The project shall have the written approval of voluntary participation from the designated national authorities of each party involved, including confirmation by the host party that the project activity assists it in achieving sustainable development	Kyoto Protocol Art. 12.5a, Marrakesh Accords, CDM Modalities §40a, §28, Annex 3 of the Resolução Interministerial 01/03	Applied for Approval from Ministry of Environment & Forest (DNA). Approval has been obtained 26/07/2006	Table 2, Section A.3.2
5. The emission reductions shall be real, measurable and give long-term benefits related to the mitigation of climate change	Kyoto Protocol Art. 12.5b	See Table 2, Section A.5.2.2	Table 2, Section E
6. Reduction in GHG emissions shall be additional to any that would occur in absence of the project activity, i.e. a CDM project	Kyoto Protocol Art. 12.5c,	See Table 2, Sections A.5.2.2, B.3.2 and B.3.3	Table 2, Section B.2



## VALIDATION REPORT

REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference / Comment
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	Marrakesh Accords, CDM Modalities §43 and 44		
<b>7.</b> Potential public funding for the project from Parties in Annex I shall not be a diversion of official development assistance	Marrakech Accords	The project will not receive any public funding from parties included in Annex 1	A.5.5.1
<b>8.</b> Parties participating in the CDM shall designate a national authority for the CDM	Marrakech Accords, CDM Modalities §29, UNFCCC website	Ministry of Environment & Forest, Government of India is Designated National Authority for India	-
<b>9.</b> The host country shall be a Party to the Kyoto Protocol	Marrakech Accords, CDM Modalities §30, UNFCCC website	Yes	-
<b>10.</b> Comments by local stakeholders shall be invited, a summary of these provided and how due account was taken of any comments received	Marrakech Accords, CDM Modalities §37b	Stakeholders comments were received and due account taken	Table 2, Section G
<b>11.</b> Documentation on the analysis of the environmental impacts of the project activity, including transboundary impacts, shall be submitted, and, if those impacts are considered significant by the project participants or the Host Party, an environmental impact assessment in accordance with procedures as required by the Host Party shall be carried out.	Marrakech Accords, CDM Modalities §37c	See Table 2, Section F	Table 2, Section F
<b>12.</b> Baseline and monitoring methodology shall be previously approved by the CDM Methodology Panel	Marrakech Accords, CDM	See Table 2, Section B.1.1, D.1.1, Table 3, 1.1.11	Table 2, Section B.1.1 and D.1.1



## VALIDATION REPORT

REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference / Comment
	Modalities §37e		
<b>13.</b> Provisions for monitoring, verification and reporting shall be in accordance with the modalities described in the Marrakech Accords and relevant decisions of the COP/MOP	Marrakech Accords, CDM Modalities §37f	Table 2, Section D	Table 2, Section D
<b>14.</b> Parties, stakeholders and UNFCCC accredited NGOs shall have been invited to comment on the validation requirements for minimum 30 days, and the project design document and comments have been made publicly available	Marrakech Accords, CDM Modalities, §40	<p>BVQI published the project documents on the UNFCCC CDM website on 31<sup>st</sup> December 2005 and invited comments within 30<sup>th</sup> January 2006.</p> <p>The PDD was again re-web hosted in accordance with the guidelines provided by EB 27 (change in the version of the methodology Version 05 to Version 06 of the methodology) It was re web hosted on 29<sup>th</sup> November 2006 and comments were invited within 28<sup>th</sup> December</p>	-
<b>15.</b> A baseline shall be established on a project-specific basis, in a transparent manner and taking into account relevant national and/or sectoral policies and circumstances	Marrakech Accords, CDM Modalities, §45 b, c, e	Table 2, Section A.5.2.2	Table 2, Section B.5
<b>16.</b> The baseline methodology shall exclude to earn CERs for decreases in activity levels outside the project activity or due to force majeure	Marrakech Accords, CDM Modalities, §47	Table 2, Section A.5.2.2	Table 2, Section B.2
<b>17.</b> The project design document shall be in conformance with the UNFCCC CDM-PDD format and fulfilled according to the guidelines for completing CDM-PDD, CDM-NMB, and CDM-	Marrakech Accords, CDM Modalities,	OK	-



