



---

# VALIDATION REPORT

---

## “WIND ENERGY PROJECT IN GUJARAT” IN INDIA

REPORT No. 2012-9065

REVISION No. 02

DET NORSKE VERITAS



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

Date of first issue: 2011-09-29	ConCert Project No.: PRJC-327722-2011-CCS-IND
Approved by: Edwin Aalders	Organisational unit: DNV KEMA Energy & Sustainability Accredited Climate Change Services
Client: Vish Wind Infrastructure LLP	Client ref.: Mr. Yogesh Mehra

**Summary:**

**Project Name:** Wind Energy Project in Gujarat

**Country:** India

**Methodology:** ACM0002

**Version:** 13.0.0

**GHG reducing Measure/Technology:** Grid connected wind power based renewable electricity generation

Sectoral Scope 1: Energy industries, renewable

**ER estimate:** 101 234 tCO<sub>2</sub>e per year (average)

**Size**

☒ Large Scale

☐ Small Scale

**Validation Phases:**

☒ Desk Review

☒ Follow up interviews

☒ Resolution of outstanding issues

**Validation Status**

☐ Corrective Actions Requested

☐ Clarifications Requested

☒ Full Approval and submission for registration

☐ Rejected

In summary, it is DNV's opinion that the project activity "Wind Energy Project in Gujarat" in India, as described in the PDD, version 4.0 of 04 September 2012 meets all relevant UNFCCC requirements for the CDM and correctly applies the baseline and monitoring methodology ACM0002, version 13.0.0. Hence DNV requests the registration of the project as a CDM project activity.

Report No.: 2012-9065		Subject Group: Environment		<b>Indexing terms</b>	
Report title: "Wind Energy project in Gujarat" in India				Key words Climate Change Kyoto Protocol Validation Clean Development Mechanism	
Work carried out by: Ravi Kumar Prabhu Komaranapura Venkatachar Sudarshan A. Parasuraman				<input checked="" type="checkbox"/> No distribution without permission from the client or responsible organisational unit <input type="checkbox"/> free distribution within DNV after 3 years <input type="checkbox"/> Strictly confidential <input type="checkbox"/> Unrestricted distribution	
Work verified by: Zuzana Andrtová					
Date of this revision: 2012-09-4	Rev. No.: 02	Number of pages: 37			
© 2009 Det Norske Veritas AS All rights reserved. This publication or parts thereof may not be reproduced or transmitted in any form or by any means, including photocopying or recording, without the prior written consent of Det Norske Veritas AS.					



<i><b>Table of Content</b></i>	<i><b>Page</b></i>
1 EXECUTIVE SUMMARY – VALIDATION OPINION .....	1
2 INTRODUCTION .....	2
2.1 Objective	2
2.2 Scope	2
3 METHODOLOGY .....	3
3.1 Desk review of the project design documentation	4
3.2 Follow-up interviews with project stakeholders	9
3.3 Resolution of outstanding issues	10
3.4 Internal quality control	13
3.5 Validation team	13
4 VALIDATION FINDINGS .....	14
4.1 Participation requirements	14
4.2 Project design	14
4.3 Application of selected baseline and monitoring methodology	16
4.4 Project boundary	16
4.5 Baseline identification	17
4.6 Additionality	17
4.7 Monitoring	30
4.8 Algorithms and/or formulae used to determine emission reductions	34
4.9 Environmental impacts	35
4.10 Comments by local stakeholders	35
4.11 Comments by Parties, stakeholders and NGOs	36

Annex 1 Geographic coordinates of all project WECs

[Appendix A Validation Protocol](#)

[Appendix B Curricula vitae of the validation team members](#)



## Abbreviations

APPC	Average Power Procurement Cost
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
CMP	CDM Modalities and Practices
CO <sub>2</sub>	Carbon dioxide
CO <sub>2e</sub>	Carbon dioxide equivalent
C-WET	Centre for Wind Energy Technology
DNV	DNV Climate Change Services AS
DNA	Designated National Authority
EIL	Enercon (India) Limited
FAR	Forward Action Request
GEDA	Gujarat Energy Development Agency
GERC	Gujarat Electricity Regulatory Commission
GETCO	Gujarat Electricity Transmission Company
GHG	Greenhouse Gas(es)
HCA	Host country Approval
IEX	Indian Energy Exchange
INR	Indian Rupees
IPCC	Intergovernmental Panel on Climate Change
IREDA	Indian Renewable Energy Development Agency
LLP	Limited Liability Partnership
LoA	Letter of approval
MNRE	Ministry of New and Renewable Energy
MoEF	Ministry of Environment and Forests
MoP	Ministry of Power
M	Million
NCDMA	National Clean Development Mechanism Authority
NEWNE	North East West North-East integrated grid of India
NGO	Non-governmental Organisation
ODA	Official Development Assistance
OM	Operating Margin
PDD	Project Design Document
PP	Project Participant
PPA	Power Purchase Agreement
PXIL	Power Exchange India Limited
REC	Renewable Energy Certificate
tCO <sub>2e</sub>	Tonnes of CO <sub>2</sub> equivalents
UNFCCC	United Nations Framework Convention on Climate Change
VWILLP	Vish Wind Infrastructure LLP
WEC	Wind Energy Convertor



