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# VALIDATION REPORT

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## “WIND POWER PROJECT IN TINWARI, RAJASTHAN” IN INDIA

REPORT NO. 2011-9638

REVISION NO. 03

DET NORSKE VERITAS

## VALIDATION REPORT

Date of first issue:	ConCert Project No.:	DNV CLIMATE CHANGE SERVICES AS  Veritasveien 1, 1322 HØVIK, Norway Tel: +47 67 57 99 00 Fax: +47 67 57 99 11 http://www.dnv.com Org. No: NO 994 774 352 MVA
30 September 2011	PRJC-330326-2011-CCS-IND	
Approved by	Organisational unit:	
Edwin Aalders	DNV KEMA Energy & Sustainability Accredited Climate Change Services	
Client:	Client ref.:	
Enercon (India) Limited	Mr. Yogesh Mehra	
Summary:		
<p><b>Project Name:</b> Wind Power Project in Tinwari, Rajasthan</p> <p><b>Country:</b> India</p> <p><b>Methodology:</b> ACM0002 <b>Version:</b> 12.2.0</p> <p><b>GHG reducing Measure/Technology:</b> Grid connected electricity generation from renewable energy source (wind)</p> <p><b>Technical area:</b> TA 1.2 Energy generation from renewable energy sources <b>Sectoral Scope:</b> 01</p> <p><b>ER estimate:</b> 32 415 tCO<sub>2</sub>e per year (average) over a ten year fixed crediting period</p> <p><b>Size</b></p> <p><input checked="" type="checkbox"/> Large Scale <input type="checkbox"/> Small Scale</p> <p><b>Validation Phases:</b></p> <p><input checked="" type="checkbox"/> Desk Review</p> <p><input checked="" type="checkbox"/> Follow up interviews</p> <p><input checked="" type="checkbox"/> Resolution of outstanding issues</p> <p><b>Validation Status</b></p> <p><input type="checkbox"/> Corrective Actions Requested <input type="checkbox"/> Clarifications Requested</p> <p><input checked="" type="checkbox"/> Full Approval and submission for registration <input type="checkbox"/> Rejected</p> <p>In summary, it is DNV's opinion that the project activity "Wind Power Project in Tinwari, Rajasthan" in India, as described in the PDD, version 05 of 23 July 2012, meets all relevant UNFCCC requirements for the CDM and correctly applies the baseline and monitoring methodology ACM0002, version 12.2.0. Hence DNV requests the registration of the project as a CDM project activity.</p>		
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2011-9638	Environment	<b>Indexing terms</b>
Report title:	Key words	
Wind Power Project in Tinwari, Rajasthan	Climate Change Kyoto Protocol Validation Clean Development Mechanism	
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**Abbreviations**

BM	Build Margin
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CEA	Central Electricity Authority
CER	Certified Emission Reduction(s)
CL	Clarification request
CM	Combined Margin
CO <sub>2</sub>	Carbon dioxide
C-WET	Centre for Wind Energy Technology
CO <sub>2</sub> e	Carbon dioxide equivalent
DNV	DNV Climate Change Services AS
DNA	Designated National Authority
EIL	Enercon (India) Limited
EIA	Environment Impact assessment
FAR	Forward Action Request
GBI	Generation Based Incentive
GHG	Greenhouse gas(es)
GWP	Global Warming Potential
IDFC	Infrastructure Development Finance Corporation
IPCC	Intergovernmental Panel on Climate Change
IPP	Independent Power Producer
IREDA	Indian Renewable Energy Development Authority Limited
LoA	Letter of approval
LCS	Local Control Station
MNES	Ministry of Non-Conventional Energy Sources, Government of India
MoEF	Ministry of Environment & Forests, Government of India
NEWNE	Integrated Northern, Eastern, Western and North-Eastern regional grid of India
NGO	Non-governmental Organisation
ODA	Official Development Assistance
OM	Operating Margin
PDD	Project Design Document
PLF	Plant Load Factor
PP	Project Participant
PPA	Power Purchase Agreement
RBI	Reserve Bank of India
RERC	Rajasthan Electricity Regulatory Commission
RRECL	Rajasthan Renewable Energy Corporation Limited
RSEB	Rajasthan State Electricity Board
tCO <sub>2</sub> e	Tonnes of CO <sub>2</sub> equivalents
UNFCCC	United Nations Framework Convention on Climate Change
WEG	Wind Energy Generator
VVM	Validation and Verification Manual

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**1 EXECUTIVE SUMMARY – VALIDATION OPINION**

*DNV Climate Change Services AS (DNV) has performed a validation of the project activity “Wind Power Project in Tinwari, Rajasthan” in India. The validation was performed on the basis of UNFCCC criteria for the Clean Development Mechanism as well as criteria given to provide for consistent project operations, monitoring and reporting.*

*The review of the project design documentation and the subsequent follow-up interviews have provided DNV with sufficient evidence to determine the fulfilment of stated criteria.*

*The host Party is India and the project participant is Enercon (India) Limited. The DNA from India confirmed that the project assists in achieving sustainable development. No Annex I Party has yet been identified.*

*The project correctly applies the baseline and monitoring methodology ACM0002, version 12.2.0 “Consolidated baseline methodology for grid-connected electricity generation from renewable sources”.*

*The project activity is intended to generate electricity from a 20 MW wind farm which will displace the electricity generation in the fossil fuel dominated NEWNE integrated grid of India, thereby resulting in the reduction of GHG emissions that are real, measurable and gives long-term benefits to the mitigation of climate change. 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 on the average 32 415 tCO<sub>2</sub>e per year over the selected 10 year fixed crediting period. The emission reduction forecast has been checked and it is deemed likely that the stated amount is achieved given that the underlying assumptions do not change.*

*The monitoring plan provides for the monitoring of the project’s emission reductions. The monitoring arrangements described in the monitoring plan are feasible within the project design and it is DNV’s opinion that the project participants are able to implement the monitoring plan.*

*In summary, it is DNV’s opinion that the project activity “Wind Power Project in Tinwari, Rajasthan” in India, as described in the PDD, version 05 dated 23 July 2012, meets all relevant UNFCCC requirements for the CDM and correctly applies the baseline and monitoring methodology ACM0002, version 12.2.0. Hence, DNV requests the registration of the project as a CDM project activity.*

Bangalore and Oslo, 24 July 2012



Ravi Kumar Prabhu  
CDM Validator  
DNV Bangalore, India



Edwin Aalders  
Approver  
Det Norske Veritas Certification AS

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## 2 INTRODUCTION

Enercon (India) Limited has commissioned DNV Climate Change and Environmental Services (DNV) to perform a validation of the “Wind Power Project in Tinwari, Rajasthan” in India (hereafter called “the project”). This report summarises the findings of the validation of the project, performed on the basis of UNFCCC criteria for the CDM, as well as criteria given to provide for consistent project operations, monitoring and reporting. UNFCCC criteria refer to Article 12 of the Kyoto Protocol and the subsequent decisions by the CDM Executive Board.

### 2.1 Objective

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

### 2.2 Scope

The validation scope is defined as an independent and objective review of the project design document (PDD) /1/. The PDD is reviewed against the criteria stated in Article 12 of the Kyoto Protocol, the CDM modalities and procedures as agreed in the Marrakech Accords and the relevant decisions by the CDM Executive Board, including the approved baseline and monitoring methodology ACM0002 version 12.2.0 /26/. The validation was based on the recommendations in the Validation and Verification Manual /25/ .

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

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### 3 METHODOLOGY

The validation consists of the following three phases:

- I a desk review of the project design documents
- II follow-up interviews with project stakeholders
- III the resolution of outstanding issues and the issuance of the final validation report and opinion.

The following sections outline each step in more detail.

#### 3.1 Desk review of the project design documentation

The following tables list the documentation that was reviewed during the validation.

##### 3.1.1 Documentation provided by the project participants

/1/	EIL: CDM-PDD for project activity “Wind Power Project in Tinwari, Rajasthan” in India, webhosted version 01 dated 30 July 2011 and final PDD version 05 dated 23 July 2012.
/2/	EIL: Technical specification of E-53 model WEG of 800 kW capacity and its life expectancy.
/3/	EIL: Detailed Project Report prepared by EIL for the project activity, dated 28 April 2011.
/4/	EIL: Extracts of Board resolution to proceed with the project activity with CDM consideration, dated 5 May 2011.
/5/	EIL: Land lease agreement signed with Jodhpur Development Authority for the project activity dated 16 May 2011.
/6/	RRECL: Capacity allotment letter issued to EIL dated 12 December 2008.
/7/	RRECL: Approval for power evacuation from the Enercon wind farm, dated 10 June 2009.
/8/	True Wind International Certification: Report on determination of plant load factor for wind energy generators at Tinwari site of EIL, dated 25 April 2011.
/9/	EIL: E-mail on intimation on developing the project activity as CDM to UNFCCC, dated 5 July 2011 and confirmation from UNFCCC on receipt of the email dated 8 August 2011.
/10/	EIL: E-mail on intimation on developing the project activity as CDM to DNA of India, dated 5 July 2011 and confirmation from DNA of India on receipt of the email dated 6 July 2011.
/11/	EIL: Loan application submitted to IDFC for an amount of INR 723 million the project activity, dated 23 May 2011.
/12/	IDFC: Loan sanction letter for INR 650 million for the project activity dated 14 July 2011.
/13/	EIL: PPA signed with the electricity distribution company, Jaipur Vidyut Vitaran Nigam Limited for the 20 MW capacity of the project activity, dated 5 October 2011.
/14/	EIL: Investment analysis spread sheet, version 1.0 and version 2.0 dated 10 February

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	2012.
/15/	EIL: Benchmark calculation spread sheet, version 1.0 and version 2.0 dated 10 February 2012.
/16/	EIL: Emission reduction calculation spread sheet, version 1.0 and version 2.0 dated 10 February 2012.
/17/	EIL: Press advertisement in local newspaper “Nafa Nuksan” dated 5 July 2011 on local stakeholder meeting.
/18/	EIL: Attendance sheet, photos and minutes of the meeting of stakeholder consultation, dated 23 July 2011.
/19/	Jaipur DISCOM: Commissioning certificates of project activity, NO:SE(RDPPC)/JVVNL/ XEN(C&R)/D-1240 dated 14 October 2011 and NO:SE(RDPPC)/JVVNL/ XEN(C&R)/D-1519 dated 28 November 2011
/20/	Deloitte Haskins & Sells: The letter no. REF/KAK/2011-12/135 dated 14 December 2011, addressed to the financier of the project IDFC, certifying the actual cost incurred by Enercon (India) Limited without including normal profit margins.
/21/	EIL: Inter office communication about the implementation of project activity, dated 7 May 2011
/22/	EIL: SAP details of material transfer to the project site, during the period of 16 May 2011 to 31 August 2011
/23/	EIL: Validation agreement with DNV dated 12 July 2011

**3.1.2 Letters of approval**

/24/	MoEF (DNA of India): Letter of approval dated 10 January 2012.
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**3.1.3 Methodologies, tools and other guidance by the CDM Executive Board**

/25/	CDM Executive Board: Validation and Verification Manual, version 1.2.
/26/	CDM Executive Board: Baseline and monitoring methodology ACM0002, version 12.2.0, “Consolidated baseline methodology for grid-connected electricity generation from renewable sources”
/27/	CDM Executive Board: Tool for demonstration and assessment of additionality, version 5.2.1.
/28/	CDM Executive Board: Tool to calculate the emission factor for an electricity system, version 2.2.1
/29/	CDM Executive Board: Guidance on Assessment of Investment Analysis, version 5, EB62 Annex 5.
/30/	CDM Executive Board: Guidelines on the demonstration and assessment of the prior consideration of CDM, version 4, EB62, Annex 13
/31/	CDM Executive Board: Guidelines for the reporting and validation of plant load factors, version 1, EB 48 Annex 11.
/32/	CDM Executive Board: Glossary of CDM terms version 05.
/33/	CDM Executive Board: Meeting report of EB 65, Para 89 dated 25 November 2011, which clarified that the older versions of tools can be used for 8 months from date of issue of new version.
/34/	CDM Executive Board: Guidelines for completing the project design document (CDM-



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	PDD) EB 41, Annex 12
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### 3.1.4 Documentation used by DNV to validate / cross-check the information provided by the project participants

/35/	CEA: CO <sub>2</sub> Baseline Database for the Indian Power Sector dated March 2011, version 6, <a href="http://cea.nic.in/reports/planning/cdm_co2/cdm_co2.htm">http://cea.nic.in/reports/planning/cdm_co2/cdm_co2.htm</a>
/36/	UNFCCC: CDM prior consideration - Intimation receipt at UNFCCC <a href="http://cdm.unfccc.int/Projects/PriorCDM/notifications/index_html">http://cdm.unfccc.int/Projects/PriorCDM/notifications/index_html</a>
/37/	MOEF notification with respect to EIA dated 14 September 2006. ( <a href="http://envfor.nic.in/legis/eia/so1533.pdf">http://envfor.nic.in/legis/eia/so1533.pdf</a> ) and the notification dated 1 December 2009 <a href="http://moef.nic.in/downloads/rules-and-regulations/3067.pdf">http://moef.nic.in/downloads/rules-and-regulations/3067.pdf</a>
/38/	RERC: Tariff order on wind energy, Commission order no.11, dated 3 June 2011 and Tariff order dated 16 July 2009. <a href="http://www.rerctest.rajasthan.gov.in/">http://www.rerctest.rajasthan.gov.in/</a>
/39/	Moody's: Rating of Indian Bonds dated 31 March 2011. ( <a href="http://banking.confity.com/story/moodys-assign-baa3-rating-to-exim-banks-us110-mln-bonds-2011-03-31">http://banking.confity.com/story/moodys-assign-baa3-rating-to-exim-banks-us110-mln-bonds-2011-03-31</a> )
/40/	Centre for Wind Energy Technology: Revised list of models and manufacturers of wind turbines, possessing valid approval, Ref. No.C-WET/S&C/RLMM/2010-11/06, dated 18 May 2010.
/41/	Indian Income Tax Act 1961, Section 32 (Rule 5) Appendix 1 and Section 80-1A, paragraph 2.0
/42/	Reserve Bank of India: Survey of professional forecasters: Results of the 14 <sup>th</sup> round (Q3: 2010-11) for the December 2010 quarter of the financial year: <a href="http://rbidocs.rbi.org.in/rdocs/Publications/PDFs/PREERE14020210.pdf">http://rbidocs.rbi.org.in/rdocs/Publications/PDFs/PREERE14020210.pdf</a>
/43/	Simon Benninga: Estimating cost of capital using Gordon model: <a href="http://simonbenninga.com/benninga_sarig/chap09.pdf">http://simonbenninga.com/benninga_sarig/chap09.pdf</a>
/44/	Power Finance Corporation: Circular on lending rates dated 13 May 2011 <a href="http://www.pfc.gov.in/writereaddata/userfiles/file/LendingRates/interest_circular_2505_2011.pdf">http://www.pfc.gov.in/writereaddata/userfiles/file/LendingRates/interest_circular_2505_2011.pdf</a>
/45/	IRDEA: Operational guidelines for implementation of generation based incentive for grid connected wind power projects, dated 17 December 2009 and 26 May 2010. <a href="http://www.ireda.gov.in/pdf/OPERATIONAL%20GUIDELINES%20for%20Wind%20GBI%20and%20AD%20as%20on%2026.05.2010.doc">http://www.ireda.gov.in/pdf/OPERATIONAL%20GUIDELINES%20for%20Wind%20GBI%20and%20AD%20as%20on%2026.05.2010.doc</a>
/46/	Indian Wind Power Directory 10 <sup>th</sup> edition, published in year 2010.
/47/	UNEP Risoe: CDM Pipeline, <a href="http://cdmpipeline.org/publications/CDMpipeline.xlsx">http://cdmpipeline.org/publications/CDMpipeline.xlsx</a>
/48/	UNFCCC: Wind projects from Rajasthan registered in 2011: Cepco wind power project in Rajasthan, (Registration no. 4942) <a href="http://cdm.unfccc.int/UserManagement/FileStorage/L054TBIUYEQWD9XRZ6KP82SJGONHM3">http://cdm.unfccc.int/UserManagement/FileStorage/L054TBIUYEQWD9XRZ6KP82SJGONHM3</a> Kohinoor Wind Power Project in Rajasthan (Registration no. 4679) <a href="http://cdm.unfccc.int/UserManagement/FileStorage/UG3DQA2P1HMZJEKN0T89RB7">http://cdm.unfccc.int/UserManagement/FileStorage/UG3DQA2P1HMZJEKN0T89RB7</a>

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	<a href="#">CL4WVFX</a> Vaayu India Wind Power Project in Jaisalmer, Rajasthan (Registration no. 5186) <a href="http://cdm.unfccc.int/UserManagement/FileStorage/ORTBPK5FUYE3XL49WH67DC/MJQAGVNI">http://cdm.unfccc.int/UserManagement/FileStorage/ORTBPK5FUYE3XL49WH67DC/MJQAGVNI</a>
/49/	India's Initial National Communication – Chapter 2 – ‘Greenhouse Gas Inventory Information, dated 16 June 2004: The national values of emission factor of coal
/50/	IPCC: Guidelines for National Greenhouse Gas Inventories, 2006

The hyperlinks to the websites stated above were checked on 28 January 2012.

