



VALIDATION REPORT

RELIANCE INNOVENTURES LIMITED (RINL)

“WIND ELECTRICITY GENERATION PROJECT”

Report No: 53120907- 07/106

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Approved by: Rainer Winter	Organisational unit: TUV NORD JI/CDM Certification Program
Client: Reliance Innoventures Limited	Client ref.: Mr. Hetalkumar Shah (Additional Manager)
<p>Summary/Opinion:</p> <p>The Reliance Innoventures Limited (RINL) has commissioned the TÜV NORD JI/CDM Certification Program to validate the project: "Wind Electricity Generation Project", 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), and the relevant decisions by COP/MOP and CDM Executive Board.</p> <p>The purpose of this project activity is to generate electricity using renewable sources (wind) and export it to the connected state grid, thereby displacing the grid generated electricity.</p> <p>A risk-based approach has been followed to perform this validation. In the course of the validation 11 Corrective Action Requests (CARs) and 11 Clarification Requests (CRs) were raised and successfully closed.</p> <p>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.</p> <p>In detail the conclusions can be summarised as follows:</p> <ul style="list-style-type: none"> - 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 Letter of Approval (LOA-H) F.No.4/18/2007-CCC, dated 15/04/2008. - 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 809,370 t CO₂e is most likely to be achieved within the 10 years (fixed) crediting period. <p>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.</p>	

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Technical review by: Katja Beyer	
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Indexing terms

Climate change
CDM
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Kyoto Protocol

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Abbreviations

BAU	Business as usual
CA	Corrective Action / Clarification Action
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CEA	Central Energy Authority
CER	Certified Emission Reduction
CO₂	Carbon dioxide
CO_{2e}	Carbon dioxide equivalent
CP	Certification Program
CR	Clarification Request
DNA	Designated National Authority
EB	CDM Executive Board
EIA	Environmental Impact Assessment
GHG	Greenhouse gas(es)
IPCC	Intergovernmental Panel on Climate Change
kW	Kilowatt
kWh	Kilowatt hour
m	meter
m/s	meter/second
MSETCL	Maharashtra State Electricity Transmission Corporation Limited
MU	Million Units (of electricity)
MW	Megawatt
MWh	Megawatt hour
ODA	Official Development Assistance
PDD	Project Design Document
QC/QA	Quality control/Quality assurance
RINL	Reliance Innoventures Limited
UNFCCC	United Nations Framework Convention on Climate Change
WEG	Wind Energy Generator

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1 INTRODUCTION

Reliance Innoventures Limited (RINL) has commissioned the TÜV NORD JI/CDM Certification Program (CP) to validate the project:

"Wind Electricity Generation Project"

with regard to the relevant requirements for 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^{/KP/};
- the CDM modalities and procedures as agreed in the Marrakech Accords under decision 17/CP.7^{/MA/}; the annex to the decision;
- subsequent decisions made by COP/MOP & CDM Executive Board,
- 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 (CERs).

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 (based on ACM 0002/ Version 06: Consolidated methodology for grid-connected electricity generation from renewable sources) 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,
 - o the requirements of the CDM as set out in decision 17/CP.7 (Marrakech Accords)^{/MA/},
 - o the present annex, and
 - o 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
- **Monitoring Plan**
 - Monitoring methodology
 - Indicators/data to be monitored and reported
 - Responsibilities
- **Project Additionality**
- **Background investigation and follow up interviews**
- **Global Stakeholder consultation**
 - Publishing the PDD on TUV 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 CERT GmbH 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^{CPM}. 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 participant. 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 CDM project in the sector given in Table 1-1 (according to List of Sectoral Scopes of UNFCCC).

Table 1-1: Project Scope(s)

No.	Project Scope
1	Energy industries (renewable / non renewable sources)

1.3.2 Project Entities

The following entity is involved in the developing of the project:

Project Participant: Reliance Innoventures Limited
Santacruz (E),
3rd Floor, Reliance Energy Centre
Mumbai -400 055
Maharashtra, India

Contact person: Mr. Hetalkumar Shah (Additional Manager)
+91-9324216669 (Mobile)
+91 22 30094283 (Direct)
hetalkumar.shah@relianceada.com

1.3.3 Project location

The project site(s) consisting of thirty (30) Wind Turbine Generators are located at villages Ambavade Khurd, Chavanwadi, Chalkewadi, Borgewadi, Pawarwadi, Galmewadi, Dhebewadi and Maskarwadi of Satara District in Maharashtra in India. The details of the project location are given in table 1-2:

Table 1-2:

Project Location

Project Location	Project Scope
Host Country	India
Region:	Maharashtra, Western India
Project location address:	Villages Ambavade Khurd, Chavanwadi, Chalkewadi, Borgewadi, Pawarwadi, Galmewadi, Dhebewadi and Maskarwadi of Satara District, Maharashtra, India
Latitude range:	17°10'51" to 17°15'55" North
Longitude range:	73°40'25" to 73°59'20" East

1.3.4 Technical project description

The project activity involves setting up thirty (30) wind turbines with an aggregated capacity of 45 MW in Satara District of Maharashtra. The generated electricity will be sold to the grid of Maharashtra State Electricity Distribution Company Limited (interconnected with western regional grid of India) under power purchase agreement^{/PPA/}.

The WEGs are of Suzlon make, S82 model with an installed electrical output of 1500 kW each with a hub height on 78.5 m. As on date the project activity is not fully commissioned and 27 WEGs out of total 30 WEGs have been commissioned^{/CR/}, the rest 3 WEGs are to be commissioned by September 2008. The project on full commissioning is expected to generate an average of 90 GWh of electricity per year based on a net plant load factor of 22.88%^{/CWET/, /GEN/, /PLF/}. The plant load factor is determined based on estimated net generation of 3,006 MWh per WTG per annum. The estimated net generation figure is derived from gross generation of 3,873 MWh

per WTG per annum after applying correction factors for air density, array efficiency, machine availability, grid availability and electrical losses^{/GEN/}.

The project activity contributes towards meeting the objective of Government of India about 10% of incremental capacity from renewable sources and towards mitigating the supply deficit in Maharashtra.

Table 1-1: Technical and operational data

Description	Specification
Tower/Rotor Height	78.5m
Rotor Diameter	82 m
Installed electrical output	1500 kW
Annual estimated generation per WEG	3.54 MUs
Cut-in wind speed	3 m/s
Rated wind speed	12 m/s
Cut-out wind speed	20 m/s
Generator	Asynchronous generator
Operating voltage	690 V
Frequency	50 Hz
Cooling system	Air-cooled
Gear Box	3 stage gear box, 1 planetary and 2 helical
Yaw Drive System	4 active electrical yaw motors
Yaw bearing	Polyamide slide bearing
Aerodynamic brake	3 times independent pitch regulation.
Mechanical brake	Spring powered disc brake, hydraulically released fail safe.
Control unit	Microprocessor controlled, indicating actual Operating conditions, UPS back up system
Design Standards	GL/IEC

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 "crediting period" is **809,370 tCO₂e** (acc. to the PDD). The estimated amount of emission reductions per annum are 80937 tCO₂e.

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. He is Head – Energy and Carbon Services for TÜV Nord India

operation and holds energy auditorship from Bureau of Energy Efficiency of India. He is an appointed assessor for JI/CDM certification program of TÜV Nord.

For this validation he was assisted by:

- **Imran Ustad**, Post Graduate in Environment Science, Dipl in Industrial Safety is with TÜV NORD- Mumbai, India. He has received extensive training in the CDM validation & verification process. He is an appointed expert for JI/CDM certification program of TÜV NORD CERT GmbH.

The technical review is carried out by

- **Katja Beyer**. She is an Environmental Scientist and has received extensive training in the process of JI/CDM and technical aspects. Ms. Beyer is an appointed Expert of the JI/CDM Certification Program of TÜV NORD CERT GmbH.

The final validation report is approved by

- **Mr. Rainer Winter**. Mr. Winter works at TÜV NORD as ISO 9001/ 14001 Auditor and environmental verifier for EMAS. He is also an approved emission verifier within the European Emission Trading Scheme. Mr. Winter is an authorized JI/CDM senior assessor and is in charge of the JI/CDM Certification Program of TÜV NORD CERT GmbH.

3 METHODOLOGY

The validation of the project was carried from July 2007 to August 2008. The validation consisted of the following three 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 TUV NORD website.

The 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 CARs and CRs 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 assessment criteria, a validation protocol was used. The protocol shows, in a transparent manner, criteria and requirements, means of verification and the results from validating the identified criteria. The validation protocol serves the following purposes:

- It organises, details and clarifies the requirements 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 I to this report identifying 11 CARs and 11 CRs.

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 the RINL in July 2007 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 2007-09-26, the TÜV NORD JI/CDM CP performed Pre validation visit with the project proponent at Reliance Innoventures Limited.

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 the project activity - Technical details of the project realisation - Management decision on CDM - Equipment Performance data - Host Government Approval - Post registration involvement of Annex-I Party - Approval procedures and status - Monitoring and measurement equipment - Project activity starting date and commissioning date - Crediting period - CER allocation /ownership - Sustainable development issues - Analysis of Environmental Impact - Analysis of local stake holder consultation

Interviewed Persons / Entities	Interview topics
	<ul style="list-style-type: none"> - 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 - Editorial aspects of PDD - Debundling aspects - Procedural aspects - Baseline study and additionality - Details of emissions reduction calculation - Estimation of net energy (Import / Export)

A detailed list including the functions or designations of the interviewed persons is given in chapter 7 (see. 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 report 11 CARs and 11 CRs are raised.

The CARs / CRs are documented in Annex I and addressed in table no 3 of validation protocol.

3.5 Public Stake Holder Comments

The PDD was made publicly available through TÜV NORD JI/CDM CP web site www.global-warming.de. Comments on the PDD were invited within 30 days, i.e. 19/07/2007 to 19/08/2007.

The received comments were also made publicly available on the same site with a hyperlink with UNFCCC. The comments received from two stakeholders were reviewed and taken into account in this validation stage. The summary of the comments is presented in section 5.