## 1 EXECUTIVE SUMMARY – VALIDATION OPINION

*DNV Climate Change Services AS (DNV) has performed a validation of the project activity “Wind Energy Project in Gujarat” 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 Annex I Party has not been identified yet. The host Party fulfils the participation criteria and have approved the project and authorized the project participants Vish Wind Infrastructure LLP. The DNA from India confirmed that the project assists in achieving sustainable development.*

*The project correctly applies the baseline and monitoring methodology ACM0002, version 13.0.0, “Consolidated baseline methodology for grid-connected electricity generation from renewable sources”.*

*The project activity envisages generation of electricity from the renewable source of the wind. To achieve this, 63 wind electricity converters (WEC), each of 800 kW capacity, are installed in Kutch and Jamnagar districts of the State of Gujarat in India. The project activity is expected to generate 106 696.8 MWh of electric power / year, which will replace an equivalent amount of fossil fuel intensive power in the system grid. The total emission reductions from the project are estimated to be on the average 101 234 tCO<sub>2e</sub> 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 Energy Project in Gujarat” in India, as described in the PDD, version 4.0 dated 04 September 2012, meets all relevant UNFCCC requirements for the CDM and correctly applies the baseline and monitoring methodology ACM0002, version 13.0.0. Hence, DNV requests the registration of the project as a CDM project activity.*

Bangalore and Oslo, 2012-09-4

Ravi Kumar Prabhu  
CDM Validator  
DNV Bangalore, India

Edwin Aalders  
Approver,  
DNV Climate Change Services AS



## 2 INTRODUCTION

Vish Wind Infrastructure LLP has commissioned DNV Climate Change Services AS (DNV) to perform a validation of the “Wind Energy Project in Gujarat” 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, the CDM modalities and procedures, 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 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). The PDD /1/ 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 13.0.0) /22/. The validation was based on the recommendations in the Validation and Verification Manual /21/.

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.



### **3 METHODOLOGY**

The validation consisted 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

#### 3.1.1 The following tables list the documentation that was reviewed during the validation. Documentation provided by the project participants

/1/	Vish Wind Infrastructure LLP: CDM-PDD for project activity “Wind Energy Project in Gujarat” in India, Version 01 dated 25 July 2011 (web hosted), Version 2 dated 17 September 2011, and version 4.0 dated 04 September 2012
/2/	Registrar of Firms: Copy of Certificate of Registration on Conversion in Form 19 dated 9 July 2010 confirming incorporation of Vish Wind Infrastructure LLP issued by Registrar of Firms, Maharashtra, submitted by VWILLP
/3/	Vish Wind Infrastructure LLP: Certified true copy of resolution passed at the meeting of partners of VWILLP on 1 April 2011
/4/	Vish Wind Infrastructure LLP: Copies of mail to EB, UNFCCC, dated 30 June 2011 and of acknowledgement from EB, UNFCCC, dated 29 July 2011, confirming receipt of email and information in respect of the plan to start the title project
/5/	Vish Wind Infrastructure LLP: Copy of mail to NCDMA dated 30 June 2011 and acknowledgement of receipt of email and intimation from NCDMA, Ministry of Forests and Environment, dated 8 July 2011 confirming receipt of information in respect of plan to start the title project
/6/	Vish Wind Infrastructure LLP: Investment analysis - IRR MS Excel Spread sheet version 1.0.xls, version 2.0.xls dated 5 March 2012
/7/	Vish Wind Infrastructure LLP: Spreadsheet for calculation of benchmark version 01, version 02 dated 5 March 2012
/8/	Vish Wind Infrastructure LLP: Copy of spread sheet providing estimation of CERs, version 01 and version 02 dated 8 February 2012
/9/	True Wind International Certification India: Copy of report “Determination of Plant Load Factor for wind turbine generators” no. PLFD/2010-11/MD-95 dated 10 March 2011 for the project activity
/10/	Enercon India Limited: Copy of letter of offer dated 7 Feb 2011 for supply of 63 nos E-53 model wind power turbines including rates for O&M contract to be executed for a total period of 11 years from the date of commissioning for the Kutch and Lalpur sites
/11/	Vish Wind Infrastructure LLP: Copies of 6 POs all dated 2 April 2011 favouring Enercon (India) Limited, for supply of 30 x 800 kW WECs for the Lalpur site and 33 x 800 kW WECs for the Kutch site
/12/	Enercon India Limited: Specifications of Enercon wind mill model E-53 including a certificate regarding its lifetime
/13/	Enercon India Limited: Local stakeholder consultation meeting (LSCM) documents consisting of copies of newspaper notices (2 nos.) dated 28 and 29 June 2011, attendance sheets (2 nos.) dated 15 and 16 July 2011, and minutes of meeting (2 nos.) at Dharmapura and Rasaliya villages, dated 15 and 16 July 2011
/14/	Vish Wind Infrastructure LLP: Copy of letter of authorization to EIL dated 12 April 2011 for managing CDM process and CER transaction activities
/15/	Enercon India Limited: Copy of sub-lease deed documents for having sub-leased land required for establishing the proposed wind mill installations in various villages of Jamnagar and Kutch districts (1 no. dated 8 June 2011, 7 nos. dated 14 June 2011 and 1





	no. dated 23 June 2011, totally 9 nos.)
/16/	IREDA: Loan sanction letter no. 691 dated 27 July 2011 for having sanctioned loan for implementation of the project activity
/17/	GEDA: Certificate of commissioning dated 19 October 2011 confirming commissioning of 30 x 800 kW (24 MW) WECs on 2 and 3 October 2011 in Lalpur
/18/	GEDA: Certificate of commissioning dated 13 April 2012 confirming commissioning of 29 x 800 kW (23.2 MW) WECs on 31 March 2012 in Kutch
/19/	GEDA: Certificate of commissioning dated 13 April 2012 confirming commissioning of 4 x 800 kW (3.2 MW) WECs on 31 March 2012 in Kutch