The main changes between the web hosted and final PDDs are:

- The version of methodology has been changed from ACM0002 version 12.1.0 to version 12.2.0, since the version 12.1.0 used by web hosted PDD is no more valid.
- The benchmark is revised from 18.46% to 17.78% (refer CL 2).
- Changes related to CAR/CLs identified in table 3 of the report.
- Start date of crediting period has been updated to 1 August 2012.
- Corrections to address the issues raised by UNFCCC in the incomplete message dated 2 July 2012 during the information and reporting check.

### 3.2 Follow-up interviews with project stakeholders

This is a greenfield project, wherein the site activities were yet to be started at the start of validation. During the period of 13-14 September 2011, Ravi Kumar Prabhu of DNV visited the project site at Tinwari, Jodhpur, Rajasthan and performed interviews with project stakeholders.

	Date	Name	Organization	Topic
/51/	2011-09-13/14	Mr. Sidharth Mehra, Director Mr. Saujanya Kumar, CDM Corporate	Enercon (India) Limited, Mumbai	<ul style="list-style-type: none"> <li>➤ Proof of CDM consideration</li> <li>➤ Applicability of methodology</li> <li>➤ Review of project design and technology used</li> <li>➤ Review of monitoring and verification procedure, management structure of the organization.</li> <li>➤ Environmental consents and permits</li> <li>➤ Review of the stakeholder consultation process.</li> <li>➤ Joint meter reading procedure</li> <li>➤ Operation &amp; maintenance procedures.</li> <li>➤ Determination of baseline</li> </ul> Third party assessment of PLF
/52/	2011-09-13/14	Mr. Neeraj Gupta	Price Waterhouse Coopers,	<ul style="list-style-type: none"> <li>➤ Assessment of project additionality, benchmark determination, financial analysis</li> </ul>

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			Delhi	➤ Emission reduction calculations and data used ➤ Determination of baseline
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### 3.3 Resolution of outstanding issues

The objective of this phase of the validation is to resolve any outstanding issues which need be clarified prior to DNV's positive conclusion on the project design. In order to ensure transparency a validation protocol was customised for the project. The protocol shows in a transparent manner the criteria (requirements), means of verification and the results from validating the identified criteria. The validation protocol serves the following purposes:

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

The validation protocol consists of four tables. The different columns in these tables are described in the figure below. The completed validation protocol for the project activity "Wind Power Project in Tinwari, Rajasthan" in India is enclosed in Appendix A to this report.

A corrective action request (CAR) is raised if one of the following occurs:

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

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

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.

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<b>Validation Protocol Table 1: Mandatory Requirements for CDM Project Activities</b>		
<b>Requirement</b>	<b>Reference</b>	<b>Conclusion</b>
<i>The requirements the project must meet.</i>	<i>Gives reference to the legislation or agreement where the requirement is found.</i>	<i>This is either acceptable based on evidence provided (OK) or a <b>corrective action request (CAR)</b> if a requirement is not met.</i>

<b>Validation Protocol Table 2: Requirement Checklist</b>				
<b>Checklist question</b>	<b>Reference</b>	<b>Means of verification (MoV)</b>	<b>Assessment by DNV</b>	<b>Draft and/or Final Conclusion</b>
<i>The various requirements in Table 1 are linked to checklist questions the project should meet. The checklist is organised in different sections, following the logic of the CDM-PDD</i>	<i>Gives reference to documents where the answer to the checklist question or item is found.</i>	<i>Means of verification (MoV) are <b>document review (DR)</b>, <b>interview (I)</b> or any other follow-up actions (e.g., on site visit and telephone or email interviews) and <b>cross-checking (CC)</b> with available information relating to projects or technologies similar to the proposed CDM project activity under validation.</i>	<i>The discussion on how the conclusion is arrived at and the conclusion on the compliance with the checklist question so far.</i>	<i>OK is used if the information and evidence provided is adequate to demonstrate compliance with CDM requirements. A <b>corrective action request (CAR)</b> is raised when project participants have made mistakes, the CDM requirements have not been met or there is a risk that emission reductions cannot be monitored or calculated. A <b>clarification request (CL)</b> is raised if information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met. A <b>forward action request (FAR)</b> during validation is raised to highlight issues related to project implementation that require review during the first verification of the project activity.</i>

<b>Validation Protocol Table 3: Resolution of Corrective Action and Clarification Requests</b>			
<b>Corrective action and/or clarification requests</b>	<b>Ref. to checklist question in table 2</b>	<b>Response by project participants</b>	<b>Validation conclusion</b>
<i>The CARs and/or CLs raised in Table 2 are repeated here.</i>	<i>Reference to the checklist question number in Table 2 where the CAR or CL is explained.</i>	<i>The responses given by the project participants to address the CARs and/or CLs.</i>	<i>The validation team's assessment and final conclusions of the CARs and/or CLs.</i>

<b>Validation Protocol Table 4: Forward Action Requests</b>		
<b>Forward action request</b>	<b>Ref. to checklist question in table 2</b>	<b>Response by project participants</b>
<i>The FARs raised in Table 2 are repeated here.</i>	<i>Reference to the checklist question number in Table 2 where the FAR is explained.</i>	<i>Response by project participants on how forward action request will be addressed prior to first verification.</i>

**Figure 1 Validation protocol tables**

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**3.4 Internal quality control**

The final validation report has undergone a technical review performed by a technical reviewer qualified in accordance with DNV's qualification scheme for CDM validation and verification.

**3.5 Validation team**

<i><b>Role</b></i>	<i><b>Last Name</b></i>	<i><b>First Name</b></i>	<i><b>Country</b></i>	<i><b>Type of involvement</b></i>						
				Desk review	Site visit / Interviews	Reporting	Supervision of work	Technical review	TA1.2 competence	Financial Expertise
Technical team leader (CDM validator)	Prabhu	Ravi Kumar	India	✓	✓	✓	✓		✓	
Expert	A.	Parasuraman	India	✓						✓
Technical reviewer	Srivastava	Gaurav	India					✓	✓	

The qualification of each individual validation team member is detailed in Appendix B to this report.

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## 4 VALIDATION FINDINGS

The findings of the validation are stated in the following sections. The validation criteria (requirements), the means of verification and the results from validating the identified criteria are documented in more detail in the validation protocol in Appendix A.

The final validation findings relate to the project design as documented and described in the PDD, version 05 dated 23 July 2012 /1/.

### 4.1 Participation requirements

The project is being developed by Enercon (India) Limited of host Party India and no other project participant from Annex I Party is identified yet. The host Party (India) meets all relevant participation requirements.

A letter of approval (LoA) /24/ was issued by DNA of India on 10 January 2012 authorizing Enercon (India) Limited of India as project participant and confirming that the project assists in achieving sustainable development.

DNV considers the letters are in accordance with paragraphs 45- 48 of the VVM /25/. The letter of approval was received from the project participant. DNV does not doubt the authenticity of the letter of approval. DNV considers the letter is in accordance with paragraphs 45- 48 of the VVM /25/.

This is a unilateral project and the validation did not reveal any information that indicates that the project can be seen as a diversion of ODA.

### 4.2 Project design

The project activity consists of installation of 25 wind energy generators (WEGs) of the Enercon E-53 make, with capacity of 800 kW each, with gearless horizontal axis, variable speed rotor and independent electromechanical pitch system for each blade /2/. The project is spread across Salodi, Chensingh Nagar, Bari, Malunga, Bada Kotacha, Digadi, Jelu, Balvra & Beru villages of Jodhpur district in the Rajasthan state of India. The project area extends between latitude N26° 25' 29.3" to latitude N 26° 30' 42.1" and longitude E 72° 46' 18.8" to longitude E72° 52' 27.3". The WEGs generate 3 phase power at 400V, which is stepped up to 33 KV. The project activity can operate in the frequency range of 47.5 to 51.5 Hz and in the voltage range of 400 V  $\pm$  12.5%. The average life time of the WEG is expected to be 20 years /2/. A fixed crediting period of 10 years has been chosen with the starting date of the crediting period as 1 August 2012 or the date of registration of the project activity whichever is later. The 13 of the WEGs were commissioned on 30 September 2011 and the remaining 12 no.s were commissioned on 9 November 2011 /19/.

The entire power generated by the project is supplied to the local grid of Rajasthan State Electricity Board (RSEB), which is part of the integrated Northern, Eastern, Western and North-Eastern (NEWNE) regional grid of India. By the implementation of the project activity, energy generated using renewable energy will displace equivalent energy generation from the fossil fuel dominated NEWNE grid of India. Therefore, the project activity results in an equivalent amount of emission reductions from the project activity. The project is expected to

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result in 32 415 tCO<sub>2</sub>e emission reductions per annum over the selected fixed crediting period of 10 years /16/.

The starting date of the project activity indicated in the PDD is 7 May 2011, which is the the date of official circular issued by the Managing Director of EIL on 7 May 2011, based on the decision of the Board /4/, mandating the concerned departments to take necessary steps for the installation of project activity /21/.

The installation, commissioning, operation and maintenance of the WEGs are under the scope of Enercon (India) Limited (EIL), during the life time of the project activity. The technology used in the project activity is indigenously available in India and no transfer of technology is envisaged. The technology applied is deemed current good practice and is not expected to be replaced within the crediting period.

DNV considers the project description of the project contained in the PDD to be complete and accurate. The PDD complies with the relevant forms and guidance for completing the PDD /34/.

### 4.3 Application of selected baseline and monitoring methodology

The project correctly applies the approved baseline methodology ACM0002, version 12.2.0 “*Consolidated baseline methodology for grid-connected electricity generation from renewable sources*” /26/. The applicability of this methodology is justified as:

- The project is installation of new wind energy generators at a site where no renewable energy power plant was operated prior to the implementation of the project activity. This has been verified from the approval of Rajasthan Renewable Energy Corporation Limited (RRECL) for power evacuation from the Enercon wind farm /7/. DNV confirms that the project activity is a green field project and same has been verified during the site visit.
- No retrofit or capacity additions or replacements at the existing plants are involved. This has been verified from the approval of Rajasthan Renewable Energy Corporation Limited (RRECL) for power evacuation from the Enercon wind farm /7/. Further, during site visit, it was verified that no wind energy generators were existed at the project site /51/, /52/.
- The project activity is connected to the NEWNE grid of India, and the system boundaries are clearly identified and information on the characteristics of this grid is available on the web site central electricity authority (CEA), Government of India /35/.
- No hydro or biomass project is involved.
- The project does not involve an on-site switch from fossil fuels to a renewable source. During the site visit, it was verified that no wind energy generators were existed at the project site /51/, /52/.

The assessment of the project’s compliance with the applicability criteria of ACM0002 (version 12.2.0) /26/ are documented in detail in section B.2 of Table 2 in the validation protocol in Appendix A to this report and CAR 2 in Table 3.

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#### 4.4 Project Boundary

The project system boundary consists of the WEGs at the project site and the pooling sub-station and state utility substation. The spatial boundary of the project includes the NEWNE grid of India and the predominantly fossil fuel based power plants connected to the grid.

	GHGs involved	Description
Baseline emissions	CO <sub>2</sub>	Emissions equivalent to the amount of net electricity supplied by the project activity that would otherwise be generated by the power plants connected to the NEWNE grid.
Project emissions	CO <sub>2</sub>	NA
Leakage	NA	NA

The identified boundary and selected sources and gases are justified for the project activity. The validation of the project activity did not reveal any other greenhouse gas emissions occurring within the proposed CDM project activity boundary as a result of the implementation of the proposed project activity which are expected to contribute more than 1% of the overall expected average annual emission reduction, which are not addressed by ACM0002 (version 12.2.0) /26/.

#### 4.5 Baseline identification

As this project installs a new grid connected renewable power plant and the project is additional, (Ref: Section 4.6) the baseline scenario is in accordance with ACM0002, version 12.2.0 /26/, the electricity delivered to the grid by the project activity that otherwise would have 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* /28/.

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

All the assumptions and data used by the project participant are listed in the PDD and/or supporting documents. All documentation relevant for establishing the baseline scenario are correctly quoted and interpreted in the PDD /1/. Assumptions and data used in the identification of the baseline scenario are justified appropriately, supported by evidence and can be deemed reasonable. Relevant national and/or sectoral policies and circumstances are considered and listed in the PDD /1/.

#### 4.6 Additionality

The project's additionality is demonstrated using "Tool for the demonstration and assessment of additionality", version 5.2.1 /27/.



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**4.6.1 Evidence for prior CDM consideration and continuous actions to secure CDM status**

On 5 May 2011, the Board of Enercon India Limited (EIL) considered implementation of the project activity consisting of 25 number of WEGs /4/ and found it unviable; hence the Board decided to proceed with the project implementation with CDM revenues. The starting date of the project activity is the date of official circular issued by the Managing Director of EIL on 7 May 2011, based on the decision of the Board /4/, mandating the concerned departments to take necessary steps for the installation of project activity /21/

Since EIL is one of the manufacturers of WEGs in India and EIL itself is implementing the project on engineering, procurement and commissioning (EPC) basis, no purchase order is available. The selected start date of 7 May 2011 is in line with the definition of project start date stated in Glossary of CDM terms /32/ *“the start date shall be considered to be the date on which the project participant has committed to expenditures related to the implementation or related to the construction of the project activity.”* DNV verified from SAP details of EIL that material transfer to the project site started within 10 days based on the official circular (the start date of 7 May 2011) /21/ on 16 May 2011 and completed on 31 August 2011 /23/. Further, during the site visit in September 2011 (4 months after the start date), DNV verified that the project implementation had already started and was subsequently commissioned in November 2011 /19/. Thus the selected start date of 7 May 2011 is appropriate.

The major events related to the implementation of the project activity are:

S.No.	Event	Date
1	Detailed Project report /3/	28/04/2011
2	Board Resolution /4/	05/05/2011
3	Inter office communication about the implementation of project activity /21/	07/05/2011
4	Starting of material transfer to site as per SAP details /23/	16/05/2011
5	Loan application to IDFC /11/	23/05/2011
6	Prior Intimation of CDM project to UNFCCC & NCDMA (DNA) /9/	05/07/2011
7	Agreement with DNV for CDM validation /23/	12/07/2011
8	Loan Sanction letter from IDFC /12/	14/07/2011
9	Local Stakeholders' consultation /18/	23/07/2011
10	PDD web-hosted with UNFCCC	09/08/2011

Early consideration of CDM is evidenced from the e-mail notification to UNFCCC secretariat on 5 July 2011 /9/ regarding commencement of the project activity and the project participant's intention to seek CDM status for the project. DNV verified the notification from the UNFCCC website /36/ and the confirmation email from UNFCCC dated 8 August 2011 /9/. PP had also intimated the DNA of India by e-mail on 5 July 2011 regarding commencement of the project activity. DNV verified the intimation to DNA of India from the e-mail confirmation received from DNA dated 6 July 2011 /10/.

Further, the Board of EIL discussed the viability of the project and suggested to get the project registered under CDM, so that the additional revenues from the sale of emission reductions

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will help the project to be financially viable /4/. CDM was therefore seriously considered in the decision to proceed with the project activity.

DNV consider that the evidences to demonstrate CDM consideration for the project activity, since the start date of the project activity (7 July 2011) is after 2 August 2008 and that PP notified the UNFCCC secretariat and DNA of India within six months of the start date. Further, the PDD has been published for global stakeholder consultation on 9 August 2011, within 2 years from the initial notification to the UNFCCC and the DNA, thereby complying with the requirement of latest version of the “Guidelines on the demonstration and assessment of prior consideration of the CDM” /30/.

It is DNV’s opinion that the proposed CDM project activity complies with the requirements of the latest version of the “Guidelines on the demonstration and assessment of prior consideration of the CDM” /30/.

#### **4.6.2 Identification of alternatives to the project activity**

The applied methodology ACM0002 version 12.2.0 /26/ specifies that, for the grid connected new renewable power plants, the baseline scenario is that the electricity delivered to the grid by the project activity would have otherwise been generated by the operation of the grid connected power plants and by the addition of new generation sources, as reflected by the combined margin.

The realistic and credible alternatives to the project activity are the project being undertaken without registering it as a CDM activity and equivalent amount of electricity being generated through operation of grid-connected predominantly fossil fuel based power plants and addition of new generation sources. Both alternatives are in compliance with the laws and regulations of India and might be considered as baseline scenarios. However, as discussed below (in section 4.6.3), the project without CDM benefits faces barriers in implementation.

The approved baseline methodology has been correctly applied to identify a complete list of realistic and credible baseline scenarios, and the identified baseline scenario most reasonably represents what would occur in the absence of the proposed CDM project activity.

All the assumption and data used by the project participants are listed in the PDD and/or supporting documents. All documentation relevant for establishing the baseline scenario are correctly quoted and interpreted in the PDD /1/. Assumptions and data used in the identification of the baseline scenario are justified appropriately, supported by evidence and can be deemed reasonable. Relevant national and/or sectoral policies and circumstances are considered and listed in the PDD /1/.

#### **4.6.3 Investment analysis**

##### **Choice of approach**

As the project activity generates revenue without CDM and the alternative to the project does not involve investments, the selected benchmark analysis and financial indicator of post-tax equity-IRR is deemed appropriate.

Tariff Policy notified by the RERC /38/ stipulates a debt-equity ratio of 70:30 for financing power projects. In order to obtain loan from financial institutions, project proponent has to commit at least 30% of the project cost. The decision to invest or not to invest is based on the returns generated by the equity investment, represented by the post-tax Equity IRR.