VALIDATION REPORT

REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference / Comment
NMM	Modalities, Appendix B, EB Decisions		

**Table 2 Requirements Checklist**

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
<b>A. General Description of Project Activity</b> <i>The project design is assessed.</i>					
A.1. Title of the project activity, version number and date of the document	1	DR	Title of the Project activity: 19.27 MW Grid connected wind electricity generation project by KPR Mills in Tamil Nadu  (Revised to Version 03 dated 26/03/07)	OK	OK
<b>A.2. Description of the project activity</b>					
A.2.1. Is the purpose of the project activity included?	1	DR I	Purpose of the project activity indicated in A.2. of PDD. The purpose is to generate electricity from cleaner / sustainable sources.	OK	OK
A.2.2. Is the view of the project participants on the contribution of the project activity to sustainable development included?	1	DR	According to project participants, the project activity contributes to sustainable development through benefits in the areas such as <ul style="list-style-type: none"> <li>Social, Economic, Environmental and Sustainable Development.</li> </ul>	OK	OK



## VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
<b>A.3. Contribution to Sustainable Development</b> <i>The project's contribution to sustainable development is assessed.</i>					
A.3.1. Is the project in line with relevant legislation and plans in the host country?	-	DR I	Wind Energy Policy		
A.3.2. Is the project in line with host-country specific CDM requirements?	-	DR I	Status of Approval from Ministry of Environment & Forests (DNA). Submitted for approval – Not obtained	CAR 1	OK
A.3.3. Is the project in line with sustainable development policies of the host country?	-	DR I	Project proponents' view Ref.A.2,2 are in line with sustainable development policies of host country.	OK	OK
A.3.4. Will the project create other environmental or social benefits than GHG emission reductions?	-	DR I	Refer A 2.2.	OK	OK
<b>A.4. Project participants</b>					
A.4.1. Are Party (ies) and private and/or public entities involved in the project activity listed?	1	DR	Refer A.3	OK	OK
A.4.2. Is the contact information provided in annex 1 of the PDD?	1	DR	Yes.	OK	OK
A.4.3. Is this information indicated using the tabular format?	1	DR	The project participant information is indicated using the tabular format of the Annex 1 of PDD.	OK	OK
<b>A.5. Technical description of the project activity</b>					
<b>A.5.1. Location of the project activity</b>					
A.5.1.1. Host country Party(ies)	1	DR	India	OK	OK
A.5.1.2. Region/State/Province etc.	1	DR	Tamil Nadu	OK	OK
A.5.1.3. City/Town/Community etc.	1	DR	Tirunelveli and Coimbatore Dist – Refer Locational Maps provided in PDD	OK.	OK

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



## VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
A.5.1.4. Detailed description of the physical location, including information allowing the unique identification of this project activity.	1	DR	Unique identification of the project activity such as Plot No. / Survey No or. Latitude and Longitude with direction etc. are not indicated.	CAR2	OK
<b>A.5.2. Category of the project activity</b>					
A.5.2.1. Is the category of the project activity specified?	1	DR	Grid connected electricity generation from Wind sources	OK	OK
A.5.2.2. Is it justified how the proposed project activity conforms to the project category selected?	-	DR	Yes	OK	OK
<b>A.5.3. Technology to be employed</b> <i>Validation of project technology focuses on the project engineering, choice of technology and competence/ maintenance needs. The validator should ensure that environmentally safe and sound technology and know-how is used.</i>					
A.5.3.1. Does the project design engineering reflect current good practices?	-	DR I	Yes, Enercon and Suzlon Make Indigenous spare parts / Gear Box etc.	OK	OK
A.5.3.2. Does the project use state of the art technology or would the technology result in a significantly better performance than any commonly used technologies in the host country?	-	DR I	Better performance -The make is approved Centre for Wind Energy Technology	OK	OK
A.5.3.3. Is the project technology likely to be substituted by other or more efficient technologies within the project period?	-	DR I	Expected operational lifetime of the project activity is indicated to be 20 years. It is not likely that the project technology will be replaced within this project time.	OK	OK

