



VALIDATION REPORT

RATNAMANI METALS & TUBES LIMITED

“13.25 MW WIND POWER GENERATION BY RMTL, IN KUTCH, GUJARAT”

Report No: 53304508- 07/86

TÜV NORD CERT GmbH
JI/CDM Certification Program
Langemarckstrasse 20
45141 Essen, Germany
Phone: +49-201-825-3335
Fax: +49-201-825-3290
www.tuev-nord.de
www.global-warming.de

Date: 2009-March-26

Date of first issue: 2008-10-14	Project No.: 53304508- 07/86
Approved by: Mr. E. Krupp	OrganEcofrentional unit: TUV NORD JI/CDM Certification Program
Client: RATNAMANI METALS & TUBES LIMITED	Client ref.: Mr. Katta Vimal

Summary/Opinion:

Ratnamani Metal & Tubes Limited (RMTL) has commissioned the TÜV NORD JI/CDM Certification Program (CP) to validate the project: **"13.25 MW Wind Power Generation by RMTL,in Kutch,Gujarat "** with regard to the relevant requirements of the UNFCCC for CDM project activities, as well as criteria for consistent project operations, monitoring and reporting. UNFCCC criteria include article 12 of the Kyoto Protocol, the modalities and procedures for CDM (Marrakech Accords), the simplified modalities and procedures for small scale CDM project activities of annex II to decision 21/CP.8 and the relevant decisions by COP/MOP and CDM Executive Board.

The project (clean renewable electricity generation) intends to reduce GHG emissions by installation of wind turbines using renewable source of energy.

A risk based approach has been followed to perform this validation. In the course of the draft validation 6 Corrective Action Requests (CARs) and 2 Clarification Requests (CRs) were raised and successfully closed.

The review of the project design documentation and additional documents related to baseline and monitoring methodology; the subsequent background investigation, follow-up interviews and review of comments by parties, stakeholders and NGOs have provided TÜV NORD JI/CDM CP with sufficient evidence to validate the fulfilment of the stated criteria.

In detail the conclusions can be summarised as follows:

- The project is in line with all relevant host country criteria (India) and all relevant UNFCCC requirements for CDM. Project activity approval has been obtained from National CDM Authority as DNA of India vides the Host Government Approval (HGA) dated 23rd January 08.
- The project additionality is sufficiently justified in the PDD.
- The monitoring plan is transparent and adequate.
- The calculation of the project emission reductions is carried out in a transparent and conservative manner, so that the calculated emission reductions of 239600 t CO_{2e} is most likely to be achieved within the 10 years (fixed) crediting period.

The conclusions of this report show, that the project, as it was described in the project documentation, is in line with all criteria applicable for the validation.

Report No.: 53304508- 07/86	Subject Group: Environment
Report title: 13.25 MW Wind Power Generation by RMTL, in Kutch, Gujarat	
Work carried out by: Asim Kumar Jana Pankaj Patel	
Work reviewed by: Mr M Borekar, Ms K. Beyer	
Date of this revision: 2009-03-26	Rev. No.: 01
Number of pages: 98	

Indexing terms

Climate change
CDM
Validation
Kyoto Protocol

☒ No distribution without permission from the Client or responsible organisational unit

☐ Limited distribution

☐ Unrestricted distribution

Abbreviations

BAU	Business as usual
CA	Corrective Action / Clarification Action
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
CO₂	Carbon dioxide
CO_{2e}	Carbon dioxide equivalent
COP	Conference Of Parties
CP	Certification Program
CR	Clarification Request
DNA	Designated National Authority
EB	CDM Executive Board
EIA	Environmental Impact Assessment
GHG	Greenhouse gas(es)
HGA	Host Government Approval
I	Interview
kW	Kilowatt
kWh	Kilowatt hour
MOP	Meeting Of Parties
MOV	Means Of Verification
MP	Monitoring Plan
MWh	Megawatt hour
MW	Megawatt
ODA	Official Development Assistance
PDD	Project Design Document
RMTL	Ratnamani Metal & Tubes Limited
QC/QA	Quality control/Quality assurance
SSC	Small-Scale
UNFCCC	United Nations Framework Convention on Climate Change
WTG	Wind Turbine Generator

Table of Contents	Page
1 INTRODUCTION	5
1.1 Objective	5
1.2 Scope	5
1.3 GHG Project Description	6
1.3.1 Project Scope	6
1.3.2 Project Parties	6
1.3.3 Project Entities	7
1.3.4 Project location	7
1.3.5 Technical project description	7
2 VALIDATION TEAM.....	9
3 METHODOLOGY.....	10
3.1 Validation Protocol	10
3.2 Review of Documents	12
3.3 Follow-up Interviews	12
3.4 Resolution of Clarification and Corrective Action Requests	13
3.5 Public Stakeholder Comments	13
3.6 Finalising the report	13
4 VALIDATION FINDINGS	15
4.1 Participation Requirements	16
4.2 Project design	16
4.3 Baseline and Additionality	17
4.4 Crediting Period	27
4.5 Monitoring Plan	27
4.6 Calculation of GHG Emissions	27
4.7 Environmental Impacts	27
4.8 Comments by Local Stakeholders	27
5 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS.....	29
6 VALIDATION OPINION	30
7 REFERENCES	31
ANNEX: VALIDATION PROTOCOL.....	36
CERTIFICATES OF VALIDATION TEAM MEMBERS	97

1 INTRODUCTION

Ratnamani Metals & Tubes Limited, facilitated by Emergent Ventures, has commissioned the TÜV NORD JI/CDM Certification Program (CP) to validate the project: *"13.25 MW Wind Power Generation by RMTL, in Kutch, Gujarat"* with regard to the relevant requirements for Small – Scale CDM project activities.

1.1 Objective

The purpose of this validation is to have an independent third party assess the project design. In particular the project's baseline, the monitoring plan (MP), and the project's compliance with

- the requirements of Article 12 of the Kyoto Protocol; the CDM modalities and procedures as agreed in the Marrakech Accords under decision 17/CP.7; the annex to the decision; the simplified modalities and procedures for small scale CDM project activities contained in annex II to decision 21/CP.8 and subsequent decisions made by COP/MOP & CDM Executive Board and
- other relevant rules, including the host country (India) legislation and sustainability 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 seen as necessary to provide assurance to stakeholders on the quality of the project and its intended generation of certified emission reductions (CER).

1.2 Scope

The validation scope is given as an independent and objective review of the project design, the project's baseline study and monitoring plan which are included in the PDD and other relevant supporting documents.

The items covered in the validation are described below:

- **UNFCCC & Host Country Criteria**
 - UNFCCC/Kyoto Protocol requirements, in particular, the requirements of the CDM as set out in decision 17/CP.7 (Marrakech Accords), the present annex, the simplified modalities and procedures for small scale CDM project activities of annex II to decision 21/CP.8 and relevant decisions by COP/MOP & CDM Executive Board
 - Host country requirements / criteria
- **CDM Project Description**
 - Project design
 - Project boundaries
 - Predicted CDM project GHG emissions
- **Project Baseline**
 - Baseline methodology
 - Baseline GHG emissions

- **Project Additionality**
- **Monitoring Plan**
 - Monitoring methodology
 - Indicators/data to be monitored and reported
 - Responsibilities
- **Background investigation and follow up interviews**
- **Global Stakeholder Consultation**
 - Publishing the PDD on TÜV NORD website
 - Review of comments
- **Draft validation reporting with CARs & CRs, if any**
- **Final validation reporting.**

The information included in the PDD and the supporting documents were reviewed against the requirements and criteria mentioned above. The TÜV NORD JI/CDM CP has, based on the recommendations in the Validation and Verification Manual^{VVM}, 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 based on the information made available to TÜV NORD JI/CDM CP and on the contract conditions.

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

1.3 GHG Project Description

1.3.1 Project Scope

The considered GHG project can be classified as a small-scale CDM project in the sector given in Table 1-1 (according to List of Sectoral Scopes of UNFCCC).

Table 1-1: Project Scope

No.	Project Scope
1	Renewable energy projects

1.3.2 Project Parties

India as a non Annex-I party is involved in the project activity.

1.3.3 Project Entities

The following entities are involved in the developing of the project:

Project Participant : Ratnamani Metals and Tubes Ltd
17, Rajmugat Society Naranpura Char Rasta, ,
Ankur Road, Naranpura
Ahmedabad - 380 013
Gujarat

Contact person: Mr. Vimal Katta
Mob-98795 56602
Email ID-vkatta@ratnamani.com

Project Consultant: Emergent Ventures
C-2910, Sushant Lok-I
Gurgaon, Haryana 122 002
Phone : +91-124-4102980

Contact Person: Ms. Subuddhi Banthia
E-mail:subuddhi@emergent-ventures.com
Mobile: 91-9818740958

1.3.4 Project location

The project activity takes place in three villages namely Arikhana, Suthri, Vanku in the district of Kutch. Kutch is well connected by road (National Highway No. 15) and also has a domestic airport at Bhuj. It is also connected by railways and the nearest railway station is in Bhuj. The unique identification of each WTG and latitude – longitude of kutch region is prescribed in PDD section A 4.1.4.

1.3.5 Technical project description

The project activity involves setting up eight (8 X 1.5 MW) and one (1X 1.25 MW) wind energy generators supplied by Suzlon with an aggregated installed capacity of 13.25 MW. The generated electricity will be sold to the grid of Gujarat Urja Vikas Nigam Limited (interconnected with western regional grid of India) under power purchase agreement and also used for captive consumption for which the project proponent has entered in to agreement with Gujarat Energy Transmission Corporation Limited and Paschim Gujarat Vij Company Limited under wheeling agreement. The project activity was commissioned in a phased manner starting from 31/03/2006. The project is estimated to exports an average of 26.69 GWh of net electricity per year based on a plant load factor of 23%.

This project is intended to reduce CO₂ emissions to the extent of electricity displaced from the regional grid. The estimated amount of emission reductions over the chosen 10-years “fixed crediting period” is **2,39,600 tCO₂e** (acc. to the PDD). The estimated amount of emission reductions per annum are 23,960 tCO₂e.

Technical and operational data^{/TC/} :

Technical specifications of Suzlon 1500 kW WTG is given below.

Wind Energy Generator	
Manufacturer / Model	Suzlon / S-82
Nominal electrical output	1.5 MW
Rotor diameter	82 Meters
No. of rotor blade	3
Blade material	Glass Reinforced Plastic (GRP)
Generator	Asynchronous generator 4 pole
Braking system	Aerodynamic brakes and Mechanical brakes
Tower	79 Meters
Wind Energy Generator	
Manufacturer / Model	Suzlon / S-82
Nominal electrical output	1.5 MW
Rotor diameter	82 Meters
No. of rotor blade	3
Blade material	Glass Reinforced Plastic (GRP)
Generator	Asynchronous generator 4 pole
Braking system	Aerodynamic brakes and Mechanical brakes
Tower	79 Meters
Wind Energy Generator	
Manufacturer / Model	Suzlon / S-82
Nominal electrical output	1.5 MW
Rated Voltage	690 V
Rotor diameter	82 Meters
No. of rotor blade	3
Blade material	Glass Reinforced Plastic (GRP)
Generator	Asynchronous generator 4 pole
Braking system	Aerodynamic brakes and Mechanical brakes
Tower	79 Meters

Technical specifications of Suzlon 1250 kW WTG is given below.

Wind Energy Generator	
Manufacturer / Model	Suzlon / S-64
Nominal electrical output	1.25 MW
Rated Voltage	690 V
Rotor diameter	64Meters
No. of rotor blade	3
Blade material	Glass Reinforced Plastic (GRP)
Generator	Asynchronous generator 4 pole
Braking system	Aerodynamic brakes and Mechanical brakes
Tower	65 Meters

2 VALIDATION TEAM

The Validation team was led by:

- **Asim Kumar Jana**, TÜV Nord -Mumbai, India. Mr. Jana, M. Tech (Env Engg), Dipl in Industrial Safety, is a TÜV-CERT Lead auditor for ISO 9001/14001 and OHSAS 18001 and certified energy auditor by Bureau of Energy Efficiency of India. Currently he is Head –Energy and Carbon Services for TÜV Nord India operation. He is an appointed assessor for TÜV NORD JI/CDM Certification Program and participated already several CDM project (pre-) validation.

For this validation he was assisted by:

- **Pankaj Patel**, TÜV Nord -Baroda, India is TÜV-CERT auditor for ISO 9001/14001 and TS 16949. He has performed a number of CDM validation and verification functions of several projects. He is an appointed assessor for JI/CDM certification program of TÜV NORD.
- **Hemang Shah**, TUV Nord – Vadodara. India. Mr Shah M.E.(Env Engg), Dip. Industrial Safety is a Lead Auditor ISO 14001. He is an appointed CDM Expert for JI/CDM certification program of TÜV NORD CERT GmbH. He has received extensive training in the CDM validation & verification process.

Trainees that attended this validation:

- **Saroj Sahoo**, TUV-Nord, Vadodara, India. He is an appointed CDM Trainee for JI/CDM certification program of TÜV NORD CERT GmbH. He has received training in the CDM validation & verification process

The technical review is conducted by:

- **Katja Beyer**. Ms. Beyer is an environmental scientist and has received extensive training in technical aspects, CDM validation and verification and QM. She is an appointed expert for the JI/CDM CP of TÜV NORD.

