

VALIDATION REPORT

Madras Cements Limited

**74 MW wind energy project in
Tamilnadu, India**

SGS Climate Change Programme

SGS United Kingdom Ltd
SGS House
217-221 London Road
Camberley Surrey
GU15 3EY
United Kingdom

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10/09/2012		CDM.VAL2836	
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74 MW wind energy project in Tamilnadu, India			
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SGS United Kingdom Limited		Madras Cements Limited	
Publication of PDD for Stakeholders Consultation			
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First PDD Version and Date:		Version 01, dated - 17/06/2009	
Final PDD Version and Date:		Version 11, dated - 10/09/2012	
Summary:			
<p>Madras Cements Limited has commissioned SGS to perform the validation of the project: 74 MW wind energy project in Tamilnadu, India</p> <p>Methodology Used: ACM0002, Consolidated baseline methodology for grid-connected electricity generation from renewable sources</p> <p>Version and Date: 12.3.0, Valid from 17/09/2010 onwards; Requests for registration can be submitted until 11 Jan 2013 23:59:59 GMT</p> <p>The scope of the validation is defined as an independent and objective review of the project design document, the project's baseline study and monitoring plan and other relevant documents. The information in these documents is reviewed against CDM Validation and Verification Manual (version 1.2), Kyoto Protocol requirements and UNFCCC rules.</p> <p>The report is based on the assessment of the project design document undertaken through stakeholder consultations, application of standard auditing techniques including but not limited to document reviews, follow up actions (e.g site visit, telephone or e-mail interviews) and also the review of the applicable approved methodology and underlying formulae and calculations.</p> <p>The report and the annexed validation describes a total of 13 findings which include:</p> <ul style="list-style-type: none"> • 12 Corrective Action Requests (CARs); • 01 Clarification Requests (CLs); • 00 Forward Action Requests (FARs); and <p>All findings have been closed satisfactorily and the project will be recommended to the CDM Executive Board with a request for registration.</p>			
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Validation Team:		<input checked="" type="checkbox"/> No Distribution (without permission from the Client or responsible organisational unit)	
Harsh Raval – Lead Assessor/ Team Leader/ Local Assessor Vikas Bankar - Sectoral Expert Anshul Sharma – Financial Expert			
Technical Review:		<input type="checkbox"/> Limited Distribution	
Date: 10/09/2012 Name: Ramkrishna Patil			
Trainee Technical Reviewer:		<input type="checkbox"/> Unrestricted Distribution	
Name: N/A			
Authorised Signatory:			
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Abbreviations

BFUL	BF Utilities Limited
BM	Built Margin
BSE	Bombay Stock Exchange
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CEA	Central Electricity Authority
CER	Certified Emission Reduction
CL	Clarification Request
CM	Combined Margin
CO	Carbon Monoxide
CO ₂	Carbon Di-Oxide
COP/MOP	Conference of Parties/Meeting of Parties
DNA	Designated National Authority
DOE	Designated Operational Entity
DR	Document Review
EB	Executive Board
EF	Emission Factor
EIA	Environmental Impact Assessment
EPC	Engineering, Procurement and Construction
ER	Emission Reduction
FAR	Forward Action Request
GHG	Greenhouse Gas(es)
HCA	Host Country Approval
IPCC	Intergovernmental Panel on Climate Change
IRR	Internal Rate of Return
ISHC	International Stakeholder Consultation
kWh	Kilo Watt-hour
LoA	Letter of Approval
MAT	Minimum Alternate Tax
MCL	Madras Cements Limited
MNES	Ministry of Non-Conventional Energy Sources
MoEF	Ministry of Environment and Forest
MP	Monitoring Plan
MW	Mega Watt
MWh	Mega Watt-hour
O&M	Operation and Maintenance
ODA	Official Development Assistance
PDD	Project Design Document
PLF	Plant Load Factor
PO	Purchase Order
PP	Project Participant
PPA	Power Purchase Agreement
QA/QC	Quality Assurance/Quality Control
RBI	Reserve Bank of India
ROE	Return On Equity
RRR	Required Rate of Return
SPM	Suspended Particulate Matter
UNFCCC	United Nations Framework Convention on Climate Change
VVM	Validation and Verification Manual
WACC	Weighted Average Cost of Capital
WTG/WE	Wind Turbine Generator/ Wind Energy Converter

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1. Validation Opinion

SGS United Kingdom Ltd has been contracted by Madras Cements Limited to perform a validation of the project: "74 MW wind energy project in Tamilnadu, India".

The Validation was performed in accordance with the UNFCCC criteria for the Clean Development Mechanism Validation and Verification Manual (Version 01.2) and host country criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

The project activity involves a total of 67 WTGs (involving 43 * 800 KW and 24 * 1650 KW WTGs) by Madras Cements Limited (MCL), in Coimbatore, Dindigul and Tirunelveli districts of Tamilnadu, India with a total installed capacity of 74 MW. The project activity exports the electricity to the Southern regional electricity grid of India, which is mainly contains the fossil fuel based generation.

Thus, by generation of the clean renewable energy through wind turbine generators, the project activity will result in reductions of greenhouse gas (GHG) emissions that are real, measurable and give long-term benefits to the mitigation of climate change.

In our opinion, the project meets all relevant UNFCCC, CDM criteria and all relevant host country criteria. The project correctly applies methodology ACM0002 version 12.3.0 dated 17th September 2010. It is demonstrated that the project is not a likely baseline scenario. Emission reductions attributable to the project are hence additional to any that would occur in the absence of the project activity.

The total emission reductions from the project are estimated to be 1,562,880 t of CO₂e over a 10 years crediting period, averaging 156,288 tones of CO₂e annually. The emission reduction forecast has been checked and it is deemed likely that the stated amount is achieved given the underlying assumptions do not change.

The project will hence be recommended by SGS for registration with the UNFCCC.

Signed on Behalf of the Validation Body by Authorized Signatory

Signature:



Name: Siddharth Yadav

Date: 09/10/2012

2. Introduction

2.1 Objective

Madras Cements Limited has commissioned SGS to perform the validation of the project: '74 MW wind energy project in Tamilnadu, India' with regards to the relevant requirements for Clean Development Mechanism (CDM) project activities. The purpose of a 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 relevant UNFCCC and host country criteria are validated in order to confirm that the project design as documented is sound and reasonable and meets the stated requirements and identified criteria. Validation is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of certified emission reduction (CER). UNFCCC criteria refer to the Kyoto Protocol criteria and the CDM rules and modalities and related decisions by the COP/MOP and the CDM Executive Board.

2.2 Scope

The scope of the validation is defined as an independent and objective review of the project design document, the project's baseline study and monitoring plan and other relevant documents. The information in these documents is reviewed against Kyoto Protocol requirements, UNFCCC rules and associated interpretations. SGS has employed a risk-based approach in the validation, focusing on the identification of significant risks for project implementation and the generation of CERs.

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

2.3 GHG Project Description

The project activity involves the installation of a wind farm enabling generation of electricity by Wind Turbine Generators (WTGs) with an installed capacity of 74 MW. The project activity involves the installation of 67 WTGs with the capacity-wise breakup as follows:

- 43 WTGs of 0.8 MW constituting 34.4 MW in Dindigul District, Tamil Nadu, India
- 24 WTGs of 1.65 MW constituting 39.6 MW in Coimbatore and Tirunelveli Districts, Tamil Nadu, India

The project activity involves a total of 67 WTGs (involving 0.8 MW of Enercon make and 1.65 MW WTGs of Vestas make) by Madras Cements Limited (MCL), in Coimbatore, Dindigul and Tirunelveli districts of Tamil Nadu, India with a gross installed capacity of 74 MW. The electricity generated by the project activity is being exported to the Southern regional electricity grid of India through Tamil Nadu State Electricity Board, which is mainly based on higher carbon intensive fuels like coal. Thus, by reducing the dependence on carbon intensive fuels and replacing the generation by such fuel with wind power generation, the project activity achieves the GHG emission reductions. The project activity is fully commissioned and is in operation successfully. The Validation team has validated the accuracy of the project description through a combination of steps consisting of review commissioning certificates for the WTGs, site visit, and interview of the Project Participant and their representatives.

2.4 The Names and Roles of the Validation Team Members

Assessment Team	Role
Harsh Raval	Lead Assessor / Team Leader / Local Assessor
Vikas Bankar	Sectoral Scope Expert (TA 1.2)
Anshul Sharma	Financial Expert

Technical Review	Role
Ramkrishna Patil	Technical Reviewer and Sectoral Scope Expert (TA 1.2)

3. Methodology

3.1 Review of CDM-PDD and Additional Documentation

The validation is performed primarily as a document review of the publicly available project document version 1.0 dated 17/06/2009 and the subsequent version 02 dated 05/07/2010, version 03 dated 15/10/2010, version 04 dated 30/12/2010, version 05 dated 28/04/2011, version 06 dated 11/11/2011, version 07 dated 22/02/2012, version 08 dated 06/06/2012, version 09 dated 01/08/2012, version 10 dated 29/08/2012 and version 11 dated 10/09/2012. The assessment is performed by trained assessors using a validation protocol attached as Annex 2, table 2.

The site visit was performed on 05/11/2009 to 06/11/2009. The results of the same are summarized in separate checklist as Annex 1. The validation team has confirmed the statements of the PDD through review of documents.

3.2 Use of the Validation Protocol

The validation protocol used for the assessment is designed in accordance with the Validation and Verification Manual; Version 01.2 dated 30 July 2010. It serves the following purposes:

- it organises, details and clarifies the requirements the project is expected to meet; and
- It documents both how a particular requirement has been validated and the result of the validation (reporting).

The validation protocol consists of several tables. The different columns in these tables are described below.

Checklist Question	Ref ID	Means of Verification (MoV)	Comment	Draft and/or Final Conclusion
The various requirements are linked to checklist questions the project should meet.	Lists any references and sources used in the validation process. Full details are provided in the table at the bottom of the checklist.	Explains how conformance with the checklist question is investigated. Examples of means of verification are document review (DR) or interview (I). N/A means not applicable.	The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached.	This is either acceptable based on evidence provided (Y), or a Corrective Action Request (CAR) due to non-compliance with the checklist question (See below). Clarification Request (CL) is used when the validation team has identified a need for further clarification.

The completed validation protocol for this project is attached as Annex A.1 to this report

3.3 Findings

As an outcome of the validation process, the team can raise different types of findings

A Clarification Request (CL) is raised if information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met

Where a non-conformance arises the Assessor shall raise a **Corrective Action Request (CAR)**. A CAR is issued, where:

- The Project Participants have made mistakes that will influence the ability of the project activity to achieve real, measurable additional emission reductions;
- The CDM requirements have not been met;
- There is a risk that emission reductions cannot be monitored or calculated.

The validation process may be halted until this information has been made available to the assessors' satisfaction. Failure to address a CL may result in a CAR. Information or clarifications provided as a result of a CL may also lead to a CAR.

A Forward Action Request (FAR) is raised during validation to highlight issues related to project implementation that require review during the first verification of the project activity. FARs shall not relate to the CDM requirements for registration.

Corrective Action Requests and Clarification Requests are raised in the draft validation protocol and detailed in a separate form (Annex A.3). In this form, the Project Developer is given the opportunity to "close" outstanding CARs and respond to CLs and FARs.

3.4 Internal Quality Control

Following the completion of the assessment process and a recommendation by the Assessment team, all documentation will be forwarded to a Technical Reviewer. The task of the Technical Reviewer is to check that all procedures have been followed and all conclusions are justified. The Technical Reviewer will either accept or reject the recommendation made by the assessment team. Findings can be raised at this stage and client must address them within agreed timeline.

4. Validation Findings

4.1 Approval

The PP submitted the letter of approval issued by the Indian DNA, 'The Ministry of Environment & Forests' bearing Letter No.4/5/2010-CCC dated 12/08/2010^{3.1/}. The name of the project activity & Project Participant in the HCA was verified against that in section A.1 and section A.3 of the PDD, being submitted for request for registration and was found to be consistent and hence accepted.

The letter of approval confirms that:

- (a) The Government of India has ratified the Kyoto Protocol in August 2002 and hence is a Party to the Kyoto Protocol
- (b) The HCA is an approval of voluntary participation in the proposed CDM project activity
- (c) The project contributes to Sustainable Development in India
- (d) The HCA refers to the precise proposed CDM project activity – '74 MW wind energy project in Tamilnadu, India' – mentioned in the PDD being submitted for registration

The LoA letter is unconditional with respect to (a) to (d) mentioned above. It is confirmed that HCA complies with the requirement stipulated in the paragraph 44-50 VVM version 01.2.

The authenticity of the submitted approval letter has been checked with the Indian DNA. The DNA has through mail dated 28/02/2012^{3.2/} confirmed the approval to the Project Participant for the particular project activity under validation.

Discussion of CARs/CLs:

The letter of approval from the host Party DNA was not submitted by the project Participant with version 01 of the PDD and hence **CAR#01** was raised. In response to CAR#01, PP has submitted a copy of the same and therefore CAR#01 was **closed out**.

Opinion

The validation team confirms that the HCA submitted by the PP complies with the requirements of paragraphs 44-50 of the VVM version 01.2 (EB 55 Annex 1).

4.2 Participation Requirements

The host country for this project is India and has ratified the Kyoto Protocol on 26th August 2002. This was checked from the UNFCCC website <http://maindb.unfccc.int/public/country.pl?country=IN>. The Project Participant listed in section A.3 of the PDD is Madras Cements Limited (MCL). The HCA letter from the Indian DNA approves the participation of Madras Cements Limited (MCL); therefore the Project Participant is approved by the Party to the Kyoto Protocol. This is found in accordance with para 52 and 53 of VVM (version 01.2).

No Annex I Party has been identified in the PDD version 01 or the final PDD, being submitted along with the request for registration and therefore no further Letter of Approval was available. It is observed that the CDM EB has agreed that the registration of a CDM project activity can take place without an Annex I Party being involved at the stage of registration although it should be noted that before the CERs can be transferred to an Annex 1 Party, a Letter of Approval from an Annex 1 Party will need to be submitted.

The PP has provided the MOC letter^{4/} dated 30/01/2012, which is duly verified against the project title and information mentioned in Annex 1 and found to be consistent and hence accepted.

The proposed CDM project has been web hosted in the UNFCCC website <http://cdm.unfccc.int/Projects/Validation/DB/BHX0TQO6T2FMQNF1A59AGMX7X5E4DD/view.html> for global stakeholder's process to invite comment as per the CDM requirements. As per the CDM EB guidelines the proposed CDM project has been web hosted from 24/06/2009 to 23/07/2009. From the above discussion, it has been concluded that the proposed CDM project activity meets the relevant CDM requirements.

Opinion

In accordance with the requirements of paragraphs 51 to 54 of the VVM version 01.2 (EB 55 Annex 1), the validation team is of the opinion that, the proposed CDM project activity meets all the relevant participation requirements.

4.3 Project Design Document including Project Description

The project activity is entitled as "74 MW wind energy project in Tamilnadu, India". The project activity title is transparent and unique. The uniqueness of the same has been checked with the registered project database^{/5.3/} and under validation project database^{/5.4/} available/accessible through the UNFCCC website. During the search only one project activity have been found with the same title, which is current project activity webhosted at <http://cdm.unfccc.int/Projects/Validation/DB/BHX0TQO6T2FMQNF1A59AGMX7X5E4DD/view.html> from 24/06/2009 to 23/07/2009. Further, the project title has been consistently mentioned in the webhosted PDD, the final PDD - being submitted for RFR, Host country approval^{/3.1/} and the MoC letter^{/4/}.

The project design and its objectives have been transparently explained in the final PDD and are consistent with the timeline of the project history.

The proposed project activity is a large scale project activity with installation of new equipments. It does not cover the replacement, modification or addition to any existing project. This fact has been confirmed by the project purchase orders^{/13/}, project timeline, Investment approval^{/20/} and onsite inspections^{/8/}. Since, this is a large scale project, the final PDD, has been prepared in the Project Design Document template, version 03 (CDM-PDD), which is the correct applicable format to be used. The final PDD has been prepared in accordance with the Guidelines for completing the Project Design Document, version 07, EB41, annex 12^{/5.2/} and thus accepted by the assessment team. The Project activity has applied the approved baseline and monitoring methodology ACM0002, version 12.3.0. The methodology applicability and applications are discussed at later sections of this report.

The project activity includes the installation of grid connected 74 MW Wind power generation project in Tamil Nadu State of India. There are in total 67 WTGs out of which 43 WTGs (0.8 MW each) located in Dindigul district, 08 WTGs (1.65 MW each) in Coimbatore district and 16 WTGs (1.65 MW each) in Tirunelveli district of Tamil Nadu state in India. The project will achieve emission reductions by supplying zero emission electricity to the Southern Region Electricity Grid of India, which is dominated by fossil fuel based thermal power plants. Therefore, the net generation of the project will displace same amount of electricity of the grid and greenhouse gas (GHG) emissions will be consequently reduced as well.

The total installation of the project activity includes,

- 42 * 0.8 MW of the Enercon made E- 53 WTGs
- 1 * 0.8 MW of the Enercon made E- 48 WTG
- 24 * 1.65 MW of Vestas made V82 WTGs

The technical specification for the each type of WTGs have been submitted by the PP^{/6/} and also provided as appendix 2 of the final PDD. The technical specifications are issued by the respective suppliers and confirms with the details provided by the PP in the PDD, being submitted for request for registration.

A physical site visit had been carried out to the project activity locations on 05/11/2009 to 06/11/2009^{/8/}. The onsite inspection and assessment confirms the project details as provided in the PDD. The geographical co-ordinates for each WTG were checked on site as well as information from the respective suppliers^{/7/}. The PP has provided the same as appendix 1 of the final PDD. The geographical co-ordinates and allocation details as provided in the appendix 1 have been checked with the supplier's information and are found to be correct.

All the WTGS in the project activity have been commissioned and is successfully installed. The PP has provided the commissioning date for each WTG involved in Appendix 1 of the PDD. The commissioning dates are checked with the commissioning certificates^{/9/} issued by the Tamilnadu Electricity Board. The information provided in the PDD is found to be correct and hence accepted by assessment team.

The ownership of the project is from Madras Cements Limited, which is also a Project Participant in the project. The ownership has been confirmed by means of purchase orders^{/13/} and O&M contracts^{/24/}. The validation team recognizes that the proposed project of Madras Cements Limited (MCL) is helping the host country to fulfill its goals of promoting sustainable development. The project is expected to be in line with the host countries specific CDM requirements because;

- it is approved for voluntary participation by DNA of India
- provides direct and indirect employment to the local people
- provides electricity to the deficient electricity grid of Southern region
- leads to better quality of life for local people due to above reasons
- leads to reduced fossil fuel consumption
- Does not release pollutants like SPM, CO₂, CO, etc.

The project activity does not source any ODA funding. The project activity has been a 100% equity investment from the Madras Cements Limited. This fact has been checked from undertaking issued by the Executive Director - Finance, confirming the source of the funding and the ODA declaration^{/11/}. The same has been checked by the assessment team and is found to be appropriate. The information regarding the funding and ODA involvement has been consistently mentioned in the section A.4.5 and annex 2 of the PDD and thus, accepted by the assessment team.

The PP has provided the Modalities of Communication letter dated 30/01/2012^{/4/}. The MoC has been checked for latest available guidance for completeness check and is found complete. The project name and the Project Participant details as mentioned in the MoC are found consistent with the other documents i.e. the PDD & the Host Country Approval.

The validation team is of the opinion that the description of the proposed CDM project activity mentioned in the PDD provides a clear understanding of the precise nature of the project activity and the technical aspects of its implementation. Thus, as per the requirements of paragraphs 58 to 64 of the VVM version 01.2 (EB 55, Annex 1), the validation team confirms that the project description in the PDD is accurate and complete.

Findings:

An issue was raised to the PP in **CAR#01** as the modalities of communication form was not submitted. The issue was **closed** as the PP submitted the same in accordance with the latest available format and guidelines.

CAR#02 was raised as the geographical coordinates were not provided by the PP in consistent format in the PDD version 01. The CAR#02 was **closed** as the PP reported the coordinates in consistent decimal formats and the same are checked with the supplier's information^{/7/}.

CAR#13 was raised as the header of the PDD during the validation process was changed by the PP and was not in line with the standard PDD template. The CAR was **closed** as the PP submitted the revised PDD with necessary correction and PDD in line with the template.

Opinion

The PDD satisfies the requirements of paragraphs 55-64 of VVM version 01.2^{/5.1/} (EB 55 Annex 1). The PDD used as a basis for validation has been prepared in accordance with the latest template and guidance from the CDM Executive Board available on the UNFCCC CDM website. The PDD contains a clear description of the project activity that provides a clear understanding of the precise nature of the project activity. This description was found to be accurate and complete. It is consistent and in compliance with the actual situation. All details have been consistently mentioned throughout the PDD.

4.4 Applicability of selected methodology to the project activity

The project activity applies the approved consolidated baseline and monitoring methodology ACM0002 "Consolidated baseline methodology for grid-connected electricity generation from renewable sources" version 12.3.0^{/2.1/}. The applicability of the methodology is justified through following paragraphs of the methodology;

As per the ACM0002, version 12.3.0,

- *This methodology is applicable to grid-connected renewable power generation project activities that (a) install a new power plant at a site where no renewable power plant was operated prior to the implementation of the project activity (Greenfield plant); (b) involve a capacity addition; (c) involve a retrofit of (an) existing plant(s); or (d) involve a replacement of (an) existing plant(s).*
- The current project activity is a grid-connected renewable power generation.
- The Grid connectivity of the project activity is substantiated and confirmed by means of the Power Purchase agreements^{12/} and the Commissioning certificates^{9/}.
- The project activity is a new power plant at site where no renewable power plant was operated prior to the implementation of the project activity. The Purchase order^{13/} for the wind turbines indicates that the wind turbines are new and do not involve retrofit and/or modifications to the existing equipment.
- *The project activity is the installation, capacity addition, retrofit or replacement of a power plant/unit of one of the following types: hydro power plant/unit (either with a run-of-river reservoir or an accumulation reservoir), wind power plant/unit, geothermal power plant/unit, solar power plant/unit, wave power plant/unit or tidal power plant/unit;*
- The project activity is about installation of new wind power plant. This is confirmed through the purchase order and commissioning certificates.
- *In the case of capacity additions, retrofits or replacements (except for capacity addition projects for which the electricity generation of the existing power plant(s) or unit(s) is not affected): the existing plant started commercial operation prior to the start of a minimum historical reference period of five years, used for the calculation of baseline emissions and defined in the baseline emission section, and no capacity addition or retrofit of the plant has been undertaken between the start of this minimum historical reference period and the implementation of the project activity;*
- The project activity is not about the capacity addition i.e. it is a Greenfield plant.
- The project activity is about the installation of the Wind based Power Generation Turbine; It is not a hydro project. Thus, conditions related to hydro plants are not applicable to the project activity.

As per the ACM0002, version 12.3.0, the methodology is not applicable to the following:

- *Project activities that involve switching from fossil fuels to renewable energy sources at the site of the project activity, since in this case the baseline may be the continued use of fossil fuels at the site;*
- This is not applicable to the project activity, since it is a green field project activity and does not involve fuel switch.
- *Biomass fired power plants;*
- The proposed project activity is not a biomass fired plant.
- *A hydro power plant that results in the creation of a new single reservoir or in the increase in an existing single reservoir where the power density of the reservoir is less than 4 W/m².*
- The proposed project activity is not a hydro power plant.
- *In the case of retrofits, replacements, or capacity additions, this methodology is only applicable if the most plausible baseline scenario, as a result of the identification of baseline scenario, is "the continuation of the current situation, i.e. to use the power generation equipment that was already in use prior to the implementation of the project activity and undertaking business as usual maintenance".*
- The proposed project activity does not involve retrofit, replacement or capacity addition.

Thus, it can be concluded that the applied methodology ACM0002, version 12.3.0 is applicable to the project activity.

Further, the applied methodology refers to latest available versions of the following tools;

- 1) Tool to calculate the emission factor for an electricity system

- The same has been followed by the PP. The final PDD refers and correctly applies the tool to calculate the emission factor for an electricity system, version 02.2.1, which is the latest available version to use. The locations of windmills are in Tamil Nadu state in India. As per CEA data^{14/}, Tamil Nadu state comes under Southern regional electricity grid in India, the geographic and system boundaries of which are clearly identified and information on the characteristics of the grid is available. Thus, the tool is applicable for the application.
- 2) Tool for the demonstration and assessment of additionality
 - The latest version 0.6.0.0 of the tool for the demonstration and assessment of additionality has been used by the PP. This is the latest applicable and available version of the tool.
- 3) Combined tool to identify the baseline scenario and demonstrate additionality
 - The PP has used the tool to demonstration and assessment of additionality in demonstration of additionality and the baseline has been developed in accordance with the applied baseline methodology. Thus, combined tool is not used by the Project Participant.
- 4) Tool to calculate project or leakage CO₂ emissions from fossil fuel combustion
 - Since there is no fossil fuel combustion involved in the project site or in the project boundary, this tool is not applicable to the proposed project activity and not used/applied by the Project Participant.
 - Further, it has been checked by the assessment team by means of the site visit inspection of project boundary and project design.
 - No other greenhouse gas emissions sources within the proposed CDM project activity boundary are found, which can contribute more than 1% of the overall expected average emission reductions and not addressed in the applied methodology or the PDD.

It was also noted that the PDD, version 01 was published for global stakeholder consultation under methodology ACM0002 version 10. During the course of validation the PDD was revised to further version 11, 12 and 12.3.0 of the applied methodology due to expiry of the earlier versions. The Validation team confirmed that this revision has been taken as per the guidance published by EB in its 50th meeting under paragraph 6 of Annex 48, wherein there is no requirement to re-publish the PDD for this methodology and so this was accepted by assessment team.

Discussion of Findings:

CL#03 was raised as the validity date of the initially applied methodology ACM0002, version 10 was not correct in the PDD, version 01. The same was closed as the PP submitted the revised PDD with the correct date. The CL#03 was further opened as the applied methodology versions 11 & 12 were subsequently expired during the course of validation. The CL#03 was finally closed as the PP submitted the revised PDD with applicable version 12.3.0 of the methodology, which is still valid for Requests for registration until 11 January 2013 23:59:59 GMT.

Opinion:

The validation team therefore confirms the opinion that the project activity meets all the applicability conditions and all other stipulations of the selected approved methodology ACM0002 version 12.3.0 in line with para 75 and 76 of VVM (version 01.2).

4.5 Project Boundary

The spatial extent of the project boundary is assessed through the description in the PDD and the grid structure in India as known from the official data available from the central electricity authority, CEA^{14/}.

The project activity boundary includes the project power plant (Project WTGs) and all power plants connected physically to the Southern regional electricity grid in India.

The PP has considered only CO₂ gas for the baseline emissions in line with the methodology. The exclusion of CH₄ & N₂O in the baseline scenario is appropriate, as there are no associated emissions of the same in a wind power project. The project activity involves the generation of electricity using wind energy. Hence, there

are no project emissions associated with this project activity. Hence, the exclusion of CO₂, CH₄ & N₂O in the project scenario are appropriate. The electricity imported by the project activity will be accounted for the net electricity exported to the grid by the project activity. There are no other sources of project emissions. Hence, the Project Participant has considered project emissions as zero for project activity; this is in line with the methodology and with para 78-80 of VVM (version 01.2).

Further, it is confirmed that the project activity does not involve any transfer of equipment from or to the project activity and thus there is no leakage accountable to the project activity. The project design is sound and the geographical boundaries (Southern Regional Electricity Grid in India) of the project are clearly defined. The validation team confirms that the only greenhouse gas relevant to the project activity is CO₂. This gas is addressed by the applied methodology. Further it was observed during the site visit and also checked by means of project design assessment that there are no other sources, involved in the project boundary, which may contribute more than 1% of the total GHG reductions.

Opinion

The validation team is of the opinion that the project boundary has been correctly identified in the PDD in line with paragraph 79 of VVM version 01.2^{5.1/} (EB 55 Annex 1).

4.6 Baseline Selection and Additionality

As the Project is the installation of a newly built and grid-connected renewable power plant that exports the generated electricity to the grid (Southern regional electricity grid in India), hence, according to methodology ACM0002 version 12.3.0, the baseline scenario is determined properly as:

"The electricity delivered to the grid by the Project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in the "Tool to calculate the emission factor for an electricity system".

The latest available version for tool to calculate the emission factor for an electricity system is version 02.2.1^{5.6/} and the PP has referred to the same in the section B.4 of the final PDD, being submitted for registration and is found to be correct.

The calculation for the operating margin and build margin for the Indian Grid is readily available and published by the Central Electricity Authority, Government of India^{14/}. The CEA data is referred by all CDM project in India in the CER calculation and is yearly updated with recent data. The project validation contract was signed by the PP on 28/05/2009^{15/} and the PDD, version 01 was webhosted from 24/06/2009 to 23/07/2009^{1.1/}. During the time of submission to the validation, the applicable version of the CEA database is version 04 dated September 2008 (The excel sheet was published with user guide on October 2008). The later version 05 of the database was published on November 2009 and thus version 04 of CEA database is applicable to the project activity.

The PP has used the simple operating margin calculation and the operating margin is calculated as a weighted average of the past three years i.e. 2005-06, 2006-07 and 2007-08. The value for operating margin has been calculated based on the Net generation in the operating margin and the simple operating margin for the Southern Grid in India as provided in the CEA CO₂ database. The same is reported, validated and used by the PP as 0.998 tCO₂/MWh. The Build margin for the southern grid is considered as 0.713 tCO₂/MWh for year 2007-08. The weighted average combined margin has been calculated by the PP, considering the 75% weighted for operating margin and 25% for build margin, this is in accordance with the tool. The weighted average combined margin for the project activity comes to 0.927 tCO₂/MWh. The PP has provided the calculation for the same in the CER calculation sheet^{16/} and validated by the assessment team.