3.6 Finalising the report

The 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 CRs & CARs raised and outstanding concerns, TÜV NORD JI/CDM CP issues this final validation report and 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) <ul style="list-style-type: none"> - Project boundaries - Participation requirements - Technology to be employed - Contribution to sustainable development 	3	2
Project baseline (B) <ul style="list-style-type: none"> - Baseline Methodology - Baseline scenario determination - Additionality determination - Calculation of GHG emission reductions <ul style="list-style-type: none"> Project emissions Baseline emissions Leakage - Emission reductions - Monitoring Methodology - Monitoring of <ul style="list-style-type: none"> Project emissions Baseline emissions Leakage Sustainable development indicators / environmental impacts - Project management planning 	7	7
Duration of the Project / Crediting Period (C)	1	1
Environmental impacts (D)	-	-
Stakeholder Comments (E)	-	1
SUM	11	11

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 Letter of Approval^{/LOA-H/} dt. 15/04/2008, the Indian DNA, National CDM Authority

under Ministry of Environment & Forests confirmed the voluntary participation of RINL as Project Participant in the CDM project activity.

An Annex-I party will be identified by the project participant 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 ^{/LOA-H/} and national regulation / policy on Environmental Protection, Electricity and Non Conventional Energy. Nevertheless in the Host Country 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

4.2 Project design

The objective of this 45 MW wind power project activity is to generate electricity by installation of the Wind Electric Generators so as to reduce GHG emissions by replacing electricity of the Western Grid of India which predominantly uses fossil fuels.

The project introduces wind power generation of aggregated capacity of 45 MW which consists of 30 Wind Electric Generators (30 X 1.5 MW) in the state of Maharashtra. The WEGs are located in Ambavade Khurd, Chavanwadi, Chalkewadi, Borgewadi, Pawarwadi, Galmewadi, Dhebewadi and Maskarwadi villages of Satara District in Maharashtra in India. The project activity uses state of art technology developed by M/s Suzlon Energy Limited. The WEGs are of Suzlon make, S82 model with an installed electrical output of 1500 kW each with a hub height on 78.5 m. The technology is a clean technology since there are no GHG emissions associated with the electricity generation. The host country also agrees to this fact that technology of harnessing wind power through windmills is environmentally safe and sound and hence does not ask for Environmental Impacts¹ Assessment for this type of project.

According to sustainable development various social, economic and environmental benefits are achieved. The project activity would result in green house gas emission

¹ <http://envfor.nic.in/legis/eia/so1533.pdf>

reductions, while also enhancing the employment of the local people during the construction and operation phases of this wind based power plant.

During the ten years of fixed crediting period the project activity is likely to export 90,180 MWh/year of net generated electricity to the Maharashtra State Electricity Transmission Corporation Limited (MSETCL) which is interconnected to Western regional grid of India.

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.

Nevertheless, CAR A1-2, CR A1-2 had to be raised in the course of the validation and was successfully closed (ref Annex: Validation Protocol - Table 3)

4.3 Baseline and Additionality

The selected baseline methodology is the approved baseline methodology "consolidated baseline methodology for grid-connected electricity generation from renewable sources" (ACM0002 Ver.06).

The selected baseline methodology, i.e., ACM0002 is correctly applied to this type of wind project. The baseline under the adopted methodology ACM0002 is calculated by multiplying the electricity baseline emission factor or grid emission factor (EF_y) and the electricity exported to the western grid (EG_y). The grid emission factor (EF_y) is estimated as a combined margin (CM), consisting of the combination of operating margin (OM) and build margin (BM) factors. In this case the Combined Margin (weighted average of Simple Operating Margin and Build Margin) is estimated based on three years average (04-05, 05-06, 06-07) of Simple Operating Margin and 20 % Build Margin of current year (06-07) in line with steps of ACM0002. Both the value of Simple Operating Margin and Build Margin are selected under ex-ante approach. The grid boundary w.r.t the connected state grid is western Regional Grid of India.

In accordance with ACM0002, 'Dispatch Data Analysis' is the first methodological choice out of four options of calculating OM emission factor. Nevertheless the "Dispatch data analysis operating margin" is ruled out in India due to lack of necessary dispatch data of the grids. The same fact is also considered by the Central Electricity Authority^{/cea/} {Ref the user guide for CO2 Baseline Database for the Indian Power Sector (version 3, December 2007)}.

Out of other 3 options of calculating OM, RINL has rightly selected simple OM emission factor calculation as the share of low cost / must run resources of the selected grid over the three most recent years (2004-05, 2005-06, 2006-07) is < 50% of the gross grid generation^{/cea/}.

In accordance with wind based project activities under ACM0002, default weight factors of $w_{OM} = 0.75$ and $w_{BM} = 0.25$ has been used and the resultant grid emission factor (EF_y) works out as 897.5 tCO₂/GWh. The calculation of EF_y is current and publicly available and published by the Central Electricity Authority on its web-site^{/cea/}. The CEA published calculation is based on "Tool to calculate the emission factor for an electricity system" which is in line with ACM0002. The validation team is

convinced of the result of the emission coefficient calculation^{/CBD/}. It is deemed to be adequate and transparent.

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.

The annual power generation from the project activity is estimated to 90,180 MWh. The estimated annual electricity is based on the generation which corresponds to annual PLF of 22.88%. PLF is estimated based on the CWET wind study data^{/CWET/} like average interval, average class interval, annual frequency distribution, wind data hours^{/CWET/, /GEN/, /PLF/} and the power curve for the S82/1500 KW WEG model^{/TS/}. The calculation sheet^{/GEN/, /PLF/} to arrive at PLF of 22.88% is assessed to be appropriate.

Altogether the project activity reduces emissions of 809,370 tCO₂e over the ten year fixed crediting period.

Relevant national & sectoral policies have been considered such as decisions of the Maharashtra Electricity Regulatory Commission and the energy policy of the Government of India. The project is also in line with Non Conventional Energy Policies.

Nevertheless, CAR B1-5 and CR B1-3 had to be raised and were successfully closed (ref Annex: Validation Protocol - Table 3).

In addition to ACM 0002 for baseline emission and steps of latest Additionality Tool (ver 05) for proofing the project as additional are also applied.

Additionality

Prior consideration of the clean development mechanism: The project developer has claimed the start date of the project activity is February 9, 2007^{/PO/} and to substantiate the claim has submitted a copy of the purchase order for the supply of WEGs released to Suzlon Energy Ltd. The project developer has 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 February 9, 2007^{/PO/}, 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 July 8, 2007, i.e., after the start date of the project activity.

Therefore, 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^{/PO/, /MD/}. In response, the project developer submitted a certified copy of the Board Resolution dated December 26, 2006, wherein the Board of Directors of RINL, which is the only competent and authorized body to take a 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 Board resolution states, ".....the CDM revenue generated will support in mitigating the risks of uncertainties in wind power projects and also partially meet the interest cost of capital, thereby making the whole project viable, profitable and attractive in addition to carbon reduction"^{/MD/}. The project developer, further substantiated the claim by demonstrating the additionality of the project, which they have informed during the personal interview was the basis on which the Board decided to seek CDM benefits to go ahead with the project

Verification of the inputs used in the demonstration of additionality as well as the documentary evidence supporting the inputs reveal that there has not been any major change in the input values since the decision was taken by the Board. During the interview, the project developer informed that the validator had been appointed and the PDD was submitted for public comments within 3 months after the start date of the project activity. The project developer also added that the PDD would have been submitted earlier but for the year ending work pressure. It was also confirmed by the project developer that they would not go ahead with further implementation of the project in the absence of positive validation opinion. Based on the documents submitted and discussions held, TUV is convinced that there was serious consideration of CDM benefits by the Board of Directors before the start date of the project activity and that the project would not come up without CDM benefits. The time line is presented in Appendix-2 of the PDD and the evidences ^{/PTL/} to support the serious consideration of CDM at the time of management decision found credible.

Identification of alternatives: The project developer has considered two alternatives for the project activity, viz.,

- i) the proposed project activity *not undertaken as a CDM project activity*;
- ii) *no project activity*, in which case equivalent amount of energy would be produced by the project grid electricity system through its currently running power plants and by new capacity addition to the grid (which are mostly thermal), i.e., continuation of current situation.

Having regard to the fact that the project activity under consideration is a wind power project², TUV is convinced that there are no other realistic and credible alternatives.

Both the alternatives are in compliance with all applicable legal and regulatory requirements as

- the implementation of project activity is a voluntary initiative and is not mandatory or a legal requirement;
- the Electricity Act 2003 does not restrict or empower any authority to restrict the fuel choice for power generation;
- the applicable environmental regulations do not restrict the use of wind energy,, and
- there is no legal requirement on the choice of a particular technology.

However, of the two alternatives identified, alternative (i) cannot be considered realistic as further analysis in the following paragraph reveals that it faces barriers. Hence, alternative (ii) alone could be justified as realistic, credible and plausible alternative to the PP. However, this alternative would result in higher GHG emissions.

² The Additionality Tool (Ver 05) specifically states, "a coal-fired power station or hydropower may not be an alternative for an independent power producer investing in wind energy..." (p. 4)

Demonstrating additionality: The project is a large scale project. Hence, the Additionality Tool (Ver 05) applies to the project activity. Therefore, in accordance with ACM0002, the additionality was demonstrated based on the valid version of the "Tool for demonstration and assessment of additionality (Ver 05)". For the above reasons, this approach has been assessed to be appropriate for the assessment of additionality 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)	Plant Load Factor of the project activity is dynamic and largely unpredictable as it is dependent on the wind patterns. Hence, PLF can be less than even 20%, considered in the tariff order by MERC. Which is supported by the average PLF data compiled by Maharashtra Energy Development Agency, which is 19.85% ³ .	<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)	The tariff structure approved by MERC is a single-part tariff and the project participant is paid only the tariff initially agreed upon ⁴ . Considering the increase in capital cost and the lower PLF, the project activity would not be able to recover investments.	<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)	As the duration of the PPA is only for 13 years, project activity is more likely to face similar risks at the end of 13 th year as those faced by projects which completed 8 year PPA on March 2007 and were offered a tariff INR 1.17/kWh rendering the projects financially unattractive.	<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)	There are also significant constraints on the availability of transmission and evacuation network. Unavailability of transmission capacity resulting in generation back-down is beyond the	<input type="checkbox"/> Argument not justified <input checked="" type="checkbox"/> Argument not convincing <input type="checkbox"/> Argument justified but not a decisive barrier