The validation report is verified by:

- **Eric Krupp**. Mr. Krupp works at TÜV NORD as an approved emission verifier within the European Emission Trading Scheme. Mr. Krupp is an authorized JI/CDM assessor and deputy head of the JI/CDM Certification Program of TÜV NORD.

3 METHODOLOGY

The validation of the project was carried out from Feb '08 to Sept '08. It was divided into 2 phases: The pre-validation and the final validation.

The pre-validation process consisted of the following three sub-phases:

- A desk review of the PDD (incl. annexes) and supporting documents with the use of a customised validation protocol^{/CPM/} according to the Validation and Verification Manual^{/VVM/};
- Back ground investigation and follow-up interviews with personnel of the project proponent, the consultant, legal authorities and other stakeholders;
- Reporting of validation findings taking into account the public comments received on TÜV NORD website.

The draft validation report includes Corrective Action and Clarification Requests (CAR and CR) identified in the course of this validation.

A **Corrective Action Request** is established if

- mistakes have been made in assumptions or the project documentation which directly will influence the project results,
- the requirements deemed relevant for validation of the project with certain characteristics have not been met or
- there is a risk that the project would not be registered by the UNFCCC or that emission reductions cannot be verified and certified.

A **Clarification Request** is issued where information is insufficient, unclear or not transparent enough to establish whether a requirement is met.

The final validation started after issuance of proposed corrective action (CA) of these CAR and CR by the project proponent. The validator has assessed the proposed CA with a positive result and after the closure of these CAR and CR the project proponent has issued the final version of the PDD. On the basis of this the final validation report and opinion were issued.

3.1 Validation Protocol

In order to ensure consideration of all relevant SSC assessment criteria, a validation protocol was used. The protocol shows, in a transparent manner, criteria and requirements, means of verification and the results from pre-validating the identified criteria. The validation protocol serves the following purposes:

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

The validation protocol consists of three tables: Table 1 (Mandatory Requirements); Table 2 (Requirement Checklist); and Table 3 (Resolution of Corrective Action and Clarification Request) as described in Figure 1.

The completed validation protocol is enclosed in Annex to this report identifying **6** Corrective Action Requests and **2** Clarification Requests.

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

Validation Protocol Table 2: Requirement checklist				
Checklist Question	Reference	Means of verification (MoV)	Comment	Draft and/or Final Conclusion
<i>The various requirements in Table 1 are linked to checklist questions the project should meet. The checklist is organised in seven different sections. Each section is then further sub-divided. The lowest level constitutes a checklist question.</i>	<i>Gives reference to documents where the answer to the checklist question or item is found.</i>	<i>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.</i>	<i>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.</i>	<i>This is either acceptable based on evidence provided (OK), or a Corrective Action Request (CAR) due to non-compliance with the checklist question (See below). Clarification is used when the validation team has identified a need for further clarification.</i>

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

Figure 1: Validation protocol tables

3.2 Review of Documents

The draft PDD^{/PDD1/} submitted by Ratanamani Metals & Tubes Limited in February 2008 and supporting background documents related to the project design and baseline were reviewed.

Furthermore, the validation team used additional documentation by third parties like host party legislation, technical reports referring to the project design or to the basic conditions and technical data.

The documents that were considered during the validation process are given in chapter 7 of this report. They are listed as follows:

- Documents provided by the project proponent (Table 7-1)
- Background investigation and assessment documents (Table 7-2)
- Websites used (Table 7-3).

In order to ensure the transparency of the decision making process, the reference codes listed in tables 7-1 to 7-3 are used in the validation protocol and – as far applicable – in the report itself.

3.3 Follow-up Interviews

On 17-18/04/2008, the TÜV NORD JI/CDM CP performed Pre validation visit with the project proponent. During this visit, as well as earlier and after, interviews with the project proponent, the consultant, project stakeholders and with local authorities were carried out to confirm selected information and to resolve issues identified in the document review.

The key interviewee and main topics of the interviews are summarised in Table 3-1.

Table 3-1 Interviewed persons and interview topics

Interviewed Persons / Entities	Interview topics
Project proponent representatives	<ul style="list-style-type: none"> - Chronological description of Project - Technical details of the project realisation - project feasibility, designing, engineering, operational life time - Management decision on CDM - Equipment Performance data - Host Government Approval - Post registration involvement of Annex-I Party - Approval procedures and status - Quality and quality management system - Monitoring and measurement equipment - Project activity starting date and commissioning date - Crediting period - Project activity starting date

Interviewed Persons / Entities	Interview topics
	<ul style="list-style-type: none"> - CER allocation /ownership - Baseline study assumptions - Sustainable development issues - Power Generation & Metering system - Analysis of Environmental Impact - Analysis of local stake holder consultation - Emergency response system - Roles & responsibilities, competency and training of the staff members w.r.t project management, monitoring and reporting - Operational Data - technical specification, capacity, estimated life time of the project plant units
Project Developer	<ul style="list-style-type: none"> - Editorial aspects of PDD - Debundling aspects - Procedural aspects - Base line study, project emissions, leakage and additionality - Details of emission reduction calculation

A detailed list including the functions or designations of the interviewed persons is given in chapter 7 (cp. Table 7-4). This table also includes reference codes to be used in the validation protocol.

3.4 Resolution of Clarification and Corrective Action Requests

In order to remedy any mistakes, problems or any other outstanding issues which needed to be clarified for positive conclusion on the project design, CARs and CRs were raised.

In this validation 6 CARs and 2 CRs were raised.

The CARs / CRs are documented in the annex and addressed in Chapter 4.

3.5 Public Stakeholder Comments

3.6 According to the modalities for the validation of CDM projects, TÜV NORD JI/CDM CP published the draft PDD on its website www.global-warming.de on 07th March 08 and invited comments within 30 days, until 6th April 2008 by parties, stakeholders and UNFCCC accredited non-governmental organizations. No comment was received

3.7 Finalising the report

The draft validation report containing a set of CARs & CRs was submitted to the project proponent. The project design document was revised addressing the CARs & CRs issued by TÜV NORD JI/CDM CP. After reviewing the revised and resubmitted project documentation^{/PDD2/}; resolving the CARs & CRs raised and outstanding concerns TÜV NORD JI/CDM CP issues the final validation report and opinion.

In the course of this validation the most recent version of the CDM-SSC-PDD template, i.e. ver 03; the valid version of the applied methodology AMS I.D i.e. ver 13 are used which form the basis of the validation opinion.

4 VALIDATION FINDINGS

In the following paragraphs the findings from the desk review of the draft PDD^{PDD1/}, visits, interviews and supporting documents are summarised. This also includes the corresponding corrective action taken by the client and its final assessment.

The results are shown in table 4-1:

Table 4-1: Summary of CAR and CR issued

Validation topic ¹⁾	No. of CAR	No. of CR
General description of project activity (A) - Project boundaries - Participation requirements - Technology to be employed - Contribution to sustainable development	2	-
Project baseline (B) - Baseline Methodology - Baseline scenario determination - Additionality determination - Calculation of GHG emission reductions Project emissions Baseline emissions Leakage - Emission reductions - Monitoring Methodology - Monitoring of Project emissions Baseline emissions Leakage Sustainable development indicators / environmental impacts - Project management planning	3	-
Duration of the Project / Crediting Period (C)	1	-
Environmental impacts (D)	-	1
Stakeholder Comments (E)	-	1
SUM	6	2

¹⁾ The letters in brackets refer to the validation protocol

For an in depth evaluation of all validation items it should be referred to the validation protocol (Annex). Annex also includes all CARs and CRs (Table 3).

4.1 Participation Requirements

India as a non Annex-I party meets all relevant participation requirements. In the Host Government Approval^{/HGA/} dated 23/01/2008, the Indian DNA, National CDM Authority under Ministry of Environment & Forests confirmed the voluntary participation of M/s Ratnamani Metals and Tubes Limited as project participant in the CDM project activity.

An Annex-I party will be identified by the project participants in due time, as per the post registration involvement by Annex-I party provisions (no. 57) made in 18th EB meeting.

This type of project activity is in line with sustainable development policies of the country and national regulation / policy on Environmental Protection, Electricity and Non Conventional Energy ^{/HGA/}. Nevertheless in the Host Government Approval it is stated that the project participant (PP) has to comply with the following conditions:

- PP shall not sell the CERs to any agency/ company/ organization which purchases the CERs using ODA Funds
- PP shall inform the national CDM Authority regarding all transaction details of CERs including the name and address of the party to which CERs were sold within 30 days of transfer of the CERs
- PP shall furnish expeditiously any information, during the lifetime of the project as requested by the National CDM Authority.
- PP shall obtain all statutory clearances and other approvals as required from the competent authorities for setting up of the project
- All transaction shall be subject to supervision of the Executive Board of the CDM, under the authority and guidance of the COP/MOP
- The approval is not transferrable. The authority reserves the right to revoke this host country approval if the conditions stipulated in this approval are not complied with to the satisfaction of the National CDM authority.

Nevertheless, CAR A2 had to be raised in the course of the validation and was successfully closed (ref Annex: Validation Protocol - Table 3).

4.2 Project design

The objective of the 13.25 MW wind power project is to reduce GHG emission by replacing electricity of the western region grid of India which predominantly uses fossil fuel.

The project introduces installation of nine nos. of wind turbine generators (WTG), eight among which are of 1.50 MW and one is of 1.25 MW aggregating total capacity of the project to 13.25 MW. Project is implemented in the state of Gujarat, India. The generated electricity is supplied to the western region grid of India. All WTG are supplied by M/s Suzlon and operation and maintenance of the project activity is also undertaken by same entity. The project design has taken care of the current good practices and indigenously designed safety and environmental features. The project is currently operational, the WTG were commissioned starting from 31/03/2006. The salient features and technical specification of the WTG are described in section A 4.2. of the PDD.

According to sustainable development various social, economic and environmental benefits are intended to be achieved. The installation and operation of the wind turbines help to reduce power shortage. Besides GHG mitigation the project activity leads to conservation of natural resources.

Based on the financial information furnished by the project participants^{/IRR/}, no ODA contributes to the financing of the project. Temporal boundaries of the project are clearly defined. By means of validation interview it was verified that it is not a debundled large scale project activity.

Nevertheless, CAR A1 & CAR A2 had to be raised during the course of validation and were successfully closed (ref Annex: Validation Protocol - Table 3).

4.3 Baseline and Additionality

The selected baseline methodology is the approved baseline methodology "Grid connected renewable electricity generation" (AMS-I.D: Version 13: EB 36). The selected baseline methodology, i.e., AMS-I.D is correctly applied to this type of grid connected renewable generation by wind.

As per paragraph 9 of the approved methodology, baseline is the kWh produced by the renewable generation unit multiplied by an emission factor (measured in kg CO₂e/kWh) calculated in a transparent and conservative manner.

Project proponent has select option (a) of paragraph 9 i.e. A combined margin (CM), consisting of the combination of operating margin (OM) and build margin (BM) according to the procedures prescribed in the 'Tool to calculate the emission factor for an electricity system' for calculating emission factor.

According to the CO₂ Baseline Database (Version – 3.0) published by CEA the combined margin grid emission factor for Western regional grid is 0.8975 tCO₂/MWh (weight factors of $w_{OM} = 0.75$; $w_{BM} = 0.25$ are used). The resultant figure of 0.8975 tCO₂/MWh is deemed to be adequate, transparent as well as conservative.

The combined margin of emission factors (Simple OM and BM) is calculated to be 0.8975 tCO₂/MWh and will fixed ex-ante for the entire crediting period.

Altogether the project activity reduces emissions of 239600 tCO₂e over the ten year fixed crediting period.

The baseline calculation as furnished in the PDD under section B.4, B.6.1 and B.6.3 was also reviewed by the validation team and found adequate.

Relevant national and sectoral policies have been considered such as decisions of the GEDA and the energy policy of the Government of India. The project is also in line with Non conventional Energy Policy.

Additionality

The PP has used the approved methodology AMS ID: 'Grid connected renewable electricity generation' Version 13, Scope 1, EB 36. The applicability of the chosen baseline methodology has been adequately discussed in the PDD. The project envisages generation of 13.25 MW renewable energy using wind, of which 10.95 MW would be supplied to the grid and the balance 2.30 MW would be wheeled to their unit for consumption. The total generation is less than 15 MW, which is the eligibility limit for small-scale project activity. The validation team has also investigated and satisfied itself that the project activity is not a debundled component of a larger project activity and the project proponents have not initiated any other similar project in the previous 2 years and within 1 km boundary. This was verified with the GEDA certificate for share of electricity..

The project scenario is considered additional in comparison to the baseline scenario (grid connected power) and therefore eligible to receive Certified Emission Reductions (CERs) under the CDM.

Demonstration of additionality: The project is a small-scale project activity. Hence, in accordance with paragraph 28 of the simplified modalities and procedures for small scale CDM project activities, the additionality of the project activity has been demonstrated using Attachment A to Appendix B (additionality tool for small scale project activities). As all requirements specified vide § 28 of the simplified modalities and procedures are complied with by the project activity, the adopted approach is assessed to be appropriate for the additionality assessment for this project activity.

The individual arguments presented in the PDD to justify the additionality as well as the assessment of the validation team are summarized in table 4-2.