Thus, the validation team confirms that the selected baseline scenario reasonably represents what would happen in the absence of the project activity and the selection of the baseline is in accordance with the applied methodology ACM0002, version 12.3.0. the Project Participant has included all sources and references used for baseline determination for the project activity in the final PDD and project identified baseline is justified appropriately by the Project Participant in line with 86 of VVM (version 01.2).

The additionality for the project activity has been demonstrated in accordance with the tool for demonstration as assessment of additionality, version 06.0.0^{5.5/}. The same has been discussed in section 4.6 of this report.

Discussion of findings:

CAR#05 was raised and following points were covered;

- The vintage of data used in the combined margin calculation of the Southern Grid was not clear. In response the PP clarified that the data vintage taken for assessing the baseline emission factor has been taken as per the updated data available, Central Electricity Authority, CO₂ baseline database, version 4.0, dated September 2008 (Published with user guide on October 2008) and included the same under Annex 3 of PDD version 02. The same is applicable version of CEA database at the time of submission for the validation and the PP has used the last three years vintage in calculation of the Operating margin. Thus, issues was closed
- Further the percentage of low cost/must run resources in southern grid as mentioned Table B-2 of the webhosted PDD did not match with the CER database, version 04, thus an issue was raised. The Issue was closed as the PP rectified the same in line with the version 04 of the CEA database in next version of the PDD
- A table for the demonstration of generation mix in the southern grid (Table B-1) was provided by the PP in the PDD, version 01. However, the sources for the same were not clear and thus an issue was raised. In response, the PP removed the table from the PDD. The same has been accepted as it was just an additional information and could not be substantiated. Thus, the issue was closed
- The PP had not used the latest available version for the "Tool to calculate emission factor for the electricity system". The issue was finally closed when the PP updated the PDD, with latest available version 2.2.1 of the tool.
- The PP had calculated the simple average for the last three years (2005-06, 2006-07 and 2007-08) for the Operating margin. However, it would have been more appropriate approach to use the weighted average Operating Margin considering the generation in the grid. Thus, an issue was raised. In response, the PP has revised the OM calculation and considered the weighted average of last three years based in the CEA CO₂ database data. The revised calculation has been checked and found appropriate and thus issue was closed. This has not led to any changes in the earlier calculated OM value or the CER calculation.

Thus, all points raised in the CAR#05 were **closed**.

Based on the requirements of paragraphs 81-88 of the VVM version 01.2^{5.1/} (EB 55 Annex 1), the validation team confirms that:

- (a) All the assumptions and data used by the PP are listed in the PDD, including their references and sources
- (b) All documentation used is relevant for establishing the baseline scenario and correctly quoted and interpreted in the PDD
- (c) Assumptions and data used in the identification of the baseline scenario are justified appropriately, supported by evidence and can be deemed reasonable
- (d) Relevant national and/or sectoral policies and circumstances are considered and listed in the PDD

The approved baseline methodology has been correctly applied to identify the most reasonable baseline scenario and the identified baseline scenario reasonably represents what would occur in the absence of the proposed CDM project activity.

4.6.1 **Additionality**

The additionality of the project has been presented in the PDD using the steps of the tool for the demonstration and assessment of additionality version 06.0.0.

The PP has used the Investment analysis in order to demonstrate the additionality for the project and same is discussed in section 4.6.4 of the report. The approach used in the PDD has been assessed based on a document review, whilst the following relevant documents have been reviewed:

- Proposal from Enercon and Vestas to the PP concerning to investment in Wind Power Project^{/17/}
- MCL decision for the investment^{/20/}
- Benchmark analysis excel sheet^{/21.2/}
- IRR excel sheet(Enercon WTGs)^{/18.1/}
- IRR excel sheet (Vestas WTGs)^{/18.2/}
- Applicable TNERC Tariff Order dated 15/05/2006^{/19.1/} and addendum to the tariff order dated 18/05/2006^{/19.2/}
- Break up of administrative charges^{/10/}
- O & M proposals^{/23/}

On site, the additionality of the project activity has been discussed principally with MCL and their project consultants. Finally the data, rationales, assumptions, justifications and documentation provided have been checked using local knowledge and sectoral and financial expertise, and cross checked by:

- Power Purchase Agreements (PPAs)^{/12/}
- Purchase order for WTGs^{/13/}
- Operation and Maintenance (O & M) Contract^{/24/}
- Commissioning Certificates for all WTGs^{/9/}
- Third Party PLF/CUF assessment report^{/25/}
- Revised benchmark analysis excel sheet considering additional beta values and period of assessment^{/21.2/}
- Other relevant registered CDM Projects as referred in the validation assessment report

Opinion

Based on the responses to the various approaches mentioned above and the requirements of paragraphs 94-97 of the VVM version 01.2^{/5.1/} (EB 55 Annex 1), the validation team confirms that the documents provided for the project activity are appropriate. Hence, the data, rationales, assumptions and justifications provided in the PDD and IRR excel sheet are reliable and credible.

4.6.2 Prior Consideration of the Clean Development Mechanism

Start date:

The start date for the project activity is validated as 15/04/2007. The said date is the first financial expenditure committed by the Project Participant through issuance of letter of Intent to purchase 12*1.65 MW WTGs from Vestas.

The following chronology enables to understand the progress and implementation of the proposed CDM project activity

Date	Event	Validation	Considered as CDM prior consideration event in accordance with EB62, Annex 13?
29/03/2007:	Proposal received from the Enercon ^{/17.2/} & Vestas ^{/17.1/} for respective WTG supply	The Proposal as provided by Vestas and Enercon have been submitted by the PP and validated by the team for the motioned details and is found	No

Date	Event	Validation	Considered as CDM prior consideration event in accordance with EB62, Annex 13?
		appropriate.	
05/04/2007:	Project Management committee of MCL approved the investment for 74 MW WTG installation considering the CDM benefit ^{/20/}	The details and authenticity of the approval has been validated as mentioned in below section	Considered and validated as CDM specific prior consideration action in accordance with EB62, Annex 13
15/04/2007:	First letter of Intent Issued to M/s Vestas for supply of 12 WTG of V82 type ^{/13.1/}	The copy of the same has been submitted by the PP and checked. This is found appropriate with details provided.	No
25/05/2007:	Purchase orders issued for 42 no. of WTGs of capacity 0.8 MW to Enercon ^{/13.3/}	The copy of the same has been submitted by the PP and checked. This is found appropriate with details provided.	No
09/07/2007:	Purchase orders issued for 1 no. of WTGs of capacity 0.8 MW to Enercon ^{/13.4/}	The copy of the same has been submitted by the PP and checked. This is found appropriate with details provided.	No
28/08/2007:	Agreement signed for CDM project development of 74 MW wind power project between MCL and ECOINVEST CARBON S.A. ^{/26/}	The copy of the same has been submitted by the PP and checked. This is found appropriate with details provided.	Considered and validated as CDM specific prior consideration action in accordance with EB62, Annex 13
14/11/2007:	Letter of Intent Issued to M/s Vestas for supply of 12 WTG of V82 type ^{/13.2/}	The copy of the same has been submitted by the PP and checked. This is found appropriate with details provided.	No
28/05/2009:	Contract Signed by MCL with SGS for project activity validation ^{/15/}	Copy of the same is available with the assessment team	Considered and validated as CDM specific prior consideration action in accordance with EB62, Annex 13

Thus, the first financial obligation was committed by the Project Participant on 15/04/2007 and same has been validated as a start date of the project activity.

Since, the start date of the project activity is a prior date to the 02/08/2008, the serious prior CDM consideration and continues and real action to secure the CDM revenue has been assessed in accordance with the para 6-8, EB62, annex 13^{5,7/}.

Prior Consideration:

Prior Knowledge: The project activity is solely developed by Madras Cements Limited, which is also a Project Participant. Prior to the current project activity, the PP has already invested in another CDM project activity and same was under validation prior to the time of decision making of the current project activity. A project activity titled "41.6 MW grid connected electricity generation project by Madras Cements Limited in Tamil Nadu." was webhosted for international stakeholder's consultation from 09/04/2006 to 09/05/2006 by the DOE. The project activity also states "Madras Cements Limited" as the Project Participant in the webhosted PDD, version 02 dated 30/12/2005. The UNFCCC webpage for the same is accessible at the link: <http://cdm.unfccc.int/Projects/Validation/DB/AOLO0C51SE7IUL19FP3B27HORLSK0/view.html>. Thus, it can be confirmed that the PP was aware about the possible CDM revenue by development of the wind power projects.

Consideration: The decision for investment for the project was taken on 05/04/2007 by the management of MCL. A minute of meeting of held on 3.00 pm of 05/04/2007^{20/} has been submitted by the PP and checked by the assessment team. It was approved in the meeting to invest for total 74 MW wind power projects. The minutes also refer to the low returns from the investment and decided to go ahead for the project activity with consideration of CDM revenue. The meeting was chaired and approved by Mr. P.R. Ramasubrahmaneya, Chairman & Managing Director, Madras Cements Limited and was authorized for approval in accordance with para 6 (a) of EB62, Annex 13.

The copy of the minutes of the meeting as submitted by the PP and is dully signed by the company secretary of the MCL. The authenticity of the minutes of the meeting was verified by interviewing Mr. K. Selvanayagam, company secretary, MCL and further, the prior consideration details as mentioned in the minutes were crosschecked by interviewing Mr. Jagadish, Senior Manager- Systems, MCL, who has confirmed the consideration of CDM in the investment approval.

It was also noted that the MCL was already aware about the CDM process as they had also uploaded another wind project activity for public consultation prior to almost one year to the investment decision of the proposed project activity.

Thus, in accordance with the para 6 (a) of EB62, annex 13, the assessment team is of the conclusion that prior CDM revenue was considered by the PP for project investment and CDM was a decisive factor in project investment approval.

Continue and real actions to secure CDM revenue:

The start date for the project activity is validated as 15/04/2007. Further to the start date, the PP has signed an agreement for development of 74 MW wind power project (current project activity) as a CDM project. This agreement was signed on 28/08/2007 between Madras Cements Limited and ECOINVEST CARBON S.A.^{126/} A copy of the agreement is submitted by the PP and it refers to the current project activity. The scope of the services includes data review, the PDD preparation and CDM registration process. The contract is still valid and the proposed CDM project consultancy is being carried out under the same contract of ECOINVEST till date. The validation contract was signed with the DOE-SGS on 28/05/2009^{15/}. Thus, it can be concluded that there is a less than two year's gap between each actions taken by the PP to secure the CDM status.

Discussion of findings:

The **CAR#06** was raised to justify the start date and serious CDM consideration for the project activity. The same was **closed** as the PP justified the same in accordance with the EB41 para 67 and EB62, annex 13 with supporting documentary evidences. The validation of the same is provided in discussed in detail at CAR#06 at annex 3 (A.3) of this report.

Opinion:

In accordance with para 8 (a), EB 62, annex 13, the assessment team is of the opinion that continuous and real actions were taken by the PP to secure the CDM revenue and status for the project activity. The validation requirement of para 98, VVM, version 01.2 is checked and confirmed.

4.6.3 Identification of alternatives

Additionality of the project activity is determined based on “Tool for the demonstration and assessment of additionality” (version 06.0.0). To demonstrate and assess additionality of the project activity, all plausible and credible alternative scenarios have been identified in the PDD in line with the ACM0002 version 12.3.0.

Step 1: Identification of alternatives to the project activity consistent with current laws and regulations

Sub-step 1 a. Defines alternatives to the project activities

The PP has demonstrated two alternatives to the project activity that provide outputs or services similar to that of the project activity (i.e. electricity generation)

Alternative 1:

Implementation of the project activity not undertaken as a CDM project activity

This alternative may be a part of the baseline. However this alternative is not financially attractive.

Alternative 2:

Continuation of current situation (No project activity)

In this alternative, project activity is not implemented resulting in the continued current grid mix of Southern Region in India.

Sub-step 1b. Consistency with mandatory laws and regulations:

All the above alternatives are consistent with current laws and regulations and there are no legal and/or regulatory requirements that prevent the above alternatives from occurring. This has been validated by having discussion with the project Participant and also the validation team has knowledge of local laws and regulation.

The validation team confirms that the Project Participant has stated the assumptions and data including the references and sources to identify baseline scenario in accordance with the applied methodology and the tool. The validation team has verified the references and finds them to be correctly quoted and relevant.

Discussion of findings:

CAR#04 was raised as in PDD, version 01, the proper justification is not provided on how the Alternative 2 “Setting up a fossil fuel based power plant that supplies electricity to the Southern grid” has been eliminated from further consideration. The issue was closed as later the PP found the option invalid as it re-presented the same baseline scenario as the continuation without the project activity. This is found acceptable and thus issue was closed.

4.6.4 Investment analysis

The PP uses the investment analysis in order to demonstrate the additionality and chosen the equity IRR as the financial indicator for the demonstration. It is demonstrated that the financial returns of the proposed project are insufficient to justify the investment.

As per the **Tool for the demonstration and assessment of additionality** (version 06.0.0) to demonstrate and assess additionality of the project activity, if chosen the, investment analysis requires to determine whether the proposed project activity is the economically or financially less attractive without the revenue from the sale of certified emission reductions (CERs).

For CDM project activity, the PP has used investment analysis to demonstrate the additionality. Since alternative of the project activity is the supply of electricity from a grid and this is not to be considered as an investment; and thus benchmark is considered to be appropriate in line with paragraph 19 of Annex 05 of EB 62 i.e. Guidelines on the Assessment of Investment Analysis, version 05. The Project Participant has demonstrated that the financial returns of the proposed CDM project activity would be insufficient to justify

the required investment return in line with paragraph 109 of VVM (version 1.2) and DOE has found the argument valid. The PP has used benchmark analysis (Option III, of the tool) in which the equity internal rate of return (IRR) for the project cash flows serves as the parameter for deciding the financial attractiveness of the project and thus chosen as financial indicator. The proposed CDM project activity is less economically or financially attractive than at least one other credible and realistic alternative which is accordance with Para 108 of VVM (version 01.2).

MCL conceptualized to set up 74 MW wind power project in Tamil Nadu state in India. The validation team noted that the decision to proceed with the project was seriously considering CDM, the same has been discussed in section 4.3 of this report. The decision for the investment was taken on 05/04/2007 and same has been validated as Investment decision date for the project activity.

The PP obtained quotations from Vestas (24x1.65 MW) and Enercon (43x0.8 MW) for the supply of WTGs. To ascertain financial viability of the project, the PP has carried out financial analysis based on above quotations for both the supplier's separately and then compared against the Benchmark.

The appropriateness of the input values for the financial calculation has been checked accordance with Para 6 of "Guidelines on assessment of investment analysis" version 05 (EB 62 Annex 05).

Since the project activity includes the installation of two different types, capacity of WTGs from two different suppliers, the PP has submitted the two different IRR calculation sheets and analysis for the project activity as input values differs in both cases and this is accepted by the assessment team on rational basis.

The investment analysis is discussed in the following parts.

- Part 1: Benchmark
- Part 2: Input values validation for Vestas Machines
- Part 3: Input values validation for Enercon Machines
- Part 4: IRR computation and comparison with Benchmark
- Part 5: Sensitivity Analysis

Part 1: Benchmark

Since, the whole project activity was conceptualized at the same time; the PP has carried out the one benchmark analysis for both the investment. The project activity has been conceptualized and implemented as a 100% equity project and no debt part is involved in the project. Thus, PP has calculated the benchmark as return on the equity investment based on the parameters which were standard in the market at the time of investment decision making and then compared with the equity IRR.

The bench mark value has been determined as per paragraph 13 of EB 62, Annex 5. The above referred paragraph states that the benchmark shall be based on the parameters that are standard in the market if the project activity could be developed by an entity other than the Project Participant. The Project Participant has used the Capital Asset Pricing Model (CAPM) for the determination of benchmark (return on equity) based on publicly available data. Since, the project activity could have been developed by any other entity other than Project Participant, the benchmark based on publicly available data is found to be most appropriate. The Project Participant has calculated the expected return on equity from the CAPM considering the beta values of wind power generating companies in India that were listed at the time of investment decision. The market return has been arrived from the BSE Sensex Index which were checked and found to be correct. The value of risk free return factor has been adopted from the figures given by Reserve Bank of India (RBI). RBI is India's Central Bank fully owned by the Government of India. The assumptions used for the calculation of the benchmark are as follows.

Sl.No	Parameter	Value	Source	Means of Validation/Justification
1	Risk free rate of return (Rf ₁)	7.6931 %	Interest rate on Central Government of India dated securities, available at: http://www.rbi.org.in/scripts/BS_ViewBulletin.aspx?Id=8225	The value assumed is Month end interest rate as on December 2006 on central government dated securities for

				<p>maturity period of 20 years as published by Reserved bank of India. The rate has been considered from the RBI monthly bulletin and was applicable and available at the time of investment decision (Published on 15/02/2007).</p> <p>Further, it was noted by the assessment team that there was another latest RBI publication dated 12/03/2007 was available at the time of investment decision, which mentioned the value of interest rate for January 2007 as 8.069; However, the value of Dec 2006 (7.6931%) as considered by the PP is more conservative than this value and thus accepted by the team.</p>
2	Market Return (Rm)	16.94%	<p>The market return has been calculated based on the base index value of Sensex. Available at: http://www.bseindia.com/histdata/hindice.s.asp and the value of 13072.10 on 30/03/2007.</p>	<p>As there is no specific index for the renewable sector, the BSE Sensex index has been considered for calculating the market return. The BSE Sensex index has a relatively longer duration and the market return calculated by using this will give a fair value of the market return over the period of time. Thus this found to be appropriate. For the project the market return has been evaluated based on 16.25 years data from 1st January 1991 to 30th March 2007 which is conservative than the 28.01 years data. Also the assessment period of 16.25 years considered for market return is comparable with operational lifetime of project activity.</p>
3	Average	10.04%	The average risk free rate has been	Normally the average

	Risk free rate of return (Rf_2)		calculated as the geometric mean of the compounded annual return on government dated securities. Geometric mean of compounded return for the year 2006-07 = $[(\text{Compounded return for the year 2006-07} / \text{Return for the year 1991-92})^{1/(\text{Number of years from 1991-92 to 2006-07})}] - 1$. =10.04 The values for the calculation are considered from the RBI published central government Bond rates available at: 1991-1998: http://rbidocs.rbi.org.in/rdocs/AnnualReport/PDFs/rbi98ar4-e.pdf (Page 70) 1998-2007 (till 21 st August 2006): http://rbidocs.rbi.org.in/rdocs/AnnualReport/PDFs/72286.pdf (Page 182)	risk free rate of return considered in the calculation is same as risk free rate of return (like 7.6931% for DEC-06 as consider in this case). However being on conservative side the PP has considered it as geometric mean of the weighted average interest rate on central government dated securities over the period of approximate 16 years. This is the most conservative approach and thus accepted by the DOE.
4	Beta (β)	0.82	Average Beta value for past three years for BF utilities Limited list with the BSE Sensex. Source: Screenshots of database from the Capitaline database submitted by the Project Participant ^{21.4/}	BF Utilities Limited was the only listed company available in the market and involved in the wind power generation business at the time of investment decision making. The beta value of BF Utilities has been considered as the average of three years prior to the project start date.
5	Return on equity (Re)	13.35%	Calculated as $Re = Rf_1 + \beta \times (Rm - Rf_2)$	The calculation has been correctly validated

Cost of equity / Return on Equity (ROE):

The cost of equity has been estimated based on Capital Asset Pricing Model (CAPM). As per the model, the required return on equity investment is the return of risk free security plus beta times the difference between market return and risk free return.

$$Re = Rf_1 + \text{Beta} \times (\text{Market Return } (Rm) - \text{Average Risk Free Return } (Rf_2))$$

Expected Market Return:

Since, there was no specific index for the renewable sector at the time of investment decision, the BSE Sensex index has been considered for calculating the market return. The BSE Sensex index has a relatively longer duration and the market return calculated by using this will give a fair value of the market return over the period of time. Thus this found to be appropriate. For the project the market return has been evaluated based on 16.25 years data from January 1991 to March 2007.

However, since the project activity assessment period is 20 years, it would appropriate if the expected market risk premium is calculated over the time horizon of 20 years. However, in India the longest period of data available in public domain for any indices is BSE Sensex, which is available since 1991. Considering the same for the project activity, the assessment period duration comes to 16.25 years.

The BSE Sensex was launch in 1986 with base year of 1979 and base price of 100 (<http://www.bseindia.com/about/abindices/bse30.asp>). After that only data from 1991 is available in public

domain (<http://www.bseindia.com/histdata/hindices.asp>). Considering the base price, the period of assessment comes to the 28.01 years (1979 -2007).

The PP has calculated the expected market return in both the cases (16.25 years – 16.94% and (28.01 years – 19.00%) and considered the conservative of the same in further calculation. Since, there is no data available for any indices for 20 years duration, based on the conservativeness; the same has been accepted by the assessment team.

Risk free rate of return (R_f):

The risk free return has been taken as per the information's provided by Reserve Bank of India (RBI) on Month-end yield to maturity of SGL Transaction in Central Government dated securities for maturity period of 20 years. The available value has been considered from the RBI Monthly bulletin of February 2007, published on 15/02/2007 for the year 2006-07. The report was applicable and available at the time of investment decision. The value of Dec 2006 was considered by PP which is conservative and hence accepted by assessment team.

An issue was raised in **CAR#07** and the PP has considered the risk free rate of return as 7.89% based on the RBI annual report of 2006-07 available at <http://rbidocs.rbi.org.in/rdocs/Publications/PDFs/80303.pdf>. However, it was found that since the project activity investment decision date is 05/04/2007, this reported value was applicable to the project activity however it was not available at the time of investment decision as RBI report was published later on. Thus, the PP has changed the value for year 2006-07 to 7.6931% (Month end value of Dec 2006), which is based on RBI bulletin dated 15/02/2007 (http://www.rbi.org.in/scripts/BS_ViewBulletin.aspx?Id=8225). This value is applicable and also was available at the time of investment decision and thus accepted by the assessment team. Thus, the issue in CAR#07 was **closed**.

Further the revised risk free rate of return as considered by the PP is over the maturity period of 20 years, which is comparable to the project activity assessment period time horizon.

Market Risk Premium ($R_m - R_f$):

The risk premium is generally calculated from the market returns and the risk free return for the year of investment. However, the PP has considered the average risk free rate of return in the calculation in place of the risk free rate of return of the on year.

- Average risk free rate of return:

The average risk free rate of return is nothing but the geometric mean of the interest rate on dated securities over the period of time. The PP has considered the data from 1991-2007 (till 21st August 2006) for the weighted average yield on central government dated securities and the same has been validated from the sources as mentioned in the calculation sheet and found OK. This has been accepted by the assessment team as it is a conservative approach. The average risk free rate of return for the period of 16 years comes to 10.04%, while the applicable risk free rate of return for the year 2006-07 (month of Dec 2006) as validated above is 7.6931%.

Based on the same the market risk premium for average risk free rate of return is 6.90% (ROE - 13.35%), while for the applicable risk free rate of that year is 9.25% (ROE – 15.28%).

Thus, the approach as considered by the PP is conservative and thus accepted.

Beta:

In the webhosted PDD and also at the time of decision making, the PP has calculated the beta values based on the beta for the listed company BF Utilities limited. The BF Utilities Limited was the only company available in the market for the wind power sector. The PP has considered the average beta value of the BF utilities for last three year prior to the investment decision. i.e. for year 2004-05, 2005-06 and 2006-07. The average value over the three year comes to 0.82 and used by the PP in the Benchmark calculation.

However, the same was not accepted by the assessment team, considering the fact that the PP had included only one company in the Beta calculation and it does not provide or represent the accurate scenario in the power/renewable industry. In response, the PP has provided a revised benchmark calculation with

consideration of other listed power companies available in the market at the time of investment decision making. The PP has estimated equity beta values for a number of power companies in India and it was calculated as the covariance between its return from the equity investment in a single stock and the return from the equity investment in diversified market portfolio (BSE Sensex), divided by the variance of the return from the equity investment in diversified market portfolio.

Based on the analysis, the PP has estimated beta values for a set of power generating companies in India. The last three year's data has been used for the listed companies' beta value for the same have been calculated. The beta of various power companies of India as calculated by the PP are presented as following:

Company Name	Beta
Tata Power	1.30
CESC	0.98
Neyveli Lignite	1.04
Alstom Power	1.20
Reliance Infra	0.95
BF Utilities Limited	0.82

It was evident from the analysis that the most conservative beta value from the companies assessed is the value for BF utilities Limited. Further the average value of the beta for all 6 companies comes to 1.05, which is still higher than the value considered by the PP. Thus, the only one beta value consideration by the PP in the webhosted PDD is accepted by the assessment team on conservative basis.

Based on the above validated parameters, the required return on equity becomes **13.35%**. The PP has not considered the additional risk premium for wind project. Thus the benchmark considered is conservative in accordance with the para 112 of the VVM version 1.2.

The most of the projects uses the same approach in India for wind projects (i.e. CAPM for ROE calculation). Further it has been noted by the team that the PP has used the lowest/conservative benchmark by such calculation. Some of the projects are referred in the validation report for input parameters cross check (i.e. having similar machines or supplier/operator) and the benchmark of these projects are higher than as compared to the proposed project activity.

UN 3802 - 21% - return on equity by CAPM method, Benchmark WACC – 11.69%

UN 3115- 14.85% return on equity by CAPM method

IN 3533 – 15.75% return on equity by CAPM method

The benchmark in the project activity has been determined by means of publically available hence this is in accordance with the guidance stipulated as per paragraph 12 & 13 of EB 62 Annex 05. Thus, it has been concluded that the PP has followed the most conservative approaches in the calculation of the return on equity and thus acceptable in the present scenario.

Part 2: Input values for Investment Analysis of Vestas WTGs:

In order to compare the returns from the investment with the benchmark, the PP has calculated the Post-tax IRR, for both Vestas and Enercon projects. The project analysis involves 100% equity investment.

The IRR calculation is being provided along with the spread sheet. The validation of the input parameters in the analysis is discussed as below.

(A) Project cost:

The total project considered in the financial INR 112.2 million per WTG. The considered cost per WTG is based in the supplier's proposal dated 29/03/2007 submitted to the MCL management^{/17.1/}. The WTG

mentioned in the proposal are 1.65 MW Vestas V82 type machines and the same are installed/used in the project activity. The proposal date is prior to the project investment date and same has been considered in accordance with the paragraph 6 of "Guidelines on assessment of investment analysis" version 05 (EB 62 Annex 05). The project cost includes the following particulars:

Particular	Cost INR Million
Cost of each WTG comprising: WEG microprocessor Control Unit, Three Bladed active stall rotor of 82 m diameter, Nacelle assembly consisting of gearbox generator and other accessories, 75.5 m conical steel painted tower, civil foundation WTG transformers and related electrical including VCB yard for group control station, Overhead transmission lines	105.134
Overhead transmission lines from substation to wind farm Infrastructure charges and other TNEB changes Land suitable for WTGs	4.26
Changes for erection & commissioning with taxes	2.806
Total	112.20

The PP has also considered the 10% sensitivity check for the variation on the project cost. The results for the sensitivity suggest the project being still additional and even after 10% reduction in project cost the equity IRR does not cross the benchmark. The sensitivity analysis is also being submitted along with the IRR calculation spreadsheet.

Cross Check:

The considered project cost per WTG is cross-checked with the other documents available and same is found appropriate

- The Purchase orders^{/13.1/13.2/} for the WTGs, issues to Vestas have been submitted by the PP and checked. It was found that the PP has issued two purchase orders for total of 24 WTGs in phases by PO dated 15/04/2007 and 14/11/2007 respectively. The PO dated 15/4/2007^{/13.1/} considers the price of each WTG as 111.5 million INR and PO dated 14/11/2007^{/13.2/} considers the prices for each WTG as 110.5 million INR. Thus, a difference in actual project cost has been found than the considered price from proposal. However, the difference observed is accepted by the assessment team considering it a minor change as it is already being covered in the 10% sensitivity analysis for the project cost. Thus, it can be concluded that there are no much changes between the considered project cost at the time of investment decision making and the actual project cost.
- PP has also submitted the invoices issued by the M/s Vestas^{/27.1/} to MCL against the purchase of the WTGs. The prices mentioned in the invoices are confirmed against as mentioned in the purchase orders^{/13.1/13.2/}.
- Further at the time of investment decision making the PP has also referred to the applicable tariff order from the Tamil Nadu Electricity Regulatory Commission for the tariff related purpose. The tariff order no 3 dated 15/05/2006^{/19.1/} for "Power purchase and allied issues in respect of Non-Conventional Energy Sources based Generating Plants and Non-Conventional Energy Sources based Co-Generation Plants" and its amendment^{/19.2/} dated 18/05/2006 have been referred by the PP in order to make the financial analysis.
- The applicability of the considered tariff order has been checked by the assessment team and it is found that the same is the latest applicable tariff order available at the time of investment decision. The next amendment to the same tariff order came on [16/10/2007](#), this is after the project start date or investment decision date.
- The considered tariff order^{/19.1/} and its amendment dated 18/05/2006^{/19.2/} considers the project price for setting up the WTG as 50 million INR per MW for the future projects (tariff order page - 72, amendment- annexure VIII). Considering the fact that proposed cost in the tariff order is for per MW and not for per WTG, the per MW cost for the current project activity comes to approximately 68 million INR per MW. This is on higher side than as considered in the tariff order.
- However, the considered value for project cost by the PP has been accepted by the assessment team based on the facts that tariff order is dated 15/05/2006, while the project investment decision was made after more than one year on 05/04/2007. The proposal by the supplier is dated 29/03/2007, which is after the one year of tariff order. So, during this period of time some escalation

in the prices may have been happened as compared to the prices considered by the tariff order. Further, It is also difficult to compare exact the prices of tariff order as, the INR/MW cost for WTG depends of the type of supplier, capacity, model and also the region applicable and it varies across the particular supplier and models.