³ <http://www.mahaurja.com/Download/WindGenerationInfo.xls>

⁴ http://www.mercindia.org.in/pdf/Detail_Wind_Energy_Order.pdf,

Type of barrier [#]	Argument	Assessment
	control of the project participant and likely to impact the project viability.	<input type="checkbox"/> Argument justified / significant barrier
(e)	Wind energy based power generation is not a common practice in Maharashtra	<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
e) common practice analysis

Investment Analysis

Project developer has demonstrated through the investment analysis that the financial returns of the project activity are insufficient to justify the required investment. TÜV has adopted a six pronged strategy to ascertain the veracity of the conclusion drawn by the project developer, viz.,

- determining the suitability of the benchmark applied for the type of financial indicator presented;
- conducting an assessment of parameters and assumptions used in calculating the financial indicator and determining the accuracy and suitability of parameters;
- cross-checking the parameters against third-party or publicly available sources;
- reviewing annual financial reports related to the project participant;
- assessing the correctness of computations carried out and documented;; and
- subjecting the critical assumptions of the project activity to reasonable variations to determine under what conditions variations in the result would occur, and the likelihood of these conditions.

a) Suitability of financial indicator and benchmark: The project developer has chosen Equity IRR to demonstrate the additionality of the project. Additionality Tool (Ver. 05) permits the use of *only* one financial indicator, viz., IRR, for demonstrating the additionality using benchmark analysis. The tool has permitted the use of either project IRR or equity IRR⁵. Since the project developer is demonstrating the financial unattractiveness of the project, equity IRR is appropriate, as it is often used by the project developers to make a decision on investing in the project. As such, the

⁵ Tool for the demonstration and assessment of additionality (Version 05) p.6

selection of equity IRR as financial indicator to demonstrate the additionality of the project is appropriate conforms to the Additionality Tool.

Additionality tool (ver.05) states that the discount rates and benchmarks shall be derived from "Government/official approved benchmark, where such benchmarks are used for investment decisions"⁶, among others. However, it is imperative that the benchmark selected should be *suitable* for the *type* of financial indicator presented. The project developer has chosen the Return on Equity (ROE) recommended by MERC⁷ for wind power projects as the benchmark. The benchmark chosen is Government/official approved benchmark, in as much as it has been recommended by a statutory body. The return recommended by MERC is used for making investment decisions. Finally, the benchmark chosen is suitable for the type of financial indicator selected, for, what is sought to be compared is the *expected* return on equity with *recommended* return on equity. Therefore, the benchmark selected by the project developer is appropriate and conforms to the Additionality Tool.

The project developer has also demonstrated that the expected return from the project activity is not only lower than ROE recommended by MERC (16%), but also lower than the term loan interest rate (12.75%), the commercial lending rate.

b) Parameters and assumptions used: The three important parameters which determine the equity IRR of the project are project cost, financing pattern, and profitability estimates. The project cost include, land, WEG cost, common evacuation costs, MEDA costs and preoperative expenses. All the constituents of the project cost are based on quotation/purchase orders received/placed except the pre-operative expenses (including interest during construction and front-end fee payable for loans). Land, WEG and common evacuation costs are all based on purchase orders. Tax rate is as per the service tax rate applicable at that time. Front end fee payable to the banks is based on the sanction letter issued by the banks. Pre-operative expenses represent travel, administrative expenses, rent rates and taxes and insurance during construction and are based on calculations. Likewise, interest during construction is based on draw down schedule (which is based on purchase order). The financing pattern yields a gearing of 67:33, which is normally accepted financing pattern for wind power projects.

The profitability estimates of the project, which forms the basis for equity IRR calculation is based on installed capacity, PLF, power tariff, O&M cost, insurance cost, interest, depreciation, taxation. The installed capacity is a computed figures based on the number of WEGs installed and the capacity thereof. The PLF works out to 22.88%, in contrast to 20% recommended by MERC in its order and hence it is conservative. Power tariff is based on PPA, which is in line with the tariff recommended by MERC for wind power projects. O&M cost and insurance cost are based on O&M contract and quotation for insurance premium quotation received by the project developer. Interest is based on detailed computation forming part of the worksheet. The project developer has adopted Companies Act recommended straight line depreciation for computing book profit and Income Tax Act stipulated WDV depreciation for income tax calculation, which are accepted accounting

⁶ Tool for the demonstration and assessment of additionality (Version 05) p.7

⁷ http://www.mercindia.org.in/pdf/Detail_Wind_Energy_Order.pdf,

methods. The block of assets has been computed for depreciation purpose as per the accepted accounting principles. Tax liability has been calculated as per the income tax rules. In computing the income tax liability, the project developer has taken into account the accelerated depreciation (80%), which the wind turbines are eligible and the Tax holiday (u/s 80IA of the Income Tax Act, 1961), which the infrastructure projects (under which the project activity falls) are entitled to for the 10 consecutive years out of the first 15 years. The tax rate assumed corresponds to the tax rate⁸ prevailing at the time of taking decision.

c) Cross checking parameters: The cost of WEGs, power evacuation costs, O&M cost, insurance costs, interest costs, depreciation and tax rate have been cross checked with quotations, purchase orders, loan sanction letters, Companies Act, Income Tax Act, PPA entered into by the project developer with the Utility and the MERC order. The input costs considered appear to be in order.

d) Financial reports of project participant: TUV requisitioned the Annual Reports^{/AR/} of the project participant. None of the input values taken in the computation can be based on the Annual Report as the company is new. The company has incurred a loss of Rs.27.43 million during the year ended March, 2006 and earned a profit Rs.4.92 million during the year ended March, 2007. The accounts for the year ended March 2008 are yet to be finalized. This project activity is stated to be the first to be taken up by the company.

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/ documents and ensured that right input has been taken in the project cost and projections. The accounting principles adopted with respect computation of interest during construction, block of assets, prorata expenses and tax computation are found to be in order. The arithmetical accuracy is also found to be correct.

The principle adopted by the project developer for computing equity IRR is in conformity with the "Guidance on the Assessment of Investment Analysis" issued by EB. IRR has been computed for 20 years. The salvage value has been taken as 100% of land cost and 5% of equipment cost, which appears reasonable. Considering the wear and tear the WEGs are likely to suffer during the 20 years, they may not command any value more than the 5%. In computing the equity IRR, the project developer has taken into account profit after tax, depreciation and salvage value. The common evacuation cost being interest free loan to State Utility as per MERC Order, repayment thereof by the State Utility is taken into account as cash inflow as per MERC Order. From the total, the repayment of term loan has been deducted, which is the accepted accounting principle, in as much as the repayment of term loan is made out of cash flow, i.e., profit after tax and depreciation. In the calculation only that portion of investment costs, which is financed by equity, have been considered as the net cash outflow, which is as per the Guidance issued by EB.

⁸ 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.

Based on the above, the equity IRR of the project works out to 8.43% in contrast to the benchmark of 16%. It is even lower than the term loan interest rate of 12.75%. In the above background, TUV is convinced that the project is additional and not a business-as-usual scenario. However, this conclusion was checked by subjecting the critical assumptions to a reasonable variations.

f) Sensitivity analysis: The Guidance on assessment of investment analysis requires the robustness of the conclusion arrived at to be proved through a sensitivity analysis by varying the critical assumptions to a reasonable variation ($\pm 10\%$). The project developer has identified PLF, project cost and O&M cost as the most critical assumptions. Accordingly, sensitivity analysis has been conducted to analyse the impact of a change in (a) project cost by 10%, (b) PLF by 10% and (c) O&M Cost by 10% on the profitability of the project activity. The sensitivity analysis reveals that even under more favorable conditions, the IRR would not cross the benchmark value of not only 16% but also the term loan interest rate of 12.75% as given in the following table:

Parameters	Equity IRR	Benchmark
Baseline scenario	8.43%	
Increase in PLF by 10%	10.47%	
Reduction in O&M cost by 10%	8.69%	
Reduction in Project cost by 10%	10.37%	
Benchmark – ROE of MERC		16.00%
Benchmark – Interest rate on term loan		12.75%

TUV carried out its own independent assessment, which reveals that the project would become *non additional* only if

- PLF goes up by 23%
- Project cost goes down by 22%
- O&M cost goes down by 95%

TUV considers that such a reduction in project cost or hike in PLF is highly unrealistic and unlikely to happen for the following reasons:

PLF: The PLF considered in projections is 22.88%, as against 20% recommended by MERC and 19.85% observed by Maharashtra Energy Development Agency based on the data collected from the region where the wind mills are located. A 23% hike in PLF would mean achieving a PLF of 28.08%, which the project developer has submitted is not the case even in Tamil Nadu. TUV agrees with the project developer and is convinced that achievement of such a high PLF is not possible.

Project cost: As stated above, the cost taken into computation is based on quotations⁹. Orders have already been placed. The cost, therefore, represents firm cost and as such the question of any reduction in the cost, that too by as much as 22% is highly unrealistic. TUV agrees with the argument put forth by the project proponent.

O&M Cost: O&M cost forms very miniscule part of the total cost and as such, it makes no difference to project's additionality even if it is brought down to as low as 5% of the existing cost. However, any reduction in O&M cost is also impossible as the project developer has already entered into an O&M contract with the machinery supplier.

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 is of the opinion that though single part tariff is a significant barrier, it is not a decisive barrier; and TUV does not consider unavailability of transmission and evacuation network as a barrier as there has been no specific instance unlike in Tamil Nadu¹⁰, where the wind power generators were asked to back down generation due to non-availability of grid. TUV is convinced that dynamic and unpredictable wind affecting the achievable PLF, tenure of PPA (being 13 years) and possible reduction in tariff after 13th year and prevailing practice are barriers in as much as they 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 three barriers it is feasible to estimate with any degree of certainty the impact on the profitability of the project activity.

b) Existence of the barrier *per se*: Of the barriers listed by the Project Proponent, TUV considers the common practice as the most important barrier. Based on the data collected by TUV, it is convinced that the present practice is to use only thermal power generation. As per the General Review of CEA, 2006, total electricity availability at bus-bar in the State of Maharashtra was 82075.33 GWh¹¹, out of which wind electricity generation was 495.36 GWh¹² and yielding a negligible share of 0.6%

⁹ Quotations have been submitted to TUV during validation

¹⁰ <http://www.blonnet.com/2006/05/31/stories/2006053103621900.htm>

¹¹ Table No. 5.3, CEA General Review 2006

¹² Table No. 3.4, CEA General Review 2006

and proving that wind energy power generation is insignificant as compared to other power project generation sources in Maharashtra.