As per Guidance to Investment Analysis /38/ states that required returns on equity is appropriate benchmark for Equity IRR. Therefore the cost of equity is considered appropriate benchmark.

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Accordingly, the post-tax Equity IRR has been considered as the relevant financial indicator for Investment Analysis.

DNV verified that even with 100% equity, the equity-IRR is 9.43%, much below the benchmark.

### Benchmark selection

The project activity being an electricity generation project based on wind energy, which could also be developed by an entity other than the project participant, the benchmark should be based on publicly available data sources /27/. The Tool for demonstration and assessment of additionality /27/ sub step 2b) the require financial/economic analysis to be based on parameters that are standard in the market, considering the specific characteristics of the project type but not linked to the subjective profitability expectation or risk profile of a particular project developer. Accordingly, the cost of equity applicable to the project type has been considered as the benchmark to be compared against post-tax equity-IRR of the project activity.

The Para 15 of CDM EB guidance on assessment of Investment analysis, /29/, *If the benchmark is based on parameters that are standard in the market, the cost of equity should be determined either by: (a) selecting the values provided in Appendix A; or by (b) calculating the cost of equity using best financial practices, based on data sources which can be clearly validated by the DOE, while properly justifying all underlying factors*". Accordingly, the project participant has chosen option (a) for calculating cost of equity benchmark.

The rating of Indian bonds as on 31 March 2011 was Moody's Baa3 /39/, which was the rating applicable at the time of decision making on 5 May 2011 /4/. The default value for the expected return on equity specified in Appendix to CDM EB guidance on assessment of Investment analysis /29/, for Indian bonds with Baa3 rating is 11.75% /29/ for Group 1. Accordingly, PP has selected 11.75% as the default value for the expected return on equity, since the project activity falls under Group 1, Energy Industries.

As per para 7 of the appendix A of CDM EB guidance on assessment of Investment analysis /29/, *"in situations where an investment analysis is carried out in nominal terms, project participants can convert the real term values provided in the table below to nominal values by adding the inflation rate. The inflation rate shall be obtained from the inflation forecast of the central bank of the host country for the duration of the crediting period"*.

The inflation rate forecasted in the report of Reserve Bank of India (RBI) – "Survey of professional forecasters: Results of the 14<sup>th</sup> round (Q3: 2010-11)" /42/, the annual average percentage change over the next 10 years for wholesale consumer index (WPI) inflation is 5.4 and that for consumer price index (CPI) is 6.4. Considering the 10 year crediting period for the project activity, PP has selected the 10 year inflation rate of 5.40%, based on data published by RBI. DNV verified that the referred report is the latest data available at the time of decision making, the next report of RBI was published on 25 May 2011.

The benchmark of 17.78% has been calculated as per "Estimating cost of capital using Gorden model" /43/.

Nominal Benchmark =  $\{(1 + \text{Real Benchmark}) * (1 + \text{Expected Inflation Rate}) - 1\}$

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$$= \{(1+11.75\%)*(1+5.4\%) - 1\}$$

$$= 17.78\%$$

The benchmark calculation has been evidenced and all input parameters and calculations have been verified by DNV to be correct /15/. The benchmark identified to compare the financial attractiveness of the project activity has been verified and found to be appropriate.

**Input parameters**

The investment analysis has been performed for 20 years, which is the expected life time of the project activity /2/ and the input parameters considered are investment cost, annual operation and maintenance costs, income tax and revenue from power generation.

The assumptions used in the investment analysis are deemed appropriate and the values were verified/cross-checked from the documents shown in the following table.

<b>Inputs values</b>	<b>Value used for financial analysis</b>	<b>Documents verified/cross-checked</b>
Total investment cost of 25 WEGs of 800 kW each	INR 1 032.8 million (INR 51.64 million/MW)	The investment cost of INR 1 032.8 million was verified from the DPR of 28 April 2011 /3/. In response to the CL 3 raised by DNV, PP clarified that since the project is executed by the PP itself, they have estimated the investment cost on based on input costs, without considering profit margins. The project cost was cross checked against the loan application submitted to IDFC on 23 May 2011 /11/ and the loan sanction letter of IDFC on 14 July 2011 /12/ as INR 1 032.8 million. Further, the investment cost was also cross checked against the 16 July 2009 tariff order /38/ of Rajasthan Electricity Regulatory Commission (RERC), which has taken INR 52.5/MW for calculation of tariff. This works out to INR 1 050 for the 20 MW, that is higher than the project cost. The RERC tariff orders of 2010 and 2011 do not specify the investment cost, but adjusted the tariff (INR 4.28/kWh in 2009 to INR 4.22/kWh in 2011) based on the average price index of steel and cement /38/. Thus DNV consider the investment cost to be reasonable.
Electricity Tariff	fixed tariff of INR 4.22/kWh without any escalation for 20 years	The tariff of INR 4.22/kWh was verified from the DPR of 28 April 2011 /3/, which was calculated by PP based on the tariff indexation formula stated in 2009 RERC tariff order. This was cross checked against the RERC tariff order of 5 May 2011 /38/. The tariff of 4.22 INR/kWh for 20 years applied for the financial analysis is justified.
Plant load factor	19.5%	The PLF of 19.5 % was verified from the report of third party consultant M/s True Wind International Certification /8/. The consultant has estimated PLF of

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		<p>19.5% with 50% probability, 18.75% with 75% probability and 20.25% with 25% probability, with final conclusion that estimated PLF of the project activity is 19.5%. PP has checked the sensitivity of the PLF of 18.75% and 20.25% on IRR and concluded that even with PLF of 20.25%, benchmark is not crossed. The selected PLF is in line with the <i>Guidance on reporting and validation of PLF</i> /31/.</p> <p>DNV also cross checked the PLF of the recently registered projects in Rajasthan; Project no. 4942: 19.47%, project no. 4679: 19.43% and project no. 5186: 20.07%, which is comparable with PLF of the project activity /48/. Further, 2009 tariff order of RERC has considered a PLF of 21% for tariff calculation, though the same order states that capacity utilization in the state ranges from 18-20% /38/. The sensitivity analysis shows that the PLF is crossed only with a benchmark of 24.61% increase in PLF. Thus the PLF considered is reasonable</p>
Operation and maintenance cost	1.3% of the total investment cost from 2 <sup>nd</sup> year with an annual escalation of 6%	The O&M cost is based on the EIL's DPR /3/, according to which no charges are payable for the 1 <sup>st</sup> year, 1.3% of the investment cost for the 2 <sup>nd</sup> year with 6% yearly escalation. The O&M cost was crosschecked against the RERC tariff order of 2009 /38/, which considered the normative O&M cost of 1.25%. The value considered by RERC is marginally lower than the value considered for investment analysis, but has no material impact on investment analysis as discussed in sensitivity analysis /14/.
Insurance	0.12% of the total investment cost	The insurance cost of 0.12% of the total investment cost was verified from the DPR /3/. The insurance cost is very small and its impact on the IRR is marginal. DNV verified that even if insurance cost is not considered, that does not change the outcome of the investment analysis.
Debt: equity ratio	70:30	The debt: equity ratio of 70:30 was verified from the detailed project report /3/ dated 28 April 2011 and the same was available with the investors at the time of decision to proceed with the project on 5 May 2011 /4/. The debt: equity ratio was cross checked against the loan sanction letter from IDFC dated 14 July 2011 /12/.
Interest rate on loan	12.5%	The interest rate on the term loan (12.5%) was verified from the detailed project report /3/. The interest rate was cross checked from the Power Finance Corporation's circular /44/ on lending rates dated 13

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		May 2011, that prescribes an interest rate of 12.75% for the generation projects of private sector borrowers, but allows a rebate of 0.25% for renewable energy projects (i.e. 12.5%). The loan sanction letter from IDFC dated 14 July 2011 /12/ specifies the interest rate of 12.57% (benchmark lending rate of IDFC 9.57% + spread of 3%). The marginal difference in the actual interest rate has no material impact on the additionality since IRR will come down to 9.34% from 9.4% with the actual interest rate.
Loan tenure	10 years	The loan repayment period of 10 years was verified from the detailed project report /3/. The loan tenure was cross checked against the loan sanction letter from IDFC /12/, which provides a 10 year repayment period with 40 quarterly payments. DNV consider the loan tenure of 10 years is appropriate.
Depreciation & salvage value	Straight line depreciation was considered in line with the prevailing national regulation and the residual value of 10% is accounted during the 20 <sup>th</sup> year.	The straight line depreciation and salvage values are verified from the detailed project report /3/ and cross-checked against the Indian Income Tax Act 1961 /41/. Residual value (10% of the total investment cost) has been accounted during the 20 <sup>th</sup> year. Since the land for the project activity is leased out, its cost is not included in the total investment cost; thus not added back during last year. The depreciation rate and salvage value considered for financial analysis is appropriate.
Incentives and tax benefits	Accelerated depreciation @ 80% as per Appendix I and 10 year tax holiday under 80 IA of income tax act	The accelerated depreciation rate applicable for the renewable energy projects and 10 year tax holiday is claimed by PP as per Indian Income Tax Act 1961 /41/. The incentives and tax benefits considered for financial analysis is appropriate.
Working capital	O&M cost for 3 months and invoice amount electricity supplied to the grid for one month	The working capital requirement is verified from the DPR of 28 April 2011 /3/. The amount has been added back in the final year cash flow /14/. The RERC order of 2009 /38/ has considered working capital requirement of wind projects: O&M charges of one month and receivables of 2 months. DNV has checked that even after considering no working capital for the project, the equity IRR for the project is much below the benchmark applied for the project.
Taxes	The income tax @ 33.22%, minimum alternative tax @	The income tax and service tax rates were verified from the detailed project report /3/ and cross-checked against the Indian Income Tax Act 1961 /41/.

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	20.48% and service tax of 10.3% on O&M charges has been considered	
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Furthermore, DNV cross-checked the project cost of INR 51.64 million/MW from the recently registered projects in Rajasthan, which has similar climatic and geographical conditions and tariff structure: INR 60.5 million/MW for Cepco wind power project in Rajasthan, (Registration no. 4942), INR 59.13 million/MW for Kohinoor Wind Power Project in Rajasthan (Registration no. 4679) and 59.32 million/MW for Vaayu India Wind Power Project in Jaisalmer, Rajasthan (Registration no. 5186) /48/. Thus the project cost is lower than the cost of other similar projects.

In line with the Guideline on Investment Analysis, /29/, which states the “*Input values used in all investment analysis should be valid and applicable at the time of the investment decision taken by the project participant*”, DNV verified the input parameters to be valid at the time of decision making based on the above mentioned documents.

### Calculation and conclusion

Based on the input parameters stated above, the post-tax equity-IRR without CDM revenues has been calculated to be 9.4%, which is lower than the applied benchmark of 17.78% (post-tax). The IRR calculations were provided in a spreadsheet /14/. The calculation was verified by DNV and has been found to be correct.

### Sensitivity analysis

A sensitivity analysis has been performed in order to check the robustness of the financial analysis for reasonable variations in parameters contributing more than 20% to the project costs or project revenues. The values were varied till the benchmark was reached and the likelihood for that to happen was assessed. No significant positive correlations between the parameters are anticipated.

a) **Project cost:** The equity-IRR touches the benchmark with a 14.81% decrease in the project cost. The project cost of INR 51.64 million/MW is 12.7% lower than the cost of INR 59.13 million/MW for Kohinoor Wind Power Project in Rajasthan, lowest among the projects from Rajasthan stated above /48/. The actual cost incurred by Enercon (India) Limited without including normal profit margins, certified by the chartered accountants Deloitte Haskins & Sells is INR 1 006.1 million. This has been verified from the letter addressed by Deloitte Haskins & Sells dated 14 December 2011, to the financier of the project IDFC /20/. The actual project cost is 2.6% lower than the cost applied for financial analysis. Thus the reduction in project cost by 14.81% is unlikely.

b) **Plant load factor:** The equity-IRR touches the benchmark with a PLF of 24.61% (26.2% increase in electricity generation). The plant load factor of 19.5% considered in the financial analysis is based on the PLF determined by True Wind International Certification /8/, the third party consultant. The highest possible PLF with a 10% probability estimated by the third party consultant is 20.74%. Thus, 26.2% increase in electricity generation (PLF of 24.61%) is deemed unlikely.

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c) **Tariff:** The equity-IRR crosses the benchmark if the tariff increases by 26.27%. The tariff is fixed at INR 4.22/kWh without any escalation for 20 years, as verified from the PPAs /13/ and RERC tariff order /38/. Thus the increase in tariff by 26.2% is unlikely.

d) **Operation and maintenance cost:** It has been verified that even with O&M cost of 0%, the equity-IRR improves only to 14.16%, which is lower than the benchmark. Since the operation and maintenance quality is essential to achieve the objectives of the project activity, reduction in O&M costs to 0% is not possible.

The spreadsheet for financial analysis including the assumptions for the sensitivity analysis /14/ has been verified by DNV and no material mistakes were found. The sensitivity analysis shows that even with likely variations of the key input parameters, the post-tax equity-IRR of the proposed project is lower than the benchmark. In conclusion, the assessment of the arguments presented is deemed to sufficiently demonstrate that the project is not financially attractive.

#### 4.6.4 Common practice analysis

The generation of wind energy depends on local or region specific wind patterns and the tariff regime prevalent in the region/state. In India, tariff determination for electricity generation, supply, distribution, transmission, wheeling, purchase and procurement of power is the responsibility of the individual State Electricity Regulatory Commissions. Thus, the regulatory regime clearly differs from one state of India to another. Similarly, each state has its Renewable Energy Development Agency, with different policies for establishment, development and licensing procedures for renewable energy projects. Thus, in India, the regulatory environment for the power sector in general and renewable energy in particular is governed by the policies, regulations and tariff orders implemented at the state level. Investment policies and climate, incentive schemes, and guidelines, differ from state to state, thus the conditions prevailing across the entire country is not homogeneous. Thus the policies and tariff regime is consistent throughout the state of Rajasthan. Since the project activity is located in the state of Rajasthan and exports power to the Rajasthan state grid, the selected geographical boundary of the state of Rajasthan is considered to be appropriate for common practice analysis. All the wind power projects in private sector, with capacity of more than 15 MW size (comparable size) in state of Rajasthan were considered for common practice analysis. The wind projects set up under government sector were excluded since they have a different investment objective. Further, large scale bundled projects consisting of individual projects with capacities of less than 15 MW were also excluded since the investment risk profile of single private investor setting up a large scale project is different from the large scale bundled wind power projects. DNV considers the selection of wind projects of 15 MW and above set up by a single private sector investor for the common practice analysis as appropriate. It has been verified by DNV from the wind power directory 2010 /46/, that the cumulative installed capacity of the individual wind projects with more than 15 MW in private sector is 299.3 MW and this entire 299.3 MW capacity is under CDM pipeline which has been verified from the UNFCCC website (web-links for all these projects are included in PDD under common practice analysis section). A list of these projects with CDM links has been included in section B.5 of the PDD and same has been verified by DNV /1/. Hence it can be concluded that no other similar projects are available in state of Rajasthan, which needs to be considered for common practice analysis.



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In conclusion, it is DNV's opinion that it has been correctly demonstrated that the project activity does not represent a common practice and thus the emission reductions achieved by the project are additional to any would happen in absence of the project.

From the above discussion it can be concluded that the project is not a business-as-usual scenario and thus additional.

## 4.7 Monitoring

The project monitoring plan is in compliance with the monitoring methodology ACM0002 version 12.2.0. /26/. The monitoring plan will give opportunity for real measurement of emission reductions achieved. The methodology /26/ do not require renewable projects such as wind projects to consider leakage and project emissions. Since the project is a wind energy generation activity, no indicators have been defined regarding project emissions. Leakage accounting has not been considered for the project since the renewable energy technology equipment used is new equipment and not transferred from another activity.

It is DNV's opinion, that the project participant is able to implement the monitoring plan. As required by DNA of India, PP is committed to spend 2% percentage of the CERs revenue every year for sustainable development including society/community development. The monitorable action plan for the same has been included in section B.7.2 of the PDD /1/.

### 4.7.1 Parameters determined *ex-ante*

The combined margin emission factor (CM) for the Integrated Northern, Eastern, Western and North-Eastern (NEWNE) regional grid of India has been calculated as 0.94881 tCO<sub>2</sub>e/MWh /35/ and is fixed *ex-ante* for the entire fixed crediting period. The CM has been sourced from data of Central Electricity Authority (CEA) of the Ministry of Power, Government of India /35/. CEA has published a database of carbon dioxide emission factors for the power sector in India based on detailed authentic information obtained from all operating power stations in the country. This CO<sub>2</sub> baseline database provides information about the operating margin (OM) and build margin (BM) factors of all the regional electricity grids in India. DNV confirms that the database is an official publication of the Government of India for the purpose of CDM baselines /35/. The emission factors for coal and lignite were based on the values provided in India's Initial National Communication under the UNFCCC (Ministry of Environment & Forests, 2004) /49/. For all other fuels, default emission factors were derived from the IPCC 2006 Guidelines . In line with the "Tool to calculate the grid emission factor for an electricity system" /28/, the low end values of the 95% confidence intervals indicated by IPCC were used.