Table 4.2: Additionality Assessment

Type of barrier [#]	Argument	Assessment
(a)	Project is financially unattractive and would continue to remain financially unattractive even under optimistic assumptions.	<input type="checkbox"/> Argument not justified <input type="checkbox"/> Argument not convincing <input type="checkbox"/> Argument justified but not a decisive barrier <input checked="" type="checkbox"/> Argument justified / significant barrier
(b)	Capacity Utilization Factor (CUF) depends on several factors such as wind velocity, air density, and quality, which is beyond the control of the project proponent	<input type="checkbox"/> Argument not justified <input type="checkbox"/> Argument not convincing <input type="checkbox"/> Argument justified but not a decisive barrier <input checked="" type="checkbox"/> Argument justified / significant barrier
(d)	Most of the costs of wind energy generation are fixed in nature. For this	<input type="checkbox"/> Argument not justified

Type of barrier [#]	Argument	Assessment
	reason the Gujarat Electricity Regulatory Commission (GERC) decided to have a Single Part tariff for wind power. However, this implies a higher investment	<input type="checkbox"/> Argument not convincing <input checked="" type="checkbox"/> Argument justified but not a decisive barrier <input type="checkbox"/> Argument justified / significant barrier
(d)	The project is located in Zone V ¹ with a complicated geology comprising of thrusts and faults. The project area lies in the zone where earthquakes of intensity greater than 9 on the Richter scale occur. There were major earthquakes in the project area in the past, one of them being the 2001 Bhuj earthquake (about 80 Km from the project site)	<input type="checkbox"/> Argument not justified <input type="checkbox"/> Argument not convincing <input checked="" type="checkbox"/> Argument justified but not a decisive barrier <input type="checkbox"/> Argument justified / significant barrier
(d)	CUF may get affected by the non-availability of grid (grid evacuation problem). The transmission unavailability, back-down of generation or part-load operations, which are beyond the control of the investors, is likely to affect the project activity.	<input type="checkbox"/> Argument not justified <input checked="" type="checkbox"/> Argument not convincing <input type="checkbox"/> Argument justified but not a decisive barrier <input type="checkbox"/> Argument justified / significant barrier
(c)	WTGs of 1.25 MW and 1.50 MW capacity installed by the project, are relatively new in India. Not many wind farms have WTGs of such capacity. These are state-of-the-art technology from the manufacturer with newly introduced systems to control and operate and require dedicated management practices. There are risks involved related to installation of high capacity wind turbine generators, which are relatively new in India.	<input type="checkbox"/> Argument not justified <input checked="" type="checkbox"/> Argument not convincing <input type="checkbox"/> Argument justified but not a decisive barrier <input type="checkbox"/> Argument justified / significant barrier
(c)	Wind energy based power generation is not a common practice in the state of Gujarat. Total energy available in the state for the same year was 53410.68 GWh of which 350 GWh was contributed by wind energy. This is nearly 0.6% of total generation.	<input type="checkbox"/> Argument not justified <input type="checkbox"/> Argument not convincing <input type="checkbox"/> Argument justified but not a decisive barrier <input checked="" type="checkbox"/> Argument justified / significant barrier
Assessment of the validation team		<input checked="" type="checkbox"/> Project is additional <input type="checkbox"/> Project is not additional

Classification as per Attachment A to Appendix B of the simplified modalities and procedures

a) investment barrier; b) technological barrier; c) barrier due to prevailing practice; d) other barriers

¹ <http://asc-india.org/seismi/seis-gujarat.htm#7> , Refer Annex 6

Investment Analysis

Project developer has demonstrated financial unattractiveness of the project activity through the investment analysis. TUV has adopted a step-by-step approach to ascertain the accuracy of the conclusion drawn by the project developer. While validating the investment analysis, DOE ensured the following:

- a) that the methodology adopted is strictly in conformity with the Additionality Tool and Guidance on the Investment Analysis issued by EB (period of assessment, computation of cash inflows for IRR, input values used, suitability of benchmark, etc).;
- b) that the assumptions are conservative, (benchmark analysis, PLF, tariff, etc);
- c) that the values are evidenced by acceptable documents (various cost components of project cost, terms of loan like rate of interest, repayment holiday and repayment period, O&M contract charges, depreciation and taxation rates, etc.);
- d) that the subsidies, concessions and benefits accruing to the projects are fully accounted for (accelerated depreciation, tax holiday, tax shield, etc.);
- e) that the accounting and financial management principles adopted are as per the accepted accounting principles and standards (capitalization of assets, block of assets, interest computation, provision of depreciation, accounting of expenditure etc.); and
- f) that the calculations are accurate and all the assumptions are presented in such a way that so that any reader can reproduce the analysis and obtain the same results.

This was sought to be achieved by TUV through a six pronged strategy, viz.,

- a) determining the suitability of the benchmark applied for the type of financial indicator presented;
- b) assessing the parameters and assumptions used in financial indicator calculation and determining the accuracy and suitability of parameters;
- c) cross-checking the parameters with third-party / publicly available sources;
- d) reviewing annual financial reports related to the project participant;
- e) assessing the correctness of computations done and documented; and
- f) subjecting the critical assumptions of the project activity to reasonable variations to determine under what conditions project would become non-additional and the likelihood of occurrence of these conditions.

a) Suitability of financial indicator and benchmark: The project is a small scale project activity and the project developer has used project IRR to demonstrate the additionality of the project. As the objective is to demonstrate the financial unattractiveness of the

project, IRR is an appropriate financial indicator. IRR is increasingly used not only by financial institutions and banks, but also by project developers to make an investment decision. As such, the selection of project IRR as financial indicator to demonstrate the additionality of the project is appropriate.

The project developer has chosen bond rate increased by a suitable risk premium to reflect the project type as the benchmark. Bond rate has been sourced from the Annual Report of the Reserve Bank of India. For risk premium, PP has cited three studies done on the market risk premium for the country, viz., Prof. Rajnish Mehra of University of California, Prof. J.R. Verma of Indian Institute of Management, Ahmedabad and CRISIL, a leading rating agency of India. While Prof. Mehra's study has arrived at a risk premium of 9.7%, Prof. Verma's study has placed it at 8.75%, CRISIL has estimated the risk premium at 8.20%. PP has chosen the lowest of the three, i.e., 8.20%.

In order to arrive at the risk premium for the project type, PP has relied upon the beta (β) value of the listed and quoted wind power project. Using the equity beta of this project, the PP has arrived at the asset beta or unlevered beta using the accepted formula. The asset beta has been estimated at 1.48 for wind power projects. As a conservative measure, PP has assumed a beta value of only 0.75 (50% of observed beta value) to arrive at the risk premium. This risk premium has been added to the bond rate of 7.28% to arrive at the benchmark of 13.4%. The methodology adopted, the source of data, correctness of the data input used and the accuracy of arithmetical calculation have been certified by a financial expert. This is in conformity with the stipulations made in Additionality Tool (Ver 05.2). TÜV has also independently checked and got satisfied with the methodology, correctness of data and computation. Hence, TÜV accepts the benchmark of 13.4% for the project. The project developer has demonstrated that the expected return from the project activity is lower than the benchmark. The PP has also gone a step further and observed that the project IRR is lower than even the Prime Lending Rate (the rate at which bank lends against security for AAA rated borrowers) prevalent at the time.

b) Parameters and assumptions used: The three important parameters, which determine the IRR are project cost, financing pattern, and profitability estimates. The project cost includes, land, WTGs, tubular tower, transformer, electrical items, electrical lines, power evacuation, civil foundation, erection and commissioning, application processing fee. The project cost estimate is conservative, as it does not include any pre-operative expenses. All the constituents of the project cost are based on quotation/purchase orders received/placed .

The project is financed loan and equity. The debt equity ratio of the project works out to 74:26. The loan amount is evidenced by the loan sanction letter.

The profitability estimates of the project, which forms the basis for equity IRR calculation is based on installed capacity, CUF, power tariff, O&M cost for WTGs, O&M cost for infrastructure, GETCO charges, insurance cost, interest, depreciation and taxation. TÜV has checked the assumptions made by the project developer based on which the decision was taken by the Board of Directors to seek CDM benefits and the changes that have taken place therein since then. PP has been asked to incorporate the changes, like CUF, power tariff, rate of interest on term loan, 80IA benefits, tax rate and

tax shield enjoyed by the company². The installed capacity is a computed figures based on the number of WTGs installed and the capacity thereof. The project developer has assumed GERC recommended CUF, i.e., 23%, though the actual CUF achieved by the project developer in the last one year of operation was only 16%. The wheeling charges have been accounted for as per the recommendations of GERC. Power tariff represents weighted average of the tariff at which the power is sold to State Utility (at Rs.3.37/kWh based on the PPA, which is valid for 20 years) and wheeled for self-consumption (the tariff paid by the project developer for power at the time of taking investment decision). O&M cost, GETCO charges and insurance cost are based on O&M contract, debit note and insurance premium payment made by the project developer. Interest is based on detailed computation forming part of the worksheet. The Interest rate and repayment schedule assumed in computation is in conformity with the loan documents. The project developer has adopted straight line depreciation (at GERC recommended rate of 4.5%) in the books and WDV depreciation for computing tax, which are in conformity with accepted accounting principles. The block of assets has been computed for depreciation purpose as per the accepted accounting principles. In computing the income tax liability, the project developer has taken into account the accelerated depreciation, which the wind turbines are eligible and the Tax holiday, which the infrastructure projects are entitled to. The tax rate assumed corresponds to the tax rate³ prevailing at the time of taking decision. Since the project developer is a profit-making company, the tax shield enjoyed on account of accelerated depreciation has been taken as *notional cash inflow*.

c) Cross checking parameters: The cost of WTGs, O&M cost, insurance costs, interest costs, depreciation, tax rate, power tariff have been cross checked with quotations, purchase orders, electricity bills, loan sanction letters, GERC Order, Income Tax Act, PPA entered into by the project developer with the State Utility and the electricity bill. The input costs taken into account appear to be in order.

d) Financial reports of project participant: TUV requisitioned the Annual Reports of the project developer to ascertain whether any of the input values taken could be correlated with the actual experience of the company and the computation of tax shield was appropriate. Since the project developer is engaged in totally different activities, none of the input values taken in the computation can be based on the Annual Report. TUV observed that the developer is a profit-making company and accordingly, the project developer has taken into consideration the tax shield enjoyed on account of accelerated depreciation as *notional cash inflow*..

e) Assessment of correctness of computation: The assessment involves checking the data input taken from quotation/documents, adoption of correct accounting principle and arithmetical accuracy. TUV checked the quotation, bills, debit notes, documents and orders and ensured that right input has been taken in the project cost and projections. The accounting principles adopted with respect to computation of interest, block of assets, depreciation calculation and tax computation are found to be in order. The arithmetical accuracy is also found to be correct.

² The original workings of the PP was based on lower CUF (in line with the norm prevalent than), higher interest rate, not taking into account tax holiday and tax shield and higher rate of taxation.

³ Tax rate has gone up after the project was conceived as the educational cess has been increased from 2% to 3%. To that extent, the project would become all the more additional.

The principle adopted by the project developer for computing IRR is in conformity with the “Guidance on the Assessment of Investment Analysis” issued by EB⁴. IRR has been computed for 20 years. Profit after tax, depreciation and interest on term loan have been taken as cash inflow. To this has been added salvage value and tax shield. Residual value has been taken as salvage value, which includes 100% of land cost and undepreciated portion of other investments, which is reasonable. Considering the wear and tear the WTGs are likely to suffer during the 20 years, they may not command any value.

Based on the above, the IRR of the projects work out to 9.97% in contrast to the benchmark of 13.4%. The project proponent has also observed that the IRR of the project is much less than even the Prime Lending Rates of banks which ranged between 11-11.50% during that period. In the above background, TUV is convinced that the project faces investment barrier; it is, therefore, additional and not a business-as-usual scenario. However, this conclusion was checked by subjecting the critical assumptions to a reasonable variations.

Sensitivity analysis: Since it is a small scale project activity, sensitivity analysis is not mandatory. However, the project developer has demonstrated the robustness of the conclusion arrived at by varying the critical assumptions to a reasonable variation ($\pm 5\%$). The sensitivity analysis has been restricted to 5% for two reasons, viz.,

- a) Guidance on Investment Analysis permits the use of variation less than 10% as it states, “As a general point of departure variations in the sensitivity analysis should at least cover a range of +10% and -10%, unless this is not deemed appropriate in the context of the specific project circumstances”; and
- b) the specific project circumstances.

The project developer has identified capacity utilization, project cost and O&M cost as the most critical assumptions. Accordingly, sensitivity analysis has been conducted to analyze the impact of a change in these 3 variable on the IRR. Of the three factors considered for sensitivity analysis, O&M cost makes very little impact on project IRR as evident from the data given above. That restricts the discussion to only two factors, viz., CUF and project cost. The results of the sensitivity analysis with both $\pm 5\%$ $\pm 10\%$ variations (as required by Annex 45 of EB 41) are given below:

Critical assumptions	Project IRR				
	-10%	-5%	0%	+5%	+10%
Project cost	11.36%	10.64%	9.97%	9.36%	8.79%
CUF	8.34%	9.17%	9.97%	10.76%	11.52%
O&M Cost	10.27%	10.12%	9.97%	9.82%	9.67%

The sensitivity analysis reveals that even under more favourable conditions, the IRR does not cross the benchmark value.