- No significant change has been observed in the proposal price (29/03/2007) and the actual cost (purchase order – 15/04/2007) for the project activity, which substantiates that prevailing market for the Vestas V82 type 1.65 MW WTG.
- A supplier Vestas quotation for V82 model to the Project Participant of registered project activity ([UN 2710](#)) has been checked by the assessment team in order to find the publically available information regarding project cost. The Quotation dated 03/09/2007 is available on the UNFCCC website of the same project (Annex 4: Quotation- <http://cdm.unfccc.int/Projects/DB/SGS-UKL1245669005.21/history>) considers the price of the 1.65 MW V82 model of Vestas as 110 million INR per WTG (supply, erection and commissioning), which is in range of the price considered by the PP in March-April 2007.
- Another registered project activity UN 3802 has been checked by the assessment team, which also uses the Vestas V82 model of 1.65 MW. The per MW cost in the project has been validated as 69.144 million INR. The cost considered in based on the proposal from Vestas dated 11/12/2007. The used cost is also found in range of the cost considered by the project Participant.

Thus, the project costs considered by the PP for Vestas machines are accepted and found appropriate to the assessment team.

A difference was also observed in the project cost as mentioned in the webhosted PDD and the final PDD. The total project cost is mentioned as 67.024 million INR per MW in the webhosted PDD, while the actual cost considered in the final PDD comes 68 million INR per MW (112.2 million per WTG). The difference is observed due to the fact that value mention in the webhosted PDD are calculated based in the purchase orders. However the same were not available with the PP at the time of decision making and thus not accepted by the assessment team. The sensitivity analysis as performed on the project cost covers the gap between the webhosted PDD and the final PDD, being submitted for request for registration.

(B) Operation and Maintenance:

1. COST:

The operation and maintenance cost for the Vestas machines is considered as 0.95 million INR per WTG per year. The cost is considered based on the proposal from the Vestas for O&M dated 29/03/2007^{23.1/}. The same was available at the time of investment decision with the PP and deemed appropriate as per Para 6 of the EB62, annex 5.

The offer available with PP has only mentioned the period of 4 years of the contract. The offer further mentions the free O&M for the first year of operation and charges are applicable from the second year onwards. The actual O&M contracts made by the PP^{24.1/} based on the offer have also the duration of 4 years only and further renewable based on mutual agreement of both parties. Thus, the PP has used the financial analysis with duration of 4 years with the fixed price and escalation. i.e for first year no O&M cost is considered based on proposal/contract, from 2nd year the 0.95 million INR/WTG has been considered with escalation of 7.5% up to the 4th year, when the contract expires. It is validated from the proposal and also from the O&M contract that the mentioned prices do not include the cost of repair/replacement, damages due to the Force Majeure conditions and the insurance cost.

From the 5th year onwards the PP has assumed that the contract can be renewed at the same base price of 2nd year with same escalation up to next four years and again used this assumption for the lifetime of the project activity.

Since the PP also does not know what the scenario will be after the four years of agreement, the assumption as made by the PP is accepted based on conservativeness. This is found conservative to the fact that the PP has considered the same base price of 2nd year after every 4 years for the lifetime of the project activity, which is less likely going to happen.

Cross check:

- The O&M price considered from the proposal is further cross checked with the actual O&M contract for the project activity. PP has signed the contract for the O&M of Vestas machines in three phases by three separate contracts^{/24.1/} i.e. contract with Vestas dated 28/10/2009 for 8 WTGs, Contract with Vestas dated 28/10/2009 for 6 WTGs and contract with Vestas dated 21/02/2010 for rest of 10 WTGs. The price values considered in the O&M contract has been checked and it is found to be same to the proposal. The both O&M contract signed on 28/10/2009 considers the O&M price per WTG as 0.95 million INR, while the contract dated 21/02/2010 mentions the cost of per WTG as 1.7 million INR per WTG for 10 WTGs. Thus, prices as considered from the proposal are conservative as compared to the actual cost incurred to the PP.
- Further, the tariff order applicable at the time of the decision making has been referred by the assessment team for the cross checking purpose of the suitability of the values considered. The tariff order dated 15/05/2006^{/19.1/} considers the O&M cost for the future Wind power projects as 1.10% of the capital cost (page 78) for first five years and escalated at the rate of 5% from the fifth year. Thus, the suggested cost is not directly comparable with the proposed project activity. However, the assessment team has tried to compare the cost by applying the same methodology. i.e considering the O&M for first 5 years as 1.10% of the total project cost and then considering the 5% escalation on the 5th year value up to 20 years, the average annual cost for the project activity by this method comes to about 40.962 million INR per year, while the current financial analysis considers an average of 22.43 million INR per year for the O&M and hence is conservative. It was also noted that the tariff order cost also considers the Man power expenses, statutory fees and also the spare & repairs, which are not considered by the PP in the O&M cost.
- The suitability of O&M cost is further checked with registered project [UN2710](#), which also uses the Vestas V82 model for 1.65 MW. The registered project used the validated value of 1.2 million INR per WTG. The prices considered in the analysis are also from the proposal from Vestas, which is dated around the same time of the current project activity (i.e. 03/09/2009).
- Further referred project activity [UN3802](#) with Vestas V82 machines, uses the O&M cost as 2% of the WTG cost (<http://cdm.unfccc.int/UserManagement/FileStorage/LSH29DQJRMVZX5801KGAOFI3TN76YC>) in the financial analysis for 4th year of operation. Considering the 2% the O&M cost for the current project activity comes to 2.2 million INR, thus the considered O&M cost in the financial analysis is concluded in range or rather conservative as compared to the market price at the time of decision making.

The webhosted PDD mentions the O&M cost as 2.2 million INR per WTG, as per the supplier's offer. However the PP was not able to substantiated the same by documentary evidences and hence the price as provided in the proposal by Vestas dated 29/03/2007 has been considered and accepted by assessment team in the financial analysis, which is appropriate and conservative. Further, the same has been cross checked with O&M contract and other reference documents, thus accepted.

2. ESCALATION:

The escalation in the O&M cost is considered as rate of 7.5%. The value is based on Vestas quotation. It is observed that O&M cost & escalation varies based on the supplier and type of machines (WTG). The considered WTG in the escalation is 1.65 MW Vestas machine as per the proposal and actual installation. The PP has considered the same during the investment decision as it was the actual information available from supplier.

The escalation cost is further cross checked with actual O&M contract, it was noted that same escalation is considered in the contract and thus accepted by the team.

It was also checked and found that other most of the project activity considers the escalation of 5% on the O&M cost. It was checked and confirmed by the assessment team that the project activity also does not cross the benchmark with the same escalation of 5%.

(C) Capacity & Lifetime of the WTGs:

The capacity of the wind turbine generators is validated by means of Vestas proposal. The same is further cross checked with the purchase orders and on-site inspections^{/8/}. The number of the WTG and the capacity of the WTG are considered correctly by the PP in financial analysis are as per the actual project design.

The investment analysis is carried out for the 20 years period. This is validated through the applicable tariff order^{/19.1/} (page 90) which also states the lifetime of wind machines as 20 years. Further it was also cross checked that most of the wind power projects considers the lifetime of 20 years of operation and same is the prevailing analysis scenario and thus accepted by the assessment team.

(D) Plant Load Factor (PLF/CUF)

The plant load factor used for Vestas financial analysis is 27.51% with de-rating of 1% every year after 10th year. The validation of the PLF is discussed as below.

- The plant load factor available to the PP and used at the time of investment decision is 26.70% with de-rating of 1% every year after 10th year. The same is considered from the applicable tariff order dated 15/05/2006^{/19.1/} available at the time of decision making.
- PP has mentioned and used the same in the webhosted PDD^{/1.1/} dated 17/06/2009.
- Further the amendment to the tariff order dated 18/05/2006^{/19.2/} mentions the PLF to be considered as 27.46%.
- However, during that period of time, guideline for reporting and validation for plant load factors, version 01 was published during the EB48 (14-17 July 2009)^{/5.9/}.
- To adhere with the guidelines, the PP has carried out a third party PLF study for the project activity. The PLF study was done after the investment decision making and during the course of validation. The study was carried out by the third party consultant "M/s Fairaero Consultant & Technologist" and the report^{/25/} of the same has been submitted to the assessment team.
- As per the report study, the average PLF for the 24 Vestas machines consisting total capacity of 39.6 MW is 27.51%^{/25/}.

Thus, in order to be more conservative the PP has chosen the 27.51% PLF in the investment analysis with de-rating of 1% every year after 10th year as mentioned in the tariff order. However, the same was not available with the PP at the time of investment decision making, the assessment team is of the opinion that the consideration is more appropriate as the most conservativeness is addressed.

(E) Tariff rate:

The tariff rate considered in the financial analysis is 2.90 INR/KWh. The value has been considered from the TNERC tariff order dated 15/05/2006^{/19.1/} (Page 92) and its amendment dated 18/05/2006^{/19.2/} also keeps the same tariff. This is the latest available tariff order at the time of decision making. The tariff order mentions the constant value of tariff over the period of 20 years without escalation and was available at the time of investment decision.

The considered tariff rates are further crossed checked with the PPA^{/12/} for the project activity. It was noted that individual PPA is signed for the each WTG. Out of the 24 Vestas WTG, 14 WTGs PPA are signed at the constant rate of 2.70 INR/KWh for 20 years with the Tamil Nadu Electricity Board and rest 10 are signed at constant rate of 2.90 INR/KWh for 20 years^{/12/}. Thus, the tariff rate considered by the PP in the financial analysis is conservative than the actual situation and thus accepted by the assessment team.

(F) Depreciation rate and residual value:

The depreciation rate for the analysis has been considered as 4.5% on a straight line method. Same has been cross checked with the tariff order dated 15/05/2006 (page 112) and its amendment dated 18/05/2006 specifies the same value.

PP has also added back the 10% of the project value in the last year of the cash flow as a residual value. This is found acceptable in accordance with the Para 4 of EB62, annex 05.

(G) Insurance Cost:

Insurance cost is considered and validated from the tariff order dated 15/05/2006^{/19.1/}. The insurance cost considered by the PP in the analysis is 0.75% of project cost with reduction of 0.5% every year after 5 years. This information was available with the PP at the time of investment decision.

It has been further cross checked that the project activity IRR does not cross the desired benchmark and is additional, without consideration of insurance cost also. Thus, further cross check with the actual insurance cost was not deemed necessary.

(H) Employee's Expenses and Administrative expenses:

The PP has considered the employee's expenses as 40,000 INR per WTG and administrative expenses as 70,000 INR per WTG per year. The expenses were considered based on the PP's previous experience for setting up the wind power projects. The MCL has set up the wind generators from 1992-93 and as on March 2007, it had total installed capacity of 57.79 MW of wind turbine generators. A finance department details has been provided by the PP to the assessment team, which describes all amount paid towards the employment of the people and administrative expenses for the existing wind projects for the project activity. The summary sheet^{122/} dated 04/04/2007 to defines the total cost of 0.04 million INR for employee expenses as 0.07 million INR for admin cost. This was available with the committee for while approving the decision to invest in the project activity and hence accepted by the assessment team.

Since, these are more subjective expenses; the appropriateness of the same was checked by means of the sensitivity. It is has been checked and confirmed that project activity is still additional with totally excluding such costs.

(I) Corporate Tax and MAT rate:

Tax rate 33.66% is taken as per the Income Tax Act 1961, still applicable at the time of decision making. Value has been verified through source web site. Being an official data eliminates any ambiguity.

MAT is taken as per the Income Tax Act 1961 as 11.22%. Value has been verified through the financial expert for the applicable tax rules at that time of decision making. Being an official data eliminates any ambiguity.

(J) Means of Finance and Debt-Equity ratio:

The project activity is a 100% equity investment by the Madras Cements Limited and there is no debt component involved in the project activity. The financial analysis for the project activity has been carried out by the PP considering the 100% equity investment at the time of decision making and same has also been followed in the actual scenario.

However, the Para 18, of the guideline for investment analysis says that If the benchmark is based on parameters that are standard in the market, then the typical debt/equity finance structure observed in the sector of the country should be used. As evident from the most of the tariff orders and the registered project activities, the typical debt/equity structure observed in the host country India is 70/30 ratio in the renewable energy or power sector. Further, the referred tariff order of TNERC also considered to debt/equity ratio as 70/30. On request of the assessment team, the PP has also submitted the revised financial model with 70/30 debt-equity component and the project is found additional in with that model of financial as well, while keeping all other validated input parameters as intact. The validation of the same is discussed at later stage of this report along with the sensitivity analysis.

Part 3: Input values for Investment Analysis of Enercon WTGs:

(A) Project cost:

The total project considered in the financial INR 42.5 million per WTG. The considered cost per WTG is based in the supplier's proposal dated 29/03/2007^{17.2/} submitted to the MCL management. The WTG mentioned in the proposal are 0.8 MW Enercon machines and the same are installed/used in the project activity. The proposal date is prior to the project investment date and same has been considered in accordance with the paragraph 6 of "Guidelines on assessment of investment analysis" version 05 (EB 62 Annex 05). The project cost includes the following particulars:

Particular	Cost INR Million
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Supply of Enercon made type E-48 Wind energy converter, consisting of 3 blades per set-1, synchronous generator -1, power cabinets -3 per set, control cabinet – 1	28
Supply of steel tower 72 meter height for Enercon E-48 WTG	7
Supply of suitable transformers	1.4
DP structure	0.4
Civil work foundation and electrical lines within wind farm	1.4
Installation and commissioning	1.45
Transportation and statutory fees	2.85
Total	42.5

The PP has also considered the 10% sensitivity check for the variation on the project cost. The results for the sensitivity suggest the project being still additional and even after 10% reduction in project cost the equity IRR does not cross the benchmark. The sensitivity analysis is also being submitted along with the IRR calculation spreadsheet.

Cross Check:

The considered project cost per WTG is cross-checked with the other documents available and same is found appropriate

- The Purchase orders for the WTGs, issues to Enercon have been submitted by the PP and checked. It was found that the PP has issued two purchase orders for total of 43 WTGs in phases by PO dated 25/05/2007^{/13.3/} and 09/07/2007^{/13.4/} respectively. The both PO dated 25/05/2007 and 09/07/2007 considers the total price of supply, erection and commissioning for each WTG as 40.9 million INR. Thus, a difference in actual project cost has been found than the considered price from proposal. However the difference observed is accepted by the assessment team considering it a minor change as it is already being covered in the 10% sensitivity analysis for the project cost. Thus, it can be concluded that there are not much changes between the considered project cost at the time of investment decision making and the actual project cost.
- The PP has also submitted the invoices issued by the M/s Enercon to MCL against the purchase of the WTGs^{/13.5/}. The prices mentioned in the invoices are confirmed against as mentioned in the purchase orders.
- As discussed above the applicable tariff order no 3 dated 15/05/2006 for "[Power purchase and allied issues in respect of Non-Conventional Energy Sources based Generating Plants and Non-Conventional Energy Sources based Co-Generation Plants](#)" and its amendment dated 18/05/2006 considers the project price for setting up the WTG as 50 million INR per MW for the future projects (tariff order page - 72, amendment- annexure VIII). Considering the fact that proposed cost in the tariff order is for per MW and not for the per WTG, the per MW cost for the current project activity comes to approximately 53.125 million INR per MW. This is on higher side than as considered in the tariff order, however is deemed appropriate considering the 10% sensitivity range of the project cost variation. The difference observed from the price suggested in the tariff order is not more than the 10% of the project cost.
- The assessment team has further tried to check the used project cost with the other registered projects with same supplier and the machines, particularly for the cost at the time of decision making. It is found that for registered project [UN 3115](#), which is also in the same Tamil Nadu state Enercon E48 machines were used. As per the [registered PDD](#) the purchase orders were issued on 04/04/2007 and the prices considered in the purchase comes to about 50.9 million INR per MW.
- Another registered Project [3533](#) also considers the price of [46 million INR](#) per Enercon WTG of 0.8 MW. The date of the proposal price is not clear from the registered PDD; however same must be prior to the investment decision date (22/07/2008) of that particular project activity.

Thus, the project costs considered by the PP for Enercon machines are accepted and found appropriate to the assessment team.

Difference was observed in the project cost as mentioned in the webhosted PDD and the final PDD. The total project cost is mentioned as 50.739 million INR per MW in the webhosted PDD, while the actual cost considered in the final PDD comes 53.125 million INR per MW (42.5 million per WTG). The webhosted PDD mentions that the prices are based on the purchase orders. However the prices as per the purchase orders

are also checked by the assessment team and it comes to 40.9 million INR/WTG or 51.125 million INR per MW. The PP has confirmed that there was a typo error in the webhosted PDD for the price calculation. Considering the fact that applicable price for the investment analysis is the proposal value, which was available at the time of decision making, and all other value i.e. from the PO and the web hosted PDD values comes under the range of sensitivity analysis, the assessment team has accepted the final PDD which uses the correct value from the proposal.

(B) Operation and Maintenance:

1. Cost:

Initially in the webhosted PDD and during the decision making, the PP had used the O&M cost as 0.5 million per WTG in the first year with escalation of 7.5% every year. However, in response to the query raised by the assessment team for the supporting, the PP was not able to provide the offer from the supplier as the same was misplaced by the PP^{/23.2/}. So, the PP has considered, the O&M cost for Enercon machines as 0.6 million INR per WTGs from the 4th year onwards based on the actual O&M contract. The first 3 years O&M are considered as free as per the contract. Considering the conservativeness of the applied value and since the PP has lost the proposal by the supplier, the assessment team has accepted the O&M cost as per the contract, which is after the investment decision date. Further the appropriateness of the applied value has been checked with the publically available data.

Cross check: The tariff order applicable at the time of the decision making has been referred by the assessment team for the cross checking purpose of the suitability of the values considered. The tariff order dated 15/05/2006^{/19.1/} considers the O&M cost for the future Wind power projects as 1.10% of the capital cost (page 78) for first five years and escalated at the rate of 5% from the fifth year. This comes to about 0.467 million INR for the first year. The project activity considers the O&M cost from the fourth year as 0.6 million. Thus, considering the applied escalation, the cost considered by the PP is deemed appropriate. Further, it has been checked that the Project activity is also additional with the O&M cost as considered in the tariff order or the proposal price.

Further, the PP has also included the O&M cost in the sensitivity analysis in order to check suitability of the consider value. The validation of the O&M is discussed in details as issue 1 in CAR#07.

2. ESCALATION:

The escalation in the O&M cost is considered as rate of 5% and same is considered from the supplier contract and cross checked with the applicable tariff order. The applied value by the PP is deemed appropriate and as per the publically available information as validated in O&M cost section.

(C) Plant Load Factor (PLF/CUF)

The plant load factor used for Enercon financial analysis is 27.46% with de-rating of 1% every year after 10th year. The validation of the PLF is discussed as below.

- The plant load factor available to the PP and used at the time of investment decision is 26.70% with de-rating of 1% every year after 10th year. The same is considered from the applicable tariff order dated 15/05/2006^{/19.1/} available at the time of decision making.
- PP has mentioned and used the same in the webhosted PDD^{/1/} dated 17/06/2009.
- Further the amendment to the tariff order dated 18/05/2006^{/19.2/} mentions the PLF to be considered as 27.46%.
- However, during that period of time, guideline for reporting and validation for plant load factors, version 01 was published during the EB48 (14-17 July 2009)^{/5.9/}.
- To adhere with the guidelines PP has carried out a third party PLF study for the project activity. The PLF study was done after the investment decision making and during the course of validation. The study was carried out by the third party consultant "M/s Fairaero Consultant & Technologist" and the report^{/25/} of the same has been submitted to the assessment team.

- As per the report study, the average PLF for the 43 Enercon machines consisting total capacity of 39.6 MW is 24.26%^{/25/}. The calculation of the average PLF for Enercon machines as per the study has been provided by the PP in the CER calculation sheet and is found appropriate.

Thus, in order to be more conservative the PP has chosen the 27.46% PLF in the investment analysis with de-rating of 1% every year after 10th year as mentioned in the tariff order.

The rest of the input parameters used in the Enercon analysis are same as the Vestas consideration i.e. like, Project lifetime, tariff, depreciation rate and residual value, issuance cost, means of financing, corporate tax, Mat rate, employee and administrative expenses. Thus, the validation of the same is not provided again to avoid repetition.

Part 4: Calculation and comparison of IRR:

Considering the above validated input values, the PP has calculated the equity IRR (100% equity- it also can be termed as post tax project IRR). The Project IRR for the Vestas machines comes to 6.17% considering the 20 years lifetime of the machines, while for Enercon machines it comes to 9.45%.

Thus, the IRR of the project activity is below the consider benchmark of 13.35%. The analysis indicates that the project activity is not financially viable without the benefits of CDM. Further, a sensitivity analysis has been carried out subjecting critical parameters to variations of $\pm 10\%$ and the same has been discussed below.

The data in the financial excel spreadsheet^{/18/} submitted by the PP has been validated against the references provided and was found to be correct. The references provided are publicly available data sources. Thus, it satisfies the requirements of paragraph 13 of EB 62 Annex 05.

In addition, the PP has further also considered the 80% accelerated depreciation available to the wind mill investors in accordance with the section 80IA of the income tax act. The losses occurred or the tax saving due to negative income in initial years from such project activity can be accounted to the other business, which can result into further tax savings. The PP has also considered the same in the calculation and this is an appropriate and conservative approach.

The PP has submitted all calculation excel spreadsheets used for the investment analysis. The financial expert has checked the sheets. All the assumptions, links and formulae used in the sheet are readable and all cells are viewable and unprotected. The analysis has been presented in a transparent manner in the excel spreadsheet and is reproducible. Thus, it satisfies the requirements of paragraph 8 of EB 62 Annex 05.

The lifetime of the project activity is 20 years. The financial analysis has been carried out in the excel spreadsheet considering the entire period of 20 years in spite of the project having a fixed crediting period of only 10 years. Thus, the assessment period has been appropriately considered as per paragraph 3 of EB 62 Annex 05.

Part 5: Sensitivity Analysis

The PP has appropriately selected the following variables to conduct the sensitivity analysis:

1. Project cost
2. Plant Load Factor (PLF)
3. Tariff rate
4. O&M cost

The results of the sensitivity analysis have been presented in the final PDD. The results have also been presented in the excel spreadsheet^{/18/} in a reproducible manner. Thus, it satisfies the requirements of EB 62 Annex 05.

The sensitivity analysis for the variables covers a range from +10% to -10% which is appropriate in context of the project requirements. Thus, it satisfies the requirements of EB 62 Annex 05.

The outcome of the sensitivity analysis for each of the variable along with the selected benchmark is summarized in the tables below.

Project Cost

Since the project cost for Vestas & Enercon machines have been considered from proposals provided by WECs supplier, hence anticipating the variation that may take place sensitivity analysis has been conducted to an extent of $\pm 10\%$ in line with the "Guidelines on the assessment of investment analysis" version 05. The outcome of sensitivity analysis for project cost summarized below:

	+10%	Base IRR	-10%	Benchmark
Vestas Machines	4.72%	6.17%	7.63%	13.35%
Enercon Machines	7.73%	9.45%	11.23%	

As per the above table, it is confirmed that even after 10% reduction in project cost the project IRR does not crosses the benchmark. Further the actual purchase orders for the project activity, including the invoices have been checked by the assessment team. It is confirmed that actual project cost does not vary more than 10% in both cases and thus further analysis on the project cost sensitivity is not deemed necessary. The decrease in project cost by 38% for Vestas WTGs and decrease in cost by 20% for Enercon WTGs will cross the benchmark and such scenario is not likely as actual project reduction is only within 10%.

Plant Load Factor

In the below table, it is observed that the IRR is below the selected benchmark even after a 10% increase in PLF.

It is further evident that in Vestas analysis the equity IRR crosses the benchmark with increase by 54%. For Enercon analysis, the IRR crosses the benchmark with increase by 23%. This is not likely scenario as the PP has already chosen the conservative PLF based on the tariff order and the third party study in both cases and such high PLF in context of current Indian wind scenario are not deemed possible.

	+10%	Base IRR	-10%	Benchmark
Vestas Machines	7.63%	6.17%	4.47%	13.35%
Enercon Machines	11.26%	9.45%	7.38%	

O&M

Anticipating the expected variation in O&M cost the PP has also conducted sensitivity analysis for O&M cost to an extent of $\pm 10\%$. It is noticeable from the analysis that equity IRR does not cross the benchmark if O&M cost decreases by 10%.

The O&M cost for the Vestas machines are higher in the purchase order as compared to the proposal and O&M cost in Enercon machines are already considered based on purchase order, thus further analysis in the sensitivity is not deemed appropriate. The decrease in O&M cost by 668% for Vestas WTGs and decrease in O&M cost by 245% for Enercon WTGs will cross the benchmark and such scenario will not be in existence.

	+10%	Base IRR	-10%	Benchmark
Vestas Machines	6.06%	6.17%	6.28%	13.35%
Enercon Machines	9.04%	9.45%	9.63%	

Tariff

However, the PPAs for the project activity are signed on the fixed rate for the length of 20 years, The PP has also performed the sensitivity analysis on the tariff rate, which is already considered on conservative basis than the actual scenario.

The PPAs for the project activity are already signed and it has been checked that applicable tariff rates are fixed over the period of 20 years. Thus, further any analysis on tariff rate sensitivity is not deemed necessary. For robustness, the PP has demonstrated threshold limit for tariff rate and observed that by increase in tariff by 54% for Vestas WTGs and increase in tariff by 23% for Enercon WTGs will cross the benchmark and this scenario is not likely as tariff is fixed for 20 years as per signed PPA of project activity.

	+10%	Base IRR	-10%	Benchmark
Vestas Machines	7.63%	6.17%	4.47%	13.35%
Enercon Machines	11.26%	9.45%	7.38%	

Based on the above discussions, it can be established that the project activity is financially not viable without the benefits of CDM.

With Debt: Equity ratio as 70:30:

As discussed above the typical debt/equity finance structure observed in the sector of the host country is 70/30. Though it is a total equity investment by the PP, the PP has submitted the additional financial models^{18.3/18.4/} considering the 70/30 investment ratio while keeping the rest of the input parameters intact. The same has been checked by the assessment team and the financial expert involved in the assessment. The repayment of the loan had been envisaged by the PP over the period of 10 years. The PP has also considered the interest rate on the term loan as 12.38% applicable at the time of investment decision making (<http://rbidocs.rbi.org.in/rdocs/Wss/PDFs/76524.pdf>).

With the mention financial analysis, the equity IRR for the Vestas machines comes to 1.93% and for Enercon Machines it comes to 7.36%.

Thus, the project activity is still additional in case of the consideration of the typical investment scenario in the host country. The IRR for the project does not cross the benchmark in case of applying the mention sensitivity also.

Thus, the validation team is of the opinion that the proposed project activity is additional.

Discussion of findings:

The **CAR#07** was raised to check the appropriateness, applicability and application of the various input parameters in the investment analysis and Benchmark calculation. The same was **closed** as the PP justified all the points raised with creditable and applicable evidences. Following points were raised during the CAR#07;

- Issue 1 was raised to substantiate the O&M cost and escalation considered in both the WTGs IRR sheets. In response, the PP has provided the O&M proposal & Contract for the Vestas Machines. The suitability of the applied values by the PP has been checked. For Enercon machines the PP clarified that it has misplaced the O&M proposal, which was the basis for the values in webhosted PDD. Thus, the PP submitted the revised IRR calculation with considering the O&M cost from the O&M contract. The appropriateness of the same was checked with the applicable tariff order and other publically available references and found acceptable. Further, issue was raised to include the O&M cost in the sensitivity to check the robustness of the calculation. The PP has provided the same in the revised financial sheet and justified the change from the webhosted PDD value. Thus, issue was closed.

- Issue 2 was raised to substantiate the considered insurance cost. In response, the PP clarified that same is considered from the applicable tariff order. Thus, issue was closed as the tariff order was checked and the value as considered by the PP was found in accordance.
- Issue 3&4 were raised to justify the cost considered for the employee expanses and administrative expenses. The PP clarified they were based on its past expenditure and experience for the earlier wind mills set by the PP. The PP has also provided an internal cost statement, which was available at the time of decision making for the mentioned cost. It was also further checked by the assessment team that considered expanses are not covered in the O&M contract/proposal and not being double counted. Thus, issues were closed.
- Issue 5 was raised as considered tax calculation was not clear. In response, the PP clarified the calculation based on section 80IA of the income tax act and thus, issue was closed.
- Issue 6 was raised to check the appropriateness of the applied values with the actual scenario. Thus, the purchase orders were requested to be provided. The issue was closed and the PP provided the same.
- Issue 7 was raised to justify the considered PLF in the webhosted PDD in accordance with the EB48, annex 11. In response, the PP conducted the third part study report for the PLF determination. The PP considered the most conservative PLF in both the cases for financial analysis and also included the same in sensitivity analysis. Thus issue was closed.
- Issue 8 was raised to substantiate the considered equity component in the project activity. The issue was closed as the PP provided supporting for the same.
- Issue 9 was raised to check the considered project cost with supporting. The issue was subsequently closed and the PP justified that the project cost is based on the individual proposals in both the cases and also provided the proposal for cross check, which were found appropriate.
- Issue 10 was raised as the PP had not mentioned all the basis for the assumptions in the financial calculation sheet. The issue was closed as the PP added the same appropriately in revised version of the financial sheets.
- Issue 11 was raised as the PP has not provided the Benchmark calculation for the project activity. In response the PP has provided the same. However, the issue 11 was further discussed for the two points;
 - 1) The time horizon for the expected market and market risk premium calculation was not consistent with the project activity life time i.e. 20 years. This sub-issue was closed as the PP justified the conservativeness of the approach it has used with the available data in public domain for the market return and used the revised rate for risk free return.
 - 2) The PP had revised the beta value from the webhosted PDD. In webhosted PDD the PP had considered the beta value for BFUL directly for capitaline database, which is available to the subscribers only. In the revised sheet, it PP had calculated it by them self based on BSE Sensex data. The revised calculation provided by the PP was based on a 5 year correlation between the stock and the BSE index as compared to the 1 year correlation used in capitaline database. Thus, it covers a longer term time horizon thereby giving a more accurate picture. But the revised value of beta was much higher than as considered by the PP initially and on conservative basis, the same was not accepted by the assessment team. Further, it was not envisaged at the time of decision making and was not conservative. This is discussed in details at point 11, CAR#07 in section A.3.
- Issue 12 was raised to justify the basis for tariff rate considered. In response, the PP clarified/justified the same in line with the applicable tariff order dated 15/05/2006 and its amendment dated 18/05/2006. The tariff as considered by the PP, were further checked with the PP for the project activity and found in accordance or rather conservative. Thus, the issue was closed.