The OM sourced from the CEA database is calculated *ex-ante* using the simple OM approach based on the generation weighted average emissions per electricity unit over a three year period of 2007-08, 2008-09 and 2009-10 /35/. BM is calculated *ex-ante* based on the 20% most recent capacity additions in the NEWNE grid of India based on net generation for the year 2009-10 /35/. The OM has been determined to be 0.99431 tCO<sub>2</sub>e/MWh and the BM to be 0.81231 tCO<sub>2</sub>e/MWh /35/. DNV confirms that the database version 6 used to calculate the combined margin emission factor was the latest database available at the time of start of validation and the combined margin emission factor for the NEWNE grid of India is fixed *ex-ante* for the entire fixed crediting period.

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DNV has verified the value used against the sources and concluded that the data used are appropriate and conservative.

#### 4.7.2 Parameters monitored ex-post

The net electricity exported will be calculated from the readings of export and import indicated by the one set of Discom meter (main and check meter) at the Narwa substation and the apportioning of the electricity import and export by the WEGs based on the electricity generation recorded by the meters of the individual WEG local control stations (LCS). The meter reading at the sub-station meters will be taken jointly by the representatives of Enercon and distribution company (Discom) in the form of Joint Meter Reading.

The Enercon wind farm at Tinwari consists of wind turbines installed by the project proponent and wind turbines installed by other WEG owners, connected to the grid through the same meters in the substation. Hence the amount of electricity exported/imported to the NEWNE grid by the WEGs of individual owners is calculated by Enercon India limited based on the apportioning formulae certified by Discom and reflects in the form of energy break up report, which is also certified by officials of Discom. Based on this energy break up report, project proponents raise sales invoices to the distribution companies on monthly basis. Hence the net electricity supplied to the grid figures as provided in the energy breakup report will be considered for the emission reduction calculations and same will be cross checked against the sales invoices raised to the state electricity board.

The net electricity supplied by the project activity to the NEWNE grid will be calculated as:

Electricity exported by each WEG is apportioned on the basis of electricity generated and recorded at the controller of each WEG and the electricity exported at the main meter and mentioned in the JMR.

Electricity Export to the grid by the Project activity,

$$EG_{Export,y} = \frac{EG_{JMR,Export} * \sum EG_{Controller,j}}{\sum EG_{Controller,i}^{17}} \dots\dots\dots(1)$$

Electricity Import from the grid by the Project activity,

$$EG_{Import,y} = \frac{EG_{JMR,Import} * \sum EG_{Controller,j}}{\sum EG_{Controller,i}} \dots\dots\dots(2)$$

Wherein,

$\sum EG_{Controller, project,j}$  = Summation of net electricity generation (Gross Export – Gross Import) by all the WEGs (j number of WEGs) of project activity, as measured at the controller (LCS meter) at project site.

$\sum EG_{Controller, project,i}^{17}$  = Summation of net electricity generation (Gross Export – Gross Import) by all the WEGs (i number of WEGs) of project activity or non project activity, as measured at the controller (LCS meter) at project site.

$EG_{JMR,Export}$  = Electricity export by project and non project WEGs recorded at respective billing meters located at Discom sub-station

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 VALIDATION REPORT
 

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$EG_{JMR,Import} =$  Electricity import by project and non project WEGs recorded at respective billing meters located at Discom sub-station

The net electricity supplied to grid by 25 WEGs of the project activity is calculated as the difference of equation (1) & (2),

$$EG_{Facility,y} = EG_{Export,y} - EG_{Import,y}$$

The main and check meter installed at the substation for will be sealed by distribution company and will be calibrated annually.

The main meter readings of import and export are apportioned based upon the LCS meter readings of the individual WEG's to compute net electricity supplied from individual WEG's. The LCS meter readings are archived electronically on continuous basis. Joint meter reading at the Narwa substation is noted each month. The cumulative LCS meter reading for each month is used for purpose of allocation of net electricity supplied to the grid from the project activity.

The LCS meters do not require calibration as the energy readings of electricity generated at the LCS meter is cross verified by the energy calculated by inverting system installed in the WEG's. In case there is any mismatch in the energy values recorded by the LCS meter and the energy generation calculated by the inverting system, the WEG will stop working and generate the error report. The WEG can be restarted only after the defective LCS meter is replaced.

#### 4.7.3 Management system and quality assurance

The main and check electricity meters of 0.2S class accuracy will be used. Monthly Joint Meter Readings will be recorded at substation by Discom in the presence of Enercon. Maintenance and calibration of electricity meters will be calibrated once in a year, which has been verified from the PPAs /13/.

EIL is responsible for the complete operation and maintenance of the power plant. EIL is an ISO 9001:2000 certified quality management system from Germanischer Lloyd. The meter readings are noted in the form of joint meter report and are signed jointly by the representatives of Enercon and the Discom.

The accuracy of monitoring parameter is ensured by adhering to the calibration and testing of the metering equipment once each year. The project proponent also maintains the records of daily generation report and joint meter report.

The responsibilities and authorities for project management, procedures for monitoring and reporting, and QA/QC procedures have been established and formalized. The data monitored under the monitoring plan would be kept for 2 years after the end of crediting period or till the last issuance of CERs for this project activity, whichever occurs later.

#### 4.8 Algorithms and/or formulae used to determine emission reductions

The calculations and formulae as addressed in the approved baseline and monitoring methodology ACM0002 (version 12.2.0) have been applied. All aspects related to the direct and indirect GHG emissions as relevant to the project activity have been addressed and are presented in a transparent manner, in line with the approved methodology.

VALIDATION REPORT

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Baseline emission: The combined margin emission coefficient for the NEWNE grid of India is 0.94881 tCO<sub>2</sub>e/MWh, has been derived from Central Electricity Authority data version 6 /35/. The calculation of CM has been discussed in section 4.7.1 of this report.

The GHG emission reduction due to the project activity has been calculated as the product of net electricity exported to the grid and the combined margin grid emission factor. The electricity supplied to the grid will be calculated based on the meter readings of the main electricity meter at the sub-station and the individual WEG LCS meters. The details of the calculation of net electricity exported from the meter readings are discussed in the previous section.

The baseline emission estimate can be replicated using the data and parameter values referenced to in the PDD. The data sources mentioned have been verified by DNV. The emissions sources not foreseen by the methodology is unlikely to contribute more than 1% of the estimated emission reductions of the project.

Project emission: Project emissions are not applicable for the wind energy generators.

Leakage: It has been addressed and verified by DNV that no transfer of equipment has taken place in the project activity, thus leakage is not involved in the project activity as per the methodology.

Based on the calculations and results presented in the sections above the implementation of the project activity will result in an average *ex-ante* estimation of emission reduction conservatively calculated to be 32 415 tCO<sub>2</sub>e per year for the selected fixed crediting period.

All assumptions and data used by the project participants are listed in the PDD and/or supporting documents, including their references and sources. All documentation used by the project participants as the basis for assumptions and source of data is correctly quoted and interpreted in the PDD /1/. All values used in the PDD are considered reasonable in the context of the proposed CDM project activity. The baseline methodology has been applied correctly to calculate project emissions, baseline emissions, leakage and emission reductions. All estimates of the baseline, project and leakage emissions can be replicated using the data and parameter values provided in the PDD /1/.

## 4.9 Environmental impacts

As per the Ministry of Environment and Forests (MoEF), notifications of 2006 and 2009 /37/, wind power projects are not covered under any Schedule and thus EIA is not required for the project activity. Thus, the project activity is expected to have only beneficial impacts and no adverse impacts are foreseen. The PPA /13/, capacity allotment from RREC /6/, approval of RREC for power evacuation /7/, land allotment letters /5/ etc. have been provided and verified by DNV.

### 4.10 Comments by local stakeholders

The project participants have conducted stakeholders meeting at the project site on 23 July 2011. The stakeholders were invited through an advertisement in the local newspaper “*Nafa Nuksan*” /17/. The meeting was attended among others by project participant, employees of EIL, and local residents. The copy of the minutes of the stakeholder meeting /18/ and photographs were made available for verification. There were no negative comments from the participants.

## VALIDATION REPORT

DNV considers the local stakeholder consultation carried out adequately.

#### 4.11 Comments by Parties, stakeholders and NGOs

The PDD, version 01 dated 30 July 2011, was made publicly available on the CDM website and Parties, stakeholders and NGOs were through the CDM website invited to provide comments during a 30 days period from 9 August 2011 to 7 September 2011.

<http://cdm.unfccc.int/Projects/Validation/DB/HT3UOBHE7LMYTSPZNF8X6ZF6IMPDTH/view.html>

Six comments were received from stakeholders and is given (in unedited form) in the below text box together with how the project participants responded to these comments. Since the comments 1& 2 and 3&4 are repeated verbatim and the sender is same, these are clubbed together. DNV's assessment on the consideration of the comments in validation is provided below the text box.

S.No.	Comments from Global Stakeholder Process (GSP)	PP's Response
1&2	Stakeholder : sud	
	<p>1) Enercon, in the interest of CDM process should refrain from seeking CDM benefits for their genuinely ineligible projects. Unless it is a fully genuine CDM project Enercon should not seek CDM benefits by cooking up the figures and stories and using DOE's who listen to them and use DOE's to their advantage. Enercon is having good business in selling wind turbines and they should continue doing so instead of messing up CDM process. Enercon should not indulge in practices like in OEM business and spoil CDM process. Offer letters and purchase order copies being shown in Enercon projects are of no value and mostly falsely done to show CDM fulfilment and additionality.</p> <p>DOE to check all original documents and postal and email correspondence to validate the same with proper dates. DOE to check all payments made by clients or Enercon group companies to the turbine supplier to validate the payments are fully made as per purchase orders. Bank statements to be checked directly with the banks. Also a certificate from a reputed chartered accountant firm appointed by the DOE should certify the above in writing to the DOE in confidence.</p> <p>Submitted by: sud</p>	<p>We would like to submit to DOE that as para 6 of "Guidelines on the assessment of investment analysis", EB 62, annex 5, "<i>Input values used in all investment analysis should be valid and applicable at the time of the investment decision taken by the project participant. The DOE is therefore expected to validate the timing of the investment decision and the consistency and appropriateness of the input values with this timing. The DOE should also validate that the listed input values have been consistently applied in all calculations</i>".</p> <p>For the project activity we have considered all the input values used in the investment analysis from the detailed project report prepared by Enercon. PP has submitted all the required documents to DOE to substantiate all the parameters used in investment analysis to justify the additionality of project activity</p>

S.No.	Comments from Global Stakeholder Process (GSP)	PP's Response
3&4	Stakeholder : sud	

## VALIDATION REPORT

<p>&amp;#61558;DOE to write to the party who prepared the DPR/FR which is submitted to the banks and other agencies and the same is verified against the one submitted to the DOE by PP/Consultant.</p> <p>&amp;#61558;DOE must not entertain this project any more if found the DPR/FR is tampered with at any point in time. PP can not give different DPR's and FR's. They must submit only the one given to Banks and other agencies while obtaining loans and decision making time.</p> <p>&amp;#61558;DOE to ensure that the PDD values are consistent and ensure that the CDM project is a genuine project</p> <p>&amp;#61558;DoE to check the Detailed Project Report and Feasibility Report which is submitted to the other agencies and Banks by Project owner and ensure that the values match with the DPR/FR submitted to DoE also.</p> <p>&amp;#61558;Careful study must be done so that the DPR/FR is not in different versions made and submitted with different purposes to different agencies, which is totally unacceptable, illegal and unethical.</p> <p>&amp;#61558;Project owner should show some undertaking letter from bank manager to DoE stating that both DPR's are same. These kinds of letters should not be accepted and entertained by DoE at face value, but must be checked independently. While collecting the DPR/FR from banks and other agencies, all DPR/FR pages should be counter signed by Banks and other agencies so that the real DPR/FR given to other parties by the PP/Consultant is same as the one submitted to DOE.</p> <p>&amp;#61558;DPR/FR values must be probed fully. DOE must take a written undertaking from the PP/Consultant about the list of parties to whom this DPR/FR is submitted and for what purposes. Then DOE should cross check with all the parties and confirm that the same DPR/FR is submitted to all the parties correctly without any changes. DOE must not accept any reports and undertakings from PP/Consultant. DOE must make independent evaluation and use totally different parties without informing the PP or Consultant to cross check the facts.</p>	<ol style="list-style-type: none"> <li>1) PP has submitted the DPR along with the loan documents and all the other relevant documents to DOE to substantiate all the parameters used in investment analysis to justify the additionality of project activity</li> <li>2) All the documents have been submitted to DOE for cross verification.</li> <li>3) Please refer response of above comment.</li> <li>4) PP has submitted all the required documents to DOE to substantiate all the parameters used in investment analysis to justify the additionality of project activity</li> <li>5) Please refer response of above comment.</li> <li>6) PP has submitted the DPR along with the loan documents and all the other relevant documents to DOE to substantiate all the parameters used in investment analysis to justify the additionality of project activity.</li> <li>7) For the project activity we have considered all the input values used in the investment analysis from the detailed project report prepared by Enercon. PP has submitted all the required documents to DOE to substantiate all the parameters used in investment analysis to justify the additionality of project activity.</li> </ol>
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## VALIDATION REPORT

<p>&amp;#61558; Has the PP considered the CDM revenues while envisaging the project? Without CDM the project was not viable, is it right? This project is having a debt component? Then how bankers or lenders gave the loan? Have the bankers or lenders considered the CDM revenues while agreeing to give loan to this projects? If not this project should be rejected right away by DOE by terminating the contract forthwith. If yes, where is the proof? What is the date of the evidence document from bank? Is this document printed now a days or earlier. DOE to independently check the same. If the document is available from Bank it must be checked from all angles so that it is genuine and not forged and date changed by putting back dated. This is normally done, DOE to be aware of this please. Please check the communication the PP had during that time with banks, emails and postal receipts and the weights and dates mentioned on the receipts. Do not believe in courier bills and receipts since these can be cooked up easily. Insist on government owned postal service receipts only. If the project is fully equity project then on what basis the PP has invested full equity in to the project while considering the CDM revenue? DOE to check the same in detail and bring out the facts. Is there any past record of this PP to invest or not to invest at returns what he is talking about in this project? Proper evidences must be reviewed and digged out by the DOE and take decision on the project based on established facts. Do not ask documents from PP, DOE to collect the same from different sources to do independent evaluation.</p> <p>&amp;#61558; How is the base line defined in this project? Is Base line hypothetically defined with no proper evidences and proper justification? In such case, DOE cannot take the base line as suggested by the PDD. Please check that there are real emission reductions beyond the real and factual base line. It may so happen that this project qualifies for no CER's. DOE cannot assume values and things as giving by this PP. Whatever values are considered throughout the project in all documents including the real DPR (not the one prepared for CDM, the one given to the banks and others), they must be validated, verified and double checked. Do not ask PP for DPR. Ask the parties who have been given DPR by the PP. Get directly from the bank and others by each page of the DPR and Feasibility</p>	<p>8) The project activity has been conceived as a CDM project since its inception. In the Board meeting dated 05/05/2011, decision of proposed project was taken by the board members and certified true copy of board resolution has been submitted to DOE. The project start date is 7 May 2011 which is the is the date of official circular issued by the Managing Director of EIL on 7 May 2011, based on the decision of the Board /4/, mandating the concerned departments to take necessary steps for the installation of project activity /21/.. Loan documents have been submitted to DOE for reference.</p> <p>9) Justification of baseline has been provided in PDD.</p>
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## VALIDATION REPORT

<p>report signed. Such document can be considered as a real DPR or FR. UNFCCC CDM process cannot be degraded by fabricating and misinterpreting the project base line and additionality.</p> <p>&amp;#61558;From DOE side which auditor has done marketing and business development for acquiring this business of validating this project? With whom he or she was co-ordinating at PP or CER buyer? The same person who has done the marketing and business development to acquire the business do validation or participate in any manner what so ever in the validation process? One cannot do like that. It is against the accreditation rules and norms followed since ages. DOE should send auditors from different offices or countries to do this validation audit. DOE must take care of impartiality and accreditation rules. Due to the targets set by the DOE managements auditors are doing marketing and meeting clients and giving promises that the project will be taken care. Is it acceptable and fair? This must be stopped. No auditor should do marketing. Only non-auditing staff should do marketing. DOE to ensure the same please.</p> <p>&amp;#61558;If applicable only: Is these machines, equipment was a part of any bundle of CDM activity envisaged and developed earlier. DOE to check the same through independent sources also. Once some bundles are non-additional and getting negative validation from a DOE, PP is rolling out the same project as an individual project which is not a CDM project at all. DOE to verify the same from independent sources and also take undertaking in the form of an affidavit from the PP's that any misrepresentation or false statement with respect this would attract strict legal action from UNFCCC and DOE. Furthermore the registered project must be de-registered in case of any future findings contradicting the submissions made by the project owner.</p> <p>&amp;#61558;DOE to be more careful so that this is a genuine CDM project. What is the exact project cost? The project cost is covering what? Each value considered must be validated with proof. The machinery is second hand purchased or fresh and new from an OEM? In either case DOE to check all the quotations, proposals, purchase orders, invoices, way bills, transport bills, proof of payments like bank statements. DOE to check with banks by way</p>	<p>10) Comment is not directed for PP.</p> <p>11) Project activity is not part of any bundle CDM project. This will also be validated by DOE.</p>
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## VALIDATION REPORT