### 3.1.2 Letters of approval

/20/	National CDM Authority, Ministry of Environment and Forests (DNA of India): Letter of approval dated 15 December 2011 for the project activity, approval status and issuance confirmed by referring to <a href="http://www.cdmindia.gov.in/project_details_view.php?id=798&amp;oid=1&amp;page=1&amp;reporttype=1">http://www.cdmindia.gov.in/project_details_view.php?id=798&amp;oid=1&amp;page=1&amp;reporttype=1</a> and noting Project ID as 647/07/2011
------	---

### 3.1.3 Methodologies, tools and other guidance by the CDM Executive Board

/21/	CDM Executive Board: <i>Validation and Verification Manual</i> , version 1.2
/22/	CDM Executive Board: <i>Baseline and monitoring methodology "Approved consolidated baseline and monitoring methodology"</i> ACM0002, version 13.0.0
/23/	CDM Executive Board: <i>Tool to calculate the emission factor for an electricity system</i> , Version 2.2.1
/24/	CDM Executive Board: <i>Tool for the demonstration and assessment of additionality</i> , Version 06.0.0
/25/	CDM Executive Board: <i>Guidelines on the demonstration and assessment of prior consideration of the CDM</i> , version 04, EB 62, Annex 13
/26/	CDM Executive Board: <i>Guidelines on the assessment of investment analysis</i> , Version 05, EB 62, Annex 5
/27/	CDM Executive Board: <i>Glossary of CDM terms</i> , version 06,