Since the power generation is dependent upon the vagaries of wind, TUV is convinced that the PLF could drop down. An analysis of wind power generation by the wind mills located in Satara district (where this project activity is located) reveal that only in 4 out of 12 months (i.e., June to September) did the PLF go beyond 20%. In some of the months, it had dropped down to as low as 5%¹³. If by any chance, the project activity confronts any problem between June and September, the PLF could drop down substantially. Such an eventuality cannot be estimated with any degree of certainty.

The tenure of PPA also creates an uncertainty and hence a barrier for this project as what the tariff would be after 13th year is uncertain. If recent MERC Order is anything to go by, then it is highly likely that the tariff would be substantially low. The MERC Order dated November 20, 2007 states, "MSEDCL would purchase wind power at the rate of 90% of lowest HT Industrial Energy Tariff, i.e., at the fixed rate of Rs. 1.17 per kWh, with no variation. The Group II wind generators would be required to supply the energy *compulsorily* to MSEDCL. The rate of Rs.1.17 per kWh is the *highest* proposed rate for purchase of energy and the Commission should suitably fix a *lower tariff* considering the fact that the *cost is fully recovered by the wind generators and henceforth, only the Operation and Maintenance and incidental costs are to be recovered* by Group II wind generators"¹⁴. These projects were being paid Rs.3.24/kWh till 8th year. Viewed against this perspective, the equity IRR used to demonstrate the additionality is very conservative in that it has been computed for a period of 20 years assuming the *same tariff* from the 13th year onwards. To that extent, TUV is convinced that this is a real barrier for the project activity.

Evaluation of barriers: These barriers, TUV believes present an insurmountable hurdle in as much as 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 has concluded that the project activity

- a) faces investment barrier in as much as the equity IRR is less than the benchmark return and continue to remain additional even under most favourable conditions (based on sensitivity analysis), and
- b) faces other barriers in as much as it cannot estimate with any degree of certainty the likely wind pattern and the resultant PLF as well as the policy likely to be followed by the Utility in fixing power tariff after 13th year and the extent of support it is likely to receive from MERC.

¹³ <http://www.mahaurja.com/Download/WindGenerationInfo.xls>

¹⁴ http://www.mercindia.org.in/pdf/Ord_20_11_2007_CNo_33_of_2007.pdf

Thus 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 RINL in overcoming the barriers identified above.

Nevertheless, CARs B5 and CR B3 were raised and successfully closed (ref Annex: Validation Protocol - Table 3).

4.4 Crediting Period

The intended crediting period of the project is fixed 10 years (October 2008 to September 2017). The starting date of the crediting period is 01/10/2008 or a date not earlier than the date of registration in accordance with § 12 of CDM Modalities and procedures.

In the context of starting date of the crediting period CAR A2-A3, CAR C1 and CR C1 were raised and successfully closed (ref Annex: Validation Protocol – Table 3).

4.5 Monitoring Plan

The project applies the monitoring methodology ACM0002, for grid-connected electricity generation from renewable sources.

This methodology stipulates that monitoring shall consist of metering the electricity supplied by the project activity to the grid (ex-post). This methodology stipulates that monitoring shall consist of metering the net electricity exported to the grid by the renewable technology. In the case of the project activity, there is a dedicated common joint electricity meter for measuring the electricity export and electricity import. The export and import figures are used to calculate the net electricity exported by the project activity and the same is used to calculate the emission reductions. The procedure to monitor the electricity export and import is explained in section B.7 and Annex-4 of the PDD and was assessed to be appropriate.

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

The OM and BM are calculated as fixed for renewable crediting period by choosing data vintage^{/CEA/} based on ex-ante monitoring published by CEA. Hence data needed to recalculate OM and BM does not apply. According to the monitoring plan of the PDD this requirement is fulfilled.

Nevertheless, CR B6 and CR B7 had to be raised and were successfully closed (ref Annex: Validation Protocol - Table 3).

4.6 Calculation of GHG Emissions

Methodologies for calculating emission reductions are documented. The project intends to reduce carbon dioxide (CO₂) emissions by generating electricity from a renewable energy wind project, which would be exported to the western grid.

There are no GHG emissions arising from the project it being a wind project. hence, the project emissions are zero. As per the methodology ACM0002, there are no emissions related to leakage in this project.

The calculations of the baseline emission and emission reduction are documented in section B.6.3. and in Annexure 3 of PDD. For assessment please refer to section 4.3 of this report.

Acc. to the final PDD the project is expected to reduce emissions of **809,370 tCO_{2e}** over a 10 year crediting period.

Nevertheless, CAR B6-7, CR B4-5 had to be raised and were successfully closed (ref Annex: Validation Protocol - Table 3).

4.7 Environmental Impacts

Social & environmental impacts of the project have been sufficiently addressed. No adverse environmental impacts as well as trans-boundary impacts have been envisaged from this project activity.

4.8 Comments by Local Stakeholders

Stakeholders have been directly asked to comment on the project through an open meeting among local stakeholders, project proponent (RINL); local authorities during 22nd June 2007 /LSHC/.

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. All comments are positive in nature. No adverse comments were received and this is addressed in the PDD.

Nevertheless, CR E1 had to be raised and was 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 19th July 2007 and invited comments within 30 days, until 19th August 2007 by parties, stakeholders and UNFCCC accredited non-governmental organisations.

Comments from one (1) individual stakeholder were received in this period. This was made available to public on the same website as well. The comments (in unedited form) from Mr. Naveen Sharma and the consideration/response of TÜV NORD JI/CDM CP are presented in the table below:

Table 5-1: Accounting of Hosting Comment 1

Comment by: Mr. Naveen Sharma Company : Self Inserted on: 2007-08-16 Subject: Comments on the submitted project for validation	
Comment:	Consideration / response of TÜV NORD JI/CDM CP
1) The project uses the tool for demonstration and assessment of additionality and defines the "Setting up fossil fuel based plant that would produce equivalent units of power" as a realistic and credible alternative available to the project proponent. The version 03 of the tool for demonstration and assessment of additionality clearly says that "a coal-fired power station or hydropower may not be an alternative for an independent power producer investing in wind energy or for a sugar factory owner investing in a co-generation, but may be an alternative for a public utility. Alternatives are, therefore, related to technology and circumstances as well as to the investor." We fail to understand then that how the PP/ Validator could have missed the clarification provided in the additionality tool. Can "Setting up fossil fuel based plant that would produce equivalent units of power" be a realistic or credible alternative available to the project proponent and further, how can the additionality arguments then be based on a comparison with this alternative. Can the PP/ DOE provide explanation for this?	The same has already been considered during validation process. Refer to CAR B5. (Refer Annex of this Report).

Comment by: Mr. Naveen Sharma

Company : Self

Inserted on: 2007-08-16

Subject: Comments on the submitted project for validation

Comment:	Consideration / response of TÜV NORD JI/CDM CP
<p>2) The project proponent mentions that "There were incidences in which the developers of the wind farms are requested not to dispatch the electricity, which hampered the financial projections significantly." The above statement is a very generic one. Can the project proponent substantiate this point by mentioning specific instances when wind farm owners have been asked to not dispatch in the state of Maharashtra which is buying power from every possible source.</p>	<p>This concern has been addressed as lower part of CAR B5 (refer Annex of this Report).</p>
<p>3) The project proponent states on page 21 that the financial closure for the project is yet to be done. The project proponent also argues that the low DSCR of the project would make it very difficult for the project to get a loan sanctioned. However, even without financial closure the project proponent seems sure that the project will be commissioned within the next 2 months (September 2007). Also Page 2 of the PDD states that the PPA for the project has already been signed. The PDD is dated 8th July 2007. We request the PP to kindly inform which type of wind project can be commissioned within a period of two months from the zero date. Moreover if the project can be commissioned without financial closure, this can be either because the project proponent has sufficient financial strength to fund the project on its own or the project is funded through supplier's credit. Both of which refute the argument that the project faces a financial barrier on account of financial closure. Moreover, given that the PPA is already executed (before financial closure), it is clear that both the project developer and the off-taker deem financial closure as a non issue for the project.</p>	<p>This concern has been addressed as lower part of CAR B5 (refer Annex of this Report).</p>

Comment by: Mr. Naveen Sharma

Company : Self

Inserted on: 2007-08-16

Subject: Comments on the submitted project for validation

Comment:	Consideration / response of TÜV NORD JI/CDM CP
<p>4) On page 18, the project proponent mentions that for a capital cost of 50 to 60 million per mega watt the levelised cost cost of energy generation comes out in the range of Rs 4 to 4.5 per kWh. Details of how the project proponent has arrived at this value for levelised tariff along with detailed calculations of the same should be provided. There is obviously some mistake in the calculations, can the DOE please recheck and provide the excel sheet for public comments.</p>	<p>This concern has been addressed as lower part of CAR B5 (refer Annex of this Report).</p>
<p>5) The project proponent mentions the fact that the cost of power generation in UMPPs is much less than that of the wind energy project. We thank the project proponent for bringing this bit of information to our knowledge. We however don't understand how the tariff of an ultra mega power project can be compared with a wind power project. We also understand that the project is meant to supply electricity to the grid, so from an exporter's point of view, isn't it more beneficial to undertake a wind power project (which has a higher tariff than the UMPP) rather than a UMPP. To continue our enlightened discussion on this subject, a 4000 MW UMPP with more than 16,000 crores of investment, competitive bidding, no firm purchase commitment, escalating fuel prices, more than 6 years of gestation period and giving a tariff of Rs. 1.19/unit is far more attractive for a electricity supplier than a wind power project with 2 months gestation period, firm power purchase agreement (even before the financial closure), no fuel costs, protected by Renewable Purchase Obligation and giving a tariff of Rs. 3.50/unit with Rs. 0.15/unit annual escalation.</p>	<p>This concern has already been addressed during validation process. (Refer CAR B5 in Annex of this Report).</p>

6 VALIDATION OPINION

The Reliance Innoventures Limited (RINL) has commissioned the TÜV NORD JI/CDM Certification Program to validate the project: "Wind Electricity Generation Project", 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), and the relevant decisions by COP/MOP and CDM Executive Board.

The purpose of this project activity is to generate electricity using renewable sources (wind) and export it to the connected state grid, thereby displacing the grid generated electricity.