CAR#12 was raised as

1. As per Para 18 of EB 62 annex 5, if the benchmark is based on parameters that are standard in the market, then the typical debt/equity finance structure observed in the sector of the country should be

used. If such information is not readily available, 50% debt and 50% equity financing may be assumed as a default. And this guidance was not applied by the PP

- The issue was closed as PP submitted the additional financial models to the assessment team, which considers the 70/30 debt-equity ratio. It was found that as discussed about the project activity is still additional with the 70/30 debt/equity investment.
- 2. PP had not considered the tax benefits available under the accelerated depreciation.
 - The issue was closed as the PP submitted the revised financial model with consideration of accelerated tax depreciation benefits.
- 3. PP has not updated the PDD with revised guidance on investment analysis.
 - The issue was closed as the PP updated the PDD to the latest available guidance on Investment analysis, version 05, EB62, annex 05.
- 4. The PP is requested to justify appropriateness of only company "BF utilities" is considered for beta estimation.
 - The issue was closed as the PP provided the revised Benchmark calculation with consideration of other listed companies in the power sector in order to calculate the beta value. It was found that the benchmark considered by the PP in webhosted PDD, is conservative and hence accepted by the assessment team.
- 5. The newer version 06 of the additionality tool was not applied by the PP.
 - The issue was closed as the PP provided the revised PDD, with correct application of additionality tool, version 06.

CAR#08 was raised to check the various project related documents like, proposals, purchase orders, PPAs and the commissioning certificates; the CAR was subsequently closed as the PP provided all the documents as requested and the same were checked by the assessment team for appropriateness.

4.6.5 Barrier analysis

Project Participant has not attempted barrier analysis.

4.6.6 Common practice analysis

The PP has demonstrated the common practice analysis in accordance with the additionality tool, version 06.0.0, EB65, annex 21 and the same has been assessed by the validation team. The acceptance of the common practice analysis is justified as below.

Geographical Area:

The geographical area selected by the PP for the common practice analysis is state of Tamilnadu in India. At the time of investment decision, the PP had considered the investment in Tamilnadu only. The same is also checked with the WTG supplier's proposal, which mentions the installation of the WTG machines in Tamilnadu. Further, the development of the renewable energy sector is also the authority of the various states governments in India. Each state/provinces have their own policy for renewable sector and the applicable tariff orders are also different. The energy sector policies/development/tariff rates are regularized by the various nodal agencies applicable in the states. Thus, an investment in the Tamilnadu state or any other state of the India represents different scenarios and possibilities in terms of investment climate, policies and local regulation. As per the para 5, EB 65, annex 21, the Project Participants have provided justification for considering the applicable geographical area, smaller than the host country as the conditions for investment in wind power project vary state to state. The assessment team has reviewed the approach presented in the PDD and can confirm that the relevant parameters as location, infrastructure, economical situation and development has been taken into account in order to define the region to be used for the common practice. Hence the presented region can be considered appropriate for the common practice analysis.

Measures:

The Project activity is a 100% wind power based renewable power generation and it is not applicable for the measures as described in the para 6 of EB65, annex 21. Thus the common practice analysis is validated in line with Para 43, 44 and 45 of the tool.

Output:

The considered for the comparison is net capacity installed by a single project investment. This is in accordance with the para 7 of EB65, annex 21. Further, the PP has not considered the bundled projects in the analysis and it does not represent the scenario similar to the project activity. The, same is found appropriate approach and thus accepted.

Different technologies:

In comparison of the common practice analysis, all the technologies, apart from the wind energy generation is considered as different technology. The same has been accepted by the assessment team as all other technologies differ from the Wind Turbine Generator in terms of Energy Sources/fuel as mentioned in the Para 9 (a), EB65, annex 21. The Para 8 is not referred or considered as the project activity is not proposed as First of Its Kind.

The project activity is wind power based renewable energy generation and does not qualify for the types of the project activities as defined under Para 6 of the additionality tool, version 06. Therefore the common practice analysis is identified and performed by the PP as per the paragraph 44 and 45 of Tool for the demonstration and assessment of additionality, version 06.

Consideration of the timeline in the analysis:

The PP has demonstrated the climate and the policies for the investment in the wind power projects in state of Tamilnadu were different prior to the 2001. Prior to September 2001: The wind power tariff in Tamil Nadu was based on Ministry of Non-Conventional Energy Sources, Government of India, Policy. The tariff set out was at Rs. 2.25 per unit for the base year 1994-95 with annual escalation of 5%^{/19.1/} and from September 2001 the wind power tariff in Tamil Nadu deviated from MNES guidelines and the Tamil Nadu Electricity Board (TNEB) set tariff as from the TNEB tariff order 2001 with tariff of INR 2.70 per unit and no escalation and TNERC tariff order 2006^{/19.1/} with tariff rate of INR 2.90 per unit and no escalation.

Thus, it was concluded that the wind power installations prior to September 2001 are of a different environment with respect to regulatory framework and investment climate as compared to installations post September 2001 and hence are not comparable to each other.

Sub-step 4a. Analyze other activities similar to the proposed project activity:

The project activity is the installation of 74 MW wind based energy generation. For common practice purpose, wind power installations having a capacity within the range of 37 MW to 111 MW (i.e. -50% to +50% of capacity of the project activity) in the state of Tamil Nadu are considered by the PP for analysis. The same is considered acceptable as per the Para 44 of the EB65, annex 21, which refers to the comparison of the projects, which are of 'similar scale'. The $\pm 50\%$ range is considered appropriate as similar scale in accordance with EB65, annex 21 as other projects will differ highly in terms of investment cost, access to finance and other investment decision parameters.

For, the identification of the wind power projects in the range, the PP has used and provided the Wind power directory for the India for the year of 2009. The directory has been published by www.windpowerindia.com and purchased by the PP.

The mentioned Wind Power directory provides the name of the investors, location of the wind mills including district and state, number of wind mills installed by the investor and their installed capacity along with the year of commissioning. The assessment team has checked the section 6 of the Indian Wind power Directory, where all the WTG projects commissioned till 2009 are mentioned along with the name of the investor and the state of installation. Based on the same, it has been confirmed that that there is no wind power project of a similar capacity range as defined above in the state of Tamil Nadu invested by a single private investor (not Bundled) in a year, post September 2001.

Sub-step 4b: Discuss any similar Options that are occurring:

There are no project activity by a single project investor in range of the project activity capacity is found in the state of Tamilnadu.

Thus, Steps 4(a) and 4(b) of the additionality tool are for the project activity and it was not a common practice in the region at the time of investment decision making.

Further, the assessment team has also independently assessed the common practice analysis for the project activity in line with the para 47 of the additionality tool, version 06 with help of the same wind power project directory and the project activity is found to be not a common practice.

Discussion of findings:

The **CAR#09** was raised for the justification of the common practice analysis as the same was not found appropriate in the webhosted PDD. The PDD had also considered the CDM registered/under validation projects in the common practice analysis. The further issue was also raised as the PP had considered only range of $\pm 20\%$ in selection of the similar scale project activities. The CAR was subsequently closed as the PP justified the common practice analysis in accordance with the EB65, Annex 21.

Opinion:

The Proposed project activity is not a common practice as per the EB65, Annex 21.

4.7 Application of Baseline Methodology and Calculation of Emission Factors

The project has applied baseline methodology as mentioned in the approved consolidated methodology ACM0002, version 12.3.0. As per methodology, the baseline emission sources considered are CO₂ emissions from electricity generation in fossil fuel fired power plants that is displaced due to the project activity as reflected in the combined margin (CM) calculations described in the "Tool to calculate the emission factor for an electricity system" version 02.2.1.

Corresponding calculations were carried out based on excel spreadsheets^{/16/}. The parameters and equations presented in section B.6.1 of the PDD and further documentation have been compared with the information and requirements presented in the methodology and respective tools. The equation comparison has been made explicitly following all the formulae presented in the calculation records submitted by the Project Participant^{/16/}.

The following equations and assumptions are used to calculate the Baseline emissions, Project emissions and Leakages in the project activity:

Baseline emissions (BE_y)

$$BE_y = EG_{PJ,y} * EF_{grid, CM, y}$$

Where,

$EG_{PJ,y}$ = Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CDM project activity in year y (MWh/yr)

$EF_{grid, CM, y}$ = Combined margin CO₂ emission factor for grid connected power generation in year y calculated using the latest version of the "Tool to calculate the emission factor for an electricity system".

The weighted average Operating Margin (OM) & Build Margin (BM) values for the Southern grid in India are taken from the version 04 of data published by Central Electricity Authority (CEA)^{/14/}.

Emission factors for the respective grids of India are mentioned below:

Grid	OM, Operating Margin	BM, Build Margin	CM, Combined Margin
	Value (tCO ₂ / MWh)		
Southern Grid	0.998	0.713	0.927

Grid emission factor is determined using the ex-ante option for data using 3-year generation-weighted average, based on the most recent data available at the time of submission (2005-06, 2006-07 and 2007-08) and will remain fixed for the crediting period.

To calculate the projected baseline emissions, the electricity supplied to the grid (EG_y) is calculated based on the Capacity Utilization Factor (CUF), operational hours and the installed capacity of the project activity.

Project Emissions (PE_y)

The project activity is a Greenfield electricity generation project from renewable wind energy. Hence there project emissions are taken as zero, as per the approved methodology ACM 0002 version 12.3.0.

Leakage (LE_y)

As per the guidance provided in the approved baseline methodology ACM0002 version 12.3.0, no leakage emission has been considered under this project activity.

Emission reduction (ER_y)

$$ER_y = BE_y - PE_y - LE_y$$

The equations and assumptions used to calculate the emission reduction are in compliance with the approved methodology ACM0002 version 12.3.0.

Opinion

Based on the above discussion and the requirements of paragraphs 89-93 of the VVM version 01.2^{5.1/} (EB 55 Annex 1), the validation team confirms that:

1. All assumptions and data used by the PP are listed in the PDD, including their references and sources
2. All documentation used by the PP as the basis for assumptions and source of data is correctly quoted and interpreted in the PDD
3. All values used in the PDD are reasonable in the context of the proposed CDM project activity
4. The baseline methodology ACM0002 Version 12.3.0 has been applied correctly to calculate project emissions, baseline emissions, leakage and emission reductions

All estimates of the baseline emissions can be replicated using the data and parameter values provided in the PDD.

4.8 Application of Monitoring Methodology and Monitoring Plan

The Project uses the approved consolidated monitoring methodology ACM0002 version 12.3.0. Applicability conditions of the methodology have been discussed at section 4.4 of this report. Validation team considers the monitoring plan to be complying with the requirements of the methodology. The reasons are as follows –

- The PP has defined the monitoring parameters as per the requirements of the methodology ACM0002, Version 12.3.0 and taking into consideration the actual procedure followed on the site. In line with this, the PP has defined the monitoring parameter, in section B.7.1 of the PDD.
- Quantity of net electricity supplied to the grid (EG_{facility, y}) is included in section B.7.1 of PDD along with Electricity exported (EG_{export, y}) and Electricity imported (EG_{import, y}).
- Project Participant has revealed that all the monitored data would be archived electronically and on paper regularly throughout the crediting period. Also, data will be archived for a minimum of 2 years after the end of the crediting period or the last issuance of the CERs for this project activity, whichever occurs later. This is stated in section B.7.1 of the PDD.
- The meters will be installed at WTG locations and the electricity export and import from each WTG are being measured from these locations. There are no WTGs outside the project boundary are involved in the metering and thus no apportioning of the electricity is required.
- The monitoring plan includes requirements of calibration of all the measuring equipments used for monitoring of the parameters for project activity and the same is defined as annual. The electronic meters for every HTSC connection used for monthly recording are calibrated by TNEB. The readings from these meters will be cross checked with the electricity sales invoices issued by MCL to TNEB.
- The monitoring frequency for Electricity exported, Electricity imported and hence EG_{facility, y} matches with that of the methodology, viz. continuous measurement and monthly recording.
- Under section B.7.2 of the PDD, Project Participant has provided additional procedures to deal with data uncertainty, problems with meters, etc.

This value which will be used for the emission reduction calculations. This parameter will be obtained directly from the monthly certificate from TNEB.

The type of metering equipment, procedure of meter reading, meter testing, and calibration has been described in section B.7.2 of the PDD and is consistent with the PPA signed specifically for this project activity.

The validation team confirms that the description in the PDD correctly represents the metering system available at the project activity site and that the defined monitoring plan can be implemented in the context of the project activity.

Vestas & Enercon, the O&M contractors for the WECs has experience in monitoring and managing the O&M of numerous other wind farm projects. The validation team therefore is of the opinion that the Project Participant through the O&M agency is capable of implementing the monitoring plan in the context of the project activity.

The validation team physically verified the metering system installed at the locations of the project activity. The Project Participant has described the metering system in details in revised section B.7.2 of the PDD. Monitoring plan presented by the Project Participant has been assessed by applying two-step process as per Para of VVM. Monitoring plan mentioned in section B.7.1 of the revised final PDD is fully in compliance with the applied methodology ACM0002 version 12.3.0. Also after discussion with consultant and project Participant and actual site inspection, it has been concluded that Project Participant has got sufficient ability to implement monitoring plan described in section B.7.1 of the PDD.

Opinion

Based on the above discussion and the requirements of paragraphs 122-124 of the VVM version 01.2^{5.1} (EB 55 Annex 1), the validation team confirms that:

1. The monitoring plan included in the PDD is based on the approved methodology ACM0002, version 12.3.0 which has been applied to the proposed CDM project activity
2. The monitoring plan is in compliance with the applied methodology ACM0002, version 12.3.0
3. The monitoring arrangements described in the monitoring plan are feasible within the project design
4. The PP has the ability to implement the monitoring plan as per the PDD.

Findings:

CAR#10 was raised as

- 1) PP had not covered all the parameters required for the calculation of the net electricity supplied to the grid in the section B.7.1 of the PDD.
- 2) In Annex 4 of the PDD it was mentioned that metering equipment is located in each WTG.
- 3) The PP had not provided the recording and monitoring frequency of each parameter.

The CAR#10 was **closed** subsequently as the PP provided the revised PDD with inclusion of the gross import and export as monitored parameter, clarified that in Tamilnadu each WTG has its own metering point & meter and also added the recording and monitoring frequency for each parameter in accordance with the applied methodology.

CAR#11 was raised as the calibration frequency and procedures were not provided by the PP. The CAR#11 was **closed** as PP provided the same in the revised PDD, accordance with PPA for the project activity WTGs.

4.9 Environmental Impacts

As per the Ministry of Environment and Forests (MoEF), Government of India, Environment Impact Notification S.O. 1533 (E) dated 14/09/2006 (http://www.moef.nic.in/legis/env_clr.htm) and its latest amendment S.O 3067 (E) dated 01/12/2009 for EIA requirements (<http://moef.nic.in/downloads/rules-and-regulations/3067.pdf>) wind power projects are not covered under any schedule and thus Environmental Impact Assessment is not required for the project activity. Validation team is of the opinion that the project complies with environmental regulations in India and the local stakeholder consultation carried out adequately. Thus the adequacy of analysis carried out by project Participant for impact of the implementation of the project activity on environment has been validated as per Para 131,132 and 133 of VVM (version 01.2).

Opinion:

The project activity meets the relevant host country environmental regulations.

4.10 Local Stakeholder Comments

The PP had conducted the local stakeholders meeting for the project activity. The project activity is located at the different sites across the 3 districts of the state of Tamilnadu. Thus, local stakeholders consultation was conducted by the PP at four different locations. The details of the same are provided as below.

Location(village/district/state)	Meeting date	Reference of WTGs
Thandayarkulam	20/6/2007	Vestas 1.65MW * 8
Udumalpet	18/08/2007	Vestas 1.65MW * 8
Muthunacikkenpatti	27/02/2008	Enercon 0.8MW * 43
Uthumalai	06/06/2008	Vestas 1.65 MW*8

Thus, it is confirmed that the PP has conducted the consultations prior to the webhosting (24th June 2009 – 23rd July 2009) of the PDD.

The project participant identified the relevant stakeholder like Local villagers, Government officials and agencies, and contractors to the project activity. Based on the observations of the validation team during the site visit and as per the definition of 'stakeholder' in the Glossary of CDM terms version 6, the identification of stakeholders for consultation was found to be appropriate. Thus, the validation team is of the opinion that the relevant stakeholders have been consulted appropriately and adequately.

The relevant stakeholders were identified by the PP by means of the invitation letters^{/29.1/} sent on in English and local languages prior to the consultation of the each meeting. The PP has submitted the copies of invitation letters, as sent to the relevant stakeholders to the assessment team and has been checked.

The PP has also provided the minutes of meeting for all four meetings^{/29.2/} and also the summary of comments received. Further, attendance lists^{/29.3/} for the meetings have been submitted by the PP and is checked. The summary of comments is checked for any negative comments for the project activity. It is found that no negative comments were received for the project activity by local stakeholders. Few queries were raised by the stakeholders, which were answered by the PP during the meeting and this has been verified from the minutes of the meeting. Thus it is confirmed that local stakeholders were invited to comment on the proposed project activity prior to the publication of the PDD on the UNFCCC website. This is in line with Para 128 of VVM (version 1.2) and is accepted.

This is further cross-validated from local stakeholder consultation carried out for the project activity during the validation site visit. During the site visit the validation team interviewed some of the stakeholders. Based on the confirmation by the local stakeholders, the validation team was convinced that the process of stakeholder consultation was carried out as described in the PDD. The villagers also confirmed that they were invited for the meeting through invitation by the PP. This was found to be consistent with the invitation process mentioned in the PDD. Thus, the appropriateness of Local stakeholders consultation has been validated in line with Para 128 and 129 of VVM version 1.2.

Findings:

An issue in **CAR#08** was raised as local stake holder's consultation documents were not provided by the PP. The issue was closed as the PP provided the same of the entire sites it has consulted. The same was checked found appropriate as per the details provided in the PDD.

Opinion

The PP had consulted the local stakeholders to the project activity adequately.

5. Comments by Parties, Stakeholders and NGOs

In accordance with sub-paragraphs 40 (b) and (c) of the CDM modalities and procedures, the project design document of a proposed CDM project activity shall be made publicly available and the DOE shall invite comments on the validation requirements from Parties, stakeholders and UNFCCC accredited non-governmental organizations and make them publicly available. This chapter describes this process for this project.

5.1 Description of how and when the PDD was made publicly available

The Project Design Document for this project was made available on the UNFCCC website (<http://cdm.unfccc.int/Projects/Validation/DB/BHX0TQO6T2FMQNF1A59AGMX7X5E4DD/view.html>) and was open for comments from 24th June 2009 – 23rd July 2009. Comments were invited through the UNFCCC CDM homepage.

5.2 Compilation of all comments received

No Comments have been received during the webhosting period.

5.3 Explanation of how comments have been taken into account

No Comments have been received during the webhosting period.

6. List of Persons Interviewed

Date	Name	Position	Short Description of Subject Discussed
02/01/2012	M. Jagadish K. Selvanayagam,	Sr. Manager, MCL company secretary, MCL	Investment decision, financial calculation, mode of investment, prior consideration
23/11/2011, 19/12/2011 06/02/2012, 11/01/2012 13/07/2012	Mr. Deep Bohra Mr. Deepak Joshi	Manager- Bunge	CER calculation, Baseline consideration, PDD
05/11/2009	M. Paramasivan	Site In charge, Enercon India	Monitoring procedures, technical specifications
05/11/2009	Mr. Shanmugam	Local Stake holder	Local stake holder consultation, project activity benefits
05/11/2009	K. Madavarajan	Site In charge, MCL	Project activity installations

7. Document References

Category 1 Documents (documents provided by the Client that relate directly to the GHG components of the project, (i.e. the CDM Project Design Document, confirmation by the host Party on contribution to sustainable development and written approval of voluntary participation from the designated national authority):

- /1.1/ PDD, version 01 dated 17/06/2009, webhosted for International Stakeholder's consultation at:
<http://cdm.unfccc.int/Projects/Validation/DB/BHX0TQO6T2FMQNF1A59AGMX7X5E4DD/view.html>
- /1.2/ PDD, version 02 dated 05/07/2010
- /1.3/ PDD, version 03 dated 15/10/2010
- /1.4/ PDD, version 04 dated 30/12/2010
- /1.5/ PDD, version 05 dated 28/04/2011
- /1.6/ PDD, version 06 dated 11/11/2011
- /1.7/ PDD, version 07 dated 22/02/2012
- /1.8/ PDD, version 08 dated 06/06/2012
- /1.9/ PDD, version 09 dated 01/08/2012
- /1.10/ PDD, version 10 dated 29/08/2012
- /1.11/ PDD, version 11 dated 10/09/2012 (Final Version Submitted for RFR)
- /2.1/ Approved Baseline and Monitoring Methodology ACM0002, version 12.3.0 available at:
<http://cdm.unfccc.int/UserManagement/FileStorage/4W1SCKX3EMPO6AYGRJUTD7BQ8IVN0H>
- /2.2/ Approved Baseline and Monitoring Methodology ACM0002, version 11 available at:
<http://cdm.unfccc.int/UserManagement/FileStorage/HGY3TLRFPQVM016WA4I7XCZD92KE5S>
- /2.3/ Approved Baseline and Monitoring Methodology ACM0002, version 10 available at:
<http://cdm.unfccc.int/UserManagement/FileStorage/NF9EDA0V5K382HW0JR14GS7XYQUMCP>
- /3.1/ Host Country DNA approval Letter for the project activity with letter number 4/5/2010-CCC dated 12/08/2010
- /3.2/ Confirmation mail from the Host Country DNA for the authenticity of the approval for the project dated 28/02/2012
- /4/ Modalities of communication for the project activity dated 30/01/2012

Major Changes in the final PDD from the Webhosted PDD

Section A	Table provided for locations under section A.2 revised Number of CERs in the table A.4.4 revised
Section B.	The version of applied methodology updated to the 12.3.0 and subsequent applicable changed made for the same. The applicable tools revised to latest versions. Chronology of events revised to reflect actual events for the project Benchmark & IRR calculation revised due to various issues raised in CARs & CLs Common practice analysis revised as per the latest version of additionality tool Monitoring section and the ex-ante CER calculation revised as per the applicable guidance of the applied methodology. Date of baseline determination is revised
Section C	Start date of Crediting period revised
Section D	NA
Section E	Sufficient information regarding local stakeholder consultation added in line with

	PDD completion guidelines & VVM, version 01.2
Appendix 4	Sustainable development action plan provided.

Category 2 Documents (background documents used to check project assumptions and confirm the validity of information given in the Category 1 documents and in validation interviews):

/5/ Tools and Guidance from the CDM EB

- /5.1/ Clean Development Mechanism Validation and Verification Manual Version 1.2
- /5.2/ Guideline completing the Project Design Document, Version 07, EB41, Annex 12
- /5.3/ Database for projects submitted with request for registration available at UNFCCC website
- /5.4/ Database for under validation project at UNFCCC website
- /5.5/ Tool for demonstration and assessment of additionality, version 06.0.0
- /5.6/ Tool to calculate emission factor for an electricity system, version 02.2.1
- /5.7/ Guidelines on the demonstration and assessment of prior consideration of the CDM, version 04, EB62, annex 13
- /5.8/ Guidelines for the assessment of investment analysis, version 05, EB62, annex 5
- /5.9/ Guidelines for determination and assessment of PLF, EB48, Annex 11

/6/ Technical Specifications

- /6.1/ Technical specifications for Enercon E-48 & E-53 as provided by the ENERCON
- /6.2/ Technical specification for Vestas V82 as provided by the Vestas

/7/ Location Details

- /7.1/ WTG location and geo-graphical co-ordinates for 43 WTG as provided by supplier Enercon
- /7.2/ WTG location and geo-graphical co-ordinates as for 24 WTG as provided by supplier Vestas
- /8/ Physical site visit Inspections, Interviews and document review carried out by the assessment team on 05/11/2009 to 06/11/2009 during on site visit
- /9/ Commissioning certificates issued by the Tamilnadu Electricity Board for the project activity WTGs. The WTGs are commission in a phase wise manner for the period of 2007 to 2008
- /10/ Supporting for the employment charges, dated 04/04/2007, which provide the break up for historical admin changes incurred.
- /11/ Declaration for the source of funding and no ODA involvement by Executive Director-Finance, Madras Cements Limited
- /12/ Power Purchase Agreements for the WTGs involved in the project activity

/13/ Purchase Orders for the project activity WTGs

- /13.1/ The letter of intent issued to M/s Vestas for supply, erection and commissioning of first set of 12 WTGs of 1.65 MW (Model V82) dated 15/04/2007
- /13.2/ The letter of intent issued to M/s Vestas for supply, erection and commissioning of 12 WTGs of 1.65 MW (Model V82) dated 14/11/2007
- /13.3/ Purchase order to M/s Enercon for 42 * 0.8 MW type E-53 WTGS dated 25/05/2007
- /13.4/ Purchase order to M/s Enercon for 1 * 0.8 MW type E-53 WTGS dated 09/07/2007
- /13.5/ Invoices raised by the Enercon (India) Limited to the MCL for purchase of all 43 WTGs
- /14/ CEA Database for baseline CO2 data, Version 04 published by Chief Electricity Authority, Government of India. Accessible at: http://www.cea.nic.in/reports/planning/cdm_co2/cdm_co2.htm
- /15/ Validation contract for the project activity with SGS signed by PP on 28/05/2009

- /16/ CER calculation sheet for the project activity
- /17/ Proposal for WTGs**
- /17.1/ Proposal from Vestas to MCL dated 29/03/2007 having reference number VWTI/MKT/TN/MCL/KVS/182 for supply, erection and commissioning of V82 type 1.65 MW WTGs
- /17.2/ Proposal from Enercon to MCL dated 29/03/2007 with reference number EIL/HO/TN/Offer/06-07/1054/supply-A for supply of 0.8 MW WTGs
- /18/ IRR calculation sheets**
- /18.1/ IRR calculation sheet for Vestas WTGs with 100% equity being submitted along with requesting registration
- /18.2/ IRR calculation sheet for Enercon WTGs with 100% equity being submitted along with requesting registration
- /18.3/ IRR calculation sheet for Vestas WTGs with 70-30 debt-equity ratio submitted for DOE assessment & Check purpose
- /18.4/ IRR calculation sheet for Enercon WTGs with 70-30 debt-equity ratio submitted for DOE assessment & Check purpose
- /19/ Applicable Tariff orders**
- /19.1/ TNERC tariff order dated no 3 dated 15/05/2006 available at the link:
<http://tnerc.gov.in/orders/nces%20order%20approved%20order%20host%20copy.pdf> (Last Accessed on 30/08/2012)
- /19.2/ Addendum dated 18/05/2006 to the tariff order dated 15/05/2006 available at the link:
<http://tnerc.gov.in/orders/NCESamend.pdf> (Last Accessed on 30/08/2012)
- /20/ Certified copy of the minutes of the meeting of the MCL Windmill project management committee held at 3.00 pm on 05/04/2007 at Chennai, Tamilnadu, India
- /21/ Benchmark calculation**
- /21.1/ Initial benchmark calculation sheet, version 01, as submitted by the PP along with webhosted PDD, version 01
- /21.2/ Benchmark calculation sheet with consideration of other Beta scenario, market risk return calculation and risk free rate, being submitted along request for registration
- /21.3/ RBI annual report for year of 2005-06, available at
<http://rbidocs.rbi.org.in/rdocs/AnnualReport/PDFs/72286.pdf>
The report is dated dated 30/08/2006
(<http://www.rbi.org.in/Scripts/Annualreportarchives.aspx>).
- /21.4/ Average Beta value for past three years for BF utilities Limited list with the BSE Sensex, as provided on the Capitaline database,
- /22/ Supporting for the admin charges, dated 04/04/2007, which provide the break up for historical admin changes & employee expenses incurred.
- /23/ Proposals for the Operation and Maintenance of WTGs**
- /23.1/ Proposal for O&M of V82 type 1.65 MW WTGs by M/s Vestas dated 29/03/2007 having reference number VWTI/MKT/TN/MCL/KVS/182
- /23.2/ Confirmation from PP for the misplacement of the O&M proposal for Enercon
- /24/ Contract for the operation and maintenance of the WTGs**
- /24.1/ Contract for O&M between Vestas and MCL for first set of 8 WTGs* 1.65 MW V82 type dated 28/10/2009 having reference number VESATS/CS/MCL/361
Contract for O&M between Vestas and MCL for 6 WTGs* 1.65 MW V82 type dated 28/10/2009 having reference number VESATS/CS/MCL/362