/28/	CDM Executive Board: <i>Guidelines for completing the Project Design Document(CDM-PDD)</i> , version 07
/29/	CDM Executive Board: <i>Guidelines for reporting and validation of Plant Load Factors</i> , version 01, EB 48, Annex 11
/30/	CDM Executive Board: CDM Project no. 4756: <a href="http://cdm.unfccc.int/filestorage/W/K/6/WK620J7PBRHA93NVGLI4MZ81TSU5CQ/4756-%20FVR.pdf?t=WVR8bTBYaTZvfDC_vyMVhjOuhCIJAteWz6vn">http://cdm.unfccc.int/filestorage/W/K/6/WK620J7PBRHA93NVGLI4MZ81TSU5CQ/4756-%20FVR.pdf?t=WVR8bTBYaTZvfDC_vyMVhjOuhCIJAteWz6vn</a> <a href="http://cdm.unfccc.int/filestorage/G/7/9/G79UKQZ6WRHC3DNVBESYLTfMX58IA2/4756-%20PDD.pdf?t=a0N8bTBYaG5xfDC7Ube_UNn3533R_LP-CfiD">http://cdm.unfccc.int/filestorage/G/7/9/G79UKQZ6WRHC3DNVBESYLTfMX58IA2/4756-%20PDD.pdf?t=a0N8bTBYaG5xfDC7Ube_UNn3533R_LP-CfiD</a> <a href="http://cdm.unfccc.int/Projects/DB/DNV-CUK1304071464.49/view">http://cdm.unfccc.int/Projects/DB/DNV-CUK1304071464.49/view</a>
/31/	CDM Executive Board: CDM Project no. 4892: <a href="http://cdm.unfccc.int/Projects/DB/RWTUV1307605823.75/view">http://cdm.unfccc.int/Projects/DB/RWTUV1307605823.75/view</a> <a href="http://cdm.unfccc.int/filestorage/D/U/I/DUIWJT87HZOQSG9K412RF6CVXML3PE/4892%20PDD.pdf?t=Mmh8bTByandufDDRWWVjntkCqT05E3zSfHZo">http://cdm.unfccc.int/filestorage/D/U/I/DUIWJT87HZOQSG9K412RF6CVXML3PE/4892%20PDD.pdf?t=Mmh8bTByandufDDRWWVjntkCqT05E3zSfHZo</a> <a href="http://cdm.unfccc.int/UserManagement/FileStorage/7SRKBO1WJG9UYCFQND53LE2M64ZITH">http://cdm.unfccc.int/UserManagement/FileStorage/7SRKBO1WJG9UYCFQND53LE2M64ZITH</a>
/32/	CDM Executive Board: CDM Project no. 4740: <a href="http://cdm.unfccc.int/Projects/DB/DNV-CUK1303706196.59/view">http://cdm.unfccc.int/Projects/DB/DNV-CUK1303706196.59/view</a> <a href="http://cdm.unfccc.int/filestorage/R/T/C/RTC4NA682B7K3SHG5W9I1DOXZUEJYQ/4740-PDD.pdf?t=U1h8bTBYa282fDB8iQJeTAQLMS_YN-q8uKSQ">http://cdm.unfccc.int/filestorage/R/T/C/RTC4NA682B7K3SHG5W9I1DOXZUEJYQ/4740-PDD.pdf?t=U1h8bTBYa282fDB8iQJeTAQLMS_YN-q8uKSQ</a> <a href="http://cdm.unfccc.int/UserManagement/FileStorage/0285UK9DVOHSYMGLENZP7IC6RWAT4J">http://cdm.unfccc.int/UserManagement/FileStorage/0285UK9DVOHSYMGLENZP7IC6RWAT4J</a>
/33/	CDM Executive Board: CDM Project no. 5186: <a href="http://cdm.unfccc.int/Projects/DB/DNV-CUK1315481394.7/view">http://cdm.unfccc.int/Projects/DB/DNV-CUK1315481394.7/view</a> <a href="http://cdm.unfccc.int/filestorage/L/T/N/LTNBSZ70YEFA3MK5XUQG8IC2O1VDRH/5186-%20PDD.pdf?t=VVI8bTBybDI1fDCXc2qNJv06fWQbQ2CzBFt2">http://cdm.unfccc.int/filestorage/L/T/N/LTNBSZ70YEFA3MK5XUQG8IC2O1VDRH/5186-%20PDD.pdf?t=VVI8bTBybDI1fDCXc2qNJv06fWQbQ2CzBFt2</a> <a href="http://cdm.unfccc.int/UserManagement/FileStorage/UT1BK3SNRDEAJY957OPILVQZ8HF2GW">http://cdm.unfccc.int/UserManagement/FileStorage/UT1BK3SNRDEAJY957OPILVQZ8HF2GW</a>
/34/	CDM Executive Board: CDM Project no. 4942 <a href="http://cdm.unfccc.int/Projects/DB/DNV-CUK1309238378.14/view">http://cdm.unfccc.int/Projects/DB/DNV-CUK1309238378.14/view</a> <a href="http://cdm.unfccc.int/filestorage/Y/A/G/YAG3PXZK2JFU5OBT9S4QNDE8LCHVRM/4942-%20PDD.pdf?t=V3N8bTBybGNrfDCtrQVnhzp7wPEAVJRkRHjz">http://cdm.unfccc.int/filestorage/Y/A/G/YAG3PXZK2JFU5OBT9S4QNDE8LCHVRM/4942-%20PDD.pdf?t=V3N8bTBybGNrfDCtrQVnhzp7wPEAVJRkRHjz</a> <a href="http://cdm.unfccc.int/UserManagement/FileStorage/FARQWVETNXI0KZ85HD3B9JOY6S4L1P">http://cdm.unfccc.int/UserManagement/FileStorage/FARQWVETNXI0KZ85HD3B9JOY6S4L1P</a>
/35/	CDM EB: Registered project no. 2247, Validation Report for "13.25 MW Wind Power generation by RTML, in Kutch, Gujarat", <a href="http://cdm.unfccc.int/filestorage/J/P/H/JPH0DBTNVEYRIW61Z48F5AL7QM3O2G/RMTL%20FVR%20clean.pdf?t=dnV8bTBByYThifDANx7HUOzl9yUSYIBBIVHt8">http://cdm.unfccc.int/filestorage/J/P/H/JPH0DBTNVEYRIW61Z48F5AL7QM3O2G/RMTL%20FVR%20clean.pdf?t=dnV8bTBByYThifDANx7HUOzl9yUSYIBBIVHt8</a>
/36/	CDM EB: Registered Project no. 5184, Validation report for project "7 MW Wind Power Project of Man Industries at Kutch, Gujarat", <a href="http://cdm.unfccc.int/filestorage/J/E/9/JE9V304H2KI7FWYZ56BGNAL1CSXDT8/Final%20Validation%20Report.pdf?t=R2V8bTBByYXVkfDAegDt2Uj5TpALqp1Ced_YL">http://cdm.unfccc.int/filestorage/J/E/9/JE9V304H2KI7FWYZ56BGNAL1CSXDT8/Final%20Validation%20Report.pdf?t=R2V8bTBByYXVkfDAegDt2Uj5TpALqp1Ced_YL</a>
/37/	CDM EB: Registered Project no. 4964, validation report for project "Bundled Wind power project in Jamnagar, Gujarat" ,



	<a href="http://cdm.unfccc.int/filestorage/D/T/7/DT78AE2ZVNUGP0FWMOLKQ519YRI4XH/Final%20Validation%20Report.pdf?t=TFF8bTByYXA4fDCAjvy9d4xLGphHEBO_0SLH">http://cdm.unfccc.int/filestorage/D/T/7/DT78AE2ZVNUGP0FWMOLKQ519YRI4XH/Final%20Validation%20Report.pdf?t=TFF8bTByYXA4fDCAjvy9d4xLGphHEBO_0SLH</a>
/38/	CDM EB: Registered Project no. 5112, PDD for project "Green House Gas abatement through installation of wind power project for export to grid", <a href="http://cdm.unfccc.int/filestorage/P/C/O/PCOZ0BLYT8XIHQ1F6S5GUREWAK2MDV/5112-PDD.pdf?t=d298bTByY3RfDD9wKeeoTH4ZAHYBDC0mOEM">http://cdm.unfccc.int/filestorage/P/C/O/PCOZ0BLYT8XIHQ1F6S5GUREWAK2MDV/5112-PDD.pdf?t=d298bTByY3RfDD9wKeeoTH4ZAHYBDC0mOEM</a>
/39/	CDM EB; Registered Project no. 4700, PDD for project "Vaayu India Wind Power project in Gujarat" <a href="http://cdm.unfccc.int/UserManagement/FileStorage/4ZF5LHWXPIMY9SK1DT3UJ26CB8E0GO">http://cdm.unfccc.int/UserManagement/FileStorage/4ZF5LHWXPIMY9SK1DT3UJ26CB8E0GO</a>
/40/	CDM EB: Registered Project no. 4959, PDD for project "16.875 MW large scale grid connected wind electricity generation project by Indian Renewable Energy Foundation", <a href="http://cdm.unfccc.int/filestorage/W/M/E/WMESI9F3GV5KT68AODB20CQ714LRZX/IREF_PDD_FINAL_21.09.2011%20?t=UFV8bTBybWFufDB9H2ku4FEIwO6FkMvw8AIA">http://cdm.unfccc.int/filestorage/W/M/E/WMESI9F3GV5KT68AODB20CQ714LRZX/IREF_PDD_FINAL_21.09.2011%20?t=UFV8bTBybWFufDB9H2ku4FEIwO6FkMvw8AIA</a>
/41/	CDM EB: Clarifications on the consideration of national and/or sectoral policies and circumstances in baseline scenarios, Version 2, EB 22, Annex 3