TUV carried out its own independent assessment, which reveals that the project activity would lose additionality if the CUF goes up to 27.6 % or the project cost comes down by 20%. The project is not sensitive to O&M cost at all. TUV considers that such a

⁴ Annex 35; Guidance on the Assessment of Investment Analysis, EB 39,
Page 23 of 98

reduction in project cost or hike in CUF is highly unrealistic and unlikely to happen for the following reasons:

- The CUF considered in projections is 23%, as against 16% obtained by the projects in the last one year. The project developer has pointed out that GERC has recommended a CUF of 23% after an exhaustive study of wind pattern and mapping. TUV agrees with the project developer and is convinced that achievement of higher CUF (higher than 23%) is not possible. This contention also derives its strength from an independent study⁵ conducted by CICERO on the institutional barriers to commercialisation of wind power in India – The case of Gujarat, which states, “*Only a 12% average annual capacity factor has been achieved so far, falling short of the 19% anticipated. Such low operating capacity factors, which have declined over the life of the project in many cases, are indication that wind power development has not been as successful as initially expected*”. In the above background achieving a CUF of more than 23% is not possible.
- Project developer has submitted that the cost taken into computation is based on quotations⁶. Orders have already been placed. The cost, therefore, represents firm cost and as such the question of any reduction in the cost is highly unrealistic. TUV agrees with the argument put forth by the project proponent.

Barrier analysis

Besides investment analysis, project developer has also demonstrated the additionality of the project through barrier analysis. TUV had adopted a three- pronged strategy to validate the barriers identified by the project proponent. In the first place, it evaluated the barrier as to whether the barriers have a clear and definable impact on the financial viability of the project activity. Such barriers having a clear and definable impact on the profitability of the project have been treated as a part of the investment barrier. Secondly, the existence of the barrier *per se* was ascertained with available evidence and interviews. Finally, an evaluation was made as to whether the identified and document-supported barriers present insurmountable hurdle to the project activity.

a) Clear and definable impact on profitability of the project activity: Of the barriers identified by the project developer, TUV does not accept higher capacity of WTGs and non-availability of grid as barriers. In fact, unlike in Tamil Nadu⁷, there have been no specific instances in Gujarat, where the wind power generators were asked to back down generation due to non-availability of grid. While the seismic zone in which the project activity is located and single part of tariff can be construed to be barriers, TUV does not consider them as decisive barriers. Therefore, TUV considers dynamic and unpredictable wind affecting the achievable CUF and prevailing practice are the only barriers which do not lend themselves to a clear and definable impact on the profitability of the project activity. TUV is convinced that in none of these two barriers, it is feasible

⁵ Institutional barriers to commercialisation of Wind power in India – The case of Gujarat, Amal-Lee Amin, Center for International Climate and Environmental Research – Oslo, page 13

⁶ Quotations have been submitted to TUV for verification and validation

⁷ <http://www.blonnet.com/2006/05/31/stories/2006053103621900.htm>

to estimate with any degree of certainty the impact on the profitability of the project activity.

b) Existence of the barrier *per se*: Based on the data, TUV is convinced that the present practice is to use only thermal power generation. Out of the generation of power in Gujarat, wind power accounts for only 0.6%. In contrast, the ratio is 4.1% in Tamil Nadu, 1.5% in Karnataka and 1.1% in Rajasthan. Hence, TUV is convinced that generation of wind power is not a common practice in Gujarat. Since the power generation is dependent upon the vagaries of wind, TUV is convinced that the CUF could come down. The experience of the project itself reveals that it had achieved a CUF of only 16% in the last one year.

c) Evaluation of barriers: TUV believes that these barriers present an insurmountable hurdle and the project developer cannot estimate or forecast the occurrence or otherwise and the extent of impact the project activity would suffer if the barrier becomes a reality. Hence, TUV concludes these barriers really exist for the project activity.

Based on the foregoing, TUV concludes that the project activity faces

- a) investment barrier,
- b) technological barrier, and
- c) other barriers.

Since the project faces three barriers, the validation team has arrived at the conclusion that the project activity is additional and is not a business-as-usual case. The CDM registration would help the project in overcoming the barriers identified above.

Prior consideration of the clean development mechanism:

The project developer has reckoned January 28,2006 as the start date of the project activity. It is the date on which the order for the WTG was confirmed. The project developers have not undertaken any construction or any real action on the implementation of the project activity prior to this date. Since the *real action of the programme activity* had begun on January 28,2006, as per Glossary of CDM terms (Version 03), this date has been treated as the start date of the project activity. The PDD was web-hosted for public comments on March 07, 2008, i.e., after the start date of the project activity.

As the real action of the project activity commenced before the web-hosting seeking public comments, evidence was called for from the project developer to substantiate the claim that the need for CDM benefits was seriously considered before the start of the project activity.

In response, the project developer submitted a certified copies of the Board Resolutions dated January 28, 2006 and January 29, 2007, wherein the Board of Directors, the only competent and authorized body to take decision on setting up of this project activity, had resolved that the CDM benefits are imperative to take up the implementation of the

project activity. The project developer, further substantiated the claim by demonstrating the additionality of the project, which they informed was the basis on which the Board decided to seek CDM benefits to go ahead with the project

TUV verified the documents and inputs used for demonstrating additionality and found that the subsequent changes in the critical parameters, viz., CUF, tariff, interest rate, tax rate, tax holiday and tax shield have only improved the project's viability, though it still continues to be additional. In the above background, TUV is convinced that the project was undoubtedly additional at the time of taking decision. The interest rate and repayment schedule are now based on the loan documents. Based on the documentary evidence submitted and discussions held, TUV is convinced that there was serious consideration of CDM benefits by the Board of Directors and that the project is dependent upon CDM benefits.

The time line presented in section B.5 of the PDD as per EB 41 Annex 46 section 5b indicate that the project proponent has taken parallel action for implementation and registration of the project activity. From the timeline presented it can be seen that before the start date of the project i.e. 28.01.2006, the project proponent had entered in to "Agreement for success fee- post Registration emission Reduction Revenue^{/POT/}" with Ms. Synergy Global Private Limited on 27/12/2005 for another 5MW project pertaining to PP. In continuation to this agreement the PP has placed the letter of intent on 15/06/2006 for extending the scope of this agreement to 1.25 MW WTG installed at Vanku and another 8 number of 1.5 MW WTGs to be installed. (I.e. total 13.25 MW WTGs belonging to this project activity). The confirmation of the acceptance of the letter of intent dated by Ms. Synergy Global was done on 19/06/2006. Management decision for the additional seven 1.5 MW WTGs was taken on 29/01/2007. This shows that the PP had initiated the parallel action to secure CDM status in parallel with the project implementation.

In the month of March 2007 due to the slow progress of the earlier appointed consultant, the PP cancelled to LOI on 07/03/2007 and started looking for other consultants. This process was started formally on 24.04.2007. Meanwhile the last WTG of the project activity was commissioned on 30/06/2006. This shows that the PP had initiated the actions to secure CDM status in parallel with the project implementation. Finally the contract for registration of this 13.25 MW project was awarded to Ms. Emergent Ventures on 26.09.2007. Subsequent to this the enquiry to the DOE was floated on 07/11/2007, the application to MOEF for HCA was made on 26/11/2007, the HCA was received on 28/01/2008 and the order to DOE was placed on 06.02.2008.

The credible evidences for the above milestones have been verified by the DOE and based on the same DOE is convinced that the real and continuing efforts were made to achieve the CDM status subsequent to the project start date and parallel to project implementation.

Nevertheless, CAR B1 had to be raised and was successfully closed (ref Annex: Validation Protocol – Table 3).

4.4 Crediting Period

The intended crediting period of the project is 01/09/2008 to 31/08/2018 (Fixed Crediting period). The starting date of the crediting period is 01/09/2008 or a date of registration not earlier than the date of registration.

Nevertheless, CAR C1 had to be raised and was successfully closed (ref Annex: Validation Protocol – Table 3)

4.5 Monitoring Plan

The project applies monitoring methodology

AMS-I.D.: "Grid-connected renewable electricity generation" version 13, EB 36

The methodology requires monitoring of electricity generation from the renewable technology installed by the project proponent.

Calibration, periodical testing and maintenance procedures of monitoring equipment are clearly mentioned in the section B.7.2 as per QA/QC procedure of PDD as well as in Annex 4.

Nevertheless, CAR B3 had to be raised and were successfully closed (ref Annex: Validation Protocol – Table 3).

4.6 Calculation of GHG Emissions

As per the methodology, baseline emission are calculated by multiplying electricity supplied by the project activity (GEN) in kWh with Combined margin CO₂ emission factor of WR grid taken from the public data available from database of Central Electricity Authority (CEA) version 03. As the project involves installation of wind turbines using renewable source of energy, there is no project emission from the project activity.

The project intends to reduce GHG emissions to the extent of the difference of baseline emissions and project emissions.

As the energy generating equipment is not transferred from another activity or the existing equipment is transferred to another activity, the leakages are not considered as per the guidelines of approved methodology.

The calculations of the project emission as well as baseline emission are documented in section B.6.3, B.6.1 and in Annex-3 of PDD. For assessment of baseline emission please refer to section B.4

Nevertheless, CAR B2 had to be raised and were successfully closed (ref Annex: Validation Protocol – Table 3).

4.7 Environmental Impacts

Ministry of Environment and Forest i.e. Government of India does not require any Environment Impact Assessment (EIA) of wind turbine projects. The project activity does

not result in any negative impacts on environment. It results in no emission of GHGs and other gases i.e. SO₂ and NO_x common in conventional power generation sources.

Nevertheless, CR D 1 had to be raised and were successfully closed (ref Annex: Validation Protocol – Table 3).

4.8 Comments by Local Stakeholders

Comments, suggestions were invited from one and all on the project activity. A newspaper advertisement detailing about the project activity was published in local daily “Kutch Mitra” on 14/11/2007. A general meeting was conducted in village for discussion on project activity and its impact on people in the area. The meeting was attended by Sarpanch (Village head) - Gram panchayat and the local people in the area. A general meeting was also conducted by project proponent at the project site

A summary of the comments received and a note (through meeting and feed back questionnaire) on how due account was taken of the concerns raised in the above public consultation are included in PDD.

Nevertheless, CR E1 had to be raised and were successfully closed (ref Annex: Validation Protocol – Table 3).

5 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS

According to the modalities for the validation of CDM projects, TÜV NORD JI/CDM CP published the draft PDD on its website www.global-warming.de on 07th March 08 and invited comments within 30 days, until 6th April 2008 by parties, stakeholders and UNFCCC accredited non-governmental organizations. No comment was received.

6 VALIDATION OPINION

Ratnamani Metals & Tubes Limited has commissioned the TÜV NORD JI/CDM Certification Program (CP) to validate the project: “13.25 MW Wind Power Generation by RMTL in Kutch, Gujarat” with regard to the relevant requirements of the UNFCCC for CDM project activities, as well as criteria for consistent project operations, monitoring and reporting. UNFCCC criteria include article 12 of the Kyoto Protocol, the modalities and procedures for CDM (Marrakech Accords), the simplified modalities and procedures for small scale CDM project activities of annex II to decision 21/CP.8 and the relevant decisions by COP/MOP and CDM Executive Board.

The purpose of the project activity is to generate clean and green energy to help combat greenhouse gas emissions from conventional sources of energy. The conclusions of this report show that the project, as it was described in the project documentation, is in line with all criteria applicable for the validation.

A risk based approach has been followed to perform this validation. In the course of the draft validation 6 Corrective Action Requests (CARs) and 2 Clarification Requests (CRs) were raised and successfully closed.

The review of the project design documentation and additional documents related to baseline and monitoring methodology; the subsequent background investigation, follow-up interviews and review of comments by parties, stakeholders and NGOs have provided TÜV NORD JI/CDM CP with sufficient evidence to validate the fulfilment of the stated criteria.

In detail the conclusions can be summarised as follows:

The project is in line with all relevant host country criteria (India) and all relevant UNFCCC requirements for CDM. Project activity approval has been obtained from National CDM Authority as DNA of India vide the Host Government Approval (HGA) dated 23rd January, 2008.

The project additionality is sufficiently justified in the PDD.

The monitoring plan is transparent and adequate.

The calculation of the project emission reductions is carried out in a transparent and conservative manner, so that the calculated emission reductions of **239,600 t CO_{2e}** is most likely to be achieved within the 10 years (fixed) crediting period.