Contract for O&M between Vestas and MCL for next 10 WTGs* 1.65 MW V82 type dated 21/02/2010 having reference number VESATS/CS/MCL/368

/24.2/ Contract for O&M between Enercon and MCL for 19*0.8 MW Enercon WTGs dated 15/03/2008

Contract for O&M between Enercon and MCL for 24*0.8 MW Enercon WTGs dated 01/10/2007

/25/ Third Party PLF/CUF assessment report for the project activity WTGs, prepared by M/s Fair Aero Consultants and Technologist

/26/ Advisory agreement for "Evaluation and registration of certified emission reductions (CERs) under United Nations Framework Convention on Climate Change (UNFCCC) between ECOINVEST CARBON S.A. and Madras Cements Limited dated 28/08/2007

/27/ Invoices for the WTGs

/27.1/ Invoices raised by the M/s Vestas to MCL for supply, erection and commissioning of 24 WTGs of V82 type having 1.65 MW each

/27.2/ Invoices raised by the M/s Enercon to MCL for supply, erection and commissioning of 43 WTGs of E- 48 type having 0.8 MW each

/28/ Directory for Indian Wind Power Sector, 2009

/29/ Local Stake holder's Consultation documents

/29.1/ Invitation letters in English and local language as sent by the PP

/29.2/ Minutes of meeting for the local stakeholders meetings

/29.3/ Attendance list of the meetings

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A.1 Annex 1: Local Assessment

This checklist is designed to provide confirmation of in-country data and information provided in the Project Design Document for **74 MW wind energy project in Tamilnadu, India**. It serves as a “**reality check**” on the project that is completed by a local assessor from SGS India

Issue	Findings	Source/Mean of Verification	Further Action / Clarification / Information Required?
WTGs specifications	Technical details, PO/WO for the installation of WTGs, commissioning certificates from TNEB, PPA	Technical details, commissioning certificates, PAA, approvals	CAR#08 CAR closed as the PP provided the same.
Modalities of Communication and HCA approval	MOC and HCA needs to be provided	NA	PP needs to provide the same. CAR#01 CAR#01 closed as the PP provided the same. OK
Ownership Details	Provide details of ownership of the present project activity by PP	Purchase orders / approval. Commissioning certificates ect	PP needs to provide the same, CAR#08 CAR#08 closed as the PP provided the same.
Public Funding	Provide evidences that no public funding was granted to the present project activity	Self declaration by finance department	The PP has provided the same. O
Serious CDM consideration	The same needs to be justified by the PP along with the parallel actions to secure the CDM revenue.	NA	PP needs to provide the same, CAR#06 CAR#06 closed as prior consideration is justified.
Local Stakeholders' meeting report	The minutes of the local stakeholders' meeting needs to be submitted	NA	PP needs to provide the same, CAR#08 CAR#08 closed. OK

Issue	Findings	Source/Mean of Verification	Further Action / Clarification / Information Required?
Training of personnel	Documentary evidences of the vendor's experience in monitoring the present project activity	Training documents	PP has provided the same. OK
New equipments	Confirmed through the SV visit. PP needs to provide the documentary evidences for the same.	Purchase orders SV inspection	Pending This has been checked by means of purchase orders. OK
Geographical coordinates of WTGs in degree decimal format.	Confirmed through the SV visit. PP needs to provide the documentary evidences for the same.	SV Inspection	CAR#02 PP has provided the supplier's documents as supportive. OK
Is all information provided consistent and in compliance with the actual situation or planning?	Yes, the information provided is correct as per actual site situation	SV Inspection, Interviews	OK
Over all monitoring procedures and compliance with the information provided in the PDD	Yes, it is in compliance.	SV Inspection, Interviews, Document Reviews	OK
Authority, responsibility for the monitoring	The same has been checked and found in line with PDD	SV Inspection, Interviews, Document Reviews	OK
Data recording, achieving and documentation procedures	The same has been checked and found in line with PDD	SV Inspection, Interviews, Document Reviews	OK



Issue	Findings	Source/Mean of Verification	Further Action / Clarification / Information Required?
Monitoring QA/QC procedures	The same has been checked and found in line with PDD	SV Inspection, Interviews, Document Reviews	OK

A.2 Annex 2: Validation Checklist

Table 1 - Participation Requirements for Clean Development Mechanism (CDM) Project Activities:

Requirement	Reference Criteria	SGS Assessment	Conclusion/CARs/CLs
<p>1. All Parties involved have approved the project activity</p> <p>1.1. Has the DNA of each Party involved in the proposed CDM project activity in section A.3 of the PDD provided a written letter of approval which confirms</p> <ul style="list-style-type: none"> a) The country is a Party to the Kyoto Protocol b) Participation is Voluntary c) The Host Party confirming that the proposed CDM project activity contributes to sustainable development of the country Non-Annex 1 Party shall submit a letter of approval d) It refers to the precise proposed CDM project activity title in the PDD being submitted for registration <p>1.2. Whether the LoA is unconditional with respect to (a)-(d) above?</p> <p>1.3. Is the LoA from the Project Participant or directly from the DNA, indicate the means of validation employed to assess the authenticity with DNA if the team doubt the authentic of LoAs.</p>	<p>Clean Development Mechanism, Validation and Verification Manual, Version 01.2 (from this point forwarded referenced as VVM) - -- Para 44-50 and 126-127</p> <p>Paragraph 37 CDM Modalities and procedures</p>	<p>HCA from DNA is not provided. PP needs to substantiate the same.</p> <p>HCA is provided by the PP.</p>	<p>CAR#01</p> <p>CAR#01 closed as HCA is substantiated.</p>
<p>2. Please state the Project Participants listed in the PDD and check with which of these Project Participants does SGS have a contract for the projects validation</p>	<p>Para 37 CDM M & P</p> <p>Para 7 EB 50 Annex 48</p>	<p>Only one Project Participant "Madras Cements Limited" is mentioned as Project Participant. SGS is in direct contractual agreement with the PP.</p>	<p>Y</p>
<p>2.1. If the Project Participant(s) listed in the PDD published at international stakeholder¹ consultation</p>	<p>EB 30 Para. 41.</p> <p>EB50 Annex 48 Para. 8</p>	<p>Not Applicable as only One PP is mentioned in the webhosted PDD and same is there in the final PDD,</p>	<p>Pending. Will be checked during</p>

¹ Stakeholders mean the public, including individuals, groups or communities affected, or likely to be affected, by the proposed CDM project activity or actions leading to the implementation of such an activity

are not included in the PDD submitted with request for registration, a letter should be obtained from the withdrawn Project Participant(s) confirming its voluntary withdrawal from the proposed project activity.		being submitted for requested for registration.	the Request for registration. Pendency Closed
2.2. Confirm while submitting a request for registration – all of the Project Participants with a contractual relationship are still listed in the PDD.	EB50 Annex 48 Para.7-9	Confirmed.	Pending. Will be checked during the Request for registration. Pendency Closed
2.3. Project Participants who are listed in the PDD (submitted for global stakeholder consultation) but who do not have a contractual relationship with SGS for the purposes of the validation activity may be removed from the PDD which is submitted for registration	EB50 Annex 48 Para.7-9	Not Applicable	Pending. Will be checked during the Request for registration. Pendency Closed
2.4. SGS may restart the validation activity through the new or revised contract with a different set of Project Participants by; a. Indicating that the first validation contract has been terminated and; b. Republishing the PDD or revised PDD for global stakeholder consultation.	EB50 Annex 48 Para.7-9 (If applicable)	Not Applicable	Pending. Will be checked during the Request for registration. Pendency Closed
2.5. The letter/s of approval are unconditional with respect to 1.1.a) to 1.1.d) above	VVM Para. 49/54	Pending due to CAR#01. The letter of approval is unconditional.	Pending Closed.
3. The project shall assist non-Annex I Parties in achieving sustainable development and shall have obtained confirmation by the host country thereof, and be entered into voluntarily	VVM Para. 54 Marrakech Accords, CDM Modalities §29 and §30 Kyoto Protocol Art. 12.2,	Pending due to CAR#01. The letter of approval is satisfies the mention criteria	Pending Closed.

	Marrakech Accords, CDM Modalities §40a		
4. Parties, stakeholders and UNFCCC accredited NGOs shall have been invited to comment on the validation requirements for a minimum of 30 days, and the project design document and comments have been made publicly available	VVM Para. 40-42 Marrakech Accords, CDM Modalities, §40	The global stakeholder's webhosting commenting period is 24/06/2009 to 23/07/2009. No comments were received during this period. Refer the website for further details http://cdm.unfccc.int/Projects/Validation/DB/BHX0TQO6T2FMQNF1A59AGMX7X5E4DD/view.html	Y
5. The project design document is in accordance with the applicable CDM requirements for completing PDDs.	VVM Para. 55 – 57 Marrakech Accords, CDM Modalities, Appendix B, EB Decisions EB 25 Annex 15 EB 41 Annex 12	The header of the PDD is not in line with the PDD template. Please clarify- CAR#13. Revised PDD is submitted and the PP has correctly used the current version of CDM PDD template applicable without any modification. No issues	CAR#13 OK Closed

Table 2 - PDD

Checklist Question	Reference Criteria	MoV*	SGS Assessment	Conclusion/ CARs/CLs
A. General Description of Project Activity				
A.1. Project Title				
A.1.1. Does the used project title clearly enable the reader to identify the unique CDM activity?	VVM Para.56 Guidelines for completing a CDM-PDD (PDD) section A.1	DR	The Title of the project activity is uniquely identifiable and refers to the characteristics for the project activity.	Y
A.1.2. Is there an indication of a revision number and the date of the revision?	VVM Para.56 PDD section A.1	DR	The PDD Version 01 dated 17/06/2009 and has been mentioned.	Y
A.2. Description of the Project Activity				
A.2.1. Does the proposed CDM project activities in existing facilities or utilizing existing equipments? Does a site inspection carried out by the assessment team?	VVM Para 60 Guidelines for completing a CDM-PDD (PDD) section A.2	DR SV	As per the PDD, this is a new project activity and does not involve the existing facility or equipments. However same will be confirmed during site visit. It is confirmed during the SV that it is new project activity.	Pending OK, closed
A.2.2. Does the description of the proposed CDM project activity as contained in the PDD sufficiently cover all relevant elements accurately and provide the reader with a clear understanding of the nature of the proposed CDM project activity?	VVM Para.58-59 VVM Para. 64(a) PDD section A.2 see also A.4, A.4.3 and B.3	DR	The PDD sufficiently describes the purpose of the project activity- to generate power using renewable source of energy, thus mitigating GHG emission type of technology- use of WTG for harnessing the wind and converting the mechanical energy of the wind into electricity by a series of gears and AC generator. Sustainable development-the project contributes to sustainable development as per the details given in last paragraph of A.2 of PDD.	OK

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

A.2.3. If the project activity involves the alternation of an existing installation or process, does the project description clearly state the differences resulting from the project activity compared to the pre-project situation?	VVM Para.63 PDD section A.2 see also A.4, A.4.3 and B.3	DR	Project activity does not involve alteration. Not Applicable	Y
A.2.4. Is all information provided consistent and in compliance with the actual situation or planning?	VVM Para.64 PDD section A.2 see also A.4, A.4.3 and B.3	DR SV	Same will checked on site visit. Checked on site. Confirmed	Site visit OK
A.2.5. Is all information with respect to project description deemed accurate and complete?	VVM Para.64(b) PDD section A.2	DR SV	All the information with respect to the project activity as provided in the final PDD, being submitted for registration is deemed accurate and complete.	Pending as will be confirmed on site visit closed. OK
A.3. Project Participants				
A.3.1. Is the table required for the indication of Project Participants correctly applied?	VVM Para. 51-54 PDD section A.3	DR	Yes, the table is correctly applied.	OK
A.3.2. Whether the participation of each Project Participant has been approved by at least one Party involved, either in a letter of approval or in a separate letter specifically to approve?	VVM Para. 52	DR	Pending due to CAR#01. Yes approval has been checked.	Pending Ok closed

A.3.3. Is all information provided in consistency with details provided by further chapters of the PDD (in particular Annex 1)?	VVM Para. 51 PDD section A.3/Annex 1	DR	Yes, the details are consistent in section A.3 and the Annex 1.	OK
A.3.4. Has the MoC been completed as per the latest Procedures for MoC between the Project Participants and the Executive Board?	EB 48 Annex 60 EB 45 Annex 59	DR	PP needs to provide the MOC letter.	OK Closed
A.4. Technical Description of the Project Activity				
A.4.1. Does the information provided on the location of the project activity allow for a clear identification of the site(s)? A.4.2. Are the latitude and longitude of the site indicated (decimal points)	VVM Para.64 PDD section A.4	DR SV	Yes, the information provided clearly identified the project Site. Same will be checked on SV. SV: PP is requested to substantiate the location and geographical coordinates of WTGs in degree decimal format. Same is provided by PP. Closed	CAR#02 Ok
A.4.3. Does the proposed CDM project activity involve the alteration of existing installations or process?	VVM Para.64 PDD section A.4	DR SV	No the project activity is a green field project and does not involve alteration	Y
A.4.4. Is the category(ies) of the project activity correctly identified?	VVM Para.64 PDD section A.4	DR	The present project activity is a standalone large scale wind power project (74 MW which is greater than 15 MW) as per A.2, A.4.2, A.4.3. Hence sector scope 01 and ACM 002 which is applicable to present project activity has been correctly applied to describe the present project activity.	Y
A.4.5. Is all information provided in compliance with actual situation or planning as available by the Project Participants?	VVM Para.64 PDD section A.4 Guidelines for completing a	DR SV	Pending site visit The Information is in compliance.	Pending Closed

	CDM-PDD (PDD)			
A.4.6. Is the projected emission reductions in consistency with the ex-ante estimation in Section B.6.4?	VVM Para.64 PDD section A.4.4	DR	Checked PDD section A.4.4 for the table indicating the emission reductions correctly.	Y
A.5. Public Funding				
A.5.1. Does the information on public funding provided conform to the actual situation or planning as presented by the Project Participants?	PDD section A.4.5	DR	As per the PDD, no ODA has been used in the project. Same will be checked and confirmed during SV. No ODA is confirmed	Pending OK
A.5.2. Is all information provided consistent with details provided by further chapters of the PDD (in particular annex 2)?	PDD section A.4.5	DR	Yes information about the ODA funding is consistent within PDD.	Y
A.5.3. In case of public funding from Annex I Parties is it confirmed that such funding does not result in a diversion of official development assistance	PDD section A.4.5	DR	Not Applicable	Y
B. Baseline and Monitoring Methodology				
B.1. Title and reference of the approved baseline and monitoring methodology applied of the project activity				
B.1.1. Is the baseline methodology previously approved by the CDM Methodology Panel?	VVM Para.65 VVM Para 68 PDD section B.1	DR	The methodology ACM 002 version 10, valid from 27 th Feb 2009 is approved by UNFCCC and applied by the project activity in the PDD, version 01 The final PDD contains the Meth ACM0002, Version 12.0.3, which is also approved by the CDM Methodology panel	Y
B.1.2. Is there any specific guidance (including the	VVM Para.68-69	DR	All the applicable tools and guidance by the EB are correctly applied by the PP.	Y

Tools) provided by EB and has these guidance been applied?	PDD section B (B.1-B.2)			
B.2. Choice and Applicability of methodology				
B.2.1. Is the selected approved methodology applicable to the project activity in the PDD?	VVM Para.75/66a/68/73 PDD section B (B.1-B.2)	DR	Yes, the selected approved methodology ACM0002, version 10 is applicable to the project activity. The revised version 12.3.0 is also approved by the EB and applicable to the project activity.	Y
B.2.2. Is the discussion in the PDD in conformance with all applicability criteria of the applied methodology?	VVM Para.70-76 PDD section B (B.1-B.2)	DR	The validity date of methodology mentioned under section B.1 of PDD is not correct. Please clarify In PDD proper justification is not provided on how the Alternative 2 "Setting up a fossil fuel based power plant that supplies electricity to the Southern grid" has been eliminated from further consideration. The issues raised are addressed by the PDD.	CL#03 Closed CAR#04 Closed Ok
B.2.3. Is there any GHG emissions occurring within the project boundary as a result of the implementation of the proposed project which are expected to contribute more than 1% of the overall expected average annual ERs, which are not addressed by the applied methodology.	VVM Para 77	DR SV	Same will be checked in site visit SV: No such emission sources are found	Pending Site visit OK
B.2.4. Is the applicability of the selected methodology satisfied?	VVM Para.76	DR	Pending due to CARs & CLs. Yes, the applicability of the selected methodology is satisfied.	Pending OK
B.3. Project Boundary				
B.3.1. Does the project	VVM Para. 78-80	DR	Yes delineation is provided.	OK

boundary include the physical delineation of the proposed CDM project activity?	PDD section B.3 also see section A.4.3			
B.3.2. Are all emission sources and gases related to the baseline scenario, project scenario and leakage clearly identified and described in a complete and transparent manner?	VVM Para.79-80 PDD section B.3	DR SV	Same will be confirmed after SV SV: yes all emission sources and gases related to the baseline scenario, project scenario and leakage clearly identified and described in a complete and transparent manner	Pending OK
B.3.3. In case of grid connected electricity projects: Is the relevant grid correctly identified in accordance with the latest version of tool to calculate emission factor of electricity system (wherever applicable) and the underlying methodology?	VVM Para.79 PDD section B.3 EB 50 Annex 14	DR	PP has correctly identified the connected grid, however PP needs to clarify the vintage of the data considered in the calculation of the grid emission factor. Vintage is justified & corrected.	CAR#05 Closed OK
B.3.4. Are the project's geographical boundaries and the project's system boundaries (components and facilities used to mitigate GHGs) clearly defined?	VVM Para.76/79 PDD section B.3 also see section A.4.3	DR	Yes the geographical boundaries and the project's system boundaries are clearly defined in accordance with the applied methodology	Y
B.4. Identification of the Baseline Scenario				
B.4.1. Does the PDD discuss the identification of the most likely baseline scenario? Does the PDD	VVM Para. 82/86 PDD Section B.4/B.5	DR	Yes, the baseline scenario is correctly chosen in accordance with the applied methodology.	OK

follow the steps to determine the baseline scenario required by the methodology/tool and has the application of the tools as per methodology been consulted, if the Tool(s) are required by the methodology?				
B.4.2. Have all applicable CDM requirements been taken into account in the identification of the baseline scenario, including "relevant national and/or sectoral policies and circumstances?	VVM Para.85/87(d) EB 22 Annex 3 EB 53 Annex 32	DR	The baseline scenario is correctly chosen in accordance with the applied methodology.	OK
B.4.3. Are all potential realistic and credible alternative scenarios listed in the methodology are considered in identification of the most reasonable baseline scenario? Are all scenarios are reasonable in the con-text of the proposed CDM project and no reasonable alternative scenario has been excluded?	VVM Para. 81-84 PDD Section B.4/B.5	DR	In PDD proper justification is not provided on how the Alternative 2 "Setting up a fossil fuel based power plant that supplies electricity to the Southern grid" has been eliminated from further consideration. Same is corrected by PP.	CAR#04 Closed
B.4.4. Is conservativeness addressed in the way of identifying the baseline?	VVM Para.90 PDD Section B.4/B.5	DR	The baseline scenario is correctly chosen in accordance with the applied methodology.	Y
B.4.5. Is there a verifiable description of the baseline	VVM Para.86	DR	The baseline scenario is correctly chosen in accordance with the applied	Y

scenario? Does this include a description of the technology that would be employed and/or the activities that would take place in the absence of the proposed CDM project activity?	PDD Section B.4/B.5		methodology and same appropriately justified in the PDD.	
B.4.6. Does the selected baseline represent the most likely scenario among other possible and/or discussed scenarios?	VVM Para.87 PDD Section B.4/B.5	DR	The baseline scenario is correctly chosen in accordance with the applied methodology.	Y
B.5. Additionality				
B.5.1. Does the PDD clearly demonstrate the additionality using the approach as specified in the methodology and by following all the required steps?	VVM Para. 94-97 PDD Section B.1/B.4/B.5	DR	Yes, the PDD demonstrates the additionality as per the methodology. i.e. using the additionality tool, version 05.2 Later the same has been revised as per the latest version 06 of the tool. Accepted.	Y
B.5.2. In case of using the additionality tool: Is the 'Additionality Tool' used in the PDD latest version? If an earlier version has been used, do the changes impact the discussion in the PDD? Are all steps followed in a transparent manner?	PDD Section B.1/B.4/B.5	DR	Yes, the PDD uses the latest applicable version of 05.2 in the version 01 Issue raised in CAR#12 at later stage: PP needs to revise the additionality tool to the latest applicable version 06. Same is revised by the PP.	OK CAR#12 Closed. OK
B.5.3. Has all information been backed up with	VVM Para.93/91	DR	The date and the references will be checked on site.	Pending

references, sources and certification? Is the data presented credible and reliable with complete transparency to all available data and documentation?	PDD Section B	SV	Pending with closer of CARs & CLs. Closed	Closed
B.5.4. Is the discussion on additionality and the evidence provided consistent with the starting date of the project? If the project activity start date is prior to the validation is it discussed how the CDM was taken into account in the decision to go ahead with the project activity	VVM Para.98-99 VVM Para.103-104 PDD Section B.5	DR	PP is requested to justify the start date and the serious CDM consideration for the project activity. PP has justified the same.	CAR#06 Closed OK
B.5.5. Is the project activity a new project activity or existing project activity? How is the early consideration demonstrated?	VVM Para.100-102 PDD Section B.5	DR	This is existing project activity. Pending due to CAR#06. Early CDM consideration is demonstrated and justified.	Pending Closed
B.5.6. For an existing project activity with a start date before 2 August 2008, for which the start date is prior to the date of publication of the PDD for global stakeholder consultation, is the real documented evidence for an assessment of real and continuing actions available for validation and	EB 49, annex.22	DR	Pending due to CAR#06 Requirements as per EB62, annex 13 justified.	Pending Closed

is this evidence authentic?				
B.5.7. Are all credible and plausible alternatives correctly identified? Do the identified baseline scenarios include technologies and practices that include outputs or services comparable with the proposed CDM project activity? Do they also abide by the same applicable laws and legislations?	VVM Para.105-107	DR	All credible and plausible alternatives are correctly identified. The identified baseline scenarios include technologies and practices that include outputs or services comparable with the proposed CDM project activity and also abide by the same applicable laws and legislations.	Y
B.5.8. If an investment analysis has been used, has it been demonstrated that the proposed project activity is not the most economically or financially attractive alternative, or is not economically or financially feasible, without the revenue from the sale of CERs.	VVM Para. 108-109 PDD Section B.5	DR	Yes, It is demonstrated by the PP. However, same will be confirmed once the input values and the approach have been validated.	Pending OK
B.5.9. Is the investment analysis carried out in accordance with specific guidance from EB?	VVM Para. 110 EB 51 Annex 58 EB 48 Annex 11	DR	Yes, PP has followed the latest applicable guidance on the investment analysis. However pending till the additionality is validated	Pending OK
B.5.10. Is the investment analysis complete and accurate? (Important)	VVM Para. 111 PDD Section B.5 EB 51 Annex 58 EB 54 Para 53 EB 53 Annex 32	DR	Pending due to CARs & CLs.	Pending OK

B.5.11. Does the investment analysis rely on the values from Feasibility Study Reports (FSR) that approved by national authorities for proposed CDM project activity?	VVM Para. 113 PDD Section B.5	DR	<p>Same will be checked in site if the FSR has been used.</p> <p>The FSR is not used by the PP. PP is requested to justified the appropriateness, applicability and availability of the input parameters in the investment analysis.</p>	<p>CAR#07</p> <p>CAR#07 closed</p> <p>OK</p>
B.5.12. If a benchmark is used, is it ensured that it is selected in accordance with the requirements of the tool /methodology and it represents standard returns in the market (not linked to the subjective profitability expectation or risk profile of a particular project developer).	VVM Para. 112 PDD Section B.5 EB 51 Annex 58 EB 51 Annex 59	DR	<p>The PP has used the benchmark analysis in the webhosted PDD. However analysis sheet for the same has not been provided yet. Same will be checked on SV</p> <p>PP is requested to justify appropriateness of only company "BF utilities" is considered for beta estimation.</p>	<p>CAR#07</p> <p>CAR#07 Closed.</p> <p>OK</p> <p>CAR#12 CAR#12 closed OK</p>

B.5.13. If a barrier analysis has been used, has it been shown that the proposed project activity faces barriers that prevent the implementation of this type of proposed project activity but would not have prevented the implementation of at least one of the alternatives?	VVM Para. 115/118 PDD Section B.5	DR	Barrier analysis is not used by the PP.	OK
B.5.14. Is the discussion on additionality consistent with the identification of all plausible and credible baseline scenarios?	VVM Para. 105 PDD Section B.5	DR	Yes, the discussion is consistent	OK
B.5.15. Has the barriers correctly identified and they prevent the implementation of the project activity but not the implementation of at least one of the possible alternatives.	VVM Para. 116-118	DR	Barrier analysis is not used by the PP.	OK
B.5.16. If a barrier analysis has been used have the 'guidelines for objective demonstration and assessment of barriers'	VVM Para 116-117 EB 50 Annex 13	DR	Barrier analysis is not used by the PP.	OK

been followed? Have all applicable steps been considered and substantiated with objective evidence?				
B.5.17. Do the identified baseline scenarios include technologies and practices that include outputs or services comparable with the proposed CDM project activity? Do they also abide by the same applicable laws and legislations?	VVM Para. 105 PDD Section A.4.3/B.5	DR	The baseline scenario is identified as per the methodology.	OK
B.5.18. Is the proposed project type be justified as first-of-its kind?	VVM Para. 119 PDD Section B.5	DR	This is not proposed as first of its kind	OK
B.5.19. Is the project activity not common practice?	VVM Para. 120-121 PDD Section B.5	DR	In accordance with the Tool for the demonstration and assessment of additionality _Version 5.2. PP is requested to provide the common practice analysis. - Same has been provided by PP PP needs to justify the common practice in accordance with the additionality tool, Version 06 - Same has been provided in PDD, version 06	CAR#09 CAR#09 closed OK CAR#12 Closed. OK
B.5.20. What are the key distinctions between the project activity and any similar projects that are widely used as common practice?	VVM Para. 118, 119c/d PDD Section B.5	DR	Pending due to CAR#09 The similar project activities of such a large scale wind installations are not observed in the region.	Pending OK

B.5.21. Is the proposed project activity additional?	PDD Section B.5	DR	Pending till the Closer of related CARs & CLs. Yes, the project activity is additional.	Pending OK
B.6. Algorithms and/or formulae used to determine emission reductions				
B.6.1. Are the steps and equations applied to calculate baseline emissions in compliance with the requirements of selected baseline and monitoring methodology?	VVM Para. 67c VVM Para. 89-90 VVM Para. 93 PDD Section B.6.1	DR	Yes, the steps and calculations are as per the applied methodology	Y
B.6.2. Are the steps and equations applied to calculate project emissions in compliance with the requirements of selected baseline and monitoring methodology?	VVM Para. 67c VVM Para. 89-90 VVM Para. 93 PDD Section B.6.1	DR	No project emissions involved as per the methodology.	Y
B.6.3. Are the steps and equations applied to calculate leakages in compliance with the requirements of selected baseline and monitoring methodology?	VVM Para. 67c VVM Para. 89-90 VVM Para. 93 PDD Section B.6.1	DR	No leakage is applicable as per the methodology	Y
B.6.4. Are the steps and	VVM Para.	DR	Yes, it is in compliance of the methodology	Y

equations applied to calculate emission reductions in compliance with the requirements of selected baseline and monitoring methodology?	67c VVM Para. 89-90 VVM Para. 93 PDD Section B.6.1			
B.6.5. Where there is an option between different equations or parameters, has the methodological choices for the project been explained, have they been properly justified and are they correct?	VVM Para.89/90/91 PDD Section B (B.6.2 -B.71)	DR	Yes, the methodological choices, where applicable is appropriately made and justified in the final PDD.	Y
B.6.6. Are uncertainties in the GHG emissions estimates properly addressed in the documentation?	PDD Sections B.5-C	DR	Yes, the uncertainties ate estimated, where ever applicable.	Y
B.6.7. Are the ex-ante fixed data provided in compliance with the methodology and/or relevant tools (if applicable)?	VVM Para. 67c VVM Para. 91 VVM Para. 93 PDD Section B.6.3B.6.4	DR	Yes, the ex-ante data are provided in compliance with the methodology	Y
B.6.8. Is all the data derived from official data sources or replicable records and have these been correctly quoted?	VVM Para. 91a/b PDD Section B.6.3/B.6.4	DR	Yes, the data from CEA database is correctly quoted.	Y
B.6.9. Is the vintage of the	PDD Section	DR	Yes, the vintage is correct.	Y

baseline data correct?	B.6.3/B.6.4			
B.6.10. Is all the data appropriate and correctly applied to the CDM project activity?	VVM Para. 91c PDD Section B.6.3/B.6.4	DR	Yes the all the data are correctly and appropriately applied	Y
B.6.11. Are data and parameters that are not being monitored and remained fixed throughout the crediting period appropriately assessed, correct, and will they result in conservative estimates?	VVM Para. 90 PDD Section B.6.3/B.6.4	DR	Yes same is confirmed.	Y
B.6.12. Are the ex-post monitored data estimated appropriated for calculation of ex-ante emission reductions?	VVM Para. 67c VVM Para. 91 VVM Para. 93 PDD Section B.6.3B.6.4	DR	Yes, the ex-post monitored data are appropriately mentioned in the final PDD.	OK
B.6.13. Is sampling approach used for any parameters?	EB 50 Annex 30 Para. 30	DR	Not applicable	OK
B.6.14. Are all the steps taken and equations applied to calculate project emissions, baseline emissions and leakage and emission reductions correct and appropriate?	VVM Para. 67c VVM Para. 92	DR	Yes, the steps are correct and as per the methodology.	OK
B.6.15. Where applicable, the plant load factor shall be defined ex-ante in the	EB 48 Annex 11	DR	PP needs to justify the PLF considered. The PLF is validated by the third party.	CAR#07