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



## VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
A.5.3.4. Does the project require extensive initial training and maintenance efforts in order to work as presumed during the project period?	-	DR I	The Wind Mills are maintained and operated by Enercon and Suzlon. The personnel from M/s KPR have been trained .	OK	OK
A.5.3.5. Does the project make provisions for meeting training and maintenance needs?	-	DR I	Enercon/Suzlon Wind Farm Services are ISO 9001 certified.	OK	OK
<b>A.5.4. Brief statement of how anthropogenic emissions of GHG by sources are to be reduced by the proposed CDM project activity</b>					
A.5.4.1. Is it stated how anthropogenic GHG emission reductions are to be achieved?	1	DR	Yes	OK	OK
A.5.4.2. Is the estimate of total anticipated reductions of tons of CO <sub>2</sub> equivalent provided?	1	DR	Yes. The estimated emission reductions over the 7 years renewable crediting period would be 412991 tCO <sub>2</sub> .	OK	OK
A.5.4.3. Is this information indicated using the tabular format?	1	DR	Yes	OK	OK
<b>A.5.5. Public funding of the project activity</b>					
A.5.5.1. Is it indicated whether public funding from Parties included in Annex I is involved in the proposed project activity?	1	DR	The project will not receive any public funding from Parties included in Annex I.	OK	OK

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



## VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
A.5.5.2. If public funding is involved, is information on sources of public funding for the project activity provided in Annex 2, including an affirmation that such funding does not result on a diversion of official development assistance and is separate from and is not counted towards the financial obligations of those Parties?	1	DR	Not applicable.	-	-
<b>B. Project Baseline</b> <i>The validation of the project baseline establishes whether the selected baseline methodology is appropriate and whether the selected baseline represents a likely baseline scenario.</i>					
<b>B.1. Baseline Methodology</b> <i>It is assessed whether the project applies an appropriate baseline methodology.</i>					
B.1.1. Are the title and the reference of the baseline methodology applicable to the project activity defined?	1 UNFCCC website	DR I	Yes. ACM 0002 Version 05 Sep 30 <sup>th</sup> 2005/Version 06 dated 19 <sup>th</sup> March 2006	OK	OK
B.1.2. Is the baseline methodology previously approved by the CDM Methodology Panel?	1	DR	Yes. Approved consolidated baseline methodology ACM 0002	OK	OK
B.1.3. Does the proposed project activity meet the applicability conditions of the methodology?	1	DR	Yes. This methodology applies to grid connected renewable power generation activities using wind energy.	OK	OK

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



## VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
<b>B.2. Description of how the methodology is applied in the context of the project activity</b>					
B.2.1. Is the baseline methodology the one deemed most applicable for this project and is the appropriateness justified?	1 ACM 0002	DR	The applicability of approved methodology is indicated to be fulfilling the following specified conditions, as: The geographic and system boundaries for the relevant electricity grid can be clearly identified and information about characteristics of the grid is available. Refer B.4 Tamil Nadu State Grid	Ok	OK
<b>B.3. Description of how the anthropogenic GHG emissions by sources are reduced below those that would have occurred in the absence of the proposed project activity</b>					
B.3.1. Is the proposed project activity additional?	1	DR	CDM initiative considered – Additionality is not convincing. Barriers presented in the PDD do appear to be prohibitive.	CAR 4	OK
B.3.2. Are national policies and circumstances relevant to the baseline of the proposed project activity summarised?	-	I	Wind mill policy and tariff related policies are applicable	OK	OK
<b>B.4. Description of the project boundary for the project activity</b>					
B.4.1. Are the project's spatial (geographical) boundaries clearly defined?	1	DR	Yes	OK	OK