Essen, 2009-03-26



Rainer Winter
TÜV NORD JI/CDM Certification Program

7 REFERENCES

Table 7-1:

Documents provided by the project proponent

Reference	Document
/CP/	Proof of capacity:- Wind energy generators
/CR/	Commissioning reports
/HGA/	Host Government Approval from Ministry of Environment & Forests, Government of India, 4/24/2007-CCC dated 23/01/2008
/IRR/	Financial calculation for the project Activity.
/LSHC/	Proof of local stake holders consultation process <ul style="list-style-type: none"> • Advertisement in “Kutch Mitra” dated 14.11.2007. • MOM for meeting dated 16.11.2007 conducted in village Vanku , AriKhana , Kamad and Suthari. • List / Record of Participants • List of Queries / issues raised by local stakeholders.
/MD/	Management decision dated 28.01.2006 and 29.01.2007
/O&M/	Operation and maintenance contract.
/PDD1/	Web hosted version of Project Design Document Version 01 Dated 18/02/2008
/PDD 2/	Final Project Design Document Version 1.1 Dated 07/08/2008
/PO/	Purchase orders: RMTL/NWM/2009-07/WTG/02 for 5 Numbers of 1.5 MW WTG confirmed on 29.01.2007 RMTL/NWM/2009-07/WTG/03 for 3 Numbers of 1.5 MW WTG confirmed on 29.01.2007 RMTL/KUTCH/SEL-5/05-06 for 1 number of 1.25 MW WTG, Tower, Supply of Electrical items confirmed on 28.01.2006. Amendment to order number RMTL/NWM/2006-07/L/03 for lease of land for installation of 2 number of 1.5 MW WTG confirmed on 29.01.2007 RMTL/NWM/2006-07/L/01 for lease of land for installation of 5 numbers of 1.5MW WTG confirmed on 29.01.2007. RMTL/NWM/2006-07/T/01 for 5 numbers of Tubular Tower for 1.5 MW WTG confirmed on 29.01.2007 RMTL/NWM/2006-07/T/02 for 3 numbers of Tubular Tower for 1.5 MW WTG confirmed on 29.01.2007

Reference	Document
	<p>RMTL/NWM/2006-07/EL/01 for transformers and electrical items for 5 numbers of 1.5 MW WTG confirmed on 29.01.2007</p> <p>RMTL/NWM/2006-07/EL/03 for transformers and electrical items for 3 numbers of 1.5 MW WTG confirmed on 29.01.2007</p> <p>RMTL/NWM/2006-07/ELEC/01 for electrical lines for 5 numbers of 1.5 MW WTG confirmed on 29.01.2007</p> <p>RMTL/NWM/2006-07/ELEC/03 for electrical lines for 3 numbers of 1.5 MW WTG confirmed on 29.01.2007</p> <p>RMTL/NWM/2006-07/E&C/01 for installation and commissioning for 5 numbers of 1.5 MW WTG confirmed on 29.01.2007</p> <p>RMTL/NWM/2006-07/E&C/02 for installation and commissioning for 3 numbers of 1.5 MW WTG confirmed on 29.01.2007</p> <p>RMTL/NWM/2006-07/EVAC/01 for power evacuation facility for 5 numbers of 1.5 MW WTG confirmed on 29.01.2007</p> <p>RMTL/NWM/2006-07/EVAC/02 for power evacuation facility for 3 numbers of 1.5 MW WTG confirmed on 29.01.2007</p> <p>RMTL/NWM/2006-07/CIV/01 for civil work for 5 numbers of 1.5 MW WTG confirmed on 29.01.2007.</p> <p>RMTL/NWM/2006-07/CIV/02 for civil work for 3 numbers of 1.5 MW WTG confirmed on 29.01.2007.</p> <p>RMTL/KUTCH/SGWL5/05-06 for Power evacuation facility for 1 number of 1.25 MW WTG confirmed on 28.01.2006.</p> <p>RMTL/KUTCH/CIVIL/05-06 for civil, electrical , erection and commissioning for 1 number of 1.25 MW WTG confirmed on 28.01.2006.</p> <p>RMTL/KUTCH/05-06/LAND for lease of land for 1 number of 1.25 MW WTG confirmed on 28.01.2006.</p>
/PPA/	Power Purchase and wheeling agreements with State Electricity Board
/POT/	Proofs for timeline.
/SC/	<p>Statutory Clearances:</p> <p>GEDA Permission of Transfer- GEDA/PWF/SGWPL-RMTL/Vanku/9262dated 16/03/2006. (1X1.25 MW WTG).</p> <p>GEDA Permission of Transfer- GEDA/PWF/SGWPL-RMTL/2006-2007/ /Abdasa/8219 dated 03/03/2007. (3 x 1.5 MW WTGs)</p> <p>GEDA Permission of Transfer- GEDA/PWF/SGWPL-RM & TL /Abdasa/8063dated 26/02/2007. (5X 1.5 MW WTGs)</p>

Reference	Document
/SD/	Proof of starting date of the project activity- Purchase order RMTL/KUTCH/SEL-5/05-06 confirmed on 28.01.2006 for 1 number of 1.25 MW WTG, Tower, Supply of Electrical items.
/SLP/	Site layout plan
/XCS/	Baseline and emission reduction calculation spread sheet.

Table 7-2: Background investigation and assessment documents

Reference	Document
/AMS-ID/	AMS ID – “Grid connected renewable electricity generation “ (Version 13).
/CPM/	TÜV Nord JI / CDM CP Manual (incl. CP procedures and forms)
/CEA/	CO ₂ Baseline Database for the Indian power sector. Govt. of India ministry of power (Central electricity Authority database)
/GCP/	UNFCCC: Guidelines for Completing the Simplified Project Design Document (CDM-SSC-PDD) (Version 04, 22 nd December 2006)
/GSC/	No Global Stakeholder Comment received.
/IPCC-RM/	Revised 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Reference Manual.
/IPCC-GP/	IPCC Good Practice Guidance & Uncertainty Management in National Greenhouse Gas Inventories, 2000.
/KP/	Kyoto Protocol (1997)
/MA/	Decision 17/CP.7 (Marrakesh – Accords)
/VVM/	IETA, PCF Validation and Verification Manual (V.4)

Table 7-3: Websites used

Reference	Link	Organisation
/dna-i/	www.cdmindia.nic.in	The Designated National Authority of India
/mnes/	www.mnes.nic.in	Ministry of New and Renewable Energy

Reference	Link	Organisation
/moef/	http://envfor.nic.in/	Ministry of Environment and Forests.
/unfccc/	http://cdm.unfccc.int	UNFCCC

Table 7-4: List of interviewed persons

Reference	Mol ¹		Name	Organisation / Function
/IM01/	V	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Aniruddh Dave	Ratnamani Metals and Tubes Limited
/IM01/	V	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms	Vimal Katta	Ratnamani Metals and Tubes Limited.
/IM02/	V	<input type="checkbox"/> Mr. <input checked="" type="checkbox"/> Ms	Subhuddhi	Emergent Ventures

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

ANNEX

Validation Protocol

ANNEX: VALIDATION PROTOCOL

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

Requirement	Reference	Conclusion
Parties		
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	The project is a unilateral type. The post registration involvement by Annex I party will be as per provisions (decision no 57) made in 18 th EB meeting.
The project shall assist non-Annex I Parties in contributing to the ultimate objective of the UNFCCC.	Kyoto Protocol Art.12.2.	OK
The project shall have the written approval of voluntary participation from the designated national authority of each Party involved.	Kyoto Protocol Art. 12.5a, CDM Modalities and Procedures §40a	The project is a unilateral project and has received a Letter of Approval from the Indian government ^{/HGA/} . The document contains all relevant elements defined for such documents (see EB 16 annex 6).
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, CDM Modalities and Procedures §40a	OK
In case public funding from Parties included in Annex I is used for the project activity, these Parties shall provide an affirmation that such funding does not result in a diversion of official development assistance and is separate from and is not counted towards the financial obligations of these Parties.	Decision 17/CP.7, CDM Modalities and Procedures Appendix B, § 2	As stated by the project participant, no Official Development Assistance is included in the project activity.
Parties participating in the CDM shall designate a national authority for the CDM.	CDM Modalities and Procedures §29	OK



Requirement	Reference	Conclusion
The host Party and the participating Annex I Party shall be a Party to the Kyoto Protocol.	CDM Modalities §30/31a	The host party India is a party to Kyoto protocol
The participating Annex I Party's assigned amount shall have been calculated and recorded.	CDM Modalities and Procedures §31b	OK, The project is unilateral type. The post registration involvement by Annex I party will be as per provisions (decision no 57) made in 18 th EB meeting.
The participating Annex I Party shall have in place a national system for estimating GHG emissions and a national registry in accordance with Kyoto Protocol Article 5 and 7.	CDM Modalities and Procedures §31b	The project is unilateral type. The post registration involvement by Annex I party will be as per provisions (decision no 57) made in 18 th EB meeting.
Additionality		
Reduction in GHG emissions shall be additional to any that would occur in the 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. 12.5c, CDM Modalities and Procedures §43	Yet to be OK. (Refer CAR B1, CAR B2) OK
Forecast emission reductions and environmental impacts		
The emission reductions shall be real, measurable and give long-term benefits related to the mitigation of climate change.	Kyoto Protocol Art. 12.5b	Yet to be OK. (Refer CAR B2, CAR B4) OK
Environmental impacts (only for large scale projects)		



Requirement	Reference	Conclusion
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.	CDM Modalities and Procedures §37c	Yet to be OK. (Refer CR D1) OK
Stakeholder involvement		
Comments by local stakeholders shall be invited, a summary of these provided and how due account was taken of any comments received.	CDM Modalities and Procedures §37b	Yet to be OK. (Refer CR E1) OK
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.	CDM Modalities and Procedures §40	OK.
Other		
The baseline and monitoring methodology shall be previously approved by the CDM Executive Board.	CDM Modalities and Procedures §37e	OK
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.	CDM Modalities and Procedures §45c,d	OK
The baseline methodology shall exclude to earn	CDM Modalities and	OK



Requirement	Reference	Conclusion
CERs for decreases in activity levels outside the project activity or due to force majeure.	Procedures §47	
The project design document shall be in conformance with the UNFCCC CDM-PDD format.	CDM Modalities and Procedures Appendix B, EB Decision	OK
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.	CDM Modalities and Procedures §37f	Yet to be OK. (Refer CAR B4) OK
Requirements for small-scale projects only		
The proposed project activity shall meet the eligibility criteria for small scale CDM project activities set out in § 6 (c) of the Marrakech Accords and shall not be a debundled component of a larger project activity.		OK
The proposed project activity shall confirm to one of the project categories defined for small scale CDM project activities and use the simplified baseline and monitoring methodology for that project category.		OK
If required by the host country, an analysis of the environmental impacts of the project activity is carried out and documented.		NA

Table 2: Requirements Checklist

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
A. General Description of Project Activity <i>The project design is assessed.</i>					
A.1. Project Boundaries <i>Project Boundaries are the limits and borders defining the GHG emission reduction project.</i>					
A.1.1. Are the project's spatial boundaries (geographical) clearly defined?	/PDD/ (A.4.)	DR	<p>1. The unique identification of the project activity is not adequately addressed in the section A.4.1.4 of PDD. The latitude and longitude of all 8 WTG's / Wind Farms must be provided.</p> <p>2. The map is provided highlighting only "Suthari". Other locations are not addressed.</p>	CAR A1	OK
A.1.2. Are the project's system boundaries (components and facilities used to	/PDD/ (B.3.)	DR	The section B.3 of the PDD correctly defines the project system	OK	OK



CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
mitigate GHGs) clearly defined?			boundaries.		
A.2. Participation Requirements <i>Referring to Part A, Annex 1 and 2 of the PDD as well as the CDM glossary with respect to the terms Party, Letter of Approval, Authorization and Project Participant.</i>					
A.2.1. Which Parties and project participants are participating in the project?	/PDD/ (A.3.) /HGA/	DR	The project is a unilateral in kind and India is a host party.	OK	OK
A.2.2. Have all involved Parties provided a valid and complete letter of approval and have all private/public project participants been authorized by an involved Party?	/PDD/ (A.3.) /HGA/ /IM01/	DR, I	Host country approval ^{/HGA/} letter (4/24/2007-CCC dated 23/01/2008 is issued to Ms. Ratnamani Metals & Tubes Limited.	OK	OK
A.2.3. Do all participating Parties fulfil the participation requirements as follows: – Ratification of the Kyoto Protocol – Voluntary participation – Designated a National Authority	/PDD/ / HGA / /unfccc/	DR	Yes, India is a Party to the Kyoto Protocol and has ratified the Protocol on 26 Aug 2002.	OK	OK
A.2.4. Potential public funding for the project from Parties in Annex I shall not be a diversion of official development	/PDD/ (A.4.5, Annex 2)	DR, I	The Project does not involve any public funding.	OK	OK



CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
assistance.	/IM01/				
A.3. Technology to be employed <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.3.1. Does the project design engineering reflect current good practices?	/PDD/ (A.4.3.) /IM 01/	DR, I	The project activity entails the installation of 13.25 MW WTGs (8 X 1.5 MW + 1x 1.25 MW) of reputed manufacturers Suzlon.	OK	OK
A.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?	/PDD/ (A.4.3.) /IM01/	DR, I	The project uses WTGs of reputed manufacturer Suzlon and is proven technology.	OK	OK
A.3.3. Does the project make provisions for meeting training and maintenance needs?	/PDD/ /IM 01/	DR, I	Training and maintenance need has been identified and operation and maintenance contract has been established. This was verified during interview.	OK	OK



CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
A.4. Contribution to Sustainable Development <i>The project's contribution to sustainable development is assessed.</i>					
A.4.1. Has the host country confirmed that the project assists it in achieving sustainable development?	/PDD/ (A.2.) /moef/	DR	Yes, the contribution of sustainable development is confirmed in the HGA.	OK	OK
A.4.2. Will the project create other environmental or social benefits than GHG emission reductions?	/PDD/ (A.2)	DR	The project creates Technological, economic benefits in addition to the environmental or social benefits and GHG emission reductions	OK	OK
Small scale project activity <i>Is it assessed whether the project qualifies as small-scale CDM project activity</i>					
A.4.3. 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?	PDD (A.4.5) /IM01/	DR, I	The justification of chosen project type and category of the project activity is not provided under the section B.2. of PDD in an adequate manner. The installed capacity is 13.25 MW which is less than 15 MW of electricity generation limit.	OK	OK
A.4.4. Is the small scale project activity not a debundled component of a larger	/PDD/	DR, I,	No, The small scale project activity is not a debundled component of a	OK	OK



CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
project activity?	(B.2) /IM 01/ Background Investigation		larger project activity, this is explained in A.4.5 of the PDD		
A.5. General Topics					
A.5.1. Has the PDD been duly filled?	PDD	DR	<p>Related to completeness of PDD:</p> <ol style="list-style-type: none"> 1. The status of project participant as private or public and the column for “name of the party involved” has not been shown is not mentioned in table under section A.3 of PDD 2. Reference to ACM 0002 used is not given under section B.1. of the PDD. 3. Consistency and correctness is required to be maintained 	CAR A2	OK



CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			<p>for the WTG identification code, serial number of WTG, address as in GEDA certificate, as in commissioning report and the sections A.2. and A.4.1.4, of the PDD.</p> <p>4. Under section A.4.3 the Total estimated reduction has been incorrectly shown as 23960</p>		
A.5.2. Has all necessary information been made available to the validator?	Documents provided by the project participants. /IM 01/	I	No, this has been listed out in Table 5-1 of the Draft Validation report and also refer to CAR B1.	Yet to be OK	OK
B. Project Baseline <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.1. Baseline Methodology					



CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
<i>It is assessed whether the project applies an appropriate baseline methodology.</i>					
B.1.1. Does the project apply an approved methodology and the correct version thereof?	/PDD/ (B.) /unfccc/	DR	The project activity applies an approved small scale methodology AMS I.D. version 13.	OK	OK
B.1.2. Are the applicability criteria in the baseline methodology all fulfilled?	/PDD/ (B.2.)	DR	Yes, the baseline methodology is in line with the applicability criteria of the applied baseline methodology	OK	OK
B.2. Baseline Scenario Determination <i>The choice of the baseline scenario will be validated with focus on whether the baseline is a likely scenario, and whether the methodology to define the baseline scenario has been followed in a complete and transparent manner.</i>					



CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
B.2.1. What is the baseline scenario?	/PDD/ (B.4.) /IM 02/	DR, I	The baseline scenario for the project activity is “Electricity delivered to the grid by the project would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations” as it is not a modification or retrofit of an existing electricity generation facility.	OK	OK
B.2.2. What other alternative scenarios have been considered and why is the selected scenario the most likely one?	/PDD/ (B.4.) /IM 02/	DR, I	Methodology does not require other alternative scenarios to be considered.	OK	OK
B.2.3. Has the baseline scenario been determined according to the methodology?	/PDD/ (B.4.) /IM 02/	DR, I	Refer to comment under B.2.2.	OK	OK



CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
B.2.4. Has the baseline scenario been determined using conservative assumptions where possible?	/PDD/ (B.4.) /IM 02/	DR, I	Refer to comment under B.2.2.	OK	OK
B.2.5. Does the baseline scenario sufficiently take into account relevant national and/or sectoral policies, macro-economic trends and political aspirations?	/PDD/ (B.4.) /IM 02/	DR, I	Refer to comment under B.2.2.	OK	OK
B.2.6. Is the baseline scenario determination compatible with the available data and are all literature and sources clearly referenced?	/PDD/ (B.4.) /IM 02/	DR, I	Refer to comment under B.2.2.	OK	OK
B.2.7. Have the major risks to the baseline been identified?	/PDD/ (B.4.)	DR, I	Refer to comment under B.2.2.	OK	OK
B.3. Additionality Determination <i>The assessment of additionality will be validated with focus on whether the project itself is not a likely baseline scenario.</i>					
B.3.1. Is the project additionality assessed according to the methodology?	/PDD/ (B.5.)	DR	Yes the project additionality is assessed according to the methodology	OK	OK
i. Are all assumptions stated in a transparent and conservative	/PDD/	DR	CAR B1		



CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
manner?	(B.5.) /IRR/		<p>Related to additionality:</p> <p>The critical issue related to additionality is that the justification/arguments presented in the section B.5 of the PDD is not inline with the “Attachment A to Appendix B of the simplified modalities and procedures for small-scale CDM project activities”. The other issues with respect to various arguments presented are mentioned below:</p> <ol style="list-style-type: none"> 1. The comparison of capital cost for electricity generation from project activity with that from Coal based power generation and Fuel oil based power generation in DG sets to establish the additionality is not credible as it takes in to .account only the capital cost and not the operating cost which in case of project 	CAR-B1	OK



CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			<p>activity is substantially lower than the two baseline scenario considered.</p> <p>2. For the parameters used in IRR computation, the basis of the values used needs to be specified under section B.5. of the PDD in a specific manner and all the parameters needs to be addressed. (E.g. In the PDD Reference for Project cost is not specific- mentioned as "total for all wind turbines", "Exchange rate for Euro". "Service tax assumption", "Insurance", "MAT applicability and carry forward provision" not addressed in the table under section B.5.. of the PDD.</p> <p>3. As the project activity has already been commissioned and is operational, the assumption for parameter " CUF" needs to be validated</p>		



CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			<p>against the actual “CUF”.</p> <p>4. Hurdle rate has not been specified. The hurdle rate / desired level of IRR should be specified with the computation and reasons for selecting the same for determining the additionality.</p> <p>5. As per PPA full power generated from one Wind mill of 1.25MW and partial power generated from one 1.5 MW WTG is to be used for captive consumption. In the computation of IRR under sheet “Total ER” under cell E18 for three WTG of 1.5 MW the same had not been considered correctly.</p> <p>6. IT benefits accruing to the companies has been restricted to first year, which is not correct. Benefits accrue till four years. This should be accounted for.</p>		



CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			<p>7. The project activity commenced in December 2006. The Education cess was increased to 3% only 2007-08 Budget. The appropriate tax rate should therefore be 33.66% and 11.22% and not 33.99% and 11.33%.</p> <p>8. The salvage value (cost less accumulated depreciation) should be accounted for in the terminal year of the project life.</p> <p>9. Sec. 80IA benefits have not been accounted for in tax computation.</p> <p>10. GERC order does not provide for insurance separately. It is included in the O&M cost of 1.5%. Moreover, the O&M charges provided is already higher than what GERC order has recommended about 2.4%). Further, the basis for assuming a 5% escalation</p>		



CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			<p>beyond 10th year is also not supported by documents.</p> <p>11.As per loan document of ICICI Bank dated 16.03.2007 the moratorium period begins 15 months from the utilization date. The same has to not been addressed correctly in IRR computation under “Cash Flow”.</p> <p>12.Power evacuation application processing charges considered as depreciable cost for computing IRR. The same is not correct.</p> <p>13.The statement, ‘1.5 MW WTGs’ are relatively new’ needs supporting evidence as proof to validate the statement.</p> <p>14.The write up under heading “Summary” on page 17 of the PDD is not appropriate.</p> <p>15.The repayment is in 32</p>		



CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			<p>quarters, whereas it is stated as 32 months in 'Project Cost Worksheet'. Needs correction.</p> <p>16.Since the loan is repaid in 8 years, the purpose of indicating interest rate for 9th year in "Key assumptions Worksheet" is to be clarified.</p> <p>17.Clarification is required as to whether the company adopts WDV depreciation or straight line depreciation in the books. If the company adopts straight line depreciation, the computation of IRR worksheet should be modified. If it adopts WDV depreciation in books, a letter from the statutory auditor of the companies together with latest annual report of the companies may be submitted as evidence.</p>		



CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			<p>18.Row 24 of 'IRR Worksheet' is the addition of row 22, 23 and row 26 of 'Cash Flow Worksheet'. Row 26 of 'Cash Flow Worksheet' is blank. Needs to be corrected.</p> <p>19.When the machinery supplier has given a guarantee for generation for first year(which is higher than the CUF recommended by GERC) and backed it by a penalty clause Tthe guaranteed power generation should be taken into consideration for projections in IRR calculation.</p>		
B.3.2. Is sufficient evidence provided to support the relevance of the arguments made?	/PDD/ (B.5.) /IRR/	DR	Refer CAR B1	Depends on closure of CAR B1	OK
B.3.3. If the starting date of the project activity is before the date of validation,	/PDD/	DR, I	Consideration of CDM benefit was discussed in the Board of Directors	OK	OK



CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
has sufficient evidence been provided that the incentive from the CDM was seriously considered in the decision to proceed with the project activity?	(C.1.1.) /SD/ /MD/ /IM 01/		meeting on 28/01/ 2006.		
B.4. Calculation of GHG Emission Reductions – Project emissions <i>It is assessed whether the project emissions are stated according to the methodology and whether the argumentation for the choice of default factors and values – where applicable – is justified.</i>					
B.4.1. Are the calculations documented according to the approved methodology and in a complete and transparent manner?	/PDD/ (B.6.) /AMS 1C/	DR	Yes, the project activity doesn't cause any project emissions as it is a renewable power generation by the installation Wind Turbine Generators.	OK	OK
B.4.2. Have conservative assumptions been used when calculating the project emissions	/PDD/ (B.6.) /IPCC/	DR	Refer B.4.1	OK	OK
B.4.3. Are uncertainties in the project emission estimates properly addressed?	/PDD/ (B.6.)	DR	Refer B.4.1	OK	OK
B.5. Calculation of GHG Emission Reductions – Baseline emissions					



CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
<i>It is assessed whether the baseline emissions are stated according to the methodology and whether the argumentation for the choice of default factors and values – where applicable – is justified.</i>					
B.5.1. Are the calculations documented according to the approved methodology and in a complete and transparent manner?	/PDD/ (B.6., Annex-3)	DR	<p>Related of emission reduction calculation</p> <ol style="list-style-type: none"> 1. The calculation used for determining “net electricity exported to grid” is not evident under section B.6.1 and B.6.3 of the PDD. 2. The calculation and rationale used for determination of combined margin (CM) is not evident under section B.4, B.6.1. and B.6.3 of the PDD. 3. The statement “In the project activity --- publicly available” last para on page 11 of the PDD is not correct. (Cp guidelines for completing 	CAR B2	OK



CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			CDM- SSC-PDD). 4. The justification for using simple operating margin not addressed under section B.4. of the PDD.		
B.5.2. Have conservative assumptions been used when calculating the baseline emissions	/PDD/ (B.6., Annex-3)	DR	Refer to CAR B2	Depends on closure of CAR B2	OK
B.5.3. Are uncertainties in the baseline emission estimates properly addressed?	/PDD/ B.6.)	DR	Refer to CAR B2	Depends on closure of CAR B2	OK
B.6. Calculation of GHG Emission Reductions – Leakage <i>It is assessed whether leakage emissions are stated according to the methodology and whether the argumentation for the choice of default factors and values – where applicable – is justified.</i>					



CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
B.6.1. Are the leakage calculations documented according to the approved methodology and in a complete and transparent manner?	/PDD/ (B.6.)	DR	As per the methodology the leakage is not applicable to the project activity.	OK	OK
B.6.2. Have conservative assumptions been used when calculating the leakage emissions?	/PDD/ (B.6.)	DR	Refer to comment under B.6.1.	OK	OK
B.6.3. Are uncertainties in the leakage emission estimates properly addressed?	/PDD/ (B.6.) /AMS 1C/	DR	Refer to comment under B.6.1.	OK	OK
B.7. Emission Reductions <i>The emission reductions shall be real, measurable and give long-term benefits related to the mitigation of climate change.</i>					
B.7.1. Are the emission reductions real, measurable and give long-term benefits related to the mitigation of climate change.	/PDD/ (B.6.)	DR	The CARs/CRs given in section B have to be closed satisfactorily before forming an opinion.	Not OK	OK
B.8. Monitoring Methodology <i>It is assessed whether the project applies an appropriate baseline methodology.</i>					



CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
B.8.1. Is the monitoring plan documented according to the approved methodology and in a complete and transparent manner?	/PDD/ (B.7., Annex -4)	DR	<ol style="list-style-type: none"> Under Table B.7.1. for the data parameter "GEN" it is not clear if the same is the net electricity supplied to the grid. Moreover how the net electricity supplied to the grid is arrived at is not mentioned. The section B.7.1 does not demonstrates the specification which accepted industry standards or national or international standards will be applied, which measurement equipment is used, how the measurement is undertaken, which calibration procedures are applied, what is the accuracy of the measurement method, who is the responsible person / entity that should undertake the measurements and what is the measurement interval. (Cp guidelines for completing CDM- SSC-PDD). 	CAR-B3	OK



CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			3. Under section B.7.2 in the PDD, the detailed description of monitoring plan is not given and also the description provided is not clear.		
B.8.2. Will all monitored data required for verification and issuance be kept for two years after the end of the crediting period or the last issuance of CERs, for this project activity, whichever occurs later?	/PDD/ (B.7., Annex -4)	DR	The retention period of the monitored data is provided in section B.7.2. of PDD accordingly.	OK	OK
B.9. Monitoring of Project Emissions <i>It is established whether the monitoring plan provides for reliable and complete project emission data over time.</i>					
B.9.1. 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?	/PDD/ (B.7., Annex -4)	DR	Refer to CAR B3.	Depends on closure of CAR B3	OK
B.9.2. Are the choices of project GHG indicators reasonable and conservative?	/PDD/ (B.3.)	DR	Yes the choices of project GHG indicators are reasonable and conservative.	OK	OK



CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
B.9.3. Is the measurement method clearly stated for each GHG value to be monitored and deemed appropriate?	/PDD/ (B.7., Annex -4)	DR	Refer to CAR B3.	Depends on closure of CAR B3	OK
B.9.4. Is the measurement equipment described and deemed appropriate?	/PDD/, (B.7., Annex -4)	DR	Refer to CAR B3.	Depends on closure of CAR B3	OK
B.9.5. Is the measurement accuracy addressed and deemed appropriate? Are procedures in place on how to deal with erroneous measurements?	/PDD/ (B.7., Annex -4)	DR	Refer to CAR B3.	Depends on closure of CAR B3	OK
B.9.6. Is the measurement interval identified and deemed appropriate?	/PDD/ (B.7., Annex -4)	DR	Refer to CAR B3.	Depends on closure of CAR B3	OK
B.9.7. Is the registration, monitoring, measurement and reporting procedure defined?	/PDD/ (B.7., Annex -4) /IM01/	DR I	Refer to CAR B3.	Depends on closure of CAR B3	OK



CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
B.9.8. Are procedures identified for maintenance of monitoring equipment and installations? Are the calibration intervals being observed?	/PDD/ (B.7., Annex -4) /IM01/ /O&M/	DR, I	Refer to CAR B3.	Depends on closure of CAR B3	OK
B.9.9. Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation)	/PDD/ (B.7., Annex -4) /IM01/ /ORG/	DR, I	Yes the procedures are identified for day-to-day records handling and archiving	OK	OK
B.10. Monitoring of Baseline Emissions <i>It is established whether the monitoring plan provides for reliable and complete baseline emission data over time.</i>					
B.10.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining baseline emissions during the crediting period?	/PDD/ (B.7.)	DR	Refer to CAR B3.	Depends on closure of CAR B3	OK
B.10.2. Are the choices of baseline GHG indicators reasonable and conservative?	/PDD/ (B.3.)	DR	Refer to CAR B3.	Depends on closure	OK



CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
				of CAR B3	
B.10.3. Is the measurement method clearly stated for each baseline indicator to be monitored and also deemed appropriate?	/PDD/ (B.7., Annex -4)	DR	Refer to CAR B3.	Depends on closure of CAR B3	OK
B.10.4. Is the measurement equipment described and deemed appropriate?	/PDD/ (B.7., Annex -4)	DR	Refer to CAR B3.	Depends on closure of CAR B3	OK
B.10.5. Is the measurement accuracy addressed and deemed appropriate? Are procedures in place on how to deal with erroneous measurements?	/PDD/ (B.7., Annex -4)	DR	Refer to CAR B3.	Depends on closure of CAR B3	OK
B.10.6. Is the measurement interval for baseline data identified and deemed appropriate?	/PDD/ (B.7., Annex -4)	DR	Refer to CAR B3.	Depends on closure of CAR B3	OK
B.10.7. Is the registration, monitoring, measurement and reporting procedure	/PDD/ (B.7., Annex	DR	Yes	OK	OK



CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
defined?	-4)				
B.10.8. Are procedures identified for maintenance of monitoring equipment and installations? Are the calibration intervals being observed?	/PDD/ (B.7., Annex -4)	DR	Refer to CAR B2.	Depends on closure of CAR B2	OK
B.10.9. Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation)	/PDD/ (B.7., Annex -4)	DR	Yes the procedures are identified for day-to-day records handling and archiving	OK	OK
B.11. Monitoring of Leakage <i>It is assessed whether the monitoring plan provides for reliable and complete leakage data over time.</i>					
B.11.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining leakage?	/PDD/ (B.7.)	DR	Leakage is not applicable.	OK	OK
B.11.2. Are the choices of project leakage indicators reasonable and conservative?	/PDD/ (B.7.)	DR	Refer B.11.1	OK	OK
B.11.3. Is the measurement method clearly stated for each leakage value to	/PDD/ (B.7.)	DR	Refer B.11.1	OK	OK



CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
be monitored and deemed appropriate?					
B.12. Monitoring of Sustainable Development Indicators/ Environmental Impacts <i>It is assessed whether choices of indicators are reasonable and complete to monitor sustainable performance over time.</i>					
B.12.1. Is the monitoring of sustainable development indicators/ environmental impacts warranted by legislation in the host country?	/PDD/ (A.2. /E.1.) /HGA/ /moef/	-	Monitoring of the sustainable development indicators is not warranted by legislation in the host country. Environmental impacts are to be monitored only in case the project has a significant adverse impact.	OK	OK
B.12.2. Does the monitoring plan provide for the collection and archiving of relevant data concerning environmental, social and economic impacts?	/PDD/ (A.2. /E.1.) /HGA/	-	Refer B.12.1	OK	OK
B.12.3. Are the sustainable development indicators in line with stated national priorities in the Host Country?	/PDD/ (A.2.) /HGA/	-	Refer B.12.1	OK	OK
B.13. Project Management Planning					



CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
<i>It is checked that project implementation is properly prepared for and that critical arrangements are addressed.</i>					
B.13.1. Is the authority and responsibility of overall project management clearly described?	/PDD/ /IM 01/ /IM 01/	DR, I	Refer A.3.3	OK	OK
B.13.2. Are procedures identified for training of monitoring personnel?	/PDD/ /IM 01/	DR, I	Refer A.3.3	OK	OK
B.13.3. Are procedures identified for emergency preparedness for cases where emergencies can cause unintended emissions?	/IM 01/ /EIA/	I	There are no emergency situation for the project activity which can cause unintended emissions.	OK	OK
B.13.4. Are procedures identified for review of reported results/data?	/IM 01/	I	Yes	OK	OK
B.13.5. Are procedures identified for corrective actions in order to provide for more accurate future monitoring and reporting?	/IM 01/	I	Yes	OK	OK
C. Duration of the Project/ Crediting Period <i>It is assessed whether the temporary boundaries of the project are clearly defined.</i>					



CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
C.1. Are the project's starting date and operational lifetime clearly defined and evidenced?	/PDD/ (C.1.) /SD/ /IM 01/	DR	Consideration of CDM benefit was discussed in the Board of Directors meeting on 28 th January 2006. However the starting date of project activity under section C.1.1 is shown as 19 /12/2006	CAR C1	OK
C.2. Is the start of the crediting period clearly defined and reasonable?	/PDD/ (C.2.)	DR	Yes	OK	OK
D. Environmental Impacts <i>Documentation on the analysis of the environmental impacts will be assessed, and if deemed significant, an EIA should be provided to the validator.</i>					
D.1. Has an analysis of the environmental impacts of the project activity been sufficiently described?	/PDD/ (D.1.) /IM01/ /HGA/	DR	Clarification is needs as to which notification / act of Ministry of Environment and Forest the EIA fir wind turbine project is not required as stated under section D.1 of the PDD.	CR D1	OK
D.2. Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, is an EIA approved?	/PDD/ (D.1.) /EIA/	DR	Refer to CR D1	Depends on closure of CR D1	OK



CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
D.3. Will the project create any adverse environmental effects?	/PDD/ (D.1.)	DR	Refer CR D1	Depends on closure of CR D1	OK
D.4. Are transboundary environmental impacts considered in the analysis?	/PDD/ (D.1.)	DR	Refer CR D1	Depends on closure of CR D1	OK
D.5. Have identified environmental impacts been addressed in the project design?	/PDD/ (D.2.)	DR	Refer CR D1	Depends on closure of CR D1	OK
D.6. Does the project comply with environmental legislation in the host country?	/PDD/ (D.1.)	DR	Refer CR D1	Depends on closure of CR D1	OK
For Small-scale projects					
D.7. Does host country legislation require an analysis of the environmental impacts of the			Refer CR D1	Depends on	OK



CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
project activity?				closure of CR D1	
(1) Does the project comply with environmental legislation in the host country?	/HGA / /SC/		Refer CR D1	Depends on closure of CR D1	OK
(2) Will the project create any adverse environmental effects?			No, the project activity is not expected to create any adverse environment effect.	OK	OK
D.8. Have environmental impacts been identified and addressed in the PDD?			Yes, environmental impacts have been identified in the PDD.	OK	OK
E. Stakeholder Comments <i>The validator should ensure that stakeholder comments have been invited with appropriate media and that due account has been taken of any comments received.</i>					
E.1. Have relevant stakeholders been consulted?	/PDD/ (E.1.)	DR	It is not evidenced from the write up under section E.1 of PDD that how all potential stakeholder were identified and invited for local stakeholder consultation process. Please clarify	CR E1	OK



CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
E.2. Have appropriate media been used to invite comments by local stakeholders?	/PDD/ (E.1.)	DR	Refer CR E1	Depends on closure of CR E1	OK
E.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?	PDD/ (E.1) /moef/		No stakeholder consultation process is required by the regulations / laws of India.	OK	
E.4. Is a summary of the stakeholder comments received provided?	/PDD/ (E.2.) /LSHC/	DR	Refer CR E1	Depends on closure of CR E1	OK
E.5. Has due account been taken of any stakeholder comments received?	/PDD/ (E.3.) /LSHC/	DR	Refer CR E1	Depends on closure of CR E1	OK



Table 3: Resolution of Corrective Action and Clarification Requests

Draft report clarification requests and corrective action requests by validation team	Ref. To checklist question in table 2	Summary of project response	Validation conclusion team
CAR A1 1. The unique identification of the project activity is not adequately addressed in the section A.4.1.4 of PDD. The latitude and longitude of all 8 WTG's / Wind Farms must be provided. 2. The map is provided highlighting only "Suthari". Other locations are not addressed.	A.1.1	1. Section A.4.1.4 in PDD revised. Latitude and longitude for all WTGs has been included. 2. Suthari map has been removed and the map only shows the district Kutch now.	OK



Draft report clarification requests and corrective action requests by validation team	Ref. To checklist question in table 2	Summary of project response	Validation conclusion team
<p>CAR A2</p> <p>Related to completeness of PDD:</p> <ol style="list-style-type: none"> 1. The status of project participant as private or public and the column for “name of the party involved” has not been shown is not mentioned in table under section A.3 of PDD. 2. Reference to ACM 0002 not given under section B.1. of the PDD. 3. Consistency and correctness is required to be maintained for the WTG identification code, serial number of WTG, address as in GEDA certificate, as in commissioning report and the sections A.2. and A.4.1.4, of the PDD. 4. Under section A.4.3 the Total estimated reduction has 	A.5.1	<ol style="list-style-type: none"> 1. The status has been shown in the revised PDD. The project participant is a private entity. 2. Reference to ACM0002 made in the PDD. 3. Section A.2 and A.4.14 amended for WTG serial numbers as per GEDA commissioning certificate 4. Total emission 	OK



Draft report clarification requests and corrective action requests by validation team	Ref. To checklist question in table 2	Summary of project response	Validation conclusion team
been incorrectly shown as 23960		reduction corrected to 239600	
<p>CAR B1</p> <p>Related to additionality:</p> <p>The critical issue related to additionality is that the justification/arguments presented in the section B.5 of the PDD is not inline with the “Attachment A to Appendix B of the simplified modalities and procedures for small-scale CDM project activities”. The other issues with respect to various arguments presented are mentioned below:</p> <p>1. The comparison of capital cost for electricity generation from project activity with that from Coal based power generation and Fuel oil based power generation in DG sets to establish the additionality is not credible as it takes in to account only the capital cost and not the operating cost which in case of project activity is substantially lower than</p>	B.3.2	<p>1. The comparison was made to suggest that wind power projects attract more in terms of capex compared to more</p>	OK



Draft report clarification requests and corrective action requests by validation team	Ref. To checklist question in table 2	Summary of project owner response	Validation conclusion team
<p>the two baseline scenario considered.</p> <p>2. For the parameters used in IRR computation, the basis of the values used needs to be specified under section B.5. of the PDD in a specific manner and all the parameters needs to be addressed. (E.g. In the PDD Reference for Project cost is not specific- mentioned as “total for all wind turbines” ,”Exchange rate for Euro”. “Service tax assumption”, “Insurance”, “MAT applicability and carry forward provision” not addressed in the table under section B.5.. of the PDD.</p>		<p>conventional power plants. And due to the uncertainty in power generation, the investment becomes even more riskier. PDD however does not make this reference now.</p> <p>2. The parameters have been addressed in the revised PDD.</p>	



Draft report clarification requests and corrective action requests by validation team	Ref. To checklist question in table 2	Summary of project owner response	Validation conclusion team
3. As the project activity has already been commissioned and is operational, the assumption for parameter “ CUF” needs to be validated against the actual “CUF”		3. As per GERC order the WTG CUF in Gujarat is 23% which has been considered in the financial calculation. However the performance data suggests that WTGs have not performed at par. This indicates that our consideration for CUF for calculation of additionality is conservative. Performance data is appended in Annex 5 of PDD.	