<p>CDM-PDD according to one of the following three options:</p> <p>(a) The plant load factor provided to banks and/or equity financiers while applying the project activity for project financing, or to the government while applying the project activity for implementation approval;</p> <p>(b) The plant load factor determined by a third party contracted by the Project Participants (e.g. an engineering company)</p>				<p>CAR#07 Closed OK</p>
<p>B.7. Monitoring methodology and Monitoring Plan</p>				
<p>B.7.1. Does the monitoring methodology provide a consistent approach in the context of all parameters to be monitored and further information provided by the PDD?</p> <p>Are all parameters and data that are available at validation consistent with the approved methodology. Has this data been interpreted and applied correctly?</p>	<p>VVM Para. 67e PDD Section B.7-B.8 see also Annex 4</p>	<p>DR SV</p>	<p>Same will be confirmed after Site visit.</p> <p>SV:</p> <p>4) Please clarify if PP has covered all the parameters required for the calculation of the net electricity supplied to the grid in the section B.7.1 of the PDD.</p> <p>5) In Annex 4 of the PDD_V02, it is mentioned that metering equipment is located in each WTG. Please clarify whether this is TNEB meter or panel meters.</p> <p>PP has not provided the recording and monitoring frequency of each parameter. Please clarify</p> <p>Yes, the methodology provides a consistent approach in the context of all parameters to be monitored and further information provided by the PDD</p> <p>All parameters and data those are available at validation consistent with the approved methodology. Has this data been interpreted and applied correctly</p>	<p>CAR#10</p> <p>CAR#10 closed</p>

B.7.2. Is the monitoring plan compliant with the approved monitoring methodology and/or relevant tools (if applicable)?	VVM Para. 123(a) PDD Section B.7	DR SV	Same will be confirmed after Site visit and closer of CAR#10. Yes, the monitoring plan is in compliance with the applied approved methodology	Pending OK
B.7.3. Is the implementation of monitoring plan feasible and verifiable.	VVM Para. 123(b) PDD Section B.7	DR SV	Same will be confirmed after Site visit and closer of CAR#10. Yes, the implementation of monitoring plan is feasible and reliable.	Pending OK
B.7.4. Is it ensured that data provisions will be free of potential conflicts of interests resulting in a tendency of overestimating emission reductions?	VVM Para. 19	DR SV	Same will be confirmed after Site visit. PP has not discussed the calibration frequency and calibration standard in the PDD, version 01 for the measurement equipments involved in the project activity. Please clarify Confirmed.	CAR#12 Closed OK
B.7.5. Is the proposed monitoring plan compliance with the methodology/tools and feasible for implementation?	VVM Para. 124	DR SV	Same will be confirmed after Site visit and closer of CAR#10 & CAR#11. Yes the monitoring plan is in compliance with the methodology.	Pending OK
B.7.6. Does the information contained in Annex 4 in consistency with the information in Section B.7 of PDD?	PDD Annex 4	DR	Yes, the information in the Annex 4 is consistent with the PDD B.7.	OK
B.7.7. Does the monitoring plan in the PDD comply with the approved methodology provided for the collection and archiving	VVM Para. 91a/91d/121/79 PDD Section B.7- B.7.2	DR	Same will be confirmed after Site visit and closer of CAR#10 & CAR#11. Yes, Does the monitoring plan in the PDD complies with the approved methodology provided for the collection and archiving of all relevant data necessary for estimation	Pending OK

of all relevant data necessary for estimation or measuring the emission reductions within the project boundary during the crediting period?				
B.7.8. Are the choices of project GHG indicators reasonable and in conformance with the requirements set by the approved methodology applied?	PDD Section B.7-B.7.2/B.6.2	DR	Same will be confirmed after Site visit and closer of CAR#10 & CAR#11. Confirmed	Pending OK
B.7.9. Will it be possible to determine the specified project GHG indicators?	PDD Section B.6.2-B.8	DR	Same will be confirmed after Site visit. Confirmed	Pending OK
B.7.10. Is the information given for each monitoring variable by the presented table sufficient to ensure the verification of a proper implementation of the monitoring plan?	PDD Section B.6.2-B.7.1	DR	Same will be confirmed after Site visit and closer of CAR#10 & CAR#11. Confirmed	Pending OK
B.7.11. Is the monitoring approach in line with current good practice, i.e. will it deliver data in a reliable and reasonably acceptable accuracy?	PDD Section B.5-B.7.2	DR	Same will be confirmed after Site visit and closer of CAR#11 & CAR#10. Confirmed	Pending OK
B.7.12. Are all formulae used to determine project emission clearly	PDD Section B.6.2-B.7.1	DR	Same will be confirmed after Site visit. Confirmed	Pending OK

indicated and in compliance with the monitoring methodology.				
B.8. Operational and Management Structure				
B.8.1. Is the authority and responsibility of project management clearly described?	PDD Section B.7	DR	Yes, the authority is defined, same will be confirmed after SV Confirmed.	Pending OK
B.8.2. Is the authority and responsibility for registration, monitoring, measurement and reporting clearly described?	PDD Section B.8	DR	Yes, the authority and responsibility for registration, monitoring, measurement and reporting is described by the PP	OK
B.8.3. Are procedures identified for training of monitoring personnel?	PDD Section B.7	DR	Will be checked on SV SV: The monitoring will be done by trained personnel of O&M contractor.	Pending OK
B.9. Baseline Information				
B.9.1. Is the information contained in Annex 3 consistent with the Section B.4, B.5 and B.6?	PDD Annex 3	DR	Yes, Information in Annex 3 is consistent with the PDD.	OK
B.9.2. Is there any indication of a date when determining the baseline?	PDD Section B.8/Annex 3	DR	The Baseline is determined on 21/03/2009	OK
B.9.3. Is this consistent with the time line of the PDD history?	PDD Section B.8	DR	Yes, It is consistent	OK
B.9.4. Is all data required provided in a complete manner by annex 3 of the PDD?	PDD Annex 3	DR	Yes, complete date is provided	OK

B.9.5. What is the documented crediting period of the project? Is this in line with available data?		DR	The crediting period in the webhosted PDD is 30/11/2009 to 29/11/2019 The crediting period in the revised PDD, being submitted for registration is 01/06/2012 to 31/05/2022.	OK
B.9.6. In cases where the methodology specifies, has the ' <i>Tool to determine the remaining lifetime of equipment</i> ' been correctly applied?	EB 50 Annex 15	DR	Not applicable	OK
B.9.7. In cases where the ' <i>Tool to determine the remaining lifetime of equipment</i> ' has been used the Project Participants may use one of the following options to determine the remaining lifetime of the equipment: i. Use manufacturer's information on the technical lifetime of equipment and compare to the date of first commissioning; ii. Obtain an expert evaluation; iii. Use default values.	EB 50 Annex 15	DR	Not Applicable	OK
C. Duration of the Project / Crediting Period				
C.1.1. Are the project's starting date and operational lifetime clearly defined	VVM Para. 99	DR	Yes it is reasonable	OK

and reasonable?	PDD Section C.1.1/C.1.2			
C.1.2. Is the assumed crediting time clearly defined and reasonable (renewable crediting period of max 7 years with potential for 2 renewals or fixed crediting period of max. 10 years)?	VVM Para. 102a PDD Section C.2/C.2.1/C.2.2	DR	Yes, it is reasonable and considered clearly for 10 years fixed	OK
C.1.3. Does the project's operational lifetime exceed the crediting period	VVM Para. 102a PDD Section C.1.2/C.2.1.1/C.2.1.2	DR	Yes the operational lifetime exceeds the crediting period	OK
C.1.4. Does the start date indicate whether this is a new project activity or a pre-existing project activity?	VVM Para. 102a/ 98 PDD Section C.1.1/C.2.1.1	DR	This is pre-existing project activity	OK
D. Environmental Impacts				
D.1.1. Does the project comply with environmental legislation in the host country?	VVM Para. 131-133 PDD section D	DR	Yes, the project activity complies with the host country legislation	OK
D.1.2. Has an analysis of the environmental impacts of the project activity been sufficiently described?	VVM Para. 131-133 PDD section D	DR	Yes, same has been added in the PDD	OK
D.1.3. Are there any Host Party requirements for an Environmental Impact	VVM Para. 131-133	DR	The EIA is not required.	OK

	Assessment (EIA), and if yes, is an EIA approved?	PDD section D			
D.1.4.	Will the project create any adverse environmental effects?	VVM Para. 131-133 PDD section D	DR	No, the project does not have any adverse environmental effects	OK
D.1.5.	Are trans-boundary environmental impacts considered in the analysis?	VVM Para. 131-133 PDD section D	DR	There are no trans-boundary adverse environmental effects	OK
D.1.6.	Have identified environmental impacts been addressed in the project design?	VVM Para. 131-133 PDD section D	DR	Yes, the environmental impacts are addressed in the PDD.	OK
E. Stakeholder Comments					
E.1.1.	Have local stakeholders been invited by the PPs to comment on the proposed CDM project activity prior to the publication of the PDD on the UNFCCC web	VVM Para. 128-129 PDD Section E.1	DR	As per the PDD, version 01, the local stakeholders were invited by the PP. The proof for same needs to be provided by the PP. Same is provided by PP.	CAR#08 Closed OK
E.1.2.	Have appropriate media been used to invite comments by local stakeholders?	VVM Para. 128-129 PDD Section E.1	DR SV	This will be checked during site visit. Confirmed.	Pending OK
E.1.3.	Is the undertaken stakeholder process described in a complete and transparent manner?	VVM Para. 128-129 PDD Section E.1	DR SV	This will be checked during site visit. Confirmed.	Pending OK

E.1.4.	Is a summary of the stakeholder comments received provided?	VVM Para. 128-129 PDD Section E.2	DR SV	This will be checked during site visit. Confirmed.	Pending OK
E.1.5.	Has due account been taken of any stakeholder comments received?	VVM Para. 128-129 PDD Section E.3	DR SV	This will be checked during site visit. Confirmed.	Pending OK
E.1.6.	How the team validate the adequacy of stakeholder consultation?	VVM Para. 130	DR SV	PP has properly invited the local stakeholders through appropriate media. The consultation was done and the issues/questions raised by them is addressed. The meeting was well documented and checked by the team	Pending OK

A.3 Annex 3: Overview of Findings

Findings Overview Summary

	CARs	CLs	FARs
Total Number raised	12	01	-

Date:	06/11/2009	Raised by:	Assessment Team		
Type:	CAR	Number:	01	Reference:	Table 1 of AU4
Lead Assessor Comment:					
PP is requested to substantiate the Host country approval for the project and provide modalities of communication letter.					
Project Participant Response:				Date: 06/07/2010	
The project Participant has applied for the Host Country Approval to the National CDM Authority, and is not in receipt of it. HCA will be provided to the DOE as soon as it is received from the DNA. The MoC of the project is provided as Annexure 1.					
Documentation Provided by Project Participant:					
Annexure 1: Modalities of Communication (MoC) PDD, version 02					
Information Verified by Lead Assessor:					
Contact details of MoC with PDD Revised PDD, version 02 dated 05/07/2010					
Reasoning for not Acceptance or Acceptance and Close Out:				Date: 23/08/2010	
CAR#01 is open Contact details in the PDD_V02 is inconsistent with MoC submitted HCA is pending.					
Project Participant Response:				Date: 15/10/2010	
The project Participant has received the Host Country Approval for the project, and it has been provided as Annexure 15. The contact details in Annex 1 have been provided in line with the MoC in the revised PDD version 03.					
Documentation Provided by Project Participant:					
Host Country Approval Revised PDD, version 03					
Information Verified by Lead Assessor:					
The host country approval letter was checked dated 12/08/2010 with reference number 4/5/2010-CCC issued by MoEF, Government of India PDD, version 03 dated 15/10/2010					
Reasoning for not Acceptance or Acceptance and Close Out:				Date: 12/11/2010	
However the validation team requests PP to provide the web link from DNA where the approval note for this project is issued to check the authenticity further as per para 45-48 of VVM 1.2. Also provide the color scanned copy of the DNA's letter of approval.					
Project Participant Response:				Date: 30/12/2010	
The approved project database on DNA's website is not updated and the web link for this indicating approval for this project cannot be provided at this stage. However, The colored scanned copy of the Host Country Approval has been provided as Annexure 26.					
Documentation Provided by Project Participant:					
Annexure 26: Colored scanned copy of HCA					
Information Verified by Lead Assessor:					
The colored scanned copy of HCA					
Reasoning for not Acceptance or Acceptance and Close Out:				Date: 22/02/2011	

The colored scanned copy of the HCA was checked. Since the DNA website is not updated to include the present project activity, same will checked by contacting the DNA. Pending	
30/11/2011: PP is requested to Provide the revised MOC in latest available format on the UNFCCC website	
Project Participant Response:	Date: 02/02/2012
The MOC in the latest version is being provided to DOE.	
Documents Provided by Project Participant:	
MOC Dated 30/01/2012	
Information Verified by Lead Assessor:	
Revised MOC dated 30/01/2012 DNA confirmation through mail dated 28/02/2012 for authenticity of HCA	
Reasoning for Not Acceptance or Acceptance and close out:	Date: 01/03/2012
an email confirmation from the DNA dated 28/02/2012 has been received, which has authenticated the HCA approval The revised MOC is checked is found acceptable. Closed.	
Acceptance and Close out by Lead Assessor:	Date: 01/03/2012

Date:	06/11/2009	Raised by:	Assessment Team		
Type:	CAR	Number:	02	Reference:	A.4 Table 2 of AU4
Lead Assessor Comment:					
PP is requested to substantiate the location and geographical coordinates of WTGs in degree decimal format along with the supporting.					
Project Participant Response:				Date: 06/07/2010	
The Coordinates of WTGs have been provided in degree decimal format with supporting.					
Documentation Provided by Project Participant:					
"Coordinates degree decimal" Revised PDD_V2					
Information Verified by Lead Assessor:					
The coordinates of the WTGs are provided in degree decimal format. PDD, version 02 dated 05/07/2010					
Reasoning for not Acceptance or Acceptance and Close Out:				Date: 23/08/2010	
However the PP is requested to ensure that all coordinates are indicated in the same format i.e., either in degrees,minutes,seconds or decimal degrees. For WTG U 1522, U 1532, the coordinates are given in decimal degrees whereas all other coordinates are given in Degrees,Minutes, Seconds format.					
Project Participant Response:				Date: 15/10/2010	
The coordinates format has been consistently mentioned in the revised PDD.					
Documentation Provided by Project Participant:					
Revised PDD, version 03					
Information Verified by Lead Assessor:					
Appendix 1 of the PDD version 03 dated 15/10/2010 was checked.					
Reasoning for not Acceptance or Acceptance and Close Out:				Date: 12/11/2010	
The coordinates are consistently mentioned in Degree Minutes and Seconds format. Hence there are no inconsistencies in the representation of the coordinates in PDD, further the same has been checked with the supplier's information. Accepted.					
Acceptance and Close out by Lead Assessor: Closed				Date: 12/11/2010	

Date:	06/11/2009		Raised by:	Assessment Team	
Type:	CL	Number:	03	Reference:	B.1, Table 2 of AU4
Lead Assessor Comment:					
The validity date of methodology mentioned under section B.1 of PDD is not correct. Please clarify					
Project Participant Response:			Date: 06/07/2010		

The validity date of methodology mentioned under B.1 of has been rectified in PDD version 02.	
Documentation Provided by Project Participant:	
Please refer section B.1 of revised PDD version 02	
Information Verified by Lead Assessor:	
Section B.1 of the revised PDD version 02 dated 05/07/2010 was checked	
Reasoning for not Acceptance or Acceptance and Close Out:	Date: 23/08/2010
CL # 3 is open. ACM0002_V10 has been expired on 25 th Feb 10. Please clarify	
Project Participant Response:	Date: 15/10/2010
The version of the approved methodology has been updated to ACM0002 version 11 in PDD version 03	
Documentation Provided by Project Participant:	
Section B.1 of PDD version 03	
Information Verified by Lead Assessor:	
The section B.1 of the PDD version 03 dated 15/10/2010 was checked. As per the methodology page, http://cdm.unfccc.int/methodologies/PAmethodologies/approved.html , the validity of the methodology is from 26/02/2010 to 16/09/2010.	
Reasoning for not Acceptance or Acceptance and Close Out:	Date: 12/11/2010
Since the validity of the methodology is not as per the homepage of the ACM 0002 version 11, PP is requested to update the same	
Project Participant Response:	Date: 30/12/2010
The validity of the methodology mentioned under section B.1 of PDD version 03 was 26 Feb 2010 in line with the date mentioned on the methodology page, and the same has been maintained in PDD version 04.	
Documentation Provided by Project Participant:	
Revised PDD	
Information Verified by Lead Assessor:	
Revised PDD, version 04 dated 30/12/2010	
Reasoning for not Acceptance or Acceptance and Close Out:	Date: 22/02/2011
PP has corrected the validity date of the methodology. Accepted. This is checked with the information available on the webpage: http://cdm.unfccc.int/methodologies/DB/C505BVV9P8VSNNV3LTK1BP3OR24Y5L/view.html Closed. Reopened: 20/09/2011 The version 11 of the ACM002 has expired and cannot be used for requesting registration. Please clarify	
Project Participant Response:	Date: 22/11/2011
PDD with application of the current version 12.1.0 is being submitted	
Documentation Provided by Project Participant:	
Revised PDD, version 06	
Information Verified by the Lead Assessor:	
Revised PDD, version 06 dated 11/11/2011	
Reasoning for Not acceptance or Acceptance and close out:	Date: 30/11/2011
PP has correctly applied the revised methodology ACM0002, version 12.1.0. Accepted However with minor revision in EB 65, the applicable current version of the methodology is 12.2.0. Please clarify	
Project Participant Response:	Date: 22/02/2012
Revised PDD as per the latest version 12.2.0 of methodology is being provided to DOE	
Documents Provided by Project Participant:	
Revised PDD, version 07	
Information Verified by Lead Assessor:	
Revised PDD, version 07 dated 22/02/2012	
Reasoning for Not acceptance or Acceptance and close out:	Date: 22/02/2012

The revised PDD has been checked for the editorial revision.	
Reopened: 24/03/2012: there is a further change in the editorial revision in EB66 and the revised PDD has been submitted by the PP considering the application of methodology ACM0002, version 12.3.0.	
Acceptance and Close out by Lead Assessor:	Date: 24/03/2012

Date:	06/11/2009	Raised by:	Assessment Team		
Type:	CAR	Number:	04	Reference:	B.2, Table 2 of AU4
Lead Assessor Comment:					
In PDD proper justification is not provided on how the Alternative 2 “Setting up a fossil fuel based power plant that supplies electricity to the Southern grid” has been eliminated from further consideration.					
Project Participant Response:				Date: 06/07/2010	
Proper justification on elimination of alternative 2 from further consideration has been provided under section B.5 of PDD version 02.					
Documentation Provided by Project Participant:					
Please refer section B.5 of PDD version 02.					
Information Verified by Lead Assessor:					
Section B.5 of PDD version 02 dated 05/07/2010					
Reasoning for not Acceptance or Acceptance and Close Out:				Date: 23/08/2010	
CAR#04 is open. The PDD is not clear regarding how the alternative 2 has been eliminated, as it is not elaborate as per the guidelines of EB 39 annex 10 additionality tool 5.2					
Project Participant Response:				Date: 15/10/2010	
Alternative 2 has been removed from the PDD version 03, since a specific fossil fuel based power plant cannot be identified, and it would result in continuation of existing situation that is grid connected power plants.					
Documentation Provided by Project Participant:					
Revised PDD					
Information Verified by Lead Assessor:					
The revised PDD version 03 dated 15/10/2010 and alternatives to the project activity has been removed under the section for additionality.					
Reasoning for not Acceptance or Acceptance and Close Out:				Date: 12/11/2010	
Since the alternative 2 has been removed, as it will as baseline scenario, the same has been accepted.					
Acceptance and Close out by Lead Assessor: Closed				Date: 12/11/2010	

Date:	06/11/2009	Raised by:	Assessment Team		
Type:	CAR	Number:	05	Reference:	B.2, Table 2 of AU4
Lead Assessor Comment:					
Please clarify the Vintage of the data considered in the calculation of the grid emission factor.					
Project Participant Response:				Date: 06/07/2010	
The data vintage taken for assessing the baseline emission factor has been taken as per the updated data available, Central Electricity Authority, CO ₂ baseline database, ver 4.0, October 2008. The same has been included under Annex 3 of PDD version 02.					
Documentation Provided by Project Participant:					
Please refer: Annex 3 of PDD version 02 http://www.cea.nic.in/reports/planning/cdm_co2/cdm_co2.htm					
Information Verified by Lead Assessor:					
Annex 3 of PDD version 02 dated 05/07/2010					
Reasoning for not Acceptance or Acceptance and Close Out:				Date: 23/08/2010	

CAR#05 is open. The PDD was webhosted on 24/06/2009 and the CEA CO ₂ baseline applicable to that time period is version 04, October 2008. Accepted	
<ol style="list-style-type: none"> 1. The percentage of low cost/must run resources in southern grid as mentioned Table B-2 of the webhosted PDD does not match with the CER database, version 04 2. Sources/references used in table B-1 of the PDD for demonstration of generation mix in the southern grid are not clear. Please clarify 3. Please clarify if PP has used the latest tool to calculate the grid emission factor and followed the steps as per the latest tool to calculate the grid emission factor. 	
Project Participant Response:	Date: 15/10/2010
<ol style="list-style-type: none"> 1. The percentage for low cost/must run resources has been rectified as 27.1 % of net generation for the Southern grid as per CEA database version 4.0 in PDD version 03 2. Table B – 1 under section B.4 which mentions the installed generation capacity and fuel mix is taken from the CEA report 'All India Installed capacity (in MW) of power stations located in regions of main land and islands' mentioned as footnote in the PDD. This table and its content are not from the CEA database and are not related to the generation statistics. These are just to provide an indication on the fuel mix in the southern grid. 3. The latest "Tool to calculate emission factor of an electricity system" version 2.0, has been used in the PDD version 03 in order to calculate the grid emission factor 	
Documentation Provided by Project Participant:	
Revised PDD	
Information Verified by Lead Assessor:	
<ol style="list-style-type: none"> 1. The percentages of low cost/must run resources in Southern Regional Grid (SRG) has now been rectified in page 14 of PDD, version 03 dated 15/10/2010. This is as per the version 04 of CEA data base. Accepted. 2. Please indicate the source of data clearly used in Table B-1 in PDD version 03 for cross checking purpose. Open 3. The latest "Tool to calculate emission factor of an electricity system" version 2.0, has now been used for determining the emission factor of the electricity system. Accepted 	
Reasoning for not Acceptance or Acceptance and Close Out:	Date: 12/11/2010
Point 2 is open as clarified above.	
Project Participant Response:	Date: 30/12/2010
The table B-1 has been removed from the revised PDD version 04, as it was additional information and not related to generation statistics and calculation of emission factor.	
Documentation Provided by Project Participant:	
Revised PDD	
Information Verified by Lead Assessor:	
PDD version 04 dated 30/12/2010 under section B.4 in page 14.	
Reasoning for not Acceptance or Acceptance and Close Out:	Date: 22/02/2011
Since the table B.1 is removed from the PDD, the open issue is now closed.	
Reopened: 12/01/2012	
PP is requested to refer to the latest applicable version of the "Tool to calculate the emission factor of an electricity system".	
Project Participant Response	Date: 22/02/2012
PDD as per the latest version 2.2.1 of Tool to calculate the emission factor of an electricity system is being provided to DOE.	
Documents Provided by Project Participant	
Revised PDD version 7	
Information Verified by Lead Assessor	

Revised PDD, version 07 dated 22/02/2012	
Reasoning for Not Acceptance or Acceptance and Close out:	Date: 22/02/2012
The PP has revised PDD and used the latest version 2.2.1 of the tool. Same is found acceptable.	
Reopened: 10/09/2012	
Project Participant Response:	Date: 10/09/2012
The weighted average OM of last 3 years has been calculated in the revised PDD and ER sheet. Revised PDD and ER sheet is being provided to DOE.	
Documents Provided by Project Participant	
Revised PDD, CER calculation sheet	
Information Verified by Lead Assessor	
Revised PDD, version 11 dated 10/09/2012 Revised CER calculation sheet	
Reasoning for Not Acceptance or Acceptance and close out:	Date: 10/09/2012
The PP has revised the calculation of the OM and has considered the weighted average of generation and simple OM, in place of just simple average. The same is more appropriate approach. Accepted. This has not changed the value of earlier CER or OM.	
Acceptance and close out by Lead Assessor: Closed	Date: 10/09/2012

Date:	06/11/2009	Raised by:	Assessment Team		
Type:	CAR	Number:	06	Reference:	Section B.4
Lead Assessor Comment:					
PP is requested to justify the start date and the serious CDM consideration for the project activity.					
Project Participant Response:				Date: 06/07/2010	
The proof of start date is the work order placed to Vestas for the first set of WTGs.					
Documentation Provided by Project Participant:					
Annexure 3: Work order dated 15/4/2007 placed to Vestas					
Information Verified by Lead Assessor:					
Annexure 3 and section B.5 of PDD version 02 dated 05/07/2010					
Reasoning for not Acceptance or Acceptance and Close Out:				Date: 23/08/2010	
CAR#06 is open. From the details provided in section B.5 of PDD, the PP is requested to provide the detailed chronology and define the timeline events as per Para 6(a) and (b) of EB 49 annex 22 and how the gaps between the two events is complying with the Para 8(a) of EB 49 annex 22 guidelines. Please provide the documentary evidence for the chronology of events (Section B.5 of the PDD_V02).					
Project Participant Response:				Date: 15/10/2010	
The detailed chronology delineating the timeline of events as per para 6a and 6b of EB 49 Annex 22 has been included under section B.5 of PDD version 03. It can be observed that continuous and real actions were taken by MCL to secure CDM status for the project in parallel with its implementation and that the time gap between any two events was less than 2 years, thereby complying with para 8(a) of EB 49 annex 22 for prior consideration of CDM. The PP had previous experience of developing a CDM project, and the same has been considered as proof for prior knowledge of CDM under section B.5 of the PDD version 03. The documentary evidence for chronology of events has already been submitted to the DOE, except the contract with consultant as Annexure 17.					
Documentation Provided by Project Participant:					
Annexure 17: Contract with consultant for CDM advisory services					
Information Verified by Lead Assessor:					
The section for serious CDM consideration in PDD was checked. The evidences provided by PP were checked for the events mentioned in PDD. However, the following inconsistencies were observed: 1. Why the timeline is truncated in PDD version 03 vis-à-vis version 02 and the description for the same is not continued from PDD version 02 to PDD version 03 for serious CDM consideration? 2. The continuous actions taken up by the PP to secure CDM revenues is missing from the chronology					

as per the requirements of para 6(b) of EB 49 annex 22 guidelines	
<p>3. Please justify how 15/04/2007, PO for 12 x 1650 kW is the start date of project activity as per EB 41 paragraph 67 meeting report?</p> <p>4. Please justify how continuous communication between the PP and Ecoinvest is a serious CDM events as per para 6(a) and 6(b) of EB 49 annex 22 guidelines?</p> <p>5. Annexure 17 is not submitted as evidence for contract with consultant for CDM advisory services.</p>	
Reasoning for not Acceptance or Acceptance and Close Out:	Date: 12/11/2010
Due to the various queries raised above, the issue is kept open.	
Project Participant Response:	Date: 30/12/2010
<p>1. The earlier events truncated in the timeline pertained to a previous project developed by the PP (web-hosting of the previous project done during April 2006). These events were earlier presented in PDD of current project to highlight the prior experience of CDM with the PP. Therefore, to show awareness of CDM in a concise manner, the timeline was truncated by removing the events prior to webhosting of the previous project. The webhosting of earlier project by the same PP has been mentioned just to indicate the PP's awareness of CDM. The basis for serious CDM consideration by the PP is the CDM project approval note submitted earlier as Annexure 14, in line with para 6(a) of EB 49 annex 22 guidelines. The earlier project (2006) and the current project (2007) are not related; therefore the events which led to webhosting of the previous project are not required in the context of the current project activity.</p> <p>2. The project was conceptualized for 74 MW and proposals from both Vestas and Enercon were invited. The offers from WTG suppliers Enercon and Vestas dated 29th March 2007 were obtained (provided earlier as Annexure 11), prior to the project approval on 5th April 2007 and the project was to be executed in a phase wise manner during the year. Therefore, the project was approved for 74 MW as per the capacity mentioned in CDM consideration (Annexure 14) and it covers the Enercon machines as well.</p> <p>3. It is mentioned in the CDM consideration note (Annexure 14) that the 74 MW project will be executed phase wise during the year. The first set of purchase order was that of 12 * 1650 kW and is appropriate for start date of project activity as per EB 41 paragraph 67</p> <p>4. Continuous communication between the PP and Ecoinvest was provided as information to show continuity of actions on CDM front. However, it is not mentioned as a serious CDM event as per para 6(a) and 6(b) of EB 49 annex 22 guidelines, and is just an additional information provided</p> <p>5. Annexure 17 has been submitted along with the response</p>	
Documentation Provided by Project Participant:	
Annexure 14: Colored scanned copy of CDM consideration of the 74 MW project activity	
Annexure 17: Colored scanned copy of the contract between MCL and Ecoinvest	
Information Verified by Lead Assessor:	
PDD version 04 dated 30/12/2010, Annexure 14 and 17 was checked by the validation team.	
Reasoning for not Acceptance or Acceptance and Close Out:	Date: 22/02/2011
<p>1. The truncated time line is now accepted, since the webhosting of PDD constitutes as the prior consideration of CDM by the project Participant. Closed</p> <p>2. Closed as per the reasons given in point 01</p> <p>3. Since the WTGs are going to be implemented in a phase wise manner, the chronology was accepted as serious CDM consideration. Closed</p> <p>4. Since communication to the consultants are mentioned for information purposes only and do not constitute serious CDM consideration event as per para 6(a) and 6(b) of EB 49 annex 22 guidelines, the same is accepted by the validation team. Closed</p> <p>5. Annexure 17 is checked which is an evidence of contract with consultant for CDM advisory services. However the buyer's designation and counter seal of the company is not present. Please clarify how</p>	

this evidence can be considered as authentic. Also the PP is requested to mention the dates in serious CDM consideration table including the day of contract signing instead of mentioning month and year. Besides the appointment date of SGS is not consistent with the signed contract that SGS possesses. **Open**

Barring the annexure 17 issue which is as of yet unresolved, all open issues are closed.