### 3.1.4 Documentation used by DNV to validate / cross-check the information provided by the project participants:

/42/	CEA: CO <sub>2</sub> Baseline Database for the Indian Power Sector. Version 6, Date: March 2011, <a href="http://www.cea.nic.in/reports/planning/cdm_co2/cdm_co2.htm">http://www.cea.nic.in/reports/planning/cdm_co2/cdm_co2.htm</a> and <a href="http://www.cea.nic.in/reports/planning/cdm_co2/user_guide_ver6.pdf">user guide, version 6.0, dated March 2011</a> <a href="http://www.cea.nic.in/reports/planning/cdm_co2/user_guide_ver6.pdf">http://www.cea.nic.in/reports/planning/cdm_co2/user_guide_ver6.pdf</a>
/43/	MoEF: Requirement of Environment Impact Assessment (EIA) studies, dated 14 September 2006, <a href="http://envfor.nic.in/legis/eia/so1533.pdf">http://envfor.nic.in/legis/eia/so1533.pdf</a> Government gazette notification no. S.O. 3067 (E) 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>
/44/	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
/45/	MNRE: “Policies for development of renewable energy in India”, Ministry of New & Renewable Energy, Government of India, <a href="http://www.indiaenergyportal.org/viewPolicies.php?id=PO1&amp;theme=">http://www.indiaenergyportal.org/viewPolicies.php?id=PO1&amp;theme=</a>
/46/	CDM Executive Board: Confirmation of Prior consideration of CDM for this project available at <a href="http://cdm.unfccc.int/Projects/PriorCDM/notifications/index.html">http://cdm.unfccc.int/Projects/PriorCDM/notifications/index.html</a>
/47/	CDM Executive Board: Web hosting of project for global stakeholder consultation from 04 Aug 2011 to 02 Sep 2011, available at <a href="http://cdm.unfccc.int/Projects/Validation/DB/IK1BYLA1OA6M6X4NT9D8FKKFF77CQZ/view.html">http://cdm.unfccc.int/Projects/Validation/DB/IK1BYLA1OA6M6X4NT9D8FKKFF77CQZ/view.html</a>
/48/	Reserve Bank of India: Survey of professional forecasters: Results of 14 <sup>th</sup> round, available at <a href="http://rbi.org.in/scripts/PublicationsView.aspx?id=13050">http://rbi.org.in/scripts/PublicationsView.aspx?id=13050</a> dated 2 February 2011
/49/	Gujarat Electricity Regulatory Commission: Tariff order no. 1/2010 dated 30 January 2010 available at <a href="http://www.gercin.org/renewablepdf/en_1303211765.pdf">http://www.gercin.org/renewablepdf/en_1303211765.pdf</a>
/50/	“Potential wind farm sites in Gujarat” available at <a href="http://wind-power.industry-focus.net/index.php/wind-farm-in-gujarat.html">http://wind-power.industry-focus.net/index.php/wind-farm-in-gujarat.html</a>
/51/	C-WET: “India state wise installed capacity” available at <a href="http://www.cwet.tn.nic.in/html/information_isw.html">http://www.cwet.tn.nic.in/html/information_isw.html</a>
/52/	Power Finance Corporation Limited: Lending policy unit, Interest rates applicable from 23 March 2011, <a href="http://www.pfc.gov.in/writereaddata/userfiles/file/LendingRates/interest_circular_23032011.pdf">http://www.pfc.gov.in/writereaddata/userfiles/file/LendingRates/interest_circular_23032011.pdf</a>
/53/	IT department: Rates of depreciation as per IT act, III, 8G(XIII)(I), <a href="http://www.llponline.in/tax_llp.php">http://www.llponline.in/tax_llp.php</a> ; Deduction under section 80-IA of Income Tax Act 1961 <a href="http://www.caclubindia.com/articles/deduction-u-s-80-ia-of-income-tax-act-1961-4392.asp">http://www.caclubindia.com/articles/deduction-u-s-80-ia-of-income-tax-act-1961-4392.asp</a>
/54/	LLP Online: tax rates applicable for LLP, <a href="http://www.llponline.in/tax_llp.php">http://www.llponline.in/tax_llp.php</a>
/55/	IEC & PXIL: REC market volume and price data on IEC <a href="http://www.iexindia.com/RECDData.aspx">http://www.iexindia.com/RECDData.aspx</a> and PXIL : <a href="http://www.powerexindia.com/PXILReport/pages/RECMVPReport.aspx">http://www.powerexindia.com/PXILReport/pages/RECMVPReport.aspx</a>
/56/	Central Electricity Regulatory Commission: Determination of Forbearance and Floor