Draft report clarification requests and corrective action requests by validation team	Ref. To checklist question in table 2	Summary of project owner response	Validation conclusion team
<p>4. Hurdle rate has not been specified. The hurdle rate / desired level of IRR should be specified with the computation and reasons for selecting the same for determining the additionality</p> <p>5. As per PPA full power generated from one Wind mill of 1.25MW and partial power generated from one 1.5 MW WTG is to be used for captive consumption. In the computation of IRR under sheet "Total ER" under cell E18 for three WTG of 1.5 MW the same had not been considered correctly.</p>		<p>4. The hurdle rate has been changed to "Bond rate" plus "risk premium for the project type. The certificate from the financial expert on the correctness of the methodology adopted , data base and the calculation is enclosed.</p> <p>5. PP has installed 8 WTGs of 1.5 MW each and 1 WTG of 1.25 MW in the project. The 1.25 MW is for captive use and supplies</p>	



Draft report clarification requests and corrective action requests by validation team	Ref. To checklist question in table 2	Summary of project owner response	Validation conclusion team
<p>6. IT benefits accruing to the companies has been restricted to first year, which is not correct. Benefits accrue till four years. This should be accounted for.</p>		<p>100% power generated to PP's manufacturing unit in the state. Besides 1 WTG of 1.5 MW supplies power up to 70% of generated power to the unit. Hence wheeling against that power has been taken into account. The calculation has been corrected in the sheet.</p> <p>6. IT benefits will accrue for three years, which has been accounted</p>	



Draft report clarification requests and corrective action requests by validation team	Ref. To checklist question in table 2	Summary of project owner response	Validation conclusion team
<p>7. The project activity commenced in December 2006. The Education cess was increased to 3% only 2007-08 Budget. The appropriate tax rate should therefore be 33.66% and 11.22% and not 33.99% and 11.33%.</p> <p>8. The salvage value (cost less accumulated depreciation) should be accounted for in the terminal year of the project life.</p>		<p>for in the revised worksheet.</p> <p>7. The tax rate has been changed to 33.66% and 11.22% for corporate tax and MAT respectively in the revised sheet.</p> <p>8. In the terminal year the WTG value has already depreciated 90% and will not attract much value after 20 years. However, salvage value has been included in the</p>	



Draft report clarification requests and corrective action requests by validation team	Ref. To checklist question in table 2	Summary of project owner response	Validation conclusion team
<p>9. Sec. 80IA benefits have not been accounted for in tax computation.</p> <p>10. GERC order does not provide for insurance separately. It is included in the O&M cost of 1.5%. Moreover, the O&M charges provided is already higher than what GERC order has recommended about 2.4%). Further, the basis for assuming a 5% escalation beyond 10th year is also not supported by documents.</p>		<p>revised estimation.</p> <p>9. As per the act, tax benefits can be availed for upto 10 years in the initial 15 years. This has been accounted for in the revised sheet.</p> <p>10. Insurance charges towards Machinery Breakdown are included in O&M charges and charges towards other risks are considered under Insurance separately. Project</p>	



Draft report clarification requests and corrective action requests by validation team	Ref. To checklist question in table 2	Summary of project owner response	Validation conclusion team
<p>11.As per loan document of ICICI Bank dated 16.03.2007 the moratorium period begins 15 months from the utilization date. The same has to not been addressed correctly in IRR computation</p>		<p>proponent has assumed the continuation of escalation factor even beyond the 10th year. This is justified as with time, the wear and tear of the WTGs would be more and cost of O&M would continue to go up. Moreover, it is submitted that GERC has not restricted the escalation of O&M expenses beyond 10 years</p> <p>11.The moratorium is for 15 months and during this period only</p>	



Draft report clarification requests and corrective action requests by validation team	Ref. To checklist question in table 2	Summary of project response	Validation conclusion team
<p>under "Cash Flow".</p> <p>12.Power evacuation application processing charges considered as depreciable cost for computing IRR. The same is not correct.</p>		<p>interest is payable with no principal repayment.</p> <p>12. As per GERC Order, entire evacuation infrastructure cost has to be borne by the developer. The processing charge is one time cost to the project proponent, which is non-refundable Since the expenditure have been incurred by the developer, the only way to amortise the expense is to depreciate the</p>	



Draft report clarification requests and corrective action requests by validation team	Ref. To checklist question in table 2	Summary of project response owner	Validation conclusion team
<p>13.The statement, '1.5 MW WTGs' are relatively new' needs supporting evidence as proof to validate the statement.</p>		<p>amount over the life time of the project. Hence, this cost has been and thus is considered as part of project cost and depreciable amount.</p> <p>13.The sentence does not imply that the WTGs are new per se, but when compared WTGs of other capacities, they are comparatively new. Refer third paragraph in this link.</p>	



Draft report clarification requests and corrective action requests by validation team	Ref. To checklist question in table 2	Summary of project owner response	Validation conclusion team
<p>14.The write up under heading “Summary” on page 17 of the PDD is not appropriate.</p> <p>15.The repayment is in 32 quarters, whereas it is stated as 32 months in ‘Project Cost Worksheet’. Needs correction.</p> <p>16.Since the loan is repaid in 8 years, the purpose of indicating interest rate for 9th year in “Key assumptions Worksheet’ is to be clarified.</p>		<p>www.suzlon.com/WindTurbines.html?cp=2_3</p> <p>14.Summary section revised in the PDD.</p> <p>15.It has been corrected to 32 quarters.</p> <p>16. The loan interest rate is 7.2 % for the first 7 years, 7.7% in the 8th year and 8.2% in the 9th year. PP will repay the entire loan in 9 years with 15 months moratorium period during which PP shall pay interest but</p>	



Draft report clarification requests and corrective action requests by validation team	Ref. To checklist question in table 2	Summary of project owner response	Validation conclusion team
<p>17. Clarification is required as to whether the company adopts WDV depreciation or straight line depreciation in the books. If the company adopts straight line depreciation, the computation of IRR worksheet should be modified. If it adopts WDV depreciation in books, a letter from the statutory auditor of the companies together with latest annual report of the companies may be submitted as evidence.</p>		<p>no principal repayment. Total quarters for repayment are 32.</p> <p>17. Company uses SLM depreciation as per Company's Act and this is mentioned in the annual report of the company. For tax calculations, company takes WDV dep as per Income Tax Act. 80% dep has been considered for the first year. Please refer annual report 2006-07, page</p>	



Draft report clarification requests and corrective action requests by validation team	Ref. To checklist question in table 2	Summary of project owner response	Validation conclusion team
<p>18. Row 24 of 'IRR Worksheet' is the addition of row 22, 23 and row 26 of 'Cash Flow Worksheet'. Row 26 of 'Cash Flow Worksheet' is blank. Needs to be corrected.</p> <p>19. When the machinery supplier has given a guarantee for generation for first year (which is higher than the CUF recommended by GERC) and backed it by a penalty clause the guaranteed power generation should be taken into consideration for projections in IRR calculation.</p>		<p>48 under section "Depreciation"</p> <p>18. Redundant Rows have been removed in the revised sheet.</p> <p>19. The purchase order gives a guarantee for the first year of the operation only. This guarantee is not applicable for entire lifetime of the project. The clause also mentions that the generation is dependent on 100% grid and</p>	



Draft report clarification requests and corrective action requests by validation team	Ref. To checklist question in table 2	Summary of project owner response	Validation conclusion team
		<p>wind availability, which may not be the case all the times. The intermittent supply of wind through the year is supported by the actual figures of power generation for the year 2007-08. During 2007-08, the wind mills achieved a PLF of only 17.6% and 14.9% only. Further various other factors such as wind density , wind velocity also impacts the generation</p>	



Draft report clarification requests and corrective action requests by validation team	Ref. To checklist question in table 2	Summary of project owner response	Validation conclusion team
		<p>capacity and Suzlon will not compensate for any decline in the electricity generation. Hence 23% CUF as given in the GERC order is the conservative estimate for calculating the power generation used for calculating IRR. Though the Company achieved a PLF of 17.6% and 14.9% during 2007-08, it did not receive any amount from Suzlon as the conditions were</p>	



Draft report clarification requests and corrective action requests by validation team	Ref. To checklist question in table 2	Summary of project owner response	Validation conclusion team
		not fulfilled. Moreover, even if the guaranteed generation of 28 lakh units for 1.25 MW WEG for the first two years and 35 lakh units per WEG for the 8 , 1.5 MW WEGs for one year is taken into account, the project IRR works out to 10.21% only, which is much lower than the benchmark.	
CAR B2 . Related of emission reduction calculation	B.5.1		OK



Draft report clarification requests and corrective action requests by validation team	Ref. To checklist question in table 2	Summary of project response	Validation conclusion team
<ol style="list-style-type: none"> 1. The calculation used for determining “net electricity exported to grid” is not evident under section B.6.1 and B.6.3 of the PDD. 2. The calculation and rationale used for determination of combined margin (CM) is not evident under section B.4, B.6.1. and B.6.3 of the PDD. 3. The statement “ In the project activity --- publicly available” last para on page 11 of the PDD is not correct. (Cp guidelines for completing CDM- SSC-PDD). 		<ol style="list-style-type: none"> 1. Corrected in the PDD and now details of calculations incorporated in section B.6.1 and B.6.3. 2. It has now been specified in the PDD about the reference to CEA data for determining the CM. 3. The statement has been 	



Draft report clarification requests and corrective action requests by validation team	Ref. To checklist question in table 2	Summary of project owner response	Validation conclusion team
4. The justification for using simple operating margin not addressed under section B.4. of the PDD.		<p>revised in the PDD.</p> <p>4. According to 'Tool to calculate the emission factor for an electricity system' any of the four methods can be used i.e. any one of Simple OM, Simple Adjusted OM, Dispatch data analysis, Average OM. For Simple OM method to be used low cost/ must run resources must constitute less</p>	



Draft report clarification requests and corrective action requests by validation team	Ref. To checklist question in table 2	Summary of project owner response	Validation conclusion team
		than 50% of the total generation in the Western Grid in the most recent five years. For 2002-07 the low cost/ must run resources averages out to be 10.4% which is less than 50%. Thus Simple OM method is used in the PDD.	
<p>CAR B3</p> <p>1. Under Table B.7.1. for the data parameter “GEN” it is not clear if the same is the net electricity supplied to the grid. Moreover how the net electricity</p>	B.8.1	1. Revised in the PDD.	OK



Draft report clarification requests and corrective action requests by validation team	Ref. To checklist question in table 2	Summary of project response	Validation conclusion team
<p>supplied to the grid is arrived at is not mentioned.</p> <p>2. The section B.7.1 does not demonstrates the specification which accepted industry standards or national or international standards will be applied, which measurement equipment is used, how the measurement is undertaken, which calibration procedures are applied, what is the accuracy of the measurement method, who is the responsible person / entity that should undertake the measurements and what is the measurement interval. (Cp guidelines for completing CDM- SSC-PDD).</p> <p>3. Under section B.7.2 in the PDD, the detailed description of monitoring plan is not given and also the description provided is not clear.</p>		<p>2. Revised in the PDD</p> <p>3. Monitoring plan revised to give a detailed description in the PDD.</p>	
<p>CAR C1</p> <p>Consideration of CDM benefit was discussed in the Board</p>	C.1	Corrected in the	OK



Draft report clarification requests and corrective action requests by validation team	Ref. To checklist question in table 2	Summary of project response	Validation conclusion team
of Directors meeting on 28 th January 2006. However the starting date of project activity under section C.1.1 is shown as 19 /12/2006.		revised PDD as 28.01.2006. I.e the date of confirmation of Purchase order on Ms. Suzlon.	
CR D1 Clarification is needs as to which notification / act of Ministry of Environment and Forest the EIA fir wind turbine project is not required as stated under section D.1 of the PDD. .	D.1	The link is also provided in the revised PDD. MoEF Notification, S.O. 1533, 14 th September 2006. http://envfor.nic.in/le_gis/eia/so1533.pdf	OK



Draft report clarification requests and corrective action requests by validation team	Ref. To checklist question in table 2	Summary of project response	Validation conclusion team
CR E1 It is not evidenced from the write up under section E.1 of PDD that how all potential stakeholder were identified and invited for local stakeholder consultation process.	E.1	Revised in the PDD.	OK



CERTIFICATES OF VALIDATION TEAM MEMBERS



CERTIFICATE OF APPOINTMENT

Mr. Dipl.-Ing. Eric Krupp

born on 1971-06-25

satisfies the requirements as specified in the TÜV NORD
JI/CDM CP directives and is hereby appointed as

TÜV NORD JI/CDM Senior Assessor

The present appointment will terminate on 2010-07-05
Certification registration No. 06 05 01 - 017

Essen, 2007-07-06

Head of TÜV NORD JI/CDM Certification Program
of TÜV NORD CERT GmbH



CERTIFICATE OF APPOINTMENT

Katja Beyer

born on 1980-01-08

satisfies the requirements as specified in the TÜV NORD
JI/CDM CP directives and is hereby appointed as

TÜV NORD JI/CDM Expert

The present appointment will terminate on 2010-09-18
Certification registration No. 07 09 01 - 43

Essen, 2007-09-19

Head of TÜV NORD JI/CDM Certification Program
of TÜV NORD CERT GmbH



CERTIFICATE OF APPOINTMENT

Mr. Asim Kumar Jana

born on 1966-11-20

satisfies the requirements as specified in the TÜV NORD
JI/CDM CP directives and is hereby appointed as

TÜV NORD JI/CDM Assessor

The present appointment will terminate on 2011-02-10
Certification registration No. 08 02 01 - 014

Essen, 2008-02-11

Head of TÜV NORD JI/CDM Certification Program
of TÜV NORD CERT GmbH

CERTIFICATE OF APPOINTMENT

Mr. Pankaj Patel

born on 1961-07-20

satisfies the requirements as specified in the TÜV NORD
JI/CDM CP directives and is hereby appointed as

TÜV NORD JI/CDM Assessor

The present appointment will terminate on 2010-06-29
Certification registration No. 06 05 02 - 31

Essen, 2007-06-30

Head of TÜV NORD JI/CDM Certification Program
of TÜV NORD CERT GmbH

CERTIFICATE OF APPOINTMENT

Mr. Manojkumar Borekar

born on 1979-10-14

satisfies the requirements as specified in the TÜV NORD
JI/CDM CP directives and is hereby appointed as

TÜV NORD CDM Assessor

The present appointment will terminate on 2010-05-23
Certification registration No. 06 05 02 - 38

Essen, 2007-05-24

Head of TÜV NORD JI/CDM Certification Program
of TÜV NORD CERT GmbH