Project Participant Response:	Date: 28/04/2011
Annexure 17 is the contract with Ecoinvest Carbon SA for providing CDM advisory services to the PP for the project activity. It is signed by Mr. Alfred Evans, who is the authorized signatory for Ecoinvest Carbon SA. It is usual practice at the company to include just the signature without mention of the designation of the signatory. However, in order to substantiate that Mr. Alfred Evans is indeed the authorized signatory on behalf of Ecoinvest, the modalities of communication form of another project with UNFCCC reference number 524, that was developed by Ecoinvest is submitted which specifies Mr. Alfred Evans as the primary authorized signatory on behalf of Ecoinvest Carbon SA and it can also be downloaded from the UNFCCC website. The dates of various events have been mentioned in the serious CDM consideration table under section B.5 in revised PDD version 05. The appointment date of SGS has been rectified in line with the contract date between SGS and PP in the revised PDD version 05.	
Documentation Provided by Project Participant:	
Annexure 37: Modalities of communication form for UNFCCC project no. 524 Revised PDD	
Information Verified by Lead Assessor:	
Annexure 37: Modalities of communication form for UNFCCC project no. 524 Revised PDD, version 05 dated 28/04/2011	
Reasoning for Not Acceptance or Acceptance and Close out	Date: 17/06/2011
The signature is verified and the authenticity of the contract is confirmed. The Start date and the prior consideration of the project activity has been checked and accepted in accordance with EB 49 annex 22.	
Reopened: 01/01/2012: The revised version of prior consideration EB 62 annex 13 has been checked for the project activity. It is found appropriate. Closed.	
Acceptance and close out by Lead Assessor:	Date: 01/01/2012

Date:	06/11/2009	Raised by:	Assessment Team		
Type:	CAR	Number:	07	Reference:	B.4.3, S.No.48
Lead Assessor Comment:					
The PP has used the Benchmark analysis in order to demonstrate the investment barrier in demonstration of additionality. PP is requested to provide the substantial evidences in order to validate the following input parameters,					
<div><div>1. O&M – Evidences for O&M cost for both the technology suppliers and the escalation rate of 7.5%.</div><div>2. Insurance Cost – Evidence for the insurance cost considered.</div><div>3. Employee Expense –Evidence for the assumption of 0.4 Lacs per MW as employee expense.</div><div>4. Administrative Expense - Evidence for the assumption of 0.5 Lacs per MW as administrative assumption.</div><div>5. Tax Calculation – the calculation for N74 is not clear. Please clarify.</div><div>6. In order to validate the appropriateness of the values considered from the proposals, PP is requested to provide the purchase orders for the WTGs</div><div>7. PP is requested to justify the 26.70 % CUF as mentioned in PDD and how it follows the PLF guidance given in Para 3a or 3b of Annex 11, EB48.</div><div>8. PP is requested to clarify the 100% equity as mentioned in the webhosted PDD</div><div>9. PP is requested to provide evidence for Project Cost considered</div><div>10. Please include reference sources for all the data used in financial analysis in the excel sheet.</div><div>11. Please provide the Benchmark calculation sheet for the project.</div><div>12. PP is requested to clarify tariff chosen for investment analysis.</div></div>					
Project Participant Response:				Date: 06/07/2010	

<p>Point 1: The O&M cost and escalation rate of 7.5% has been mentioned in the proposal provided by Vestas (Annexure 4)</p> <p>Point 2: The insurance cost of 0.75% (TNERC Tariff Order) (Annexure 5)</p> <p>Point 3: The employee expense of 0.4 lac per MW is taken from an internal calculation by the project Participant in order to create team of personnel to manage the wind farm business. Please refer Annexure 6: Internal working for consideration of employee and administrative expenses.</p> <p>Point 4: The administrative expense of 0.05 million per MW is taken from an internal calculation by the project Participant in order to create and manage a new administrative set-up for the wind farm business. Please refer Annexure 6: Internal working for consideration of employee and administrative expenses.</p> <p>Point 5: The row number 74 mentions "Section 80IA" from M74 to Q74. It is just to indicate that the tax holiday can be applied from 11th year to 15th year.</p> <p>Point 6: The Purchase Orders for all WTGs have been provided as Annexure 3:</p> <p>Point 7: The CUF of 26.7% has been taken from the TNERC tariff guidelines. Furthermore, the project Participant has conducted study for PLF by a third party consultant as per EB 48 Annex 11. The report has been attached as Annexure 7. As per the report, the average PLF for Enercon Machines is 24.27 % while the average PLF for Vestas machines is 27.51%. Thus, performing sensitivity analysis on 26.7 %, with a +/- 10% variation on generation covers the PLF mentioned in the third party study and is appropriate.</p> <p>Point 8: The project is based on 100% equity, and does not contain any debt financing; hence there is no term loan document.</p> <p>Point 9: The Project cost has been taken from individual proposal. The proposal have been provided as annexure 3.</p> <p>Point 10: Most of the assumptions are based on the TNERC tariff order. Only assumptions pertaining to project cost and the O&M cost have been based technology supplier proposals and purchase orders, because the same are specific to project activity. Employee and administrative cost are not covered under the O&M cost. As explained above, launching wind power generation at such a large scale, project Participant envisaged incurring additional expenditure on personnel and administrative infrastructure dedicated to the wind power operations. The estimate is based on expenditure incurred by other group companies of the project Participant involved in developing wind power projects. The reference for sources of all data used in financial analysis has been included in the excel sheet.</p> <p>Point 11: the benchmark return for the project activity has been revised as per the guidance. It has been corrected as per the formula for beta mentioned under section B.5 or the PDD which is as per formula for beta computation in finance. The earlier beta was incorrect and without any available reference for the value mentioned earlier. Furthermore, it was not computed as per the formula for beta computation which has also been mentioned in the PDD. Also, for accuracy, five year correlation period has been chosen with BSE Sensex for computation of beta, which is a well diversified portfolio of leading stocks in the economy. It can be noted that the revised value for the benchmark return on equity is also lower than the industry returns of 16% return on equity as mentioned by the Central Electricity Regulatory Commission. The references of the data used has been mentioned in the excel sheets for the same.</p> <p>Point 12: The tariff chosen (INR 2.90/ kWh) for investment analysis is as per the tariff order on wind energy by TNERC. Please refer to section 9.5 of the tariff order on Non-Conventional Energy Sources, March 2006. The same has been provided as Annexure. However, for WTGs commissioned in 2007, the actual tariff as per PPA is INR 2.70/ kWh, while the actual tariff is INR 2.90/ kWh for PPA signed in 2008. Thus, for the project 42.3 MW was signed at a tariff of INR 2.70/ kWh and 31.7 MW was signed at a tariff of INR 2.90/ kWh. Therefore, the project financials prepared at a tariff of INR 2.90 / kWh are conservative.</p>	
<p>Documentation Provided by Project Participant:</p> <p>Point 1: Annexure 4: Annex II of Proposal by Vestas mentioning O&M cost details</p> <p>Point 2: Annexure 5: TNERC tariff order</p> <p>Point 3 and 4: Annexure 6 – Internal memo for establishing employee and administrative cost</p> <p>Point 7: Annexure 3: proposals of WTGs</p> <p>Point 8: Annexure 8: Third party PLF study by Fair Aero Consultant and Technologies</p> <p>Point 9: Annexure 9: Technical specification of WTGs</p> <p>Annexure 10: Softy copy, "MCL IRR", Soft Copy "MCL Benchmark calculation"</p>	
<p>Information Verified by Lead Assessor:</p> <p>Input values used in the financial analysis. Purchase orders of WTG, TNERC order, etc</p> <p>Revised PDD, version 02 dated 05/07/2012</p>	
<p>Reasoning for not Acceptance or Acceptance and</p>	<p>Date: 23/08/2010</p>

Close Out:	
<p>CAR#07 is open.</p> <p>Point 1: O & M expense</p> <ul style="list-style-type: none"> O & M expense provided is not clear (Annex 4 doesn't contain any detail like name of the PP, date, etc. Also it is referring only Vestas V 82 machines). No proof submitted for Enercon machines Please provide the source of O & M for all machines and escalation of O&M expense. In PDD_V02 O & M expense provided in Table B-4 is not consistent with investment analysis spread sheet. OPEN <p>Point 2: Insurance cost has been taken from TNERC order dated 15/05/2006. Same has been validated from the order and was available at the time of decision making. Accepted & Closed.</p> <p>Point 3 & point 4: Please justify, Employee and administrative expenses are not considered in the O & M expense. Also please provide the actual O & M contract made by PP.</p> <p>Point 5: PP has clarified the tax calculation in cell N74. Accepted.</p> <p>Point 6: PP has provided the purchase order for the WTGs. Accepted.</p> <p>Point 7: PLF used in the financial analysis and ER calculations are not as per EB 48 annex 11 guidelines. Please clarify.</p> <p>Point 8: PP has clarified that it is a 100% equity project by them, and no loan component is involved in the project. The same has been checked with the declaration from executive director, finance, MCL. Accepted.</p> <p>Point 9: The total project cost has been considered from the offers from the suppliers Vestas and the Enercon. However PP has not provided the break up for the same in financial sheet. Please clarify.</p> <p>Point 10: PP has clarified the sources for the input values in the revised financial sheet. Accepted.</p> <p>Point 11: PP has provided the benchmark calculation sheet. However following clarifications are requested in the same</p> <ul style="list-style-type: none"> A. The life time of the project activity is 20 years. Please justify how the time period chosen for Risk Free Rate, Market Risk Premium, Average Risk Free return, Expected market rate of return are appropriate. Please clarify. B. Please provide the proper justification for increase in Beta value and the benchmark value compared to webhosted PDD. <p>Point 12: Since TNERC tariff rates are applicable based on the date of commissioning of the WTGs as per the latest TNERC order, the considered tariff of 2.9 INR/KWh is conservative and accepted. Closed.</p>	
Project Participant Response:	Date: 15/10/2010
<p>Point 1: The O&M expense provided earlier was Annexure II of the Vestas proposal for easy reference and hence does not contain name of the PP, date etc. as these would be mentioned on the front page of the proposal. Therefore, the cover page of the proposal and the section mentioning the proposed O&M cost has been provided as Annexure 18 to this response. The source of O&M and its escalation for Vestas machines is the proposal and actual O&M agreement with Vestas. The O&M cost and its escalation for Enercon can be referred from the actual O&M agreement between MCL and Enercon. Please refer to Vestas proposal provided as annexure 18, O&M contract provided as Annexure 19, and O&M contract with Enercon provided as Annexure 20.</p> <p>Point no.6 of Annex II of the Vestas proposal offers O&M only for a period of 5 years, and hence the escalation of O&M price provided only for 5 years. However, considering 20 years life time of WTG, O&M would be required till the 20th Year. Therefore, it is natural to extend the escalation rate till 20th year, based on the indicative rate provided by Vestas up to 5th year.</p> <p>The O&M expense provided under table B.4 of the PDD has been rectified accordingly in line with that mentioned in the investment analysis spreadsheet.</p> <p>Point 3 & 4: As explained above, employee and administrative cost are not covered under the O&M cost. Launching wind power generation at such a large scale, project Participant envisaged incurring additional expenditure on personnel and administrative infrastructure dedicated to the wind power operations. The estimate is based on actual expenditure incurred by the project Participant and its group companies in existing wind project installed prior to conceptualization of the current project activity. The expenditure incurred by PP during FY 2007 as per Company accounts was provided as Annexure 6 earlier, to indicate that the PP incurs such a cost on wind operations. This is over and above the O&M cost, which the PP would be undertake by signing a contract with the wind turbine suppliers. The actual O&M contract for the project</p>	

activity has been provided as Annexure 19 and 20.

Point 7: The revised financials and ER calculations considering PLF as mentioned in the third party study conducted by the project Participant, in line with EB 48 annex 11 guidelines have been provided as excel files "MCL IRR Enercon", "MCL IRR vestas" and "MCL CER sheet" respectively

Point 9: The break-up of total project for Vestas machines is not available in the proposal. The break-up for Enercon machines has been provided in the excel spreadsheet "MCL IRR Enercon"

Point 11:

- a. The life time of the project activity is 20 years and time period chosen for Risk Free Rate, Market Risk Premium, Average Risk Free return, Expected market rate of return is 16 years from 1991 to 2007 in order to have a comparable and accurate estimate of the returns calculated over the longest period possible considering data availability. Since the data for the chosen indices BSE Sensex is publically available since 1991 only. The starting period from 1991 for calculation of market return was chosen because it is the earliest data available on BSE database. Following that, the period for computing risk free rate, market risk premium, and average risk free rate is chosen as the same 16 year period from 1991 to 2007 for consistency and accuracy purpose. This is conservative approach. To support this fact the revised excel sheet contain calculation of expected market return from BSE Sensex base year 1979. It is evident that the Project Participant has chosen the conservative approach. The risk free rate is considered for the year 2006-07 and the average risk free return is taking as mean value of weighted average interest rates. This is also most conservative approach the PP can use. The revised sheet is also provided with consideration of risk free rate of return over 20 years maturity period.
- b. In the web-hosted PDD, the beta was shown as the three year average of annual equity beta of BF Utilities. However, the reference of the same is not available. Therefore, the beta of BF Utilities with respect to BSE Sensex was computed using the formula as per finance theory and the equity beta was obtained as 1.96. Then as per theory, one needs to un-lever the equity beta to obtain the asset beta for the comparable company (BF Utilities). This asset beta is then re-levered with the Debt/Equity (D/E) ratio of the PP, to provide the equity beta for MCL. Since, this MCL project does not involve debt financing (D/E ratio is 0), the equity beta obtained for MCL was same as the asset beta of 1.24 for BF Utilities. Please refer to the excel sheet "MCL Benchmark calculation" for the calculation of beta as described above. This beta of 1.24 obtained is used in.

Documentation Provided by Project Participant:

Annex 18 : Copy of proposal by Vestas
Annex 19: O&M agreement with Vestas
Annex 20: O&M agreement with Enercon
Annexure 19 and 20: Actual Operation contract and Maintenance contract between MCL and the technology suppliers Vestas and Enercon
Annexure 21: Purchase orders for Vestas machines
Excel files "MCL IRR Vestas", "MCL IRR Enercon" and "MCL ER calculations"
<http://www.bseindia.com/histdata/stockprc2.asp>
<http://www.bseindia.com/histdata/hindices.asp>
<http://www.bseindia.com/histdata/hindices.asp>
Excel file "MCL benchmark calculation"
Excel files "MCL IRR Vestas" and "MCL IRR Enercon"
Annexure 22: Section 9.5 of Tariff order on Non-Conventional Energy Sources, March 2006
Annexure 23: Actual invoices for WTGs

Information Verified by Lead Assessor:

Point 1: O & M Expenses:

While accepting the O & M costs used in the financial sheet, the PP is requested to use only those data which were available to the PP at the time of Investment decision date. This is the requirement as per Para 6 of EB 51 annex 58 on financial guidelines version 02. So the O&M escalation rates as per PO should not be used for financial calculations as it follows after, the CDM consideration date. Open.

Point 2: is closed as above.

Point 3 & 4: The employee and administrative expenses is based on data available is based on "similar projects" as per PP. PP is requested to elaborate the assumptions to arrive at the figures arrived at. Open.

Point 5 & 6: as Closed above.

Point 7: In annexure 8 which shows the results of third party PLF study, the following PLF for different

location and make of WTG is given. PP needs to address the conservativeness in the financial calculation based the available PLF data for both cases.

Point 9: Since the project cost breakup is not available with the PP in the proposal, it is accepted. Further the total cost has been cross checked with the purchase order. Ok

Point 11:

- a. Since the Sensex data for all stocks are not available prior to 1991 in the websites: (<http://www.bseindia.com/histdata/stockprc2.asp> ;<http://www.bseindia.com/histdata/hindices.asp>) the time horizon chosen from 1991 is acceptable for the discussion in question.
- b. Regarding the apparent disconnect between the beta values and benchmark applied between the webhosted PDD and PDD version 03, the following points are requested to be clarified from PP:
 - i) The description of the financial model used (CAPM) and its link (third party link available in public domain) is not mentioned in revised PDD.
 - ii) The PP says that the beta values used in webhosted PDD were erroneous and used “untraceable beta value”. Please elaborate on the same.

Reasoning for not Acceptance or Acceptance and Close Out:	Date: 12/11/2010
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Due to some points remaining unresolved as discussed above, the issue is kept Open

Project Participant Response:	Date: 30/12/2010
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Point 1: The O&M escalation rates have been taken from Vestas proposal and are the same as that mentioned in the O&M agreement. The O&M proposal for Enercon machines has been misplaced and not available, and hence the O&M for Enercon has been taken from the O&M contract with the WTG supplier, which is based on the proposal provided by them. Thus, escalation for Vestas machines is based on the proposal provided by Vestas and which is also there in the O&M contract. In case of Enercon machines, although the O&M cost has been taken from contract, due to unavailability of the proposal, the escalation is justified because there is year-on-year increase in cost due to inflation, as reflected in the O&M contract and also in the tariff order by TNERC which considers escalation of 5% for O&M cost.

Point 3 & 4: The figures provided are not an assumption but a conservative estimate based on actual cost incurred by PP on previous wind mill installations taken from their book of accounts. The actual break-up of cost has been clearly mentioned in Annexure 6 provided earlier, which mention the employee and admin cost at 0.042 million/MW and 0.073 million/MW. These were then conservatively rounded off to 0.04 million/MW and 0.05 million/MW respectively as mentioned in the document.

Point 7: The revised CER sheet has been provided as excel file “MCL ER calculations 24-11-10” considering the diverse PLF as mentioned in the third party PLF study. During project conceptualization, the source of PLF values available with the project Participant was from the TNERC tariff order. The third party PLF study was conducted much later on during 2010 in order to meet the requirement of EB 48 annex 11 guidelines. Therefore, such site wise break-up would not have been available with the PP during decision making time. Therefore, in the revised PDD, the financials have been computed in two ways:

- Considering PLF as per TNERC tariff order to assess financial additionality during project conceptualization for Enercon machines, which is a conservative approach as the PLF in tariff order is higher than the actual PLF study report. For Vestas machines actual PLF report is considers as that is higher than the tariff order.
- A sensitivity analysis is conducted in both the sheet to address the variation.
- PLF from the third party source is considered in the CER calculation as it represents more accurate scenario, since it is based on the actual PLF study.

Point 9: The cost of WTG has not been chosen on per MW basis. The cost for Vestas and Enercon per WTG was taken from the proposals obtained from the respective suppliers in the financials submitted as Annexure 28. The proposals from WTG suppliers have been provided earlier.

Point 11:

b.

- i) Reference of a public domain link of the financial model used (capital asset pricing model) has been inserted as a footnote in the revised PDD version 4.0.
- ii) it was mentioned that the beta values in the web-hosed PDD are not traceable, since the beta value in web-hosted PDD does not match with the working provided for beta as per finance theory for the same period

(from 2004 to 2007) and therefore it was appropriately changed to the correct calculated value. The revised working submitted to the DOE is based on the formula of beta as per finance theory and which has also been mentioned under section B.5 of the PDD, and the data for beta computation has been taken from Bombay Stock Exchange (BSE) historical database which is accurate and available in public domain.	
Documentation Provided by Project Participant:	
Annexure 7: Purchase orders 3) Annexure 6: Scanned copy file 'Emp and Adm cost' 5) Soft copy excel file "MCL ER calculations 24-11-10", Annexure 28: Softy copy of excel sheets "MCL IRR Enercon" and "MCL IRR Vestas" 14) Annexure 9.1- Vestas technical specification	
Information Verified by Lead Assessor:	
Annexure 7: Purchase orders 3) Annexure 6: Scanned copy file 'Emp and Adm cost' 6) Annexure 11: Offers from WTG suppliers 14) Annexure 9.1- Vestas technical specification	
Reasoning for not Acceptance or Acceptance and Close Out:	Date: 22/02/2011
<p>Point 1: O & M Expenses As per the PP the O & M proposal given by Vestas is available but the same is not available for Enercon due to the misplacement of the proposal, hence have adopted O & M charges from the O&M Contact. The PP is requested to justify the suitability of the same in accordance with the publically available data.</p> <p>Point 2: is closed as above.</p> <p>Point 3 & 4: The actual breakup of the cost incurred for employee and admin cost has been checked in annexure 6. However the PP is requested to clarify how rounding of 0.73 lakhs/MW to 0.5 lakhs/MW is justified for admin cost, while agreeing to the fact that rounding down from 0.42 lakh /MW to 0.40 lakh/MW is justified for employee cost. Open</p> <p>Point 5 & 6: as closed above</p> <p>Point 7: The PP has considered the most conservative approach in the PLF consideration. PP has also further added the same in the sensitivity analysis. Accepted.</p> <p>Point 9: Closed.</p> <p>Point 11: b. i) The website chosen for explaining CAPM which is inserted as footnote in PDD version 04 is taken from Wikipedia.org which is an editable website. Please give the explanation of CAPM from a non-editable website. Open ii) PP is required to submit all verifiable documentary evidence to validate Benchmark calculated and beta value used at the time of decision making. Any change in benchmark that is calculated and beta value considered cannot be accepted just because of a reason that the source is untraceable. PP is requested to submit proper justification for revising benchmark and beta value considered in calculating such benchmark. Further to this PP needs to justify the sudden change in benchmark in relation to benchmark webhosted and beta value used IRR sheet which will be looked into only after this issue is resolved by PP. Open.</p>	
Project Participant Response:	Date: 28/04/2011
<p>Point 1: The TNERC tariff order titled "Power purchase and allied issues in respect of Non-Conventional Energy Sources based Generating Plants and Non-Conventional Energy Sources based Co-Generation Plants" dated 15-05-2006 and its following amendment dated 18-05-2006 specify the escalation on O&M cost as 5% as mentioned in Annexure VIII of the tariff order under table 'wind energy average tariff for future units'. The tariff order and its amendment specify just one value that is 5% for escalation in O&M for wind projects. The tariff order and its amendment are duly provided as annexure to this response. Hence, the escalation for O&M considered in the financial working of the project activity is as per the TNERC tariff order available to the PP at the time of decision making. For the total O & M cost consideration, PP has revised the financial sheet and actual PO value is considered for investment analysis.</p> <p>Point 3 & 4: Although the actual administrative cost incurred by the PP on its previous wind mill installations was INR 0.73 lakhs per MW (taken from the book of accounts), it was assumed that for the current project activity that the administrative expense per MW would be around INR 0.5 lakh per MW. However, the admin cost has been taken in line with the previous project experience at INR 0.7 lakh per MW (rounded down from 0.73 lakh per MW as per Annexure 6 submitted earlier) in the revised financial worksheet "MCL Enercon IRR</p>	

28.04.2011" & "MCL Vestas IRR 28.04.2011".	
Point 11:	
b.	
i) The reference source for CAPM has been modified in the revised PDD version 05 and is from a non-editable website. It is now taken from the website http://www.investopedia.com/articles/06/CAPM.asp	
ii) The difference between the webhosted benchmark sheet and the revised benchmark sheet was the Beta value. The Beta used in the webhosted PDD was the three year average from FY 2004 to 2007 as reported in the capitaline database. Kindly note that the capital database does not provide the back-up data or its calculation approach on the beta being reported and it is only available to subscribed clients. If the annual beta for this period is evaluated based on primary data from BSE database, and as per finance theory formula, then the beta obtained is on a higher side. For better understanding, a separate worksheet 'BFUL beta' was provided in the benchmark sheet. On the other hand, the beta used in the revised beta excel sheet, is based on a 5 year correlation between the stock and the BSE index as compared to the 1 year correlation used in capitaline database. Thus, it covers a longer term time horizon thereby giving a more accurate picture. Furthermore, it is based on data taken from authentic publicly available database (BSE database) which is in line with the CDM guidelines, and calculating beta as per finance theory, as opposed to capitaline database, whose back-up is not known. Thus, it was decided to revise the beta based on correct approach and to be in line with CDM guidelines thereby leading to a change in the benchmark. However, Since, the DOE has objected change from the webhosting of PDD the is not changed now..	
Documentation Provided by Project Participant:	
1) Annexure 35: TNERC tariff order dated 15-5-2006 and amendment dated 18-5-2006	
4) Annexure 23.1: Scan copy of invoices of remaining two WTGs	
10) i) http://www.investopedia.com/articles/06/CAPM.asp	
10) ii) Annexure 36: Screen shot of capitaline database for BF Utilities for the years 2004-05, 05-06 and 06-07	
Information Verified by Lead Assessor	
TNERC tariff orders dated 15/05/2006 and amendment dated 18/05/2006	
Enercon O&M contract for the all 43 WTGs involved in the project activity	
Reasoning for Not Acceptance or Acceptance and Close out:	Date: 17/06/2011
Point 1: O &M cost & escalation	
Vestas: For Vestas machines PP has considered the O&M cost and the escalation as per the proposal from Vestas. Same was available at the time of decision making and further cross checked with the actual contract. No difference has been found in the proposal and the actual contract. The cost and escalation considered are thus found acceptable.	
Enercon machines: PP has considered the cost of the O&M and the escalation from the actual purchase order; same is based on the offer submitted by the Enercon during the decision making. PP has not been able to submit the available proposal at the time of decision making and thus has proposed the O&M cost from the actual O&M agreement. The O&M agreement has been checked and confirms the cost and escalation considered by the PP. Further, the TNERC tariff order dated 15/05/2006 and amendment dated 18/05/2006, which were available at the time of decision making have been checked. As per the tariff order the O&M cost considered are 1.10% of the total project cost considering the project cost as 42.5 million. Which comes to about 0.467 million per WTG per year for the first year. Considering the escalation 5% every year same comes in range of the cost considered by tariff order. Accepted.	
However, PP is requested to clarify the mentioning of Rs.0.5 million per WTG and 7.5% escalation every year after 2nd year in the webhosted PDD.	
Further PP is requested to justify why O&M costs should not be included in the project sensitivity analysis?	
Point 2: is closed as above.	
Point 3: PP has considered the administrative charges and the employee's cost as per their estimate based on the previous experience. MCL has experience in setting up the WTGs since 1992-93 and based on their previous experience they have considered these costs. The calculation for the same has been provided by PP and checked. Accepted.	
Point 4 - 8: as closed above	
Point 9: Reopened:	
PP is requested to clarify the considered project cost in the webhosted PDD. It is mentioned as 67.024 million INR per MW for Vestas machines and 50.739 million INR per MW for Enercon machines. It is requested to clarify the same in accordance with the current cost considered in the final investment analysis.	