	<p>of written confirmation the amount transacted, to whom the money is paid, when the money is paid, is the party paid is the correct party as shown in the purchase orders. It may so happen that the values, party names, dates are fabricated and misrepresented in this project. DOE should terminate their contract for this project immediately. This is the only way out to protect the value of CDM process. If the PP is purchasing second hand or second quality equipment and inflating the purchase order values and invoices, this must be probed thoroughly and real values to taken for additionality calculation. Then I'm sure the additionality is not there at all in such a situation.</p> <p>&amp;#61558;Is the project equipment purchased second hand equipment or sourced from cheap foreign sources? If yes, the issue must be probed by DOE since invoices will invariably be inflated and forged. Total project costs mentioned by PP will not be the same as originals. Hence no additionality. These facts must be probed in full by DOE by checking all documents and money transactions along with bank statements and certified accounts by a legally acceptable financial analyst.</p> <p>Submitted by: sud</p>	<p>12) Comment is not directed for PP. Further PP has submitted the DPR along with the loan documents and all the other relevant documents to DOE to substantiate all the parameters used in investment analysis to justify the additionality of project activity</p> <p>13) The equipment purchased is new and therefore for evaluation purpose full technical life of the project activity is considered for additionality. Further the project cost considered is INR 51.64 million. Capital cost was compared with the WTGs of the project proponents such as Cepco Industries Pvt. Ltd., Kohinoor planet constructions Pvt. Ltd., Vish Wind, Vaayu India Power corporation pvt. Ltd. etc. who are making use of the same make WTGs. The average capital cost considered by other developers was INR 59.57 million, which is lower than the capital cost considered by PP.</p>
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S.No.	Comments from Global Stakeholder Process (GSP)	PP's Response
5	Stakeholder : sud	

## VALIDATION REPORT

	<p>Non de-bundling nature of the project is not justified properly in the section A.4.5. DOE has to validate whether there is no registered project with the PP nor there is an application for registration of any project. PP doesn't confirm in the PDD that there is no application for registration.</p> <p>2. Operating margin, build margin, combined margin is not as per "Tool for emission factor for an electricity system". The tool is not used at all. Pls. calculate combined margin as per the tool. Pls. justify that grid emission factor calculated is as per CEA data latest version.</p> <p>3. The date of investment decision is not provided transparently. It should be used generously in the PDD for clarity.</p> <p>4. How risk free return, market return and beta is calculated is not documented in the PDD. How many companies included in the calculation of beta.</p> <p>5. The application of MAT which is based on tax holiday while calculating WACC is not appropriate.</p> <p>6. The project cost of the project should be based on offer and not on purchase</p>	<p>1) PP has used ACM0002 methodology hence there is no question regarding the de bundling of project activity.</p> <p>2) Operating margin, build margin, combined margin has been calculated as per the latest "Tool for emission factor for an electricity system", version 02.2.1.</p> <p>3) Date of investment decision has been considered as 05/05/2011, being the date of Board Resolution. As per the CDM –PDD guideline on starting date.</p> <p>"The starting date of a CDM project activity is the earliest of the date(s) on which the implementation or construction or real action of a project activity begins/has begun". In the Board meeting dated 05/05/2011, decision of proposed project was taken by the board members and therefore PP has been selected as the project start date.</p> <p>4) PP has calculated the benchmark as per the default value of Cost of equity as per the latest tool for "tool for demonstration and assessment of additionality" version 5.2.</p> <p>Detailed calculation has been submitted to DOE for verification and same has been included in PDD. PP has used all the parameter available at the time of investment decision &amp; submitted the certified documents to DOE for cross verification and project activity is additional</p> <p>5) PP has not used the WACC as benchmark approach.</p> <p>6) Project cost has been taken from detailed project report. The cost used for the investment analysis is the cost</p>
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## VALIDATION REPORT

	<p>order or tariff order.</p> <p>7. O&amp;M charges considered are on higher side. Pls. clarify.</p> <p>8. Justification of tariff rate is not provided.</p>	<p>of the project after excluding the profit margin on each WEGs and same cost of the project has been submitted by PP to bank for financing the loan which can be verified from the loan application letter. Further average cost of supply of one WEG (Enercon make E-53) to other customer by Enercon in the state of Rajasthan is INR 59.57 million/MW as available in the public domain (please refer the attached sheet of projects for purchase order cost with web-links for reference), while for the project activity the project is INR 51.64 Million/MW (13.31% lower than the WEGs cost supplied to other customers) and same cost has been selected for investment analysis. PP has submitted the loan application &amp; loan sanction document to DOE to cross verify the project cost used in DPR.</p> <p>7) O&amp;M cost has been also taken from detailed project report. From the available documents in public domain the average cost of Operation &amp; Maintenance for the Enercon make E-53 WEGs in the state of Rajasthan is 1.4% of capital cost with average escalation of 6% per annum on O&amp;M charges (please refer the attached sheet of projects for O&amp;M cost references with web-links). For the project activity PP has taken the O&amp;M cost of 1.3% of capital cost which is comparable w.r.t. same type of WEGs. The PP has done sensitivity analysis on O&amp;M cost in revised PDD and presented to DOE.</p> <p>8) Rajasthan state electricity commission has fixed the tariff for the period of 20 years (Lifetime) for the wind power projects. The tariff for the entire life of the project activity is fixed a Rs. 4.22 per Unit. PP has submitted the copy of tariff order to DOE for reference.</p> <p>9) According to the "Guidelines for the reporting and validation of Plant load factors", EB 48, Annex 11, the plant</p>
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## VALIDATION REPORT

	<p>9. Justification of PLF is not provided. There is a huge difference in project. It should be based on guideline as provided by latest EB report. Pls. clarify. DOE has to validate this.</p> <p>10. A notification has to be sent to government of India and EB stating the starting of the project. It is not clear from the PDD whether it is done since this aspect is not provided in the PDD. Pls. clarify.</p> <p>11. 12. UNFCCC has to personally check the project thoroughly. Because more loopholes are there in the proposed project.</p> <p>13. The project proponent and consultants are playing a game with UNFCCC, please take more care of this project, this is my sincere request to DOE.</p> <p>14. DOE has more responsibility to take-up this type of project, if DOE continues this project they will face more problem in future.</p> <p>Submitted by: sud</p>	<p>load factor shall be defined ex-ante in the CDM-PDD as determined by a third party contracted by the project participants. PP has contracted third party for the PLF estimation and same values has been used for investment analysis</p> <p>10) The PP has intimated UNFCCC about the project activity initiative within six months of the start date on 7th July 2011 and received the acknowledgement from UNFCCC on the same day. Copy of acknowledgment mail has been submitted to DOE for verification and same can be cross checked from UNFCCC website.</p> <p>11) Comment is not directed to PP.</p> <p>12) Comment is not directed to PP.</p> <p>13) Comment is not directed to PP.</p> <p>14) Comment is not directed to PP.</p>
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S.No.	Comments from Global Stakeholder Process (GSP)	PP's Response
6	Stakeholder : Karthikeyan	

## VALIDATION REPORT

	<p>This is a very peculiar project. Enercon India is the manufacturer of Wind mills and it is selling the windmills to itself. And that too at a cost of Rs.59.34 mn./MW while for outsiders the cost is much less. DOE should look at other projects recently webhosted based on Enercon machines. When the finished product is sold to itself can there be a cost?</p> <p>The story does not end there. It charges O&amp;M charges at Rs.7.7 lakhs for maintaining its own assets and subjects it to 6% escalation for itself while it charges 5% to others.</p> <p>Further, the profit from windmill is treated separately and subjected to tax at MAT rate.</p> <p>Stock transfer is treated as sale and the PDD claims that the banks have financed 70% of the asset value. What is the asset value? Have the banks become so naïve to finance such transaction? Did the banks finance sundry debtors or fixed assets?</p> <p>There cannot be more funny projects than this</p> <p>This PDD is a case study by itself and it should be rejected outright. It is incorrect from all angles. Submitted by: Karthikeyan which is comparable w.r.t. same type of WEGs. The PP has done sensitivity analysis on O&amp;M cost in revised PDD and presented to DOE.</p>	<p>For the project activity we have considered all the input values used in the investment analysis from the detailed project report prepared by Enercon. Following are the main parameters used for calculation of IRR:-</p> <p><b>a) <u>Project Cost:</u></b></p> <p>Project cost has been taken from detailed project report. The cost used for the investment analysis is the cost of the project after excluding the profit margin on each WEGs and same cost of the project has been submitted by PP to bank for financing the loan which can be verified from the loan application letter. Further average cost of supply of one WEG (Enercon make E-53) to other customer by Enercon in the state of Rajasthan is INR 59.57 million/MW as available in the public domain while for the project activity the project is INR 51.64 Million/MW (12.7% lower than the WEGs cost supplied to other customers) which is lower value and same cost has been selected for investment analysis.</p> <p>PP has submitted the loan application &amp; loan sanction document to DOE to cross verify the project cost used in DPR.</p> <p><b>b) <u>O&amp;M Cost</u></b></p> <p>O&amp;M cost has been also taken from detailed project report. From the available documents in public domain the average cost of Operation &amp; Maintenance for the Enercon make E-53 WEGs in the state of Rajasthan is 1.4% of capital cost with average escalation of 6% per annum on O&amp;M charges (please refer the attached sheet of projects for O&amp;M cost references with web-links). For the project activity PP has taken the O&amp;M cost of 1.3% of capital cost which is comparable w.r.t. same type of WEGs. The PP has done sensitivity analysis on O&amp;M cost in revised PDD and presented to DOE.</p> <p><b>c) <u>Means of finance:-</u></b></p> <p>Project is funded through the mix of debt &amp; equity (70:30). PP has already applied for the loan and same has been approved by the financial institution. PP has submitted the loan application &amp; loan sanction document to DOE to cross verify the financial structure of the project as mentioned in the DPR.</p>
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## VALIDATION REPORT

		<p><b>d) <u>Accelerated Deprecation:-</u></b></p> <p>Accelerated Depreciation for the project is considered as 80% . As per income tax act regulations, additional 20% was allowed for manufacturing companies. There is bit of ambiguity on application of 20% additional depreciation as it is applicable only in case of manufacturing of specific articles. Conservatively PP has considered 100% accelerated depreciation for the project activity.</p> <p><b>e) <u>PLF:-</u></b></p> <p>According to the “Guidelines for the reporting and validation of Plant load factors”, EB 48, Annex 11, <i>the plant load factor shall be defined ex-ante in the CDM-PDD as determined by a third party contracted by the project participants</i>. PP has contracted third party for the PLF estimation and same values has been used for investment analysis.</p> <p><b>f) <u>TAX calculation:-</u></b></p> <p>All the tax calculations have been done in accordance with the income tax act &amp; rules. Reference of same has been submitted to DOE for verification.</p>
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***How DNV has considered the comment received in its validation:***

The CDM validation of the project was carried out as per the UNFCCC procedures and Validation and Verification Manual (VVM) version 1.2, EB 55, Annex 1. The validation team members have declared that they do not have any conflict interest in the project as per the accreditation requirement of DOEs. Since the project is being implemented by EIL itself, no purchase order is available. The investment cost was crosschecked against the cost considered in 2009 tariff order of RERC tariff order. Further, the investment cost checked from the debt: equity ratio and loan amount stated in the loan sanction letter from IDFC. It was further compared with investment cost of other CDM projects in Rajasthan and found it to be reasonable. The DPR was prepared by EIL. The input parameters were validated as per the Guidance on Assessment of Investment Analysis, version 5 and the requirements of VVM, which is detailed in section 4.6.3 of the report. The input parameters used for financial analysis were cross-checked against third party or publicly available sources, as per the requirements. The CDM consideration for the project activity was verified from the emails sent to the UNFCCC and MoEF, the DNA of India. The intimation to UNFCCC was also verified from the web site of UNFCCC. The CDM consideration of the project was evaluated as per the requirements of Guidelines on the demonstration and assessment of the prior consideration of CDM, version 4 and described in section 4.6.1 of the report. The entire project is located at Jodhpur district and owned by EIL, thus not a bundled project. The baseline of the project was validated as per the requirement of the methodology ACM0002 version 12.2.0 applied for the project. During site visit, it was verified that the equipment used

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are all new. The investment decision was taken during the EIL Board meeting on 5 May 2011. The OM, BM and CM are calculated as per the Tool for emission factor for an electricity system and sourced from data published by CEA. The benchmark for investment analysis is calculated as per the Guidance on Assessment of Investment Analysis, version 5 and explained in section 4.6 of the report. It is our opinion that the other issues raised by the stakeholders have been adequately addressed by DNV as described in the sections above and the validation protocol.

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## APPENDIX A

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### CDM VALIDATION PROTOCOL



**Table 1 Mandatory requirements for Clean Development Mechanism (CDM) project activities**

Requirement	Reference	Conclusion
<b>About Parties</b>		
1. The project shall assist Parties included in Annex I in achieving compliance with part of their emission reduction commitment under Art. 3.	Kyoto Protocol Art.12.2	<del>CL1</del>
2. The project shall assist non-Annex I Parties in contributing to the ultimate objective of the UNFCCC.	Kyoto Protocol Art.12.2.	<b>OK</b>
3. The project shall have the written approval of voluntary participation from the designated national authority of each Party involved.	Kyoto Protocol Art. 12.5a, CDM Modalities and Procedures §40a	<del>CL1</del>
4. The project shall assist non-Annex I Parties in achieving sustainable development and shall have obtained confirmation by the host country thereof.	Kyoto Protocol Art. 12.2, CDM Modalities and Procedures §40a	OK
5. In case public funding from Parties included in Annex I is used for the project activity, these Parties shall provide an affirmation that such funding does not result in a diversion of official development assistance and is separate from and is not counted towards the financial obligations of these Parties.	Decision 17/CP.7, CDM Modalities and Procedures Appendix B, § 2	OK
6. Parties participating in the CDM shall designate a national authority for the CDM.	CDM Modalities and Procedures §29	OK
7. The host Party and the participating Annex I Party shall be a Party to the Kyoto Protocol.	CDM Modalities §30/31a	OK
8. The participating Annex I Party's assigned amount shall have been calculated and recorded.	CDM Modalities and Procedures §31b	OK
9. The participating Annex I Party shall have in place a national system for estimating GHG emissions and a national registry in accordance with Kyoto Protocol Article 5 and 7.	CDM Modalities and Procedures §31b	OK
<b>About additionality</b>		
10. Reduction in GHG emissions shall be additional to any that would occur in the absence of the project activity, i.e. a CDM project activity is additional if anthropogenic emissions of greenhouse gases by sources are reduced below those	Kyoto Protocol Art. 12.5c, CDM Modalities and Procedures §43	<del>CL1</del> <del>CL2</del> <del>CL3</del>

Requirement	Reference	Conclusion
that would have occurred in the absence of the registered CDM project activity.		<del>CL</del> 4
<b>About forecast emission reductions and environmental impacts</b>		
11. The emission reductions shall be real, measurable and give long-term benefits related to the mitigation of climate change.	Kyoto Protocol Art. 12.5b	OK
<b>For large-scale projects only</b>		
12. Documentation on the analysis of the environmental impacts of the project activity, including transboundary impacts, shall be submitted, and, if those impacts are considered significant by the project participants or the Host Party, an environmental impact assessment in accordance with procedures as required by the Host Party shall be carried out.	CDM Modalities and Procedures §37c	OK
<b>About stakeholder involvement</b>		
13. Comments by local stakeholders shall be invited, a summary of these provided and how due account was taken of any comments received.	CDM Modalities and Procedures §37b	OK
14. Parties, stakeholders and UNFCCC accredited NGOs shall have been invited to comment on the validation requirements for minimum 30 days, and the project design document and comments have been made publicly available.	CDM Modalities and Procedures §40	OK
<b>Other</b>		
15. The baseline and monitoring methodology shall be previously approved by the CDM Executive Board.	CDM Modalities and Procedures §37e	OK
16. A baseline shall be established on a project-specific basis, in a transparent manner and taking into account relevant national and/or sectoral policies and circumstances.	CDM Modalities and Procedures §45c,d	OK
17. The baseline methodology shall exclude to earn CERs for decreases in activity levels outside the project activity or due to force majeure.	CDM Modalities and Procedures §47	OK
18. Provisions for monitoring, verification and reporting shall be in accordance with the modalities described in the Marrakech Accords and relevant decisions of the COP/MOP.	CDM Modalities and Procedures §37f	OK

**Table 2 Requirements checklist**

Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
<b>A General description of project activity</b>						
<b>A.1 Title of the project activity (VVM para 55-57)</b>						
A.1.1	Does section A.1 of the PDD include a clearly identifiable project title, version number of the PDD and date of the PDD?	/1/	DR	<input checked="" type="checkbox"/> Clearly identifiable title of the project activity <input checked="" type="checkbox"/> Version number of the PDD is included <input checked="" type="checkbox"/> Date of the PDD is included.		OK
A.1.2	Is the PDD is in accordance with the applicable requirements for completing PDDs?	/1/	DR	<input checked="" type="checkbox"/> Yes <i>If no, list where the PDD is not in accordance:</i>		OK
<b>A.2 Description of the project activity (VVM para 58-64)</b>						
A.2.1	How was the design of the project assessed?	/1/	DR	<i>What type is the project?</i> <input type="checkbox"/> Project in existing facility or utilizing existing equipment(s) <input checked="" type="checkbox"/> Large scale project <input type="checkbox"/> bundled small scale projects, each with emission reductions not exceeding 15 000 tCO <sub>2</sub> e per year <input type="checkbox"/> individual small scale project activity with emission reductions not exceeding 15 000 tCO <sub>2</sub> e per year <input checked="" type="checkbox"/> Greenfield project  <i>How was the design of the project assessed?</i> <input checked="" type="checkbox"/> Physical site inspection <input checked="" type="checkbox"/> Reviewing available designs and feasibility studies		OK
A.2.2	If a greenfield project, describe the physical implementation	/1/	DR	At the time of site visit, the civil foundation		OK