	Price for the REC framework, <a href="http://www.nldc.in/docs/REC/Final_Order_on_Forbearance_and_Floor_Price_for_RE_C.pdf">http://www.nldc.in/docs/REC/Final_Order_on_Forbearance_and_Floor_Price_for_RE_C.pdf</a>
/57/	Indian Electricity Act, 2003 and its amendments, <a href="http://www.powermin.nic.in/acts_notification/electricity_act2003/pdf/The%20Electricity%20Act_2003.pdf">http://www.powermin.nic.in/acts_notification/electricity_act2003/pdf/The%20Electricity%20Act_2003.pdf</a>
/58/	Directory of Indian Wind Power, 2010
/59/	Texas Forest Service: Nominal Rate and Real rate calculator available at <a href="http://tfsfrd.tamu.edu/tdss/Basic/rates.htm">http://tfsfrd.tamu.edu/tdss/Basic/rates.htm</a>
/60/	Bloomberg: "India raises interest rates for 10 <sup>th</sup> time since 2010 to tame inflation" available at <a href="http://www.bloomberg.com/news/2011-06-16/india-raises-rates-for-10th-time-since-2010-to-curb-accelerating-inflation.html">http://www.bloomberg.com/news/2011-06-16/india-raises-rates-for-10th-time-since-2010-to-curb-accelerating-inflation.html</a>
/61/	Google Maps: project locations at Kutch and Jamnagar districts of Gujarat, India, at <a href="http://maps.google.com/maps?ll=23.894546,69.001109&amp;z=8&amp;t=h&amp;hl=en">http://maps.google.com/maps?ll=23.894546,69.001109&amp;z=8&amp;t=h&amp;hl=en</a>
/62/	Indian Wind Turbine Manufacturers Association: "Guidelines / Incentives for wind power generation in various states" - <a href="http://www.indianwindpower.com/policy_environment.php">http://www.indianwindpower.com/policy_environment.php</a>
/63/	Global Wind Energy Council: "Global Wind Report" Annual Market Update 2010 - available at <a href="http://www.indianwindpower.com/pdf/gwecReport_2010.pdf">http://www.indianwindpower.com/pdf/gwecReport_2010.pdf</a>
/64/	IREDA: "Assessment of investment climate for wind power development in India for Indian Renewable Energy Development Agency (IREDA)", <a href="http://ireda.gov.in/pdf/Assessment.pdf">http://ireda.gov.in/pdf/Assessment.pdf</a>
/65/	IREDA: "Compendium of state government policies on renewable energy sector in India" <a href="http://ireda.gov.in/Compendium/index%20copy.htm">http://ireda.gov.in/Compendium/index%20copy.htm</a>
/66/	Ministry of New and Renewable Energy: "STRATEGIC PLAN FOR NEW AND RENEWABLE ENERGY SECTOR FOR THE PERIOD 2011-17" <a href="http://mnre.gov.in/file-manager/UserFiles/strategic_plan_mnre_2011_17.pdf">http://mnre.gov.in/file-manager/UserFiles/strategic_plan_mnre_2011_17.pdf</a>
/67/	Ministry of Company Affairs: Companies Act, 1956, <a href="http://www.mca.gov.in/Ministry/pdf/Companies_Act_1956_13jun2011.pdf">http://www.mca.gov.in/Ministry/pdf/Companies_Act_1956_13jun2011.pdf</a>
/68/	Central Electricity Regulatory Commission (CERC): Notification no. L-1/12/2010-CERC dated 14 January 2010 covering the terms and conditions for recognition and issuance of Renewable Energy Certificates (REC), <a href="http://www.cercind.gov.in/Regulations/CERC_Regulation_on_Renewable_Energy_Certificates_REC.pdf">http://www.cercind.gov.in/Regulations/CERC_Regulation_on_Renewable_Energy_Certificates_REC.pdf</a>
/69/	Enercon (India) Limited: Quality Policy and ISO 9001:2008 Certificate for EIL, certificate no. QS-898 HH issued by The Germanischer Lloyd Certification GmbH, valid till 08 February 2013
/70/	Directory of Indian Wind Power: Detailed list of Private Windfarm owners in India, July 2011

All the hyperlink references provided in the above sections were checked on 19 March 2012 and 16 May 2012 and were found to be working and correct.

### 3.2 Follow-up interviews with project stakeholders



## VALIDATION REPORT

On 15 September 2011 DNV visited the project site at Lalpur, Jamnagar District, Gujarat, and performed interviews with project stakeholders. The visit to Kutch site was not undertaken since the PP informed that construction work was not started there at the time of site visit.