A risk-based approach has been followed to perform this validation. In the course of the validation 11 Corrective Action Requests (CARs) and 11 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 Letter of Approval (LOA-H) F.No.4/18/2007-CCC, dated 15/04/2008.
- 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 809,370 t CO₂e 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.

Mumbai, 2008-08-08



Asim Kumar Jana

Team Leader

TÜV NORD JI/CDM Certification
Program

Essen, 2008-08-08



Rainer Winter

Final Approval

TÜV NORD JI/CDM Certification
Program

7 REFERENCES

Table 7-1: Documents provided by the project proponent

Reference	Document
/AR/	Annual reports of RINL for 2005-06 and 2006-07
/CR/	Commissioning report of wind energy generators
/CWET/	CWET report on site validation and generation estimate of proposed wind farm at Satara district in Maharashtra
/GEN/	Spreadsheet for estimated electricity generation from the project activity.
/IRR/	Financial calculation for the project activity.
/LOA-H/	Host Government Approval from Ministry of Environment & Forests, Govt of India, dated 15/04/2008
/LSHC/	Proof of local stake holders consultation process <ul style="list-style-type: none"> • Minutes of Public hearing dated 22/06/2007 • List of Participants • List of issues raised by local stakeholders.
/MD/	Management decision: Extract of resolution passed by the board of directors of Reliance Innoventures Ltd on 26 th December 2006.
/MOC/	Modalities of Communication (dt.22/07/2008)
/O&M/	Operation and maintenance contract (Included in /PO/)
/PDD/	<ol style="list-style-type: none"> 1. Draft PDD: 45 MW Large Scale Grid Connected "Wind Electricity Generation Project" by Reliance Wind Energy" by Reliance Innoventures Limited. (Hosted for public comments during 19/07/2007 to 21/08/2007). 2. Final PDD: "Wind Electricity Generation Project" (Corrected and submitted by Project Proponent in July'08).
/PLF/	Spread sheet for Plant Load Factor Calculation of 22.88%. Corresponds with /GEN/
/PO/	Purchase order for Wind Electric Generators (WEG), Electrical items, Erection and Commissioning of WEGs and Civil work dt. 09/02/2007
/PPA/	Power Purchase Agreement between Reliance Innoventures Limited and Reliance Energy Limited
/PTL/	Proofs associated with the timeline of the project progress in parallel with

Reference	Document
	CDM progress.
/SD/	Proof of starting date of the project activity. Corresponds to /PO/
/SLP/	Site layout plan for the project activity WEGs
/TS/	Technical specification of wind energy generators from manufacturer
/XCS/	Baseline and emission reduction calculation spread sheet

Table 7-2: Background investigation and assessment documents

Reference	Document
/ACM0002/	Consolidated methodology for grid connected electricity generation from renewable sources (Version 06, 19 th May 2006)
/AT/	Tool for the demonstration and assessment of additionality (Ver 3 and Ver 5)
/CPM/	TÜV Nord JI / CDM CP Manual (incl. CP procedures and forms)
/CEA/	CO ₂ Baseline Database for Indian Power Sector -User Guide, Ver 3 dated December 2007 published by CEA. The same was assessed by TUV NORD in accordance with Tool to determine emission factor.
/GCP/	UNFCCC: Guidelines for Completing the Project Design Document (CDM- - PDD)
/GSC/	Global Stake Holder Comments received
/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
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Reference	Link	Organisation
/cea/	www.cea.nic.in	Central Electricity Authority
/dna-i/	http://cdmindia.nic.in/	The Designated National Authority of India
/meda/	http://www.mahaurja.com	Maharashtra Energy Development Agency
/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.	Hetalkumar Shah	Senior Manager, Reliance Innoventures Limited

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

ANNEX

Validation Protocol



ANNEX: VALIDATION PROTOCOL

Table 1: Mandatory Requirements for (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. LOA-H dt 15/04/2008 was made available to the validation team.
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. LOA-H dt 15/04/2008 was made available to the validation team.
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
The host Party and the participating Annex I Party	CDM Modalities §30/31a	The host party India is a party to Kyoto protocol



Requirement	Reference	Conclusion
shall be a Party to the 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 B5 and CR B3) 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 B3, B4, B6,B7 and CR B4 and B5) OK
Environmental impacts (only for large scale projects)		
Documentation on the analysis of the environmental impacts of the project activity, including	CDM Modalities and Procedures §37c	OK



Requirement	Reference	Conclusion
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.		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	Yet to be OK. (Refer CAR B1,B2, B3 ,B4 and CR B1) OK
The baseline methodology shall exclude to earn CERs for decreases in activity levels outside the project activity or due to force majeure.	CDM Modalities and Procedures §47	OK



Requirement	Reference	Conclusion
The project design document shall be in conformance with the UNFCCC CDM-PDD format.	CDM Modalities and Procedures Appendix B, EB Decision	Latest format (Ver 06.1) of PDD is used.
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 CR B6 and CR B7) 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.		NA
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.		NA
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>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 30 WEG's must be provided in a tabular format.</p> <p>-----</p> <p>The description under the section B.3 first para last line concludes with the consideration of "the zone encompassing the WEG installations to the nearest grid interconnection point" as the project boundary. It is not clear if the power plants connected to the grid are included in project boundary or not. Clarification is requested.</p>	CR-A1	OK
A.1.2. Are the project's system boundaries (components and facilities used to mitigate GHGs) clearly defined?	/PDD/ (B.3.)	DR	Yes the project's system boundaries are clearly defined.	OK	



CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
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.) /LOA-H/	DR	The project is a unilateral in kind and India is a host party.	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.) /LOA-H/ /IM01/	DR, I	Host country letter of approval dt 15 th April 2008 is issued to the private project participant - M/s Reliance Innoventures Limited. The title of the project activity mentioned in the PDD does not correspond with that given in inverted commas in the Host Country Approval. Moreover, the contact address stated in the Host country approval as well as Annex I of PDD mentions the Postfix/ZIP as 400 101 which doesn't correspond to the location i.e. Santacruz (E). Appropriate correction requested.	CAR-A2	OK
A.2.3. Do all participating Parties fulfil the participation requirements as follows: – Ratification of the Kyoto Protocol – Voluntary participation	/PDD/ / LOA-H / /unfccc/	DR	Yes, India is a Party to the Kyoto Protocol and has ratified the Protocol on 26 Aug 2002.	OK	



CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
– Designated a National Authority					
A.2.4. Potential public funding for the project from Parties in Annex I shall not be a diversion of official development assistance.	/PDD/ (A.4.5, Annex 2) /IM01/	DR, I	The Project does not involve any public funding.	OK	
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.) /TS/ /IM 01/	DR, I	Yes the company has implemented latest improved WEG manufactured by Suzlon Energy Limited	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.) /TS/ /IM01/	DR, I	S82 model which use a synchronous generator at rated output of 1500 kW and can provide harmonic-free power supply to grid.	OK	
A.3.3. Does the project make provisions for meeting training and maintenance needs?	/PDD/ /O&M/ /IM 01/	DR, I	Training and maintenance need has been identified and operation and maintenance contract has been given to OEM supplier.	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.) /LOA-H/ /moef/	DR	Yes, the contribution of sustainable development is confirmed in the LOA-H.	OK	
A.4.2. Will the project create other environmental or social benefits than GHG emission reductions?	/PDD/ (A.2) /IM01/	DR	The project creates Technological, economic benefits in addition to the environmental or social benefits and GHG emission reductions	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)	DR, I	NA	NA	
A.4.4. Is the small scale project activity not a debundled component of a larger project activity?	/PDD/ (B.2)	DR, I,	NA	NA	
A.5. General Topics					
A.5.1. Has the PDD been duly filled?	PDD	DR	(Related to completeness of PDD) • The section 'view of project participants on the contribution of	CAR A3	OK



CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			<p>the project activity to sustainable development' should not exceed one page (Cp guidelines for completing the CDM-PDD).</p> <ul style="list-style-type: none"> • The section A.4.1 of PDD should not be filled. The map for unique identification is to be provided in section A.4.1.4 of PDD. • Section A.4.3 of PDD should include a description of how environmentally safe and sound technology is used in the project activity (Cp guidelines for completing the CDM-PDD). • The description about the western grid, the life cycle emissions, net leakage, independent power projects etc under section B.3 of PDD is not in line with the guidelines. (Cp CDM-PDD). • The dates mentioned under section C. of PDD must be in DD/MM/YYYY format. (Cp guidelines for completing the CDM-PDD). • The date of completion of the application of baseline study and monitoring methodology is not in DD/MM/YYYY format. Also indicate if the person/entity is also a project 		



CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			participant listed in Annex-1. (Cp guidelines CDM-PDD)		
A.5.2. Has all necessary information been made available to the validator?	Documents provided by the project participants. /IM 01/	I	Yes, all necessary information has been provided to the validation team		
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 <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.) /ACM0002/ /unfccc/	DR	The project activity applies an approved large scale methodology ACM0002 version 6. (The PDD was web hosted for global stakeholder comments with version 6 which can be submitted for Request for registration until 13 Aug 08)	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	



CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
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>					
B.2.1. What is the baseline scenario?	/PDD/ (B.4.) /IM 01/	DR, I	<p>In context of electricity supply by project activity, the PDD mentions the following:</p> <ul style="list-style-type: none"> • The statement "The project proponent has signed PPA for 13 years with Maharashtra state private utility Reliance Energy Ltd (REL)" in section A.2 on page 2. • The statement "The generated electricity is fed into the Western regional grid through local grid" in section A.2 on page 3. • The statement "The project activity supplies electricity to the utility which supplies power to the suburbs of Mumbai connected to the western regional grid" in section B.2 on page 10. • The statement "the CDM project would be supplying electricity to the western regional grid" in section B.3 on page 11. <p>Clarification is requested whether the</p>	CR-B1	OK



CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			project activity supplies electricity to the private utility or to the grid.		
B.2.2. What other alternative scenarios have been considered and why is the selected scenario the most likely one?	/PDD/ (B.4.) /IM 01/	DR, I	Refer CR B1	Not OK	OK
B.2.3. Has the baseline scenario been determined according to the methodology?	/PDD/ (B.4.) /IM 01/	DR, I	Yes the baseline scenario has been determined according to the methodology ACM0002 version 6.	OK	
B.2.4. Has the baseline scenario been determined using conservative assumptions where possible?	/PDD/ (B.4.) /IM 01/	DR, I	Section B.4. Subsection "Approach" mentions that "Equal weights (for OM and BM) have been provided by default as per the norms" is not in line with ACM0002 ver 6 which mentions the default weight of 0.75 for wOM and 0.25 for wBM. (Cp ACM0002 ver 6 page 10)	CAR-B1	OK
			Explanation and justification of key assumptions and rationales for determination of baseline scenario is missing in section B.4 of the PDD. Ex. Estimation of electricity generation from the project activity.	CAR-B2	OK
			The vintage year for calculation of $EF_{BM,y}$ is to be stated in section B.4 of PDD.	CAR-B3	OK
			The year vintage 2001-02 to 2005-06 as mentioned on page 17 contradicts to the year vintage used for calculation of	CR-B2	OK



CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			operating margin and build margin emission factor in section B.4 of PDD.		
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 01/	DR, I	Latest CEA database Version 3.0 (December 2007) should be used for all the relevant figures throughout the PDD.	CAR-B4	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 01/	DR, I	Refer CAR B2 , CAR B3 and CAR B4	Not OK	OK
B.2.7. Have the major risks to the baseline been identified?	/PDD/ (B.4.)	DR, I	Pending closure of the CARs and CRs raised in section B of validation protocol.	Not 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/ /MD/ (B.5.)	DR	Yes the project additionality is assessed according to the methodology	OK	
B.3.2. Are all assumptions stated in a transparent and conservative manner?	/PDD/ (B.5.) /IRR/	DR	<i>Related to additionality:</i> The description/justification given under sub-step 1a. section B.5 is not in line with the Additionality Tool Ver 03. Step 1a should only define the realistic and credible alternatives to the project activity. Moreover, as per the additionality tool fossil fuel based plant can not be considered as a realistic and credible alternative for wind power project.	CAR-B5	OK



CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			<p>Sub-step 3b of Additionality tool ver3 has not been discussed in the PDD. Also Step 5: Impact of CDM registration has been discussed which is not in line with Additionality Tool ver3. Moreover, the latest version of Additionality Tool i.e ver5 can be referred.</p> <p>As per the guidelines for completing the PDD projects which have been implemented before the start of the validation should incorporate a detailed timeline of the project activity in section B.5.</p> <p>Related to global stakeholder comment: Considering the GSC received from Mr. Naveen Sharma the clarification is requested against part of his comment as reproducible below:</p> <p><i>Comment no.2:</i> The project proponent mentions that "There were incidences in which the developers of the wind farms are requested not to dispatch the electricity, which hampered the financial projections significantly." The above statement is a very generic one. Can the project proponent substantiate this point</p>		



CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			<p>by mentioning specific instances when wind farm owners have been asked to not dispatch in the state of Maharashtra which is buying power from every possible source.</p> <p><i>Comment no.3:</i> The project proponent states on page 21 that the financial closure for the project is yet to be done. The project proponent also argues that the low DSCR of the project would make it very difficult for the project to get a loan sanctioned. However, even without financial closure the project proponent seems sure that the project will be commissioned within the next 2 months (September 2007). Also Page 2 of the PDD states that the PPA for the project has already been signed.</p> <p>The PDD is dated 8th July 2007. We request the PP to kindly inform which type of wind project can be commissioned within a period of two months from the zero date. Moreover if the project can be commissioned without financial closure, this can be either because the project proponent has sufficient financial strength to fund the project on its own or the project is funded</p>		



CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			<p>through supplier's credit. Both of which refute the argument that the project faces a financial barrier on account of financial closure.</p> <p>Moreover, given that the PPA is already executed (before financial closure), it is clear that both the project developer and the off-taker deem financial closure as a non issue for the project.</p> <p><i>Comment no.4:</i> On page 18, the project proponent mentions that for a capital cost of 50 to 60 million per mega watt the levelised cost of energy generation comes out in the range of Rs 4 to 4.5 per kWh. Details of how the project proponent has arrived at this value for levelised tariff along with detailed calculations of the same should be provided</p> <p>There is obviously some mistake in the calculations, can the DOE please recheck and provide the excel sheet for public comments.</p> <p>----- Related to additionality.</p>	CR-B3	OK



CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			<p>Annual estimated generation is given as 3.54 million units per annum vide page 8 of PDD. This yields a PLF of about 27%. However, in the calculation PLF has been taken at 23%. Clarification requested.</p> <p>Related to spreadsheet: Though the relevant rows in the 'Project Cost' worksheet are hidden, it appears the WACC has been computed treating MERC recommendation of 16% ROE as post-tax ROE. The tables given in the Order do not seem to support this contention. Clarification requested.</p> <p>MEDA deposit charges and IDC charges computation not clear in the IRR spreadsheet.</p> <p>Repayment has been shown in the year 2006-07 and 2007-08 ('Profit and Loss' Worksheet), while starting date of project activity (p33 of PDD) has been stated as January 2008. Clarification requested.</p>		
B.3.3. Is sufficient evidence provided to support the relevance of the arguments made?	/PDD/ (B.5.) /IRR/	DR	Yes	OK	
B.3.4. If the starting date of the project activity	/PDD/	DR, I	The evidence of Management decision		



CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
is before the date of validation, 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/		dtd. 26/12/2006 proves that the incentive from the CDM was seriously considered in the decision to proceed with the project activity	OK	
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.) /ACM0002/ /XLS/	DR	The table provided on page 13 includes CO2 out of project emissions. Clarification requested on source of project emissions.	CR-B4	OK
B.4.2. Have conservative assumptions been used when calculating the project emissions	/PDD/ (B.6.)	DR	Refer B.4.1	OK	
B.4.3. Are uncertainties in the project emission estimates properly addressed?	/PDD/ (B.6.)	DR	Refer B.4.1	OK	



CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
B.5. Calculation of GHG Emission Reductions – Baseline emissions <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) /XLS/	DR	Explanation and justification of all relevant methodological choices must be provided in section B.6.1 of PDD. Also clearly state which equations will be used in calculating emission reductions. (Cp guidelines for completing the CDM-PDD)	CAR-B6	OK
			The description provided under sub section 'emission by source', 'leakage', 'baseline emission' in section B.6.3 is not in line with the guidelines. Also the ex-ante calculation of project emission, baseline emission, emission reduction is to be provided. (Cp guidelines for completing the CDM-PDD)	CAR-B7	OK
			The estimated emission reduction figure on page 8 and 9 mentions 95791 tCO ₂ e which contradicts with that mentioned on page 19 i.e. 849994 tCO ₂ e.	CR-B5	OK
B.5.2. Have conservative assumptions been used when calculating the baseline	/PDD/ (B.6.,	DR	Refer CAR B6 and CAR B7 above	Not OK	OK



CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
emissions	Annex-3)				
B.5.3. Are uncertainties in the baseline emission estimates properly addressed?	/PDD/ B.6.)	DR	Refer CAR B4, CAR B6 and CAR B7	Not OK	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>					
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 ACM 0002 No leakages to be considered for the wind power generation	OK	
B.6.2. Have conservative assumptions been used when calculating the leakage emissions?	/PDD/ (B.6.)	DR	Not Applicable	OK	
B.6.3. Are uncertainties in the leakage emission estimates properly addressed?	/PDD/ (B.6.) /ACM0002/	DR	Not Applicable	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	/PDD/ (B.6.)	DR	The CARs/CRs given in section B have to be closed satisfactorily before forming	Not OK	OK



CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
related to the mitigation of climate change.			an opinion.		
B.8. Monitoring Methodology <i>It is assessed whether the project applies an appropriate baseline methodology.</i>					
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	<p>Section B.7.1 mentions that the Net electricity is measured whereas section B.7.2 page 32 mentions that "the net electricity supply is measured and/or calculated" Clarification is requested.</p> <p>-----</p> <p>The section B.7.1 of the PDD mentions that EGy is metered. Clarification is requested whether the same parameter is measured by one dedicated joint meter/more connected to the project activity or a shared joint meter(s) which is also connected to other WEGs additional to the project activity? To facilitate the verification process the metering provisions of EGy should be provided in the section B.7.1 and Annex-4 of the PDD.</p>	CR-B6	OK
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	Yes	OK	



CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
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	No project emission applies for WTG projects. Hence no monitoring is required.	OK	
B.9.2. Are the choices of project GHG indicators reasonable and conservative?	/PDD/ (B.3.)	DR	See the above comment	OK	
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	See the above comment	OK	
B.9.4. Is the measurement equipment described and deemed appropriate?	/PDD/, (B.7., Annex -4)	DR	See the above comment	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	See the above comment	OK	
B.9.6. Is the measurement interval identified and deemed appropriate?	/PDD/ (B.7., Annex -4)	DR	See the above comment	OK	
B.9.7. Is the registration, monitoring, measurement and reporting procedure defined?	/PDD/ (B.7., Annex -4) /IM01/	DR I	See the above comment	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	See the above comment	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	See the above comment	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 CR B6 and CR B7	OK	
B.10.2. Are the choices of baseline GHG indicators reasonable and conservative?	/PDD/ (B.3.)	DR	Yes the choices of project GHG indicators are reasonable and conservative.	OK	
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 CR B6 and CR B7	Not OK	OK
B.10.4. Is the measurement equipment described and deemed appropriate?	/PDD/ (B.7., Annex -4)	DR	Refer CR B7	Not OK	OK
B.10.5. Is the measurement accuracy addressed and deemed appropriate? Are	/PDD/ (B.7., Annex	DR	Refer CR B7	Not OK	OK



CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
procedures in place on how to deal with erroneous measurements?	-4)				
B.10.6. Is the measurement interval for baseline data identified and deemed appropriate?	/PDD/ (B.7., Annex -4)	DR	Yes the measurement interval identified and deemed appropriate	OK	
B.10.7. Is the registration, monitoring, measurement and reporting procedure defined?	/PDD/ (B.7., Annex -4)	DR	Refer CR B7	Not OK	OK
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 CR B7	Not OK	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	
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	As per ACM 0002 no leakages to be considered for the wind power generation	OK	
B.11.2. Are the choices of project leakage indicators reasonable and conservative?	/PDD/ (B.7.)	DR	Not Applicable	OK	
B.11.3. Is the measurement method clearly stated for each leakage value to be monitored and deemed appropriate?	/PDD/ (B.7.)	DR	Not Applicable	OK	



CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
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.) /LOA-H/ /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	
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.) /LOA-H/	-	Same as above	OK	
B.12.3. Are the sustainable development indicators in line with stated national priorities in the Host Country?	/PDD/ (A.2.) /LOA-H/	-	Same as above	OK	
B.13. Project Management Planning <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/	DR, I	Yes the authority and responsibility of overall project management clearly described	OK	
B.13.2. Are procedures identified for training of monitoring personnel?	/PDD/ /IM 01/	DR, I	Training has been identified and provided by M/s. Suzlon Energy Limited	OK	



CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
	/O&M/		and also provision has been made to recruit trained and competent person. This was verified during interview.		
B.13.3. Are procedures identified for emergency preparedness for cases where emergencies can cause unintended emissions?	/IM 01/	I	All possible emergencies had been identified and documented Onsite Emergency Plan exists.	OK	
B.13.4. Are procedures identified for review of reported results/data?	/IM 01/	I	Yes	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	
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	The start date of the project activity is stated as 1 st January 2008 in section C.1.1 whereas in section A.2 mentions the project has been commissioned in September 2007. Clarification requested.	CR C1	OK
C.2.	Is the start of the crediting period clearly defined and reasonable?	/PDD/ (C.2.)	DR	The year vintage mentioned under section A.4.4 should match with the start date of crediting period as mentioned under section C.2.2.1. Also refer CAR A3	CAR C1	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>						



CHECKLIST QUESTION		Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
D.1.	Has an analysis of the environmental impacts of the project activity been sufficiently described?	/PDD/ (D.1.) /IM01/ /LOA-H/	DR	Yes, analysis of environmental impacts of the project activity has been sufficiently described in section D.1 of PDD	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.)	DR	No host party requirements for EIA in case of wind power project (as it has a positive impact and little adverse impact).	OK	
D.3.	Will the project create any adverse environmental effects?	/PDD/ (D.1.)	DR	The project activity does not have any major adverse impacts on environment.	OK	
D.4.	Are transboundary environmental impacts considered in the analysis?	/PDD/ (D.1.)	DR	NA	NA	
D.5.	Have identified environmental impacts been addressed in the project design?	/PDD/ (D.2.)	DR	No adverse impacts have been identified	OK	
D.6.	Does the project comply with environmental legislation in the host country?	/PDD/ (D.1.)	DR	Yes the project complies with the environment legislation in the Host country.	OK	
For Small-scale projects						



CHECKLIST QUESTION		Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
D.7.	Does host country legislation require an analysis of the environmental impacts of the project activity?			NA	NA	
D.8.	Does the project comply with environmental legislation in the host country?			NA	NA	
D.9.	Will the project create any adverse environmental effects?			NA	NA	
D.10.	Have environmental impacts been identified and addressed in the PDD?			NA	NA	
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.) /LHSC/	DR	The description under section E1 of PDD does not describe how the local stakeholders were identified, informed and invited for the local stake holder's consultation process.	CR E1	OK
E.2.	Have appropriate media been used to invite comments by local stakeholders?	/PDD/ (E.1.) /LHSC/	DR	Refer CR E1	Not OK	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	/moef/		Stakeholders consultation is not required by regulations/laws in the host country, Moreover the project proponent has gone for a local stakeholder consultation.	OK	



CHECKLIST QUESTION		Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
with such regulations/laws?						
E.4.	Is a summary of the stakeholder comments received provided?	/PDD/ (E.2.) /LSHC/	DR	Yes	OK	
E.5.	Has due account been taken of any stakeholder comments received?	/PDD/ (E.3.) /LSHC/	DR	Since no adverse comments were received no action has been taken on this account	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 owner response	Validation team conclusion
CAR A1 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 30 WEG's must be provided in a tabular format.	A.1.1	The unique identification of the location of the turbines has been enlisted in the table in the Appendix 2 of the revised PDD	The unique identification of the project activity is adequately addressed in section A.4.1.4. OK
CAR A2 The title of the project activity mentioned in the PDD does not correspond with that given in inverted commas in the Host Country Approval. Moreover, the contact address stated in the Host country approval as well as Annex I of PDD mentions the Postfix/ZIP as 400 101 which doesn't correspond to the location i.e. Santacruz (E). Appropriate correction requested.	A.2.2	The title is now changed to be inline with that given in the Host Country Approval. The Postfix/ZIP is wrongly mentioned in the Host country approval and Annex I of PDD. The Postfix/ZIP which corresponds to the contact address (Santacruz, East) is 400 055. The Annex I of the PDD has been modified accordingly.	The title of the project activity and the contact details are now corrected in the revised PDD. Hence CAR is closed.
CAR A3 (Related to completeness of PDD) <ul style="list-style-type: none"> The section 'view of project participants on the contribution of the project activity to sustainable development' should not exceed one page (Cp guidelines for completing the CDM-PDD). The section A.4.1 of PDD should not be 	A.5.1	The section write-up is compressed to one page in the revised PDD. It is corrected and updated	The particular section of modified PDD is appropriately modified. OK Section A.4.1 in



Draft report clarification requests and corrective action requests by validation team	Ref. To checklist question in table 2	Summary of project owner response	Validation team conclusion
<p>filled. The map for unique identification is to be provided in section A.4.1.4 of PDD.</p> <ul style="list-style-type: none"> Section A.4.3 of PDD should include a description of how environmentally safe and sound technology is used in the project activity (Cp guidelines for completing the CDM-PDD). The dates mentioned under section C. of PDD must be in DD/MM/YYYY format. (Cp guidelines for completing the CDM-PDD). The date of completion of the application of baseline study and monitoring methodology is not in DD/MM/YYYY format. Also indicate if the person/entity is also a project participant listed in Annex-1. (Cp guidelines CDM-PDD) The description about the western grid, the life cycle emissions, net leakage, independent power projects etc under section B.3 of PDD is not in line with the guidelines. (Cp CDM-PDD). 		<p>in the revised PDD.</p> <p>It is corrected and updated in the revised PDD.</p> <p>The Date format is revised as per DD/MM/YYYY format through out the PDD</p> <p>The Date format is revised as per DD/MM/YYYY</p> <p>Section B.3 is revised as per guidelines.</p>	<p>appropriately filled in the modified PDD. OK</p> <p>Section A.4.3 in modified PDD is inline with guidelines for completing CDM-PDD. OK</p> <p>The date format mentioned in the modified PDD is now OK. OK</p> <p>The date format mentioned in the modified PDD is now OK. OK</p> <p>The section B.3 corrected in the modified PDD.</p>
<p>CAR B1</p> <p>Section B.4. Subsection "Approach" mentions that "Equal weights (for OM and BM) have been provided by default as per the norms" is not in line with ACM0002 ver 6 which mentions the default weight of 0.75 for wOM and 0.25</p>	B.2.4	The section B.4 is revised accordingly	The default weights for wOM and wBM are corrected inline with the methodology requirements. 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 team conclusion
for wBM. (Cp ACM0002 ver 6 page 10)			
CAR B2 Explanation and justification of key assumptions and rationales for determination of baseline scenario is missing in section B.4 of the PDD. Ex. Estimation of electricity generation from the project activity.	B.2.4,B.2.6	The explanation and justification of key assumptions and rationales is now provided in section B.4 of revised PDD.	The baseline scenario is appropriately described transparently with mention of input parameters and proper justification for the same is correctly mentioned in the revised PDD. OK
CAR B3 The vintage year for calculation of $EF_{BM,y}$ is to be stated in section B.4 of PDD.	B.2.4,B.2.6	The Vintage year calculation of $EF_{BM,y}$ is stated and updated according to latest version of CEA CO ₂ database (version 3).	The vintage is now correctly mentioned as per the latest CEA CO ₂ database (version 3). OK
CAR B4 Latest CEA database Version 3.0 (December 2007) should be used for all the relevant figures throughout the PDD.	B.2.4,B.2.6,B.5.3	All the relevant figures are revised according to the latest version of CEA CO ₂ database throughout the revised PDD	The latest available CEA CO ₂ baseline database is used for used for determination the emission factor in the revised PDD and the same is determined using ex-ante approach. OK
CAR B5 Related to additionality 1. The description/justification given under sub-step 1a. section B.5 is not in line with the Additionality Tool Ver 03. Step 1a	B.3.2	The realistic and creditable alternatives to the project activity are	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 team conclusion
<p>should only define the realistic and credible alternatives to the project activity. Moreover, as per the additionality tool fossil fuel based plant can not be considered as a realistic and credible alternative for wind power project.</p> <p>2. Sub-step 3b of Additionality tool ver3 has not been discussed in the PDD. Also Step 5: Impact of CDM registration has been discussed which is not in line with Additionality Tool ver3. Moreover, the latest version of Additionality Tool i.e ver 5 can be referred.</p> <p>3. As per the guidelines for completing the PDD projects which have been implemented before the start of the validation should incorporate a detailed timeline of the project activity in section B.5.</p>		<p>included in the revised PDD.</p> <p>The latest version of the additionality tool ver 05 is referred in the revised PDD.</p> <p>The time schedule of the project activity is included in the PDD, all evidences are provided to the DOE.</p>	<p>The latest version of additionality tool i.e. version 5 has been referred. OK</p> <p>The appendix 2 in the revised PDD demonstrates the project progress was happening in parallel with the process to secure CDM status from the management decision. The evidences^{/PTL/} provided to support the milestones were found credible. Hence the prior consideration of CDM is assessed to be serious in</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 team conclusion
<p><u>Related to global stakeholder comment:</u></p> <p>Considering the GSC received from Mr. Naveen Sharma the clarification is requested against part of his comment as reproducible below:</p> <p>4. <i>Comment No.2:</i> The project proponent mentions that "There were incidences in which the developers of the wind farms are requested not to dispatch the electricity, which hampered the financial projections significantly." The above statement is a very generic one. Can the project proponent substantiate this point by mentioning specific instances when wind farm owners have been asked to not dispatch in the state of Maharashtra which is buying power from every possible</p>		<p>Comment No.2: PP has issued purchase order to Suzlon Energy Limited (SEL) dated 09/02/2007. Considering the turnkey order to Suzlon Energy Limited, SEL had applied for the clearances to execute and commission the project. During the process of clearances and commissioning, PP had received temporary commissioning clearances based on load 10 MW (at rated capacity during peak wind season) to 25 MW (under rated capacity during low wind</p>	<p>line with Appendix 46 of EB 41 meeting report. GSC comment number 3 is also associated with timeline of financial closer.</p> <p>OK. However this cannot be accepted as a barrier.</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 team conclusion
<p>source.</p> <p>5. <i>Comment No.3:</i> The project proponent states on page 21 that the financial closure for the project is yet to be done. The project proponent also argues that the low DSCR of the project would make it very difficult for the project to get a loan sanctioned. However, even without financial closure the project proponent seems sure that the project will be commissioned within the next 2 months (September 2007). Also Page 2 of the PDD states that the PPA for the project</p>		<p>season), which is linked to upcoming infrastructure i.e. 220 KV substation to cope up the planned projects capacity within the area. The evidences of for the same are provided to the DOE.</p> <p>Comment No.3 Entering into PPA with the Utility and achieving financial closure are two different things. It is not necessary that the project developer should achieve financial closure before entering to PPA. Off taker is not concerned with financial closure.</p> <p>The project developer</p>	<p>The response is acceptable. However, now that the project developer has obtained the financial sanction, it cannot be construed as barrier.</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 team conclusion
<p>has already been signed.</p> <p>The PDD is dated 8th July 2007. We request the PP to kindly inform which type of wind project can be commissioned within a period of two months from the zero date. Moreover if the project can be commissioned without financial closure, this can be either because the project proponent has sufficient financial strength to fund the project on its own or the project is funded through supplier's credit. Both of which refute the argument that the project faces a financial barrier on account of financial closure.</p> <p>Moreover, given that the PPA is already executed (before financial closure), it is clear that both the project developer and the off-taker deem financial closure as a non issue for the project.</p>		<p>released the order for WEGs along with advance (funded from out of the equity to be brought in the project developer0 in February 2007. Hence, the period for implementation considered is 8- 9 months, which is adequate to commence first phase of 24 MW. The second pahse is stated to commence only in December 2007, which is another 3 months away.</p> <p>As reagrds financial closure, the project developer has not received the sanction letter yet by that time though they have been pursuing the banks. Hence, it was a barrier for the project activity. Though the project has obtained the sanction, the rate of interest is quite high at 12.75%, once</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 team conclusion
<p>6. <i>Comment no.4:</i> On page 18, the project proponent mentions that for a capital cost of 50 to 60 million per mega watt the levelised cost of energy generation comes out in the range of Rs 4 to 4.5 per kWh. Details of how the project proponent has arrived at this value for levelised tariff along with detailed calculations of the same should be provided.</p> <p>There is obviously some mistake in the calculations, can the DOE please recheck and provide the excel sheet for public comments.</p>		<p>again proving the point that finance is a barrier for this project</p> <p>Comment no.4: Since Additionality Tool (Ver.05) does not permit use of any financial indicator other than IRR (project or equity), the use of levelized cost as financial indicator has been dispensed with. The additionality is established using equity IRR as required by the Additionality Tool</p>	OK
<p>CAR B6 Explanation and justification of all relevant methodological choices must be provided in section B.6.1 of PDD. Also clearly state which equations will be used in calculating emission reductions. (Cp guidelines for completing the CDM-PDD)</p>	B.5.1,B.5.2,B.5.3	Explanation and justification of all relevant methodological choices and the equations for emission reduction are now provided in section B.6.1 of the revised PDD	The section B.6.1 of the revised PDD is appropriately modified inline with the guidelines for completing CDM-PDD. 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 team conclusion
CAR B7 The description provided under sub section 'emission by source', 'leakage', 'baseline emission' in section B.6.3 is not in line with the guidelines. Also the ex-ante calculation of project emission, baseline emission, emission reduction is to be provided. (Cp guidelines for completing the CDM-PDD)	B.5.1,B.5.2,B.5.3	Section B 6.3 is revised according to guidelines and ex-ante calculations of project emission, baseline emission, emission reduction are provided as per guidelines.	The section B.6.3 of the revised PDD is appropriately modified so as to provide the ex-ante calculation of emission reductions as per the requirements of guidelines for completing CDM-PDD. OK
CAR C1 The year vintage mentioned under section A.4.4 should match with the start date of crediting period as mentioned under section C.2.2.1.	C.2	Start date of the crediting period is revised inline with the starting date in the revised PDD.	Correction is OK.
CR A1 The description under the section B.3 first para last line concludes with the consideration of "the zone encompassing the WEG installations to the nearest grid interconnection point" as the project boundary. It is not clear if the power plants connected to the grid are included in project boundary or not. Clarification is requested.	A.1.1	The project boundary is clearly mentioned in the revised PDD	OK
CR A2 The description of the project activity given in section A.2 should be updated according to the current status of project execution.		Section A 2 is revised according to the current project status.	Section A.2 in revised PDD is appropriately filled.
CR B1	B.2.1,B.2.2	Reliance Energy Ltd. one	The modified PDD is clear