MoV = Means of Verification, DR= Document Review, I= Interview, CC= Cross-Checking

Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
of the project when the validation was commenced.				works, erection of concrete towers and turbine assembly and electrical works were seen at various stages of completion.		
A.2.3	If physical site visits were performed based on sampling (only applicable for bundled small scale projects, each with emission reductions not exceeding 15 000 tCO <sub>2</sub> e per year), justify the sampling through a statistical analysis:	/1/	DR	Not applicable since the project activity is not a bundled small scale project.		OK
A.2.4	Is the description of the proposed CDM project activity as contained in the PDD sufficiently covers all relevant elements, is accurate and that it provides the reader with a clear understanding of the nature of the proposed CDM project activity?	/1/	DR	Yes. The proposed CDM project activity entails installation of 25 numbers of Wind Energy Generators each of 800 kW capacities (E-53 model) totaling 20 MW. The electricity generated will be exported to the NEWNE grid of India.		OK
A.2.5	Does the project activity involve alteration of existing installations? If so, have the differences between pre-project and post-project activity been clearly described in the PDD?	/1/	DR	The project is a green field project activity and so this is not applicable		OK
A.2.6	Does the project design engineering reflect current good practices?	/1/	DR	The wind farm utilizes 25 machines of Enercon model E-53 WEG of 800 kW capacities which are approved by Centre for Wind Energy Technology, Government of India.		OK
A.2.7	Would the technology result in a significantly better performance than any commonly used technologies in the host country? Is any transfer of technology from any Annex-I Party involved?	/1/	DR	Yes. The equipment supply and erection are by suppliers and contractors who are experienced in the field. There is no technology transfer from Annex-I party.		OK
<b>A.3 Participation requirements (VVM para 51-54, 123-125)</b>						
A.3.1	Do all participating Parties fulfil the participation requirements as follows:	/1/ /24/	DR	Letter of Approval from the DNA of India need to presented for verification.	<del>CAR-1</del>	OK
a) Party has ratified the Kyoto Protocol b) Party has designated a Designated National Authority		India (host) <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No				

MoV = Means of Verification, DR= Document Review, I= Interview, CC= Cross-Checking

Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
c) The assigned amount has been determined		<input type="checkbox"/> Yes	<input type="checkbox"/> No			
A.3.2	Do the letters of approval meet the following requirements?	/1/ /24/	DR	Letter of Approval from the DNA of India need to presented for verification.	CAR-1	OK
		India (host)				
a) LoA confirms that Party has ratified the Kyoto Protocol		<input type="checkbox"/> Yes	<input type="checkbox"/> No			
b) LoA confirms that participation is voluntary		<input type="checkbox"/> Yes	<input type="checkbox"/> No			
c) The LoA confirms that the project contributes to the sustainable development of the host country?		<input type="checkbox"/> Yes	<input type="checkbox"/> No			
d) The LoA refers to the precise project activity title in the PDD		<input type="checkbox"/> Yes	<input type="checkbox"/> No			
e) The LoA is unconditional with respect to (a) to (d) above		<input type="checkbox"/> Yes	<input type="checkbox"/> No			
f) The LoA is issued by the respective Party's DNA		<input type="checkbox"/> Yes	<input type="checkbox"/> No			
g) The LoA was received directly by the DNA or the PP		<input type="checkbox"/> DNA	<input type="checkbox"/> PP			
h) In case of doubt regarding the authenticity of the letter of approval, describe how it was verified that the letter of approval is authentic						
A.3.3	Have all private/public project participants been authorized by an involved Party?	/1/	DR	Letter of Approval from the DNA of India need to presented for verification.	CAR-1	OK
<b>A.4 Technical description of the project activity (VVM para 58-64)</b>						
A.4.1	Is the project's location clearly defined?	/1/	DR	Yes, the project's spatial boundaries are defined. The project is spread across Salodi, Chensingh Nagar, Bari, Malunga, Bada Kotacha, Digadi, Jelu & Beru villages of Jodhpur district in the Rajasthan state of India. Name of the substations to which the project activity are connected also to be indicated.		OK
<b>A.5 Public funding of the project activity</b>						
A.5.1	In case public funding from Parties included in Annex I is used for the project activity, have these Parties provided an	/1/	DR	This is a unilateral project. The project does not involve any public funding and hence no		OK

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Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
affirmation that such funding does not result in a diversion of official development assistance and is separate from and is not counted towards the financial obligations of these Parties?			diversion of funds from official development assistance is expected.		
<b>B Application of a baseline and monitoring methodology</b>					
<b>B.1 Methodology applied (VVM para 65-76)</b>					
B.1.1 Does the project apply an approved methodology and the correct version thereof?	/1/ /26/	DR	<p>The project correctly applies the approved baseline methodology “Consolidated baseline methodology for grid-connected electricity generation from renewable sources” ACM0002, version 12.1.0 for large scale CDM projects.</p> <p>The version 12.1.0 of the methodology ACM0002 applied for the project activity has been withdrawn with effect from 25 November 2011.</p>	CAR-2	OK
<b>B.2 Applicability of methodology (and tools) (VVM para 65-76)</b> <i>Insert a row for each applicability criteria of the applied methodology (and tools)</i>					
B.2.1 How was it validated that project complies with the following applicability criteria: The 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).	/1/ /26/	DR	The project activity is installation of WEG for generation of power from wind energy to supply to the grid and is a green field project.		OK

MoV = Means of Verification, DR= Document Review, I= Interview, CC= Cross-Checking

Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
B.2.2	How was it validated that project complies with the following applicability criteria: 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;	/1/ /26/	DR	The project activity is a green field project that uses wind energy to generate electricity and so this clause is not applicable.		OK
B.2.3	How was it validated that project complies with the following applicability criteria: In the case of capacity additions, retrofits, replacements: 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 expansion or retrofit of the plant has been undertaken between the start of this minimum historical reference period and the implementation of the project activity.	/1/ /26/	DR	The project activity is a green field project that uses wind energy to generate electricity and so this clause is not applicable		OK
B.2.4	How was it validated that project complies with the following applicability criteria: The methodology is not applicable to the following a) 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 b) Biomass fired power plants c) Hydro power plants that result in new reservoir or increase in existing reservoirs where the power density of the power plant is less than 4 W/m <sup>2</sup> .	/1/ /26/	DR	The project activity is a green field project that uses wind energy to generate electricity and so this clause is not applicable		OK
B.2.5	Is the selected baseline on of the baseline(s) described in the methodology and this hence confirms the applicability of the methodology?	/1/ /26/	DR	Yes. The baseline selected is the equivalent addition of new generation capacity to the grid generating emissions in the absence of the project activity.		OK

MoV = Means of Verification, DR= Document Review, I= Interview, CC= Cross-Checking

Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
<b>B.3 Project boundary (VVM para 77-79)</b>						
B.3.1	What are the project's system boundaries (components and facilities used to mitigate GHGs)? Are they clearly defined and in accordance with the methodology?	/1/	DR	Yes, the project's spatial boundaries are defined. The project is spread across Salodi, Chensingh Nagar, Bari, Malunga, Bada Kotacha, Digadi, Jelu & Beru villages of Jodhpur district in the Rajasthan state of India.  The spatial boundary of the project also include transmission network for the evacuation of electricity to the NEWNE grid of India, to which the project activity is connected.		OK
B.3.2	Which GHG sources are identified for the project? Does the identified boundary cover all possible sources linked to the project activity? Give reference to documents considered to arrive at this conclusion.	/1/ /5/ /35/	DR/I	The project system boundaries are clearly defined and consist of the 25 machines of Enercon model E-53 WEG of 800 kW capacities each. The spatial boundary also includes the NEWNE grid of India to which the project is connected. This is as per the version 6 of CEA data.  Since the power is being generated from wind energy there are no GHG emission sources in the project activity.		OK
B.3.3	Does the project involve other emissions sources not foreseen by the methodologies that may question the applicability of the methodology? Do these sources contribute with more than 1% of the estimated emission reductions of the project?	/1/	DR/I	No. The project activity is generation of electricity for supply to grid using wind energy and so does not involve any other emission source not foreseen by the methodology.		OK
<b>B.4 Baseline scenario determination (VVM para 80-87, 103-105)</b>						
B.4.1	Which baseline scenarios have been identified? Is the list of baseline scenarios complete?	/1/	DR/I	Yes the baseline alternatives identified are in line with applied methodology ACM0002 version 12.1.0 and tool to demonstrate additionality version 5.2.  As per the tool to demonstrate additionality		OK

MoV = Means of Verification, DR= Document Review, I= Interview, CC= Cross-Checking



Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
				version 5.2 in context of approved consolidated methodology ACM0002, project proponent only need to identify that there is at least one credible and feasible alternative that would be more attractive than the proposed project activity. In line with tool and methodology project proponent has identified following alternatives: <ul style="list-style-type: none"> <li>• Project activity not taken up as CDM project he project.</li> <li>• Equivalent amount of electricity being generated through operation of grid-connected power plants and addition of new generation sources.</li> </ul>		
B.4.2	How have the other baseline scenarios been eliminated in order to determine the baseline?	/1/	DR/I	According to the methodology, there is only one baseline scenario. Hence this is not applicable.		OK
B.4.3	What is the baseline scenario?	/1/ /35/	DR/I	The baseline scenario identified is the emissions 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 combined margin emission factor for the NEWNE regional grid of India has been sourced from CEA database version 06.		OK
B.4.4	Is the determination of the baseline scenario in accordance with the guidance in the methodology?	/1/ /26/	DR/I	Yes the baseline scenario identified is inline with applied methodology ACM0002 version 12.1.0.		OK
B.4.5	Has the baseline scenario been determined using conservative assumptions where possible?	/1/ /26/	DR/I	Yes the baseline scenario identified is inline with applied methodology ACM0002 version 12.1.0.		OK
B.4.6	Does the baseline scenario sufficiently take into account relevant national and/or sectoral policies, macro-economic	/1/ /26/	DR/I	Yes, national and sectoral policies have been taken into consideration for selecting the baseline		OK

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Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
	trends and political aspirations?			scenario.		
B.4.7	Is the baseline scenario determination compatible with the available data and are all literature and sources clearly referenced?	/1/ /26/ /35/	DR/I	The combined margin emission factor for the NEWNE regional grid of India has been sourced from CEA database version 06 and the value applied is 0.94912 tCO <sub>2</sub> e/MWh.		OK
B.4.8	Is the baseline determination adequately documented in the PDD? <ul style="list-style-type: none"> <li>All assumptions and data used by the project participants are listed in the PDD and related document to be submitted for registration. The data are properly referenced.</li> <li>All documentation is relevant as well as correctly quoted and interpreted.</li> <li>Assumptions and data can be deemed reasonable</li> <li>Relevant national and/or sectoral policies and circumstances are considered and listed in the PDD.</li> <li>The methodology has been correctly applied to identify what would occurred in the absence of the proposed CDM project activity</li> </ul>	/1/ /26/ /35/	DR/I	Inline with the applied methodology ACM0002 version 12.1.0, the baseline scenario identified is 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 combined margin emission factor for the NEWNE grid of India has been sourced from CEA database version 06 and the value applied is 0.94912 tCO <sub>2</sub> e/MWh.		OK
<b>B.5 Additionality determination (VVM para 93-119)</b>						
B.5.1	What approach/tool does the project use to assess additionality? Is this in line with the methodology?	/1/ /27/	DR	The tool for demonstration and assessment of additionality version 5.2 has been used. Yes this is in line with the methodology		OK
B.5.2	Have the regulatory requirements correctly been taken into account to evaluate the project activity and the alternatives?	/1/	DR/I	Yes the regulatory requirements have been taken into account to evaluate the alternatives to the project activity.		OK
B.5.3	Is sufficient evidence provided to support the relevance of the arguments made?	/1/	DR/I	Yes. The relevant documents have been provided for verification and this has been verified and found to be in order by DNV.		OK
B.5.4	What is the project additionality mainly based on	/1/	DR/I	The project additionality has been mainly based		OK

MoV = Means of Verification, DR= Document Review, I= Interview, CC= Cross-Checking

Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
(Investment analysis or barrier analysis)?		/14/ /15/		on investment analysis.		
<b>Prior consideration of CDM (VVM para 96-102)</b>						
B.5.5	What is the evidence for serious consideration of CDM prior to the time of decision to proceed with the project activity?	/1/ /9/ /10/	DR/I	The start date of the project activity (5 May 2011) is after 2 August 2008. On 5 July 2011, the PP has notified the DNA and UNFCCC of the intention to seek CDM status for the project activity. The confirmation email was received from UNFCCC and DNA on 8 August 2011 and 6 July 2011 respectively. This demonstrates prior consideration of CDM for the project activity.  The start date selected is the date of Board meeting deciding to proceed with the project activity. PP is requested justify selection of the start date in accordance with "Glossary of CDM terms" version 05.	<del>CL</del>	OK
B.5.6	If the starting date is after 2 August 2008 and before the global stakeholder consultation, has the DNA and UNFCCC confirmed that the project participants have informed in writing of the project's intention to seek CDM status?	/1/ /9/ /10/	DR/I	The start date of the project activity (5 May 2011) is after 2 August 2008. On 5 July 2011, the PP has notified the DNA and UNFCCC of the intention to seek CDM status for the project activity. The confirmation email was received from UNFCCC and DNA on 8 August 2011 and 6 July 2011 respectively. This demonstrates prior consideration of CDM for the project activity.		OK
<b>Continuous efforts to secure CDM status (only to be completed if starting date is before 2 August 2008)</b>						
B.5.7	What initiatives were taken by the project participants from the starting date of the project activity to the start of validation in parallel with the physical implementation of the project activity?	/1/ /5/	DR/I	The start date of the project activity, is 5 May 2011, which is after 2 August 2008 and so this is not applicable.		OK
B.5.8	When did the construction of the project activity start?	/1/	DR/I	The start date of the project activity is 5 July		OK

MoV = Means of Verification, DR= Document Review, I= Interview, CC= Cross-Checking

Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
	/5/		2011, which is after 2 August 2008 and so this is not applicable.		
B.5.9 When was the project commissioned?	/1/	DR/I	The start date of the project activity is 5 July 2011, which is after 2 August 2008 and so this is not applicable.		OK
B.5.10 Does the timeline of the project confirm that continuous actions in parallel with the implementation were taken to secure CDM status?	/1/	DR/I	The start date of the project activity is 5 July 2011, which is after 2 August 2008 and so this is not applicable.		OK
<b>Investment analysis (VVM para 106-112)</b> <i>The list of questions below must be adjusted to the parameters in the investment analysis relevant to the project under validation.</i>					
B.5.11 Does the project activity or any of the remaining alternatives generate revenues apart from CDM? Is this reflected in the PDD?	/1/ /14/ /27/	DR/I	Yes. The project activity generates revenue from sale of power to the grid and the same is mentioned in the PDD.		OK
B.5.12 Do any of the alternatives to the project activity involve investment? Is this reflected in the PDD?	/1/	DR/I	Yes. The alternative to the project activity require investment and this is indicated in the PDD.		OK
B.5.13 Is the choice of benchmark analysis, investment comparison or simple cost analysis correct?	/1/ /15/ /27/	DR/I	Yes. The benchmark analysis has been chosen by PP to demonstrate the additionality of the project. The details of the benchmark calculation need to be presented in the PDD.	CL2	OK
B.5.14 Is the benchmark/discount rate the latest available at the time of decision?	/1/ /15/ /29/	DR/I	The cost of equity is stated to be used as benchmark for the project. The PLR and equity returns considered are that at the time of decision making.		OK
B.5.15 What is the financial indicator? Is it on equity/project basis? Before/after tax? Is the financial indicator in correspondence with the benchmark?	/1/ /14/	DR/I	The financial indicator selected by the PP for the investment analysis is the post tax equity-IRR.		OK
B.5.16 Are the underlying assumptions appropriate, e.g. what is considered as waste in the baseline is considered to have zero	/1/	DR/I	This is not applicable as the project activity is electricity generation from wind energy.		OK

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Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
value?						
B.5.17	Does the income tax calculation take depreciation into account? Is the depreciation year in accordance with normal accounting practice in the host country?	/1/ /41/	DR/I	Yes. Income tax calculation considers depreciation as permissible under the income tax act. The depreciation considered is as per the accounting practice allowable for such type of projects as per the Income tax act.		OK
B.5.18	Is the time period of the investment analysis and operating time of the project realistic? Has salvage value been taken into account? Is working capital returned in the last year of operation?	/1/ /2/	DR/I	20 years operating life has been considered which is realistic for WEG. Enercon has given an undertaking on this. Salvage value has been added back during the 20 <sup>th</sup> year. The working capital has also been added back in the last year of operation.		OK
B.5.19	When a feasibility study report or similar approved by the government is used as the basis for the investment analysis: Can it be confirmed that the values used in the PDD are fully consistent with the FSR and is the period of time between finalization of the FSR and the investment decision adequate?	/1/ /3/ /4/	DR/I	The investment decision was made on the basis of the detailed project report (DPR). However, in India, the DPR does not require the approval of the government. The DPR for the project activity was prepared on 28 April 2011, whereas the start date of the project activity is on 5 May 2011. Considering the short period of time between the DPR and the decision to proceed with the project activity, it is reasonable to assume that the DPR was the basis for the investment decision.		OK
B.5.20	How was the amount of output (e.g. sales of electricity) assessed? Remember to include all the data sources used and list all the projects that have been used for cross-checking in accordance with VVM paragraph 95.	/1/	DR/I	<input type="checkbox"/> 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 <input checked="" type="checkbox"/> The plant load factor determined by a third party contracted by the project participants (e.g. an engineering company) <input type="checkbox"/> Other approach. The PLF is determined by "True Wind	CL3	OK