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## VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
B.4.2. Are the project's system (components and facilities used to mitigate GHGs) boundaries clearly defined?	1	DR	Refer CAR2	OK	OK
<b>B.5. Details of the baseline and its development</b>					
B.5.1. Is the date of completion provided?	1	DR	Yes	OK	OK
B.5.2. Is contact information provided?	1	DR	Yes		
				OK	OK
<b>C. Duration of the Project/ Crediting Period</b> <i>It is assessed whether the temporary boundaries of the project are clearly defined.</i>					
C.1.1. Are the project's starting date and operational lifetime clearly defined and reasonable?	1	DR	Starting Date:01/12/2000 The first PO on Enercon for four 230Kw Enercon Machines by KPR were released on 01/12/2000 by KPR Mills Pvt Limited. Life Time: 25 years	OK	OK
C.1.2. Is the assumed crediting time clearly defined and reasonable (renewable crediting period of max. two x 7 years or fixed crediting period of max. 10 years)?	1	DR	Fixed crediting period – 10 years.	OK	OK

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





## VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
<b>D. Monitoring Plan</b> <i>The monitoring plan review aims to establish whether all relevant project aspects deemed necessary to monitor and report reliable emission reductions are properly addressed.</i>					
<b>D.1. Monitoring Methodology</b> <i>It is assessed whether the project applies an appropriate baseline methodology.</i>					
D.1.1. Is the monitoring methodology previously approved by the CDM Methodology Panel?	1	DR	ACM 002 Version 06		
D.1.2. Is the monitoring methodology applicable for this project and is the appropriateness justified?	1	DR	The reasons for choosing this monitoring methodology are appropriately justified in the item D.2 of the PDD.	OK	OK
D.1.3. Does the monitoring methodology reflect good monitoring and reporting practices?	-	DR	Yes	OK	OK
D.1.4. Is the discussion and selection of the monitoring methodology transparent?	-	DR	Yes.	OK	OK
<b>D.2. Monitoring of Project Emissions</b> <i>It is established whether the monitoring plan provides for reliable and complete project emission data over time.</i>					
D.2.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for estimation or measuring the greenhouse gas emissions within the project boundary during the crediting period?	-	DR I	Project emission is Zero in case of Wind mill	OK	OK

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



## VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
D.2.2. Are the choices of project GHG indicators reasonable?	-	DR	Refer D.2.1	OK	OK
D.2.3. Will it be possible to monitor / measure the specified project GHG indicators?	-	DR	Refer D.2.1	OK	OK
D.2.4. Will the indicators give opportunity for real measurements of achieved emission reductions?	-	DR	Refer D.2.1	OK	OK
D.2.5. Will the indicators enable comparison of project data and performance over time?	-	DR	Refer D.2.1	OK	OK
<b>D.3. Monitoring of Leakage</b> <i>It is assessed whether the monitoring plan provides for reliable and complete leakage data over time.</i>					
D.3.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining leakage?	-	DR	No Leakage to be considered as per ACM 002	OK	OK
D.3.2. Have relevant indicators for GHG leakage been included?	-	DR	As above	OK	OK
D.3.3. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining leakage?	-	DR	As above	OK	OK
D.3.4. Will it be possible to monitor the specified GHG leakage indicators?	-	DR	As above	OK	OK

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



## VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
<b>D.4. Monitoring of Baseline Emissions</b> <i>It is established whether the monitoring plan provides for reliable and complete project emission data over time.</i>					
D.4.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining baseline emissions during the crediting period?	-	DR	Yes	OK	OK
D.4.2. Is the choice of baseline indicators, in particular for baseline emissions, reasonable?	-	DR	Yes. The formulae indicated for calculation is same as identified in the approved methodology.	OK	OK
D.4.3. Will it be possible to monitor the specified baseline indicators?	-	DR	Yes	OK	OK
<b>D.5. Project Management Planning</b> <i>It is checked that project implementation is properly prepared for and that critical arrangements are addressed.</i>					
D.5.1. Is the authority and responsibility of project management clearly described?	1	DR	Not explained in PDD	CAR3	OK
D.5.2. Is the authority and responsibility for registration, monitoring, measurement and reporting clearly described?	1	DR	<b>As above</b>	OK	OK
D.5.3. Are procedures identified for training of monitoring personnel?	-	I	As above	OK	OK
D.5.4. Are procedures identified for emergency preparedness for cases where emergencies can cause unintended emissions?	-	I	Emergency Plans are not in place.	CL3	OK