Date	Name	Organization	Topic/s
/71/ 2011-09-15	Mr. Sidharth Mehra	Director, EIL	CDM Consideration
	Mr. Saujanya Kumar	CDM Corporate, EIL	Cluster & location details Equipment purchase O&M Contract
	Mr. Virendra		
	Mr. Bhushan		
	Mr. Neeraj Gupta	PWC, Delhi	Desk review findings Monitoring plan / instruments QA QC procedures

The PDD /1/ submitted for global stakeholder consultation /47/ was revised (version no. 4 dated 04 September 2012) to address various issues raised during validation before being submitted for registration; salient changes between the two versions of the PDD are as below:

- Detailed location details including geographic coordinates of all selected sites have been included; actual status of project implementation updated with commissioning details
- The Simple OM, Combined CM emission factors have been recalculated by proper application of the “Tool for calculation of emission factor of an electricity system” /23/ from 0.9499 to 0.94881 tCO<sub>2</sub>e/MWh and the estimated CER revised to 101 234 from 101 268 tCO<sub>2</sub>e
- Justification of adoption of benchmark analysis, recalculation of benchmark to 17.67% from 18.46%, and resulting post-tax equity IRR to 7.86% from 7.74%
- Description of measurement methods and monitoring procedures to be adopted in sections B.7.1 and B.7.2 of the PDD
- Change of start date of crediting period to 1 October 2012
- Inclusion of an action plan for monitoring of CER revenues contributed for sustainable development activities
- Valid version of methodology ACM0002 version 13.0.0 has been adopted with the amended requirements of the methodological tool “Tool for the demonstration and assessment of additionality”, version 06.0.0”, consequent to the incomplete message dated 17 August 2012.

### 3.2 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 Energy Project in Gujarat” in India is enclosed in Appendix A to this report.

Table 2 of the validation protocol documents the findings of the desk review of the project design documentation and follow-up interviews with project stakeholders. Any findings raised in Table 2 are listed in Table 3 of the protocol, and changes to the description of the project design as a result of these findings will be addressed in Table 3. Table 2 thus may not reflect all aspects of the project as described in the final PDD submitted for registration.

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.





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

<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>
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	Gives reference to documents where the answer to the checklist question or item is found.	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.	The discussion on how the conclusion is arrived at and the conclusion on the compliance with the checklist question so far.	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.

<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>
The <b>CARs</b> and/ or <b>CLs</b> raised in Table 2 are repeated here.	Reference to the checklist question number in Table 2 where the CAR or CL is explained.	The responses given by the project participants to address the <b>CARs</b> and/or <b>CLs</b> .	The validation team's assessment and final conclusions of the <b>CARs</b> and/or <b>CLs</b> .

<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>
The <b>FARs</b> raised in Table 2 are repeated here.	Reference to the checklist question number in Table 2 where the FAR is explained.	Response by project participants on how forward action request will be addressed prior to first verification.

Figure 1: Validation protocol tables





### 3.3 Internal quality control

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

### 3.4 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	TA 1.2 competence	Financial expertise
Validator	Prabhu	Ravi Kumar	India	✓	✓	✓	✓		✓	
Assessor under training	Komaranapura Venkatachar	Sudarshan	India	✓	✓	✓				
Expert	A.	Parasuraman	India							✓
Technical reviewer	Andrtová	Zuzana	Czech Republic					✓	✓	

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



## 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 4.0 dated 04 September 2012.

### 4.1 Participation requirements

The project participant is Vish Wind Infrastructure LLP of host Party of India. The host Party (India) meets all relevant participation requirements.

A letter of approval (LoA) /20/ was issued by DNA of India on 15 December 2011, authorizing Vish Wind Infrastructure LLP of host Party as project participant and confirming that the participation is voluntary and that the project assists in achieving sustainable development. The title of the project and the name of project participant are consistent between the LoA and the CDM PDD submitted for validation /1/. The issuance of HCA and all details of the project such as title, location, description, start date were verified on the DNA website /20/; the project has been allotted ID 647/07/2011 and approval status is indicated as "Approved".

The copy of 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 /21/.

The project is owned by Vish Wind Infrastructure LLP. and the validation did not reveal any information that indicates that the project can be seen as a diversion of official development assistance (ODA) funding towards India.

### 4.2 Project design

The project envisages installation of 63 x 800 kW wind turbines, out of which 30 turbines are located in Jamnagar district and the rest (33) are in Kutch district of the state of Gujarat, India. Out of the 30 turbines in Jamnagar district, 23 turbines were commissioned on 2 October 2011 and the balance 7 turbines were commissioned on 3 October 2011. This was confirmed by verification of the Certificate of Commissioning dated 19 October 2011 issued by Deputy Director, GEDA, Gujarat/17/. All the 33 turbines planned for the district of Kutch, were commissioned on 31 March 2012, as evidenced by the Certificates of Commissioning dated 13 April 2012 issued by Deputy Director, GEDA, Gujarat /18//19/. The commissioning letters /17//18//19/ contain complete details of installations such as the revenue survey numbers of the land, name of the village, name of taluk, name of district, the unique ID of each turbine and the date of commissioning. It also contains initial generation test report for each installation.