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Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
			International Certification”, the third party engaged by the PP. Copy of the report “Determination of Plant Load Factor for Wind Turbine Generators” for the project activity was provided for verification. The PLF determined by the third party and considered in the DPR is 19.05% whereas in PDD and IRR calculation, PLF of 20.25% is used. PP is requested to clarify the difference in the values of PLF used.		
B.5.21 How was the output price (e.g. electricity price) assessed? Were the data available and valid at the time of decision? Remember to include all the data sources used and list all the projects that have been used for cross-checking in accordance with VVM paragraph 95.	/1/ /38/	DR/I	<input type="checkbox"/> Cross-check against third-party or publicly available sources (e.g. invoices or price indices) <input checked="" type="checkbox"/> Review of feasibility reports, public announcements and annual financial reports related to the project and the project participants The electricity tariff considered is based on the latest tariff order of RERC, applicable to the project activity.		OK
B.5.22 How were the investment costs assessed? Were the data available and valid at the time of decision? Remember to include all the data sources used and list all the projects that have been used for cross-checking in accordance with VVM paragraph 95.	/1/ /3/	DR/I	<input type="checkbox"/> Cross-check against third-party or publicly available sources (e.g. invoices or price indices) <input checked="" type="checkbox"/> Review of feasibility reports, public announcements and annual financial reports related to the project and the project participants The investment costs were assessed based on the DPR. However, since the PP itself is the turnkey supplier of the equipment, the supporting documents for the project cost used for investment analysis needs to be provided. Further, the reasonableness of the investment cost needs to be justified by comparing it with the order value of similar projects at that time.	<del>CL</del> 4	OK

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Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
B.5.23 How were the O&M costs assessed? Were the data available and valid at the time of decision? Remember to include all the data sources used and list all the projects that have been used for cross-checking in accordance with VVM paragraph 95.	/1/ /3/	DR/I	<input type="checkbox"/> Cross-check against third-party or publicly available sources (e.g. invoices or price indices) <input checked="" type="checkbox"/> Review of feasibility reports, public announcements and annual financial reports related to the project and the project participants The other input parameters were also sourced from DPR and are relevant at the time of decision. The references to the input parameters are indicated in the PDD and IRR spreadsheet. The O&M costs were assessed based on the offer from Enercon for the same and with that considered in the DPR. However, since the PP itself is the O&M contractor, the supporting documents for the O&M cost and escalation used for investment analysis needs to be provided. Further, the reasonableness of the O&M cost and escalation needs to be justified.	CL4	OK
B.5.24 Describe the assessment of the other input parameters. Were the data available and valid at the time of decision? Remember to include all the data sources used and list all the projects that have been used for cross-checking in accordance with VVM paragraph 95.	/1/ /3/ /12/	DR/I	<input type="checkbox"/> Cross-check against third-party or publicly available sources (e.g. invoices or price indices) <input checked="" type="checkbox"/> Review of feasibility reports, public announcements and annual financial reports related to the project and the project participants The other input parameters such as debt to equity ratio, interest on loan, depreciation and salvage value were also sourced from DPR and are relevant at the time of decision. The references to the input parameters are indicated in the PDD and IRR spreadsheet. However, PP is requested to clarify whether the tax benefits available for the renewable energy projects such as accelerated depreciation, 10 year	CL4	OK

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Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
			tax holiday and the generation based subsidy (GBI) and renewable energy certificate (REC) are considered for the project activity.		
B.5.25 Was the financial calculation spreadsheet verified and found to be correct?	/1/ /14/	DR/I	The financial calculation spread sheet has been checked and clarifications raised.	<del>CL</del> 4	OK
B.5.26 Sensitivity analysis: Have the key parameters contributing to more than 20% of the revenue/costs during operating or implementation been identified? Has possible correlation between the parameters been considered?	/1/ /14/	DR/I	PP has carried a sensitivity analysis to analyse the effect of $\pm 10\%$ variation in electricity generation, tariff, debt equity ratio, capital cost of the project and O&M cost.  Sensitivity analysis of the major identified parameters to be performed till the point at which they reach the benchmark and provide the justification on why such a scenario is unlikely.	<del>CL</del> 4	OK
B.5.27 Sensitivity analysis: Is the range of variations is reasonable in the project context?	/1/ /14/	DR	Please refer to B.5.26	<del>CL</del> 4	OK
B.5.28 Have the key parameters been varied to reach the benchmark and the likelihood of this to happen been justified to be small?	/1/ /14/	DR	Please refer to B.5.26	<del>CL</del> 4	OK
<b>Barrier analysis (VVM para 113-116)</b>					
B.5.29 Are the barriers identified complimentary to a potential investment analysis? Does the barrier have a clear impact on the financial returns so that it can be assessed in an investment analysis? Each barrier is discussed separately.	/1/	DR/I	PP has not identified other barriers for the project activity.		OK
B.5.30 How were the <u>investment barriers</u> assessed to be real? Are the investment barriers substantiated by a source independent of the project participants?	/1/	DR/I	The project does face barrier due to insufficient financial returns.		OK
B.5.31 How does CDM alleviate the investment barriers?	/1/ /14/	DR/I	Revenues from CDM help to improve the returns from the project activity and bridge the gap with the benchmark.		OK

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Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
B.5.32 Is the project activity prevented by the investment barriers and at least one of the possible alternatives to the project activity is feasible under the same circumstances?	/1/	DR/I	The project activity does face investment barrier and none of the possible alternatives to the project activity are feasible under the same circumstances.		OK
B.5.33 How were the <u>technological barriers</u> assessed to be real? Are the technological barriers substantiated by a source independent of the project participants?	/1/	DR/I	The project activity does not face any technological barrier and so this is not applicable.		OK
B.5.34 How does CDM alleviate the technological barriers?	/1/	DR/I	The project activity does not face any technological barrier and so this is not applicable.		OK
B.5.35 Is the project activity prevented by the technological barriers and at least one of the possible alternatives to the project activity is feasible under the same circumstances?	/1/	DR/I	The project activity does not face any technological barrier and so this is not applicable		OK
B.5.36 How were the <u>barriers due to prevailing practise</u> assessed to be real? Are the barriers due to prevailing practise substantiated by a source independent of the project participants?	/1/	DR/I	The project activity does not face any barrier due to prevailing practice and so this is not applicable.		OK
B.5.37 How does CDM alleviate the barriers due to prevailing practise?	/1/	DR/I	The project activity does not face any barrier due to prevailing practice and so this is not applicable.		OK
B.5.38 Is the project activity prevented by the barriers due to prevailing practise and at least one of the possible alternatives to the project activity is feasible under the same circumstances?	/1/	DR/I	The project activity does not face any barrier due to prevailing practice and so this is not applicable.		OK
B.5.39 How were the <u>other barriers</u> assessed to be real? Are the other barriers substantiated by a source independent of the project participants?	/1/	DR/I	The project activity does not face any barrier due to prevailing practice and so this is not applicable.		OK
B.5.40 How does CDM alleviate the other barriers?	/1/	DR/I	The project activity does not face any barrier due to prevailing practice and so this is not applicable.		OK
B.5.41 Is the project activity prevented by the other barriers and at least one of the possible alternatives to the project activity is	/1/	DR/I	The project activity does not face any barrier due to prevailing practice and so this is not		OK

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Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
feasible under the same circumstances?			applicable.		
<b>Common practice analysis (VVM para 117-119)</b>					
B.5.42 What is the geographical scope of the common practice analysis? Is this justified?	/1/	DR/I	The geographical scope considered is the wind mill project of above 15MW in the state of Rajasthan.		OK
B.5.43 What is the scope of technology and size (e.g. capacity of power plant) for the common practice analysis and how has this been justified?	/1/	DR/I	The choice of the capacity is projects having total wind mill capacity of 15 MW and above. However, EIL is requested to justify the inclusion of some projects of capacities less than 15 MW for the analysis. Further, exclusion of bundled projects and government sector projects need to be justified.	<del>CL-5</del>	OK
B.5.44 What is the data source(s) used for the common practice analysis?	/1/	DR/I	The data for common practice analysis is sourced from the "India Wind Power Directory 10 <sup>th</sup> edition, August 2010".		OK
B.5.45 How many similar non-CDM-projects exist in the region within the scope?	/1/	DR/I	Refer to B.5.44	<del>CL-5</del>	OK
B.5.46 How were possible essential distinctions between the project activity and similar activities assessed?	/1/	DR/I	Refer to B.5.44	<del>CL-5</del>	OK
B.5.47 What is the conclusion of the common practice analysis?	/1/	DR/I	To conclude after receipt of the data and clarifications sought from the PP and its subsequent analysis.	<del>CL-5</del>	OK
<b>Conclusion</b>					
B.5.48 What is the conclusion with regard to the additionality of the project activity?	/1/	DR/I	To conclude after receipt of the data and clarifications sought from the PP and its subsequent analysis.	<del>CL-4</del> <del>CL-5</del>	OK
<b>B.6 Calculations of GHG emission reductions</b>					
<b>Data and parameters that are available at validation and that are not monitored (VVM para 198-200)</b>					
B.6.1 How was the $EF_{OM,y}$ Operating Margin Emission Factor of	/1/	DR/I	The OM emission factor has been computed		OK

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Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
NEWNE Electricity Grid verified?				using the simple OM approach based on the generation-weighted average emissions per electricity unit over a three year period of 2007-2008, 2008-2009 and 2009-2010 available in the CEA database version 06, for the NEWNE grid. The <i>ex-ante</i> value is 0.99473 t CO <sub>2</sub> /MWh. DNV verified the website of CEA and find the calculation to be in order.		
B.6.2	How was the <b>EF<sub>BM,y</sub></b> Build Margin Emission Factor of the NEWNE Electricity Grid verified?	/1/ /35/	DR/I	The BM emission factor is computed in accordance with "Tool to calculate the emission factor for an electricity system" and sourced from CEA database version 6. The <i>ex-ante</i> value for the NEWNE electricity grid is 0.81231 t CO <sub>2</sub> /MWh. DNV verified the website of CEA and find the calculation to be in order.		OK
B.6.3	How was the <b>EF<sub>y</sub></b> Emission Factor for the NEWNE grid of India verified?	/1/ /35/	DR/I	The baseline emission factor for the project has been calculated as the weighted average of the operating margin (OM) and the build margin (BM) in the ratio of 75:25 as applicable for wind projects. The CM thus arrived is 0.94912 t CO <sub>2</sub> /MWh. DNV verified the calculation and found it to be in order.		OK
B.6.4	Are the calculations documented according to the approved methodology and in a complete and transparent manner?	/1/ /35/	DR/I	Baseline emissions have been estimated as the product of net electricity supplied to the NEWNE grid by the project activity per year and grid emission factor of the NEWNE grid, which has been obtained from the official website of the Central Electricity authority (CEA) <i>CO<sub>2</sub> Baseline Database for the Indian Power Sector User Guide – Version 6.0.</i>  Baseline emission factor for the NEWNE grid is established ex-ante based on the approved		OK

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Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
			methodology using a combined margin approach consisting 75% operating margin and 25% build margin approach.  The baseline emission factor for the project has been calculated as the weighted average of the operating margin (OM) and the build margin (BM) in the ratio of 75:25 as applicable for wind projects. The CM thus arrived is 0.94912 t CO <sub>2</sub> /MWh.		
<b>Baseline emissions (VVM para 88-92)</b>					
B.6.5 Are the calculations documented according to the approved methodology and in a complete and transparent manner?	/1/	DR/I	Yes. The baseline emission calculations is in accordance with the baseline methodology		OK
B.6.6 Have conservative assumptions been used when calculating the baseline emissions?	/1/	DR/I	Yes. Conservative assumptions have been used while calculating the baseline emissions.		OK
B.6.7 Are uncertainties in the baseline emission estimates properly addressed?	/1/	DR/I	There are no uncertainties in the baseline emissions.		OK
<b>Project emissions (VVM para 88-92)</b>					
B.6.8 Are the calculations documented according to the approved methodology and in a complete and transparent manner?	/1/	DR/I	Since the project activity is electricity generation from wind energy there is no project GHG emission and this complies with the methodology with respect to project emission computation.		OK
<b>Leakage (VVM para 88-92)</b>					
B.6.9 Are the leakage calculations documented according to the approved methodology and in a complete and transparent manner?	/1/	DR/I	This is not applicable as the project activity is electricity generation from wind energy		OK
<b>Emission Reductions (VVM para 88-92)</b>					
B.6.10 Algorithms and/or formulae used to determine emission reductions: <ul style="list-style-type: none"> <li>All assumptions and data used by the project participants are listed in the PDD and related document submitted for</li> </ul>	/1/	DR/I	All the assumptions and data used by the project participants are listed in the PDD and the data are properly referenced.		OK

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Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
<p>registration. The data are properly referenced</p> <ul style="list-style-type: none"> <li>• All documentation is correctly quoted and interpreted.</li> <li>• All values used can be deemed reasonable in the context of the project activity</li> <li>• The methodology has been correctly applied to calculate the emission reductions and this can be replicated by the data provided in the PDD and supporting files to be submitted for registration.</li> </ul>					
<b>B.7 Monitoring plan (VVM para 120-122)</b>					
<b>Data and parameters monitored</b>					
B.7.1 Do the means of monitoring described in the plan comply with the requirements of the methodology?	/1/	DR/I	Yes. The monitoring described meets the requirement of the methodology.		OK
B.7.2 Does the monitoring plan contains all necessary parameters, and are they clearly described?	/1/	DR/I	Yes. The monitoring plan contains all parameters that are to be monitored and are clearly described.		OK
B.7.3 In case parameters are measured, is the measurement equipment described? Describe each relevant parameter.	/1/	DR/I	Yes. All energy meters (main and check meter) used for metering in the project activity are of 0.2% accuracy class and are of electronic trivector type meters.		OK
B.7.4 In case parameters are measured, is the measurement accuracy addressed and deemed appropriate? Describe each relevant parameter.	/1/	DR/I	The measurement accuracy is adequate for the measurement of electricity fed to the grid and is in keeping with the practice adopted for such measurements in the region.		OK
B.7.5 In case parameters are measured, are the requirements for maintenance and calibration of measurement equipment described and deemed appropriate? Describe each relevant parameter.	/1/	DR/I	It is mentioned that DISCOM carries out the annual calibration and testing of the meter. It is also stated that the frequency of meter testing is annual.		OK
B.7.6 Is the monitoring frequency adequate for all monitoring parameters? Describe each parameter.	/1/	DR/I	The electricity fed to the grid is measured continuously by main and check meters, which is adequate. The joint meter reading at Narwa sub-station taken every month forms the basis for determining the quantity of electricity fed to the		OK

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Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
				grid. The meter measure both electricity exported by the project activity to the grid and imports from the grid. The back meter is at Enercon sub-station, Salodi. The net electricity exported is also monitored at the local control station (LCS) of the WEGs.		
B.7.7	Is the recording frequency adequate for all monitoring parameters? Describe each parameter.	/1/	DR/I	The electricity generation is measured and captured on real time basis and recorded monthly.		OK
<b>Ability of project participants to implement monitoring plan</b>						
B.7.8	How has it been assessed that the monitoring arrangements described in the monitoring plan are feasible within the project design?	/1/	DR/I	The monitoring arrangements detailed in the PDD are executable.		OK
B.7.9	Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation)?	/1/	DR/I	Yes. For the operation and maintenance of the facility contract has been entered with Enercon (India) Limited. The QA/QC procedures includes the roles and responsibilities of the officials of Enercon data archival, internal audits, procedures to correct erroneous readings etc.		OK
B.7.10	Are the data management and quality assurance and quality control procedures sufficient to ensure that the emission reductions achieved by/resulting from the project can be reported ex post and verified?	/1/	DR/I	Yes. The systems and procedures detailed are adequate to ensure the verification of emissions reductions from the project activity.		OK
B.7.11	Will all monitored data required for verification and issuance be kept for two years after the end of the crediting period or the last issuance of CERs, for this project activity, whichever occurs later?	/1/	DR/I	All monitored data required for verification and issuance is stated to be kept for two years after the end of the crediting period.		OK
<b>Monitoring of sustainable development indicators/ environmental impacts</b>						
B.7.12	Is the monitoring of sustainable development indicators/	/1/	DR/I	The recent DNA approvals for large scale CDM	<del>CL-6</del>	OK