Point 11:	
b.	
i) PP has corrected the reference to the financial model (CAPM) applied. Accepted & closed	
ii) PP has accepted not to change the webhosted benchmark used mentioned in the webhosted PDD as same is envisaged to be used at the time of investment decision taking. Accepted. However Pending till closer of CAR#12.	
CAR is open and PP needs to respond to Point 1, 9 & Point 11 (d) (ii) along with CAR#12.	
Project Participant Response	Date: 22/02/2012
Point 1: This was considered based on the proposal in the web hosted PDD. The revised PDD with correct O&M details based on contract is provided to DOE for Validation since O&M proposal is not available for substantiation. The source of the values (actual O&M contract) has been submitted to DOE for validation. Also, the IRR calculation submitted to DOE accounted only the correct values of O&M cost for (for both Enercon & Vestas WTGs).	
As suggested by DOE sensitivity analysis of O&M contract has been carried out in the revised PDD as well as in the financial sheets.	
Point 9: This was an error in the web hosted PDD as the same was considered from the purchase order, which were not available at the time of decision.	
Documents Provided by Project Participant	
PDD version 7	
Information verified by Lead Assessor	
Revised PDD, version 07 dated 22/02/2012	
Reasoning for Not acceptance or Acceptance and closed out:	Date: 01/03/2012
<ol style="list-style-type: none"> 1) The PP has clarified change of the O&M cost in the PDD. 2) The PP has considered the O&M cost in the sensitivity analysis. 3) The project cost mentioned in the webhosted PDD are from the purchase orders; however the same were not available with the PP at the time of decision making, so later of the PP has changed it to the proposal value. 	
Closed.	
CAR Reopened (24/05/2012).	
The PP has considered the risk free rate as 7.89%, which is based on the RBI annual report of the year 2006-07. This is applicable value to the project activity. However, Considering the financial year ends at 31 st March 2007, PP is requested to clarify, if this value was available to the PP at the time of investment decision (05/04/2007)?	
Project Participant response	Date: 06/06/2012
The risk free rate is now revised as 7.6931% for the month of Dec 07. This is taken from the RBI monthly bulletin for the February 2007 and provides the value for the month-end of Dec 2006. The rate is chosen for the 20 years maturity period and is available at: http://www.rbi.org.in/scripts/BS_ViewBulletin.aspx?Id=8225	
Documents Provided by the Project Participant	
http://www.rbi.org.in/scripts/BS_ViewBulletin.aspx?Id=8225	
revised PDD, version 08	
Information verified by Lead Assessor:	
http://www.rbi.org.in/scripts/BS_ViewBulletin.aspx?Id=8225	
PDD, version 08 dated 06/06/2012	
Reasoning for Not Acceptance or Acceptance and close out:	
The PP has revised the value for risk free return, which is based on the RBI monthly bulletin of February 2007 available (15/02/2007) and applicable at the time of investment decision. The same is more appropriate as the PP has considered the risk free rate for Dec 2006 which is conservative and hence is accepted by assessment team. PP has considered the interest rate of 20 years maturity period, which is comparable to the project activity assessment period. This has minor changed the Benchmark from 13.55% to 13.35%. Accepted	
Acceptance and close out by Lead Assessor:	Date: 15/06/2012
Closed	

Date:	06/11/2009	Raised by:	Assessment Team
Type:	CAR	Number:	08
		Reference:	B.4.3, S.No.48

Lead Assessor Comment:	
In Order to validate the various information provided in the PDD, version 01, PP is requested to clarify why the below source documents are not provided to the assessment team	
<ol style="list-style-type: none"> 1. Offer letters from Suppliers of WTG 2. Purchase order(s) 3. Power Purchase Agreement(s) 4. Commissioning Certificates 5. Stakeholder Consultation Documents 	
Project Participant Response:	Date: 06/07/2010
The above documents are attached as Annexure given below	
Documentation Provided by Project Participant:	
Annexure 11: Offer letter from WTG suppliers Vestas and Enercon Annexure 7: Purchase orders released to Vestas and Enercon Annexure 12: Commissioning certificates & Power Purchase Agreement for HTSC Nos. Annexure 13: Stakeholder Consultation Documents	
Information Verified by Lead Assessor:	
The given annexes were checked and the following points were observed: Annexure 11: Offer letter from WTG suppliers Vestas and Enercon Annexure 7: Purchase orders released to Vestas and Enercon Annexure 12: Commissioning certificates & Power Purchase Agreement for HTSC Nos. Annexure 13: Stakeholder Consultation Documents	
Reasoning for not Acceptance or Acceptance and Close Out:	Date: 23/08/2010
CAR#08 is open. <ol style="list-style-type: none"> 1) PP has provided the offers from the WTG suppliers. Accepted 2) Annexure 7: The vestas PO discusses 12 nos of 1650 kW; 42 nos of 800 kW in and 1 no of 800 kW in Enercon PO, which does not reflect the actual WTGs installed of 63 nos as per Table A-1-Details of WTG installations in page 2 of PDD version 02 Also the serious CDM consideration of the project activity is 15/04/2007, which is the date of PO of the 12 nos of Vestas WTG. Please justify the same. 3) Annexure 12: Upon verifying the commissioning certificates and PPA for all WTGs it is observed that the name of the village mentioned for each WTG is not consistent with each other. For example: D115 WTG, the location is mentioned as Pushpathur, whereas it is mentioned Muthunaickanpatti. 4) Annexure 13: In stakeholder's comments, the total capacity of WTGs mentioned in the comments copies is 88.6 MW, whereas the actual installed capacity is 74 MW. It is requested from PP regarding this inconsistency. Please provide the stake holders meeting details like date of meeting, place and evidence for the same. 	
Project Participant Response:	Date: 15/10/2010
<ol style="list-style-type: none"> 1) The remaining purchase order pertaining to Vestas have been provided as Annexure 21. The serious CDM consideration date of the project was 5/04/2007 while the date of the first purchase order for 12 nos. of Vestas WTGs is 15/04/2007. DOE is requested to review the documents and verify the same. 2) The location mentioned in the PDD is not the village but the overall area by which the wind farm is known. The villages are as mentioned in the commissioning certificates and PPA for all WTGs. Furthermore, the location of WTG is identified by the co-ordinates mentioned for all WTGs 3) The Stakeholders meeting was conducted in stages and site-wise and covered wind mills over various projects being developed by the project Participant. 4) Among the stakeholders documents provided, the documents from Periapatti region correspond to 	

another project and therefore DOE is requested to not consider it, thereby removing 19.8 MW from 88.6 MW earlier. For Enercon machines, a combined stakeholder meeting was held on 27th February 2008. The capacity mentioned is 42.4 MW which comprises of wind mills corresponding to current (43 * 0.8 MW) as well as another project being developed by the project Participant, thereby reducing a further 10 * 0.8 MW from the earlier 88.6 MW. Thus, the stakeholders document submitted earlier correspond to 60.8 MW

- 5) The stakeholder's feedback forms for the balance 8 * 1.65 MW Vestas Machines at Uthumalai region belonging to the project activity have been provided as Annexure 24. It mentions 17 * 1.65 MW as capacity of which 9 * 1.85 MW belongs to another project by the PP and 8 * 1.65 MW corresponds to the current project activity in consideration.
- 6) The evidences are the feedback forms provided by the stakeholders and which have been provided to the DOE. Further, scanned copies of few photographs of the stakeholder meeting have been provided as Annexure 25.

Documentation Provided by Project Participant:

Annexure 21: Balance purchase orders for Vestas machines

Annexure 24: Stakeholder comments for Uthumalai region wind mills

Annexure 25: Photograph of stakeholders consultation meet

Information Verified by Lead Assessor:

- 1) The no of 1650 kW capacity WTGs as per PDD version 03 page 3 is: 8+8+2+4+1+1=24 nos. The nos mentioned in PO issued to Vestas is: 12 (as per Annexure 7)+10(as per annexure 21)=22 nos. Please clarify the discrepancy
- 2) As per the PDD version 03 the CDM consideration date is 04/04/2007, whereas in reply PP has mentioned as 05/04/2007. Please clarify and provide proof for the same.
- 3) Please make consistent references between PPAs, Commissioning Certificates and PDD with regards to location of WTGs used in the project activity.
- 4) Please provide an undertaking to the effect that the WTG with capacity 19.8 MW is not part of the project activity along with the details of WTG inter alia HTSC Nos, location and capacity. Further to prevent ambiguity with respect to capacity of the WTGs mentioned in stakeholder's meeting and PDD, please provide details of all WTGs used in the other project activity inter alia, capacity, location, nos and an undertaking to the effect that two projects which are being promoted by the PP are mutually exclusive and the WTGs being used are specific to the project activity.
- 5) While accepting the photographic evidences for stakeholder's meeting, the validation team would request the following from PP
 - a. The feedback/questionnaire forms as part of stakeholder's meeting conducted for all WTGs used in the project activity and not one part of the WTGs used in the project activity.
 - b. The feedback forms are in English and not in local vernacular language. Please provide evidences that stakeholder's were indeed briefed in local language.
 - c. The proof that local stakeholder's were invited through local newspaper communication for all WTGs in the project activity is required.

Reasoning for not Acceptance or Acceptance and Close Out: **Date:** 12/11/2010

Due to the unresolved issues discussed above, the findings are kept open.

Project Participant Response: **Date:** 30/12/2010

- 1) The purchase orders for the 2 nos. are not available with the PP as they have been misplaced. However, the invoices have been submitted to the DOE as Annexure 23 and the WTG numbers can be verified from the same.
- 2) It was a typographical error in the earlier PDD and has been rectified in revised PDD version 04. The CDM consideration date is 5/4/2007. Please refer to Annexure 14- CDM consideration 74 MW.
- 3) Consistent reference of location of the WTGs installed in the project activity has been made under

Appendix 1 of the revised PDD version 4.0 with respect to the PPAs and Commissioning Certificates	
<p>4) The undertakings have been provided as Annexure 30- 19.8 MW WTGs in Periapatti region are not a part of the project and Annexure 31- Multiple wind power projects being developed by the PP are independent and mutually exclusive.</p> <p>5) Stake holder's consultation:</p> <p>a. The feedback forms as part of the stakeholders meeting have been provided for all WTGs earlier as Annexure 13 and Annexure 24 and these cover all the WTGs.</p> <p>b. MCL briefed the stakeholders in local language during the stakeholders meeting. Though feedback forms at some sites were in English, the questions were explained to the stakeholders in local language and then accordingly responded by them in feedback forms. MCL provides an undertaking to this effect submitted as Annexure 32</p> <p>c. The mode of invitation sent to stakeholders for the meet was through invitation letters which have been provided as Annexure 33</p>	
Documentation Provided by Project Participant:	
<p>Annexure 23- Scanned copy of the invoices for Vestas and Enercon WTGs</p> <p>Annexure 14- Coloured scanned copy of CDM consideration of the 74 MW project activity</p> <p>Annexure 30- Undertaking that the 19.8 MW WTGs in Periapatti region are not a part of the project activity</p> <p>Annexure 31- Undertaking that multiple wind power projects being developed by the PP are independent and mutually exclusive</p> <p>Annexure 13 and Annexure 24</p> <p>Annexure 32- Undertaking stating that the stakeholder meeting was conducted in local language</p> <p>Annexure 33- Invitation letters for stakeholders meeting</p>	
Information Verified by Lead Assessor:	
<p>1) The invoice copies of the Vestas make WTG have been submitted to the validation team as annexure 23 also mentions 22 nos of WTG. Please clarify regarding the same. Open</p> <p>2) Typographical error has now been corrected in PDD version 04 dated 31/12/2010 and consistent with annexure 14. Closed</p> <p>3) Appendix 1 of the revised PDD version 4.0 dated 31/12/2010 is now consistent with the commissioning certificates. Closed</p> <p>4) The undertaking given by the PP in annexure 30 and 31 are checked and the total capacities of the stakeholders were invited jointly for another project activity along with the present project activity. Closed.</p> <p>5) (a) and (b) The feedback forms was checked by the validation team and the stakeholder's were invited and the feedback was answered in local vernacular language. Although the queries were in English the stakeholder's were briefed in Tamil and explained in Tamil. Closed.</p> <p>(c) The mode of invitation letters was provided in annexure 33 which was found to be true and authentic. Closed.</p>	
Reasoning for not Acceptance or Acceptance and Close Out:	Date: 22/02/2011
Due to issue 1 is still open, the CAR is kept open.	
Project Participant Response:	Date: 28/04/2011
(i) The invoice copies of the remaining two WTGs pertaining to the project activity (corresponding to HTSC no. 2616 and 2629) are duly provided as Annexure 23.1 to this response	
Documentation Provided by Project Participant:	
Annexure 23.1: Scan copy of invoices of remaining two WTGs	
Information Verified by Lead Assessor:	
Invoices supplied by Vestas	
Reasoning for Not Acceptance or Acceptance and Close out:	Date: 17/06/2011
PP has provided the invoices issued for the remaining two WTGs corresponding to HTSC no 2616 and 2629. Accepted & Closed	

Acceptance and Close out by Lead Assessor:				Date: 17/06/2011	
Date:	06/11/2009	Raised by:	Assessment Team		
Type:	CAR	Number:	09	Reference:	B.4 of AU4
Lead Assessor Comment:					
<p>In accordance with the Tool for the demonstration and assessment of additionality _V5.2, PP is requested to provide the common practice analysis. As per the guidance provided by CDM EB, <i>the analysis should include any other activities that are operational and that are similar to the proposed project activity. Projects are considered similar if they are in the same country/region and/or rely on a broadly similar technology, are of a similar scale, and take place in a comparable environment with respect to regulatory framework, investment climate, access to technology, access to financing, etc. Other CDM project activities (registered project activities and project activities which have been published on the UNFCCC website for global stakeholder consultation as part of the validation process) are not to be included in this analysis. Provide documented evidence and, where relevant, quantitative information. On the basis of that analysis, describe whether and to which extent similar activities have already diffused in the relevant region.</i></p> <p>Since, the comparison should be with those projects which are neither registered nor have webhosted for ISHC, the PP in PDD has compared with UNFCCC registered/webhosted projects. A clarification is requested from PP regarding this.</p>					
Project Participant Response:				Date: 06/07/2010	
NA					
Documents Provided by the Project Participant					
NA					
Information Verified by Lead Assessor:					
The PP has not responded to the above issue					
Reasoning for Not Acceptance or Acceptance and close out:				Date: 23/08/2010	
The PP is requested to provide the response to the issue raised					
Project Participant Response:				Date: 15/10/2010	
The discussion on common practice analysis has been revised under section B.5 of PDD version 03 in line with the above guidelines on common practice analysis as per additionality tool version 5.2.					
Documentation Provided by Project Participant:					
Revised PDD					
Information Verified by Lead Assessor:					
Section B.5 of the revised PDD version 03 dated 15/10/2010 under common practice analysis was checked. The discussion is not elaborate in PDD to arrive at the conclusion by the PP that the diffusion of similar capacity WTGs in the region of discussion is less than 10% which is not mentioned in PDD. PP is requested to quote all references used in the common practice PDD.					
Reasoning for not Acceptance or Acceptance and Close Out:				Date: 12/11/2010	
Since the references are not included or mentioned in PDD the issue is open.					
Project Participant Response:				Date: 30/12/2010	
The discussion on common practice has been elaborated further and the related references have been provided in footnotes in section B.5 of the revised PDD. For conducting common practice analysis, section 6 of the Indian Wind power Directory 2009 has been referred, which provides a detailed list of private wind farm owners in India, and has been provided as Annexure 34					
Documentation Provided by Project Participant:					
Annexure 34: Pages 3 to 118 of Section 6 of the Indian Wind Power Directory 2009, 9 th Edition Revised PDD					
Information Verified by Lead Assessor:					
The pages 3 to 118 of section 6 of the Indian Wind Power Directory 2009, 9 th Edition was checked and PDD version 04 dated 30/12/2010					
Reasoning for not Acceptance or Acceptance and Close Out:				Date: 22/02/2011	
The PP has provided the Wind power directory for the India, which provides the name of the owner, location of the wind mills including district and state, number of wind mills and their capacity and the year of commissioning. The section 6 of the Indian Wind power Directory confirms that that there is no wind power					

project of $\pm 20\%$ capacity range as in the state of Tamil Nadu invested by a single private investor (not Bundled) in a year, post September 2001. Thus, the common practice analysis is justified and the project activity is not deemed as the common practice.	
Reopened (21/02/2012): The CAR has been reopened and Pending till closer of CAR#12, which covers the implementation of additionality tool, version 06, with revised guidelines for common practice analysis.	
(22/02/2012): The PP has submitted the revised PDD with implementation of version 06 of additionality tool. Accepted & Closed	
Reopened (30/07/2012): Further, the PP is requested to justify the range of $\pm 20\%$ in the identification of the similar projects for common practice analysis in accordance with the EB65, annex 21	
Project Participant Response:	Date: 01/08/2012
PDD has been revised in accordance with EB 65 annex 21 and + 50% has been considered in the revised PDD. Revised PDD is being provided to DOE.	
Documents Provided by the Project Participant	
Revised PDD Version 9	
Information verified by the Lead Assessor:	
Revised PDD, version 09 dated 01/08/2012 Indian Wind Power Directory, 2009	
Reasoning for Not Acceptance or Acceptance by the Lead Assessor	Date: 04/08/2012
The PP has revised the common practice analysis with consideration of $\pm 50\%$ ranges as similar project activity in accordance with the EB65, annex 21. The same has been checked with the Indian Wind power directory for the year 2009. No other project activity in the state of Tamil Nadu has been found, which is invested by a single private investor in a year, post September 2001 within a range of 37 MW- 111 MW ($\pm 50\%$). Thus, the common practice analysis is justified and the project activity is not deemed as the common practice.	
Acceptance and close out by the Lead Assessor: Closed	Date: 04/08/2012

Date:	23/08/2010	Raised by:	Assessment Team		
Type:	CAR	Number:	10	Reference:	Section B.10 of AU4
Lead Assessor Comment:					
<div>1) Please clarify if PP has covered all the parameters required for the calculation of the net electricity supplied to the grid in the section B.7.1 of the PDD.</div> <div>2) In Annex 4 of the PDD, it is mentioned that metering equipment is located in each WTG. Please clarify whether this is TNEB meter or panel meters.</div> <div>3) PP has not provided the recording and monitoring frequency of each parameter. Please clarify</div>					
Project Participant Response:				Date: 15/10/2010	
<div>1) The parameters of electricity exported, electricity imported and net electricity supplied to the grid have been included in PDD version 03 under section B.7.1</div> <div>2) It was mentioned in PDD version 02 that the metering equipment is located at each WTG's location. The metering of energy will be done at the high voltage side of the step up transformers installed at each HTSC connection by the state electricity board, TNEB. The same has been mentioned more clearly in PDD version 03.</div> <div>3) The recording and monitoring frequency of each parameter has been provided under section b.7.1 of PDD version 03.</div>					
Documentation Provided by Project Participant:					
Revised PDD					
Information Verified by Lead Assessor:					
The section B.7.1 of the PDD version 03 dated 15/10/2010 was checked and now the export and import of electricity is included as separate parameters. OK					

Reasoning for not Acceptance or Acceptance and Close Out:	Date: 12/11/2010
1) PP has included all the parameters required for the calculation of the net electricity supplied to the grid. Accepted 2) PP has clarified the metering point location for the project activity. Accepted 3) PP has provided the recording & monitoring frequency for the each parameter. Accepted. Closed.	
Acceptance and Close out by Lead Assessor: Closed	Date: 12/11/2010

Date:	23/08/2010	Raised by:	Assessment Team		
Type:	CAR	Number:	11	Reference:	Section B.11 of AU4
Lead Assessor Comment:					
PP has not discussed the calibration frequency and procedures in the PDD, version 01 for the measurement equipments involved in the project activity. Please clarify					
Project Participant Response:				Date: 15/10/2010	
The calibration frequency and calibration standard have been included under section B.7.1 of PDD version 03					
Documentation Provided by Project Participant:					
Revised PDD, version 03					
Information Verified by Lead Assessor:					
Annex 4 of the PDD version 03 dated 15/10/2010 was checked. The calibration frequency and the calibration standard maintained by PP are mentioned in the latest PDD.					
Reasoning for not Acceptance or Acceptance and Close Out:				Date: 12/11/2010	
The PP has mentioned the calibration frequency and standard are mentioned in PDD, version 03 dated 15/10/2010. Same is found satisfactory with the guidance provided. The issue is closed.					
Acceptance and Close out by Lead Assessor: Closed				Date: 12/11/2010	

Date:	20/10/2011	Raised by:	Assessment Team		
Type:	CAR	Number:	12	Reference:	EB62, Annex 5
Lead Assessor Comment:					
A revised guidance on the investment analysis has been published by CDM EB as EB 62 annex 5. In accordance with the same PP is requested to clarify following points.					
1) As per Para 18 of EB 62 annex 5, if the benchmark is based on parameters that are standard in the market, then the typical debt/equity finance structure observed in the sector of the country should be used. If such information is not readily available, 50% debt and 50% equity financing may be assumed as a default. Please clarify					
2) PP is requested to clarify how it has considered the tax benefits available under the accelerated depreciation.					
3) PP has not updated the PDD with revised guidance on investment analysis.					
4) PP is requested to justify appropriateness of only company “BF utilities” is considered for beta estimation.					
Project Participant Response:				Date: 22/11/2011	
1) The proposed project activity is a 100% equity based project and there is no debt part involved in the financing. At the time of decision making the project activity was conceptualized as 100% equity finance. So PP would like to retain the 100% equity financing model in the PDD, which they have conceptualized at the time of decision making and as per the actual scenario. For assessment of the Para 18 for validation purpose, a revised financial sheets with considering the D/E ration as 70/30 is being submitted for assessment team. 70/30 is the finance structure observed for the investment in renewable sector on India and can be checked with various tariff orders.					
2) The revised sheet with consideration of accelerated depreciation is being submitted					
3) Revised PDD, version 06 with application of revised guidance is being submitted					

4) PP will submit the revised benchmark consideration sheet.	
Documentation Provided by Project Participant:	
Vestas IRR_70:30 Enercon IRR_70:30 Revised PDD version 06	
Information Verified by Lead Assessor:	
Additional financial sheets with 70:30 D/E ratio Revised PDD, version 06 dated 11/11/2011	
Reasoning for not Acceptance or Acceptance and Close Out:	Date: 10/01/2012
<p>1) PP has provided the revised IRR sheets with 70/30 ratio. Same has been checked and found appropriate. The 70/30 is the investment structure widely used and observed in the sector. Accepted. However pending till closer of all CAR & CL. To avoid confusion and add transparency, PP is requested to demonstrate only one financial indicator in the financial sheet. i.e. PP has calculated both post tax and pre-tax IRRs.</p> <p>2) PP has considered the accelerated depreciation benefit in the revised IRR sheets. Accepted & Closed</p> <p>3) Revised PDD version 6 has been checked. The PP has correctly updated it to the EB62 annex 05. However, it should be noted that a revised version 6.0 of tool for "demonstration and assessment of additionality" has come up as EB65 annex 21. PP is requested to follow the same in the PDD in order to demonstrate the additionality & common practice. Open</p> <p>4) PP is requested to justify appropriateness of only company "BF utilities "is considered for beta estimation.</p>	
Project Participant Response:	Date: 22/01/2012
<p>1- Revised Post tax IRR Sheet with 70/30 ratio is being provided to DOE for validation</p> <p>3 – PDD has been revised as per the latest tool of demonstration and assessment of additionality (version 6).</p> <p>4 - The project activity is a wind power generation; hence towards determining the value of Beta, it's appropriate to select & compare beta values of companies which are listed and involved in the similar business domain. In this regard, the only power generating company (available to PP at the time of investment decision) in India that has its presence entirely in the wind sector was BF Utilities Ltd. (BFUL). Therefore, PP has considered the Beta from BFUL at the time of investment decision and same was addressed in the webhosted PDD during the additionality assessment. Also, to bring the appropriateness of this value, PP had taken the average Beta yield in three consecutive years from BFUL, prior to the project start date.</p> <p>However, as per the clarification sought by DOE, PP has also analyzed the Beta yield in three consecutive years for five more reputed power companies in India (i.e. Tata Power, CESC, Neyveli Lignite, Alstom Power and Reliance Infra). The average Beta calculated with all these 5 companies gives the values of 1.09, which are higher than the Beta considered at the time of investment decision. Subsequently, the revised benchmark calculation is found to be higher than that considered in the webhosted PDD. A revised benchmark sheet is being submitted to DOE with a new Beta value of 1.09 for further validation.</p> <p>However, to keep the analysis more conservative PP has also analyzed the benchmark with the lowest beta (Reliance Infra of value 0.95) which is still higher than Beta considered at the time of investment decision (benchmark calculation with beta 0.95 value is also being submitted to DOE).</p> <p>Hence, PP justifies that the beta value of 0.82 (i.e. Beta for BF Utilities) which was considered at the time of investment decision is still appropriate and the most conservative for the Investment analysis of the Project. And to establish the same, a separate beta calculation sheet with all the possible scenarios is being submitted to DOE for further validation and acceptance.</p>	
Documents provided by the Project Participant	
Revised PDD version 7.	

Beta calculation sheet	
Information verified by Lead Assessor:	
PDD, version 07 dated 22/02/2012 Beta calculation sheet	
Reasoning for Not Acceptance or Acceptance and close out:	Date: 01/03/2012
The PP has provided the revised IRR sheet and the same has been checked. The PP has only used the post tax project IRR as financial indicator. Accepted. The PP has revised the PDD with additionality tool, version 06 The PP has provided the benchmark calculation sheet with use of other Beta values as well. It is checked that the Beta value used by the PP is conservative. Accepted.	
Acceptance and Close out by Lead Assessor:	Date: 01/03/2012

Date:	29/08/2012	Raised by:	Assessment Team		
Type:	CAR	Number:	13	Reference:	EB42 annex 12
Lead Assessor Comment:					
The Alteration of the standard PDD template is observed template as header is not in bold. Also the “page 1” text should not be bold and should be right inclined to the page in place of middle. Please clarify.					
Project Participant Response:				Date: 29/08/2012	
This corrected in the PDD. The revised version 10 of the PDD being submitted with correction.					
Documentation Provided by Project Participant:					
Revised PDD					
Information Verified by Lead Assessor:					
Revised PDD version 10 dated 29/08/2012					
Reasoning for not Acceptance or Acceptance and Close Out:				Date: 01/09/2012	
The PP has corrected the formatting of the PDD, in line with the template. Accepted.					
Acceptance and Close out by Lead Assessor: Closed				Date: 01/09/2012	

A.4 Annex 4: Team Members Statements of Competency

Statement of Competence

Name: Harsh
Raval

Status

- Lead Assessor	x	- Expert	X
- Assessor	x	- Financial Expert	
- Local Assessor	India	- Technical Reviewer	x

Scopes of Expertise

1. Energy Industries (renewable / non-renewable)	x
Technical Area(s): TA 1.2 Energy generation from renewable energy sources	
2. Energy Distribution	
Technical Area(s):	
3. Energy Demand	
Technical Area(s):	
4. Manufacturing	
Technical Area(s):	
5. Chemical Industry	
Technical Area(s):	
6. Construction	
Technical Area(s):	
7. Transport	
Technical Area(s):	
8. Mining/Mineral Production	
Technical Area(s):	
9. Metal Production	
Technical Area(s):	
10. Fugitive Emissions from Fuels (solid, oil and gas)	
Technical Area(s):	
11. Fugitive Emissions from Production and Consumption of Halocarbons and Sulphur Hexafluoride	
Technical Area(s):	
12. Solvent Use	
Technical Area(s):	
13. Waste Handling and Disposal	
Technical Area(s):	
14. Afforestation and Reforestation	
Technical Area(s):	
15. Agriculture	
Technical Area(s):	

Approved Member of Staff by:

Siddharth
Yadav

Date:

17/07/2012

Statement of Competence

Name: **Vikas Bankar**

Status

- Lead Assessor	x	- Expert	x
- Assessor	x	- Financial Expert	
- Local Assessor	India	- Technical Reviewer	X

Scopes of Expertise

1. Energy Industries (renewable / non-renewable)	x
Technical Area(s): <i>TA 1.2 Energy generation from renewable energy sources</i>	
2. Energy Distribution	x
Technical Area(s): <i>TA 2.1 Electricity distribution TA 2.2 Heat distribution</i>	
3. Energy Demand	x
Technical Area(s): <i>TA 3.1 Energy Demand</i>	
4. Manufacturing	
Technical Area(s):	
5. Chemical Industry	
Technical Area(s):	
6. Construction	
Technical Area(s):	
7. Transport	
Technical Area(s):	
8. Mining/Mineral Production	
Technical Area(s):	
9. Metal Production	
Technical Area(s):	
10. Fugitive Emissions from Fuels (solid, oil and gas)	
Technical Area(s):	
11. Fugitive Emissions from Production and Consumption of Halocarbons and Sulphur Hexafluoride	
Technical Area(s):	
12. Solvent Use	
Technical Area(s):	
13. Waste Handling and Disposal	
Technical Area(s):	
14. Afforestation and Reforestation	
Technical Area(s):	
15. Agriculture	
Technical Area(s):	

Approved Member of Staff by:

**Siddharth
Yadav**

Date:

17/07/2012

Statement of Competence

Name: Anshul Sharma

Status

- Lead Assessor	x	- Expert	
- Assessor	x	- Financial Expert	x
- Local Assessor	India	- Technical Reviewer	

Scopes of Expertise

1. Energy Industries (renewable / non-renewable)	
Technical Area(s):	
2. Energy Distribution	
Technical Area(s):	
3. Energy Demand	
Technical Area(s):	
4. Manufacturing	
Technical Area(s):	
5. Chemical Industry	
Technical Area(s):	
6. Construction	
Technical Area(s):	
7. Transport	
Technical Area(s):	
8. Mining/Mineral Production	
Technical Area(s):	
9. Metal Production	
Technical Area(s):	
10. Fugitive Emissions from Fuels (solid, oil and gas)	
Technical Area(s):	
11. Fugitive Emissions from Production and Consumption of Halocarbons and Sulphur Hexafluoride	
Technical Area(s):	
12. Solvent Use	
Technical Area(s):	
13. Waste Handling and Disposal	
Technical Area(s):	
14. Afforestation and Reforestation	
Technical Area(s):	
15. Agriculture	
Technical Area(s):	

Approved Member of Staff by: Siddharth Yadav Date: 07/03/2012

Statement of Competence

Name: Ramkrishna Patil

Status

- Lead Assessor	x	- Expert	x
- Assessor	x	- Financial Expert	
- Local Assessor	India	- Technical Reviewer	x

Scopes of Expertise

1. Energy Industries (renewable / non-renewable)	x
Technical Area(s): TA 1.2 Energy generation from renewable energy sources	
2. Energy Distribution	x
Technical Area(s): TA 2.1 Electricity distribution TA 2.2 Heat distribution	
3. Energy Demand	x
Technical Area(s): TA 3.1 Energy Demand	
4. Manufacturing	
Technical Area(s):	
5. Chemical Industry	
Technical Area(s):	
6. Construction	
Technical Area(s):	
7. Transport	
Technical Area(s):	
8. Mining/Mineral Production	
Technical Area(s):	
9. Metal Production	
Technical Area(s):	
10. Fugitive Emissions from Fuels (solid, oil and gas)	
Technical Area(s):	
11. Fugitive Emissions from Production and Consumption of Halocarbons and Sulphur Hexafluoride	
Technical Area(s):	
12. Solvent Use	
Technical Area(s):	
13. Waste Handling and Disposal	
Technical Area(s):	
14. Afforestation and Reforestation	
Technical Area(s):	
15. Agriculture	
Technical Area(s):	

Approved Member of Staff by:

Siddharth
Yadav

Date:

02/07/2012