Draft report clarification requests and corrective action requests by validation team	Ref. To checklist question in table 2	Summary of project owner response	Validation team conclusion
<p>In context of electricity supply by project activity, the PDD mentions the following:</p> <ul style="list-style-type: none"> • The statement "The project proponent has signed PPA for 13 years with Maharashtra state private utility Reliance Energy Ltd (REL)" in section A.2 on page 2. • The statement "The generated electricity is fed into the Western regional grid through local grid" in section A.2 on page 3. • The statement "The project activity supplies electricity to the utility which supplies power to the suburbs of Mumbai connected to the western regional grid" in section B.2 on page 10. • The statement "the CDM project would be supplying electricity to the western regional grid" in section B.3 on page 11. <p>Clarification is requested whether the project activity supplies electricity to the private utility or to the grid.</p>		<p>of the major Distribution Company of Maharashtra state. Maharashtra is the one of the state of the Western regional grid network.</p> <p>The distribution area of Reliance Energy Ltd. is suburbs of city Mumbai, capital city of state Maharashtra, and economic hub of India.</p> <p>As a distribution utility of the state the wind farm power is being sold to REL as per PPA and drawn up to REL distribution network utilizing common transmission network / infrastructure.</p> <p>The revised PDD addresses the clarification requested by DOE for better clarity.</p>	<p>to mention that RINL has signed PPA with Reliance Energy Ltd (REL) which is a distribution company connected to the western regional grid.</p> <p>OK</p>
CR B2	B.2.4	The same has been	Correction is 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 team conclusion
The year vintage 2001-02 to 2005-06 as mentioned on page 17 contradicts to the year vintage used for calculation of operating margin and build margin emission factor in section B.4 of PDD.		corrected in the revised PDD. Moreover the latest CEA database is referred for arriving at the grid emission factor.	
<p>CR B3 Related to additionality.</p> <p>1. Annual estimated generation is given as 3.54 million units per annum vide page 8 of PDD. This yields a PLF of about 27%. However, in the calculation PLF has been taken at 23%. Clarification requested.</p> <p>Related to spreadsheet:</p> <p>2. Though the relevant rows in the 'Project Cost' worksheet are hidden, it appears the WACC has been computed treating MERC recommendation of 16% ROE as post-tax ROE. The tables given in the Order do not seem to support this contention. Clarification requested.</p> <p>3. MEDA deposit charges and IDC charges</p>	B.3.2	<p>27% PLF was estimated without taking into consideration the machine availability, grid availability and line losses. After accounting for the same, the PLF works out to be 22.88% which has been taken into account in preparing the generation sheet.</p> <p>Revised spread sheet is submitted which is inline the revised PDD.</p> <p>Revised spread sheet is</p>	<p>OK</p> <p>OK</p> <p>OK</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 team conclusion
computation not clear in the IRR spreadsheet. 4. Repayment has been shown in the year 2006-07 and 2007-08 ('Profit and Loss' Worksheet), while starting date of project activity (p33 of PDD) has been stated as January 2008. Clarification requested.		submitted which is inline the revised PDD. In the revised worksheet, the loan repayment is taken as per the sanction letter	OK
CR B4 The table provided on page 13 includes CO2 out of project emissions. Clarification requested on source of project emissions.	B.4.1	The same is corrected in the revised PDD.	OK
CR B5 The estimated emission reduction figure on page 8 and 9 mentions 95791 tCO2e which contradicts with that mentioned on page 19 i.e. 849994 tCO2e.	B.5.1	The figure of emission reduction is corrected in the revised PDD.	OK
CR B6 Section B.7.1 mentions that the Net electricity is measured whereas section B.7.2 page 32 mentions that "the net electricity supply is measured and/or calculated" Clarification is requested.	B.8.1,B.10.1,B.10.3	Section B 7.1 and B 7.2 is corrected is the revised PDD.	OK
CR B7 The section B.7.1 of the PDD mentions that EGy is metered. Clarification is requested whether the same parameter is measured by one dedicated joint meter/more connected to	B.8.1,B.10.1,B.10.3,B.10.4 ,B.10.5,B.10.7	The project activity will have common dedicated meter for the project activity only. The meter will measure the export	The project activity has a common dedicated meter for measuring export and import of electricity. The section B.7 of the revised



Draft report clarification requests and corrective action requests by validation team	Ref. To checklist question in table 2	Summary of project owner response	Validation team conclusion
the project activity or a shared joint meter(s) which is also connected to other WEGs additional to the project activity? To facilitate the verification process the metering provisions of EGy should be provided in the section B.7.1 and Annex-4 of the PDD.		and import of electricity and the same will be used for arriving at net electricity export to be used for emission reduction calculations.	PDD mentions the metering provisions. OK
CR C1 The start date of the project activity is stated as 1 st January 2008 in section C.1.1 whereas in section A.2 mentions the project has been commissioned in September 2007. Clarification requested.	C.1	The same has been corrected as per the latest status of the project in the revised PDD.	Correction is OK.
CR E1 The description under section E1 of PDD does not describe how the local stakeholders were identified, informed and invited for the local stakeholder's consultation process.	E.1	The section E1 of the PDD is revised with the specific description on local stakeholder consultation process.	OK



CERTIFICATES



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. Imran Ustad

born on 1981-05-06

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 2010-07-04
Certification registration No. 07 07 01 - 42

Essen, 2007-07-05

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



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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. Dipl.-Ing. Rainer Winter

born on 1963-02-21

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. 04 02 154-03

Essen, 2007-07-06

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