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Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
environmental impacts warranted by legislation in the host country?				projects in India mentions that 2% of the revenue be spent for sustainable development, including society/community development. Accordingly, action plan for the same is required to be made and included in the PCN & PDD. PP is requested to provide the DNA approval and PCN for confirmation. The action plan needs to be included in the PDD.	<del>CAR-1</del>	
B.7.13	Does the monitoring plan provide for the collection and archiving of relevant data concerning environmental, social and economic impacts?	/1/	DR/I	The monitoring plan does not provide for the collection and archiving of relevant data concerning environmental, social and economic impacts and this is not warranted by the current legislation. However PP is requested to detail the action plan for monitoring 2% of the CER revenue to be spent on sustainable development activities for the local population and provide a copy of the PCN.	<del>CL-6</del>	OK
B.7.14	Are the sustainable development indicators in line with stated national priorities in the host country?	/1/	DR/I	The Letter of approval from the DNA of India needs to be submitted for verification.	<del>CAR-1</del>	OK
<b>C Duration of the project activity / crediting period</b>						
<b>C.1.1 Start date of project activity (VVM para 96-97, 102)</b>						
C.1.2	How has the starting date of the project activity been determined? What are the dates of the first contracts for the project activity? When was the first construction activity?	/1/	DR/I	The start date of the project activity is stated to be 5 May 2011, which is the date of Board meeting deciding proceed with the project activity. The start date selected is the date of Board meeting deciding to proceed with the project activity. The selection of start date needs to be justified in accordance with "Glossary of CDM terms" version 05.	<del>CL-1</del>	OK

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Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
C.1.3	Is the stated expected operational lifetime of the project activity reasonable?	/1/ /2/	DR/I	Operational lifetime of the project has been mentioned as 20 years which is reasonable and has been verified by DNV from certificate provided by technology supplier.		OK
C.1.4	Is the start date, the type (renewable/fixed) and the length of the crediting period clearly defined and reasonable?	/1/	DR/I	The start date of the crediting period is 1 March 2012 or registration date whichever is later. PP has opted for a fixed crediting period of 10 years duration.		OK
<b>D Environmental Impacts (VVM para 129-131)</b>						
D.1.1	Are there any host country requirements for an Environmental Impact Assessment (EIA), and if yes, is an EIA approved? Does the approval contain any conditions that need monitoring?	/1/	DR/I	Indian legislation in vogue does not warrant an EIA to be done for this type of project activity. PP is requested to provide copies of the agreement for the land and other statutory clearances.	CL-7	OK
D.1.2	Does the project comply with environmental legislation in the host country?	/1/ /37/	DR/I	As per the Ministry of Environment and Forests (MoEF), India Environment Impact Notification S.O. 1533 dated 14 September 2006, wind power projects are not covered under any schedule and thus environmental impact assessment is not required for the project activity.  As per the present statues no specific environmental clearances are required for wind energy based power generation projects in India		OK
D.1.3	Will the project create any adverse environmental effects?	/1/	DR/I	Being wind energy based power project, the project is not expected to have any significant impact on the environment		OK
D.1.4	Have identified environmental impacts been addressed in the project design?	/1/	DR/I	No negative impact has been identified.		OK

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Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
<b>E Stakeholder Comments (VVM para 126-128)</b>					
E.1.1 Have relevant stakeholders been consulted?	/1/ /17/ /18/	DR/I	Yes. Stake holders meeting was held at Jodhpur on 23 July 2011. The responses to the comments received during global stake holder consultation needs to be provided.	<del>CL-8</del>	OK
E.1.2 Have appropriate media been used to invite comments by local stakeholders?	/1/ /17/ /18/	DR/I	Yes. The invitation for the stake holder meeting was published in local language news paper Daily <i>Nafa Nuksan</i> on 5 July 2011. Local villagers were also personally invited.		OK
E.1.3 If a stakeholder consultation process is required by regulations/laws in the host country, has the stakeholder consultation process been carried out in accordance with such regulations/laws?	/1/	DR/I	This is not specifically required for wind power projects as per current Indian legislation.		OK
E.1.4 Is a summary of the stakeholder comments received provided?	/1/	DR/I	A summary of the comments received has been provided in the PDD.		OK
E.1.5 Has due account been taken of any stakeholder comments received?	/1/	DR/I	No adverse comments have been received		OK

**Table 3 Resolution of corrective action requests and clarification requests**

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
<b>CAR 1</b> The requirement of submission of approval of the project activity from the DNA of the host Party confirming voluntary participation of PP in the project activity and that the project contributes to sustainable development, is not fulfilled.	A.3.1 A.3.2 A.3.3 B.7.12 B.7.14	PP has received the approval from DNA and copy of the LoA dated has been submitted to the DOE.	OK. PP has provided copy of the LoA dated 10 January 2012 /24/ from DNA of the host Party confirming voluntary participation of PP in the project activity and that the project contributes to sustainable development.  CAR 1 is closed.
<b>CAR 2</b> The version 12.1.0 of the methodology ACM0002 applied for the project activity has been withdrawn with effect from 25 November 2011.		The PDD has been revised to the latest version of 12.2.0 of ACM0002 and the updated version provided to DOE.	OK. PP has applied version 12.2.0 of ACM0002 /26/ in version 03 of the PDD dated 10 January 2012 /1/. The only change in version 12.2.0 of ACM0002 is in the applicability clause for hydro power projects involving multiple reservoirs, which is not applicable to the project activity. CAR 2 is closed.
<b>CL 1</b> The start date selected is the date of Board meeting deciding to proceed with the project activity. The selection of start date needs to be justified in accordance with “Glossary of CDM terms” version 05.	B.5.5 D.1.1	As per the “Glossary of CDM terms” version 05, “start date shall be considered to be the date on which the project participant has committed to expenditures related to the implementation or related to the construction of the project activity.  In the Board meeting dated 05/05/2011, decision of proposed project was taken by the board members. An official circular was issued by the Managing Director of EIL on 07/05/2011, based on the decision of the Board, mandating the concerned departments	OK. The entire project is being installed by the PP (Enercon India Limited) itself, which is a major supplier of WEGs in India. Thus the formal purchase order is not involved in this case. The selected start date is the date of official circular issued by the Managing Director of EIL on 7 May 2011, based on the decision of the Board /4/, mandating the concerned departments to take necessary steps for the installation of project activity /21/. DNV verified from SAP details of EIL that material transfer to the project site started within 10 days based on the official

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Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
		to take necessary steps for the installation of project activity. 07/05/2011 is therefore selected as the project start date since project participant has committed to expenditures related to the implementation or related to the construction of the project activity on this day.	circular (the start date of 7 May 2011) /21/ on 16 May 2011 and completed on 31 August 2011 /23/. The official circular 7 May 2012 /4/ /21/ commits expenditure related to the implementation of the project , which is in line with the definition of start date in Glossary of CDM terms /32/.  CL 1 is closed.
<b>CL 2</b> The details of the benchmark calculation need to be presented in the PDD.	B.5.13	The details of the benchmark calculation have been presented in the section B.5 of revised PDD.	OK The details of the benchmark calculations and the source of data used has been presented in the updated PDD /1/. CL 2 is closed.
<b>CL 3</b> The PLF determined by the third party and considered in the DPR is 19.5% whereas in PDD and IRR calculation, PLF of 20.25% is used. PP is requested to clarify the difference in the values of PLF used.	B.5.20	The third party report for PLF mentioned the PLF at different probability levels ranging from P-10 to P-90. In DPR PP has considered the PLF of 19.50% at P-50 level which is the base case for the analysis while in investment analysis sheet PP used PLF of 20.25% at P-25 as the sensitivity case. As per the PLF report the PLF of project site will vary between 17.97% (at P-90) to 20.74% (at P-10) which is the sensitivity range for PLF, which concludes that the maximum estimated PLF of site is 20.74% at P-90 level. Though being conservative PP has done sensitivity of $\pm 10\%$ on base value of PLF of 19.50% (at P-50) in the revised PDD.	OK. The third party consultant True Wind International has estimated PLF of 17.97% with 90% probability, 19.5% with 50% probability, 18.75% with 75% probability, 20.25% with 25% probability and 20.74% with 10% probability. The final conclusion of the consultant is that estimated PLF of the project activity is 19.5%. PP updated the emission reduction calculations with a PLF of 19.5%. The PLF of 19.5% determined by the consultant is in line with EB 48, Annex 11 /31/. CL 3 is closed
<b>CL 4</b> The project is being executed by EIL on	B.5.22 B.5.23	Project cost has been taken from detailed project report prepared by Enercon. The cost	OK. PP clarified that since the project is executed by

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Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
<p>turnkey contractor. Since the PP itself is the turnkey supplier with no purchase order in existence, the project cost used for investment analysis needs to be justified with supporting documents. Further, the reasonableness of the investment cost needs to be justified.</p> <p>Similarly, the O&amp;M cost and annual escalation needs to be justified considering that O&amp;M activity is stated to be carried out by EIL itself.</p>	<p>B.5.24 B.5.25 B.5.26 B.5.27 B.5.28 B.5.48</p>	<p>used for the investment analysis is the cost of the project after excluding the profit margin on each WEGs and same cost of the project has been submitted by PP to bank for financing the loan which can be verified from the loan application letter.</p> <p>Further average cost of supply of one WEG (Enercon make E-53) to other customer by Enercon in the state of Rajasthan is INR 59.57 million/MW as available in the public domain (please refer the attached sheet of projects for purchase order cost with web-links for reference), while for the project activity the project is INR 51.64 Million/MW which is conservative value and same cost has been selected for investment analysis.</p> <p>From the available documents in public domain the average cost of Operation &amp; Maintenance for the Enercon make E-53 WEGs in the state of Rajasthan is 1.4% of capital cost with average escalation of 6% per annum on O&amp;M charges (please refer the attached sheet of projects for O&amp;M cost references with web-links). For the project activity PP has taken the O&amp;M cost of 1.3% of capital cost which is conservative w.r.t. same type of WEGs. Though PP has done sensitivity analysis on O&amp;M cost in revised PDD and project is still additional.</p> <p>PP is availing accelerated depreciation (80%</p>	<p>the PP themselves, they have taken the investment cost (INR 51.64 million/MW) on actual cost without profit margins. The project cost was cross checked against the loan application submitted to IDFC /11/ and the loan sanction letter of IDFC /12/ as INR 1 032.8 million. The project cost was compared with the recently registered projects in Rajasthan: INR 60.5 million/MW for Cepco wind power project in Rajasthan, (Registration no. 4942), INR 59.13 million/MW for Kohinoor Wind Power Project in Rajasthan (Registration no. 4679) and 59.32 million/MW for Vaayu India Wind Power Project in Jaisalmer, Rajasthan (Registration no. 5186) /48/. The project cost is lower than that of the projects mentioned above. DNV consider the investment cost to be reasonable.</p> <p>The O&amp;M cost is marginally higher than the average O&amp;M cost of the projects referred above. However, the sensitivity analysis shows that even with 0% O&amp;M cost, benchmark is not crossed.</p> <p>PP has clarified that they have considered (i) the accelerated depreciation (80% + 20%) and (ii) 80IA benefits under the Income Tax act /41/, which provides for 100% tax exemption in 10 consecutive years out first 15 years of operations, available for the renewable energy projects in India. Since PP is availing accelerated depreciation, it is not eligible for the GBI as per</p>

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
<p>PP is requested to clarify whether the tax benefits available for the renewable energy projects such as accelerated depreciation, 10 year tax holiday and the generation based subsidy (GBI) and renewable energy certificate (REC) are considered for the project activity.</p> <p>The applicability of alternate minimum tax for the project activity need to be justified considering that project is being executed and owned directly by EIL.</p> <p>The range of variation of conditions considered for the sensitivity analysis need to be justified and the likelihood of these conditions occurring need to be presented as per section 111(c) of VVM.</p>		<p>+ 20%) and 80IA benefits under which there is 100% tax exemption in 10 consecutive years out first 15 years of operations. Since PP is availing accelerated depreciation hence PP is not eligible for GBI benefits. Further PP has signed PPA with state utility on preferential tariff and PP is not availing the renewable energy certificate (REC). Copy of PPA has been submitted to DOE for reference.</p> <p>We would like to submit to DOE that there is a typo error with tax calculation for project activity. PP is not eligible for alternate minimum tax (AMT is applicable for LLP companies), though PP has to pay marginal alternate tax (MAT) on book profits as per the income tax ruling. Tax calculation has been corrected in revised investment analysis sheet.</p> <p>The sensitivity analysis is extended to the point at which the equity IRR crosses the benchmark cost of equity. The justification on the range of variation has been mentioned in PDD.</p>	<p>the “Operational guidelines for implementation of generation based incentive for grid connected wind power projects”. The projects can register for REC only for the projects that have not entered into PPA with preferential tariff. The project is not eligible for REC since it has signed PPA with preferential tariff /13/.</p> <p>PP has corrected investment analysis /14/ by updating the income tax calculations in line with the Income Tax regulations in India /41/.</p> <p>PP has updated the PDD /1/ and investment analysis /14/ to include the sensitivity analysis extending to the point at which the equity IRR crosses the benchmark. The justification on the range of variation has also been mentioned in PDD.</p> <p>CL 4 is closed.</p>
<p><b>CL 5</b></p> <p>The Common practice analysis described in PDD does not comply with guidelines on Common practice, EB63 Annex 12.</p>	<p>B.5.43 B.5.45 B.5.46 B.5.47 B.5.48</p>	<p>Common practice analysis has been described in PDD as per the guidelines on Common practice, version 5.2.1 of the “Demonstration and assessment of additionality”. This is in line with paragraph 89 of EB meeting report 65.</p>	<p>OK.</p> <p>The additionality of the project has been demonstrated using “Demonstration and assessment of additionality” version 5.2.1 /27/. The tool has been revised to version 06.0.0 in EB65, incorporating the contents of E 63 Annex 12. However, as para 89 EB 65 meeting report</p>

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Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
			/33/, the previous version (ver 5.2.1) of the tools can be applied till 25 July 2012. Thus the common practice analysis done by PP as per “Demonstration and assessment of additionality” version 5.2.1 /27/ meets the validation requirements. CL 5 is closed.
<b>CL 6</b> The requirement of submission of approval of the project activity from the DNA of the host Party is not fulfilled. The action plan for utilisation of 2% of the revenue from CDN for sustainability development is not presented in the PDD.	B.7.12 B.7.13	The action plan for utilisation of 2% of the revenue from CDM for sustainability development has been presented in section B.7.2 of revised PDD.	OK. The action plan for utilisation of 2% of the revenue from CDM for sustainability development has been presented in section B.7.2 of revised PDD /1/.  CL 6 is closed.
<b>CL 7</b> Copies of the agreement for the land and other statutory clearances such as PPA, clearance from state utility for setting up of the project etc. are not been provided for verification.	D.1.1	Copy of all the statutory approvals such as PPA, land lease deed, Capacity allotment letter, Evacuation Approval, JDA Allotment letter, RREC approval is being submitted to DOE for verification.	OK. Copies of the PPA /13/, land lease deed /5/, capacity allotment letter, evacuation approval, JDA allotment letter, RREC approval /6/ /7/. CL 7 is closed.
<b>CL 8</b> The responses to the comments received during global stake holder consultation needs to be provided.	E.1.1	We have submitted the point wise responses to the comments received during the global stakeholder consultation process to the DOE.	OK. PP has provided point wise responses to the comments received during global stake holder consultation, which is mentioned in section 4.11 of the report along with how DNV considered the comments. CL 8 is closed.

**Table 4 Forward action requests**

Forward action request	Reference to Table 2	Response by project participants
<b>No FAR is raised</b>		

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## **APPENDIX B**

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### **CURRICULA VITAE OF THE VALIDATION TEAM MEMBERS**



**Mr. Ravi Kumar Prabhu** holds Bachelor's Degree in Chemical Engineering and has done Post Graduate Diploma course in Management and has an overall working experience of around twenty five years. Prior to joining DNV has around twenty three years of experience in Chemical process industry (fertilizer & petrochemical manufacturing) covering production, technical services including energy audits and efficiency studies, waste heat recovery, efficiency studies of boilers, power plants, safety audits, pollution control activities and waste water treatment. With respect to the Thermal Power Plant, the job assignment included the monitoring of flue gas stack temperatures and excess air, efficiency of fuel additives, condition of boiler refractory and insulation of steam lines, residual life assessment of boilers etc. His experience also includes 7 years in the Process design of fertilizer & petrochemical plants, wherein he was involved in the development of process flow diagrams, development of P&IDs, equipment design, HAZOP studies, procurement and commissioning activities.

He has over three and half years of experience in validation and verification of CDM projects in DNV and is also an EMS lead auditor.

His qualification, industrial experience and experience in CDM projects demonstrate sufficient sectoral competence in Chemical Process Industries (TA 5.1), Thermal Energy Generation from fossil fuels (TA1.1), Heat distribution (TA 2.2), Energy generation from Renewable Energy sources (TA 1.2) and Waste handling and disposal (TA 13.1).

**A.Parasuraman** is a fellow member of the Institute of Chartered Accountants of India (FCA) and Partner of, Sundar Srini & Sridhar, Chartered Accountants. He has 28 years of experience consisting of associating as Partner in M/s Shri Kamakoti Associates, Chartered Accountants, Chennai and Senior Manager (Finance) FACT, Udyogamandal covering costing, taxation, project appraise etc. He is presently involved in statutory audits, bank audits – internal and concurrent, internal audits, direct and indirect taxation, company formation and related activities, preparation of cash flow/ fund flow statements on behalf of customers for availing loan from banks etc.

**Gaurav Srivastava:** CDM Validator/Verifier, DNV Bangalore, India holds a Master's Degree in Energy Systems. His educational qualification covers the fields of sustainable development, power plant technology, renewable energy technology, performance of thermal & electrical utilities and project financing. He has completed ISO 14001:2004 - Environmental Management System Auditor / Lead Auditor Program, certified by IRCA.

He has experience of around 4 and half years in validation and verification of numerous CDM projects in DNV, both in India & abroad. His qualification, training and experience in CDM demonstrate his sufficient sectoral competence in energy generation from renewable energy sources.