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



## VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
D.5.5. Are procedures identified for calibration of monitoring equipment?	-	I	TNEB meters as per their procedures	OK	OK
D.5.6. Are procedures identified for maintenance of monitoring equipment and installations?	-	I	Documented preventive and periodic maintenance check list maintained.	OK	OK
D.5.7. Are procedures identified for monitoring, measurements and reporting?	-	I	Daily, weekly and monthly reporting.	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)	-	I	Electronic data – back-up in CD	OK	OK
D.5.9. Are procedures identified for dealing with possible monitoring data adjustments and uncertainties?	-	I	Data adjustment in case of TNEB meter fails is explained in PDD	OK	OK
D.5.10. Are procedures identified for review of reported results/data?	-	I	In place	OK	OK
D.5.11. Are procedures identified for internal audits of GHG project compliance with operational requirements where applicable?	-	I	Internal audit as per QMS requirements	OK	OK
D.5.12. Are procedures identified for project performance reviews before data is submitted for verification, internally or externally?	-	I	Yes	OK	OK
D.5.13. Are procedures identified for corrective actions in order to provide for more accurate future monitoring and reporting?	-	I	QMS system in place..	OK	OK

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



## VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
<b>E. Calculation of GHG Emissions by Source</b> <i>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.</i>					
<b>E.1. Predicted Project GHG Emissions</b> <i>The validation of predicted project GHG emissions focuses on transparency and completeness of calculations.</i>					
E.1.1. Are all aspects related to direct and indirect GHG emissions, including leakage, captured in the project design?	-	DR	Yes.	OK	OK
E.1.2. Are the GHG calculations documented in a complete and transparent manner?	-	DR	Yes	OK	OK
E.1.3. Have conservative assumptions been used to calculate project GHG emissions?	-	DR	Yes	OK	OK
E.1.4. Are uncertainties in the GHG emissions estimates properly addressed in the documentation?	-	DR	yes	OK	OK
E.1.5. Have all relevant greenhouse gases and source categories listed in Kyoto Protocol Annex A been evaluated?	-	DR	Yes	OK	OK
E.1.6. Are uncertainties of external data sources for emissions reduction estimated?	-	DR	YES	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> <i>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.</i>					
E.2.1. Are potential leakage effects beyond the chosen project boundaries properly identified?	-	DR	Not applicable	OK	OK
E.2.2. Have these leakage effects been properly accounted for in calculations?	-	DR	. Refer E.2.1	OK	OK
E.2.3. Does the methodology for calculating leakage comply with existing good practice?	-	DR	. Refer E.2.1	OK	OK
E.2.4. Are the calculations documented in a complete and transparent manner?	-	DR	. . Refer E.2.1	OK	OK
E.2.5. Have conservative assumptions been used when calculating leakage?	-	DR	. Refer E.2.1	OK	OK
E.2.6. Are uncertainties in the leakage estimates properly addressed?	-	DR	. Refer E.2.1	OK	OK
<b>E.3. Baseline Emissions</b> <i>The validation of predicted baseline GHG emissions focuses on transparency and completeness of calculations.</i>					
E.3.1. Are the baseline boundaries clearly defined and do they sufficiently cover sources and sinks for baseline emissions?	-	DR	Yes	OK	OK
E.3.2. Are the GHG calculations documented in a complete and transparent manner?	-	DR	Yes	OK	OK

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



## VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
E.3.3. Have conservative assumptions been used when calculating baseline emissions?	-	DR	Yes	OK	OK
E.3.4. Are uncertainties in the GHG emission estimates properly addressed in the documentation?	-	DR	Yes	OK	OK
E.3.5. Have the project baseline(s) and the project emissions been determined using the same appropriate methodology and conservative assumptions?	-	DR	Yes	OK	OK
<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 scenario?	-	DR	Yes	OK	OK
<b>F. Environmental and Social Impacts</b> <i>Documentation on the analysis of the environmental and social impacts will be assessed, and if deemed significant, an EIA should be provided to the validator.</i>					
F.1.1. Has an analysis of the environmental and social impacts of the project activity been sufficiently described?	PDD	I	Yes		
F.1.2. Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, is an EIA approved?	-	I	EIA not required	OK	OK

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## VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
F.1.3. Will the project create any adverse environmental or social effects?	-	I	No adverse effect	OK	OK
F.1.4. Are transboundary environmental and social impacts considered in the analysis?	-	I	Explained in PDD	OK	OK
F.1.5. Have identified environmental and social impacts been addressed in the project design?	-	I	Refer above	OK	OK
F.1.6. Does the project comply with environmental legislation in the host country?	-	I	Yes – No specific environmental legislation pertaining to Wind Mills operation	OK	OK
<b>G. Stakeholder Comments</b> <i>The validator should ensure that a stakeholder comments have been invited and that due account has been taken of any comments received.</i>					
G.1.1. Have relevant stakeholders been consulted?	-	DR I	Details of Stakeholders not clear and explained	CAR5	OK
G.1.2. Have appropriate media been used to invite comments by local stakeholders?	-	DR I	YES	OK	OK

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





## VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
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?	-	I	Not required	OK	OK
G.1.4.Is a summary of the stakeholder comments received provided?	-	DR	As above	OK	OK
G.1.5.Has due account been taken of any stakeholder comments received?	-	DR	As above	OK	OK

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

## VALIDATION REPORT

**Table 3 Baseline and Monitoring Methodologies ACM 0002**

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
<b>1. Baseline Methodology</b>					
<b>1. 1. Applicability</b>					
1.1.1. Is the project related to grid connected power generation under the following conditions: Hydro power or Wind energy or Geothermal etc.		DR	Wind energy	OK	OK
1.1.2. Does the project involves switching from fossil fuels to renewable source ?		DR	No	OK	OK
1.1.3. Can Geographical and system boundaries be identified ? Is the Information on grid characteristics available ?		DR	Identified Available	OK	OK
1.1.4. What is the approach taken ?		DR	Explained in the PDD	OK	OK
<b>2. Additionality</b>					
2.1. Was the additionality of the project activity demonstrated and assessed using the latest tool ?		DR	Yes	OK	OK
2.2 Was the preliminary analysis done with respect to starting date ? Were the evidences available for CDM initiatives ?		DR	Yes	OK	OK
<b>2.3 Identification of alternatives:</b>				OK	OK
2.3.1 Was consistency ensured between baseline scenario and base line emissions ?		DR	Yes	OK	OK
2.3.2. Did PDD defined credible alternatives to the project activities ?		DR	Yes,	OK	OK
2.3.3 Was the analysis done with respect legal compliance ?		DR	Yes	OK	OK
2.3.4. Was the option considered under Investment barrier acceptable ? Was it justified ?			Refer 2.3.2	OK	OK



## VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
2.3.5 Was the investment analysis transparent and reproducible and consistent ?			Refer 2.3.2	OK	OK
2.3.6. Were transparent and documented evidences provided ?			Not provided.	OK	OK
2.3.7 . Did PDD identify atleast one viable alternative ?			Yes,	OK	OK
2.3.8- Was the Common Practice analysis justifiable ?			Yes	OK	OK
2.3.9 Was the impact of CDM justifiable ?			Refer 2.3.8	OK	OK
3.1. Do the project activities envisage modification or retrofitting of an existing facility ? If, no, then a.)Does Baseline consider the electricity generation by grid connected power plants and new additions	2	DR	Yes.	OK	OK
3.1.1.b) If , yes then, Does baseline retrofit level considered ? Is the replacement time point conservative ? Are the calculations for the combined margin based on data from official source ?	2	DR	See 1.1.1	OK	OK
3.2. Was the dispatch data analysis was given preference to calculate OM ?  If No, was there any justification?	2	DR I	Justified	OK	OK
3.3. In case of use of simple OM , What is the % of low-cost / must run sources ?			Explained in the PDD		
3.4 Was OM calculation transparent ?			YES		
3.5 Was BM calculation transparent ?			CEA data has not been used	CL3	OK
4. Monitoring Methodology					



## VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
4.1. Was the applicability of defined methodology explained ?			Yes	OK	OK
4.2 Did the methodology include : i) Electricity generation ii) Data needed to recalculate OM and BM.			YES	OK	OK
4.2 Did PDD consider only the CO2 from fossil fuels?			Only from the Thermal Generation	OK	OK
4.3 Were the baseline emission Parameters consistent with Baseline options ?			Yes	OK	OK
4.4 Was the Baseline data in line with IPCC guidelines ?			Yes	OK	OK
2.3. Quality Control (QC) and Quality Assurance (QA) Procedures					
2.3.1. Did all measurements use calibrated measurement equipment that is regularly checked for its functioning?	2	DR I	Verified and found okay	OK	OK
2.3.2. Are the data double checked against commercial data?	2	DR I	Verified and found okay	OK	OK

Table 4 Legal requirements

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
1. Legal requirements					
1.1. Is the project activity environmentally licensed by the competent authority?		DR I	Not required	OK	OK



## VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
1.2. Are the conditions of the environmental license being met?		DR I	Not applicable	OK	OK
1.3 Are the conditions of the Designated National Authority being met?		I	Refer A.3.2	OK	OK




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 VALIDATION REPORT
 

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**Table 5 Resolution 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>CAR1</b> DNA approval was not available	A 3.2	DNA approval has been obtained on.	The explanation given is adequate and the corrective action is vacated
<b>CAR 2</b> Unique identification of the project activity such as Plot No. / Survey No or Latitude and Longitude with direction etc. are not indicated.	A.5.1.4	The Survey nos. of the WEGs are now provided in the revised PDD version 03 as Appendix 1	The explanation and the correction given in the PDD are adequate and the corrective action is vacated
<b>CAR 4</b> Additionality is not convincing. Barriers presented in the PDD do appear to be prohibitive.	B3.1	Investment analysis approach has been adopted and other barriers have been explained in Version 03.	The explanation and the correction given in the PDD are adequate and the corrective action is vacated
<b>CAR 3</b> The authority and responsibility of project management was not explained clearly in PDD.	D.5.1	The authority and responsibility of project management is now explained in revised PDD version 03 in section D.5.1	The explanation given is adequate and the corrective action is vacated



## 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>CAR 5</b> Stake Holders meeting was held on 25/10/05 . However it was not included in PDD. The summary of comments was not recorded.	G.1.1	The process of obtaining land and consent from the local administration has been explained in Version 03 of the PDD.	The explanation given is adequate and the corrective action is closed. Evidence is now available



## VALIDATION REPORT

**Appendix 2****Due account of comments received from a global Stakeholder**

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
1.	Mr Peter Smith smith_projects@yahoo.co.uk	30/11/2006	<b>1. The additionality in the Project is very vague and debatable. The evidence provided is inadequate and does not adequately demonstrate additionality. It is not clear what barriers were envisaged and how CDM would help. DOE to clarify.</b>	<p>The additionality of the project is based on the following arguments:</p> <ol style="list-style-type: none"> <li>1. Investment risk – The post tax equity IRR for the project is 12.36% without CDM revenue and this is much less than the benchmark equity IRR of 16% for power projects in India (as per CERC guidelines). The project is hence financially unattractive without CDM revenue.</li> <li>2. Regulatory risk - The power policy in Tamil Nadu is not conducive for Windmill installations. This can be seen from the</li> </ol>	<p><i>The verification of barriers has been verified in a very exhaustive manner. Every barrier has been thoroughly investigated and confirmed. This validation of this project has taken nearly a year for completion. The project proponent has taken the investment analysis approach to reinforce the explanation of the barrier. The explanation provided by the project proponent if fully endorsed by us.</i></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>2. The details of the stakeholder analysis is very inadequate. Little or no analysis is given.</p>	<p>wheeling and banking charges and its variation during the life of the project.</p> <p>3. Not a common practice – The investors decided to invest in the project in the period when the investment in WEGs was on a decline in the state of Tamil Nadu.</p> <p>The land used for implementation of project was not used for agriculture or any other economic activities, the agencies involved in the land acquisition carried out meetings with the landowners (landowners and prominent people of villages) and apprised them about the proposed project activity.</p>	<p><i>Evidence on the process of obtaining clearances (NOCs) from the village administration as well the other authorities has been provided to the DOE during the site visits.</i></p> <p><i>The documentary and other material provided including discussions with the local village administrations is</i></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>The meetings were carried out with two motives</p> <ul style="list-style-type: none"> <li>- Transparency in land acquisition price, so that all the stakeholders should get the same price for their land and open negotiations in front of prominent villagers can be carried out.</li> <li>- If there are any issues related to end use of the land, the same may be resolved using the available public platform.</li> </ul> <p>The villagers had no reservations towards selling of their land for implementation of wind turbines except the following</p> <ul style="list-style-type: none"> <li>- The villagers should not be deprived of their right of way and boundary walls should not be constructed.</li> </ul>	<p><i>deemed sufficient.</i></p> <p><i>The explanation provided by the project participant is considered satisfactory and acceptable.</i></p> <p><i>In India, the Host Country approval is given based on the consideration of CDM by the project proponent. Such an approval has also</i></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>- Job opportunities, if available with proposed activity of electricity generation, should be open to villagers / local habitants.</p> <p>Further, the following stakeholders were also consulted:</p> <p>A) The state electricity utility (TNEB) is responsible for entering into a wheeling and banking agreement with the project proponent. The agreement is sufficient evidence for the consent of the TNEB, and the project is continuously supplying electricity to TNEB from its date of commissioning.</p> <p>B) The local villagers and land owners have been consulted before and after implementation of project (at the time of validation of the</p>	<i>been given to this project</i>



## 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>3. The proof of taking CDM into consideration at the outset, is inadequate and unsatisfactory. This is not the way to prove Step 0.</p>	<p>candidate CDM project) and they have confirmed their support for the implemented project. The No Objection Certificate from the villages issued by the Village Governing Council have been provided to the DNA and HCA was issued thereafter.</p> <p>Board resolutions of meetings held at the head office of the investors have been submitted to the DOE. The extracts of the meeting highlight that CDM revenue was considered as a possible revenue stream to give stability to the finances, during the inception of the renewable energy project, wind energy in this case. These meetings were held prior to the decision of</p>	<p><i>The explanation provided by the project proponent is considered sufficient and satisfactory.</i></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>investment in the wind project, indicating that carbon credits were seriously considered before taking any further step towards investment in the wind turbines.</p> <p>Further, the project activity started its operations in 29th March 2001 (Bogampatti WEGs), which falls between 1<sup>st</sup> Jan 2000 and the date of the registration of the first CDM project activity. Documentary evidence of the same is available and has been provided to DOE during validation. Further the project was submitted for validation prior to 31<sup>st</sup> December 2005 and hence is claiming retroactive credits.</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
			4. Are the projects sale to board or for captive? The analysis seems to interchange these issues in different places and hence the argument becomes weaker, since the best of both cannot be used.	The project activity generates electricity for captive use. This has been clearly mentioned in the PDD in section A2. The option of sale to EB has not been discussed in the PDD. None of the additionality arguments are for a sale to EB option.	<i>The explanation provided by the project proponent is considered sufficient and satisfactory.</i>