The details of villages, taluks and districts where the turbines have been located are as below:

District	Taluks	Villages	Geo-coordinate range
Kutch District	Nakhatrana / Abdasa	Khombadi Nani; Rampur Sarva; Vigodi; Khisar	Between longitudes 23 <sup>0</sup> 28' 57.3" & 23 <sup>0</sup> 24' 52.7" N, and



		(Netra) / Bandiya	latitudes 69° 8' 14.2" & 69° 1' 12" E
Jamnagar District	Lalpur / Bhanvad	Navi Pipar; Govana; Nani Rafudad; Kan Virdi; Sano Sari; Dharmapur; Bhangor / Babarzar	Between longitudes 22° 11' 51.3" & 22° 3' 50.9" N, and latitudes 69° 55' 25.9" & 69° 49' 31.9" E

The detailed geographic coordinates (latitude and longitude of each wind turbine location is provided in Annex 1 along with unique ID, name of village and taluk details; these have also been verified against Commissioning Certificates issued by GEDA /17//18//19/ and are included in Annex 1. Project locations were checked by using Google maps and marking the project locations at Kutch and Jamnagar districts of Gujarat /61/. The two latitudes and two longitudes given above were marked in the map to obtain a quadrilateral and were checked to confirm if all mentioned locations fall within the area marked.

The turbines installed are of "Enercon" make, E-53 model, of 800 kW capacity. The turbines are of 3-blade, direct driven, horizontal axis type with a rated wind speed of 12 m/s. The concrete tower has a height of 74 m and the rotor diameter is 52.9 m. The turbines produce electric power from the kinetic energy contained in the flowing wind at 400 V ( $\pm 12.5\%$ ) with a 50Hz ( $\pm 3\%$ ) frequency. The specifications of the equipment on offer were /12/ verified during site visit /71/ to confirm these details.

A fixed crediting period of 10 years has been chosen with the starting date of the crediting period as 1 October 2012 or the date of registration of the project activity whichever is later. As of 31 March 2012, all the 63 WEGs have been commissioned, 23 of them on 2 October 2011 /17/, 7 WEGs on 3 October 2011 /17/, and all the balance 33 WEGs on 31 March 2012 /18//19/.

The entire power generated by the project is supplied to the local grid of Gujarat State Electricity Board (GSEB), which is part of the Northern, Eastern, Western and North-Eastern (NEWNE) integrated 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 101 234 tCO<sub>2</sub>e emission reduction per annum during the crediting period of 10 years.

The starting date of the project activity indicated in the PDD is 2 April 2011, which is the date of placement of purchase order on Enercon India Limited (EIL) for the wind turbines /11/. The operational life time of the project activity is expected to be 20 years which has been verified from the certificate and specifications issued by the supplier /12/. This was further validated by comparison against information available from other recently registered wind power projects from the same host Party /30//31//32//33//34/.

The installation, commissioning, operation and maintenance of the WECs are under the scope of Enercon (India) Limited (EIL), during the crediting period. 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. The PDD has been presented in the prescribed format CDM-PDD,



version 03, and the details are provided in the PDD as per guidance for completing the CDM-PDD (version 07, EB 41, Annex 12) /28/.

DNV considers the project description of the project contained in the PDD to be complete and accurate.

### 4.3 Application of selected baseline and monitoring methodology

The project applies the approved baseline methodology ACM0002, version 13.0.0, “Consolidated baseline methodology for grid-connected electricity generation from renewable sources” /22/.

- The justification of the applicability of the methodology to this project activity is as per following details: The project activity proposes to exploit the wind power potential, a renewable source, to generate electric power which is evacuated into the NEWNE grid /42/
- The project activity does not involve capacity additions, retrofit or replacement. The copies of purchase orders /11/ for supply, erection and commissioning of 800 kW capacity WECs have been verified to confirm that this is a greenfield project activity; this was further confirmed during site visit and interviews with the site personnel /71/, when the civil work, installation activities were under progress and by verification of commissioning certificates /17//18//19/ .
- Power is proposed to be generated by undertaking new installation of wind electricity generators at a site where no renewable energy power plant was operated prior to the implementation of the project activity. This has been verified during the site visit /71/ and from the purchase order /11/ for WECs and the commissioning certificates /17//18//19/.
- No retrofit or capacity additions or replacements at the existing plants are involved. This has been verified during the site visit /71/.
- The project activity is connected to the NEWNE grid; the system boundaries are clearly identified and information on the characteristics of this grid is available /42/.
- This is a wind power project, that does not involve power generation based on hydro potential or by biomass utilization
- The project does not involve any kind of fuel switch, since this is a wind power project

The assessment of the project’s compliance with the applicability criteria of ACM0002 (version 13.0.0) /22/ are documented in detail in Table 2 of section B.2 in the validation protocol in Appendix A to this report.

### 4.4 Project boundary

The project system boundary consists of all the wind energy turbines, the transformer yards, transmission lines, pooling sub-stations, the connected NEWNE grid system and all the power plants connected to it.

Details of emission sources included in the project boundary are as follows:

Source	GHG Involved	Description
Baseline emissions	Carbon dioxide	CO <sub>2</sub> emissions equivalent to the amount of net electricity exported to the grid by the project activity



		that would have otherwise been generated by the other power plants connected to the grid
Project emissions	Not Applicable	Not Applicable
Leakage	Not Applicable	Not Applicable

The identified boundary and selected sources and gases are justified for the project activity as the validation of the project activity did not reveal 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 13.0.0).

## 4.5 Baseline identification

As the proposed project activity consists of installing a new grid connected renewable power plant comprising of wind energy turbines and the project is additional, cf. Section 4.6, the baseline scenario is in accordance with ACM0002, version 13.0.0 /22/, which is as follows:

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”, version 2.2.1 /23/.

The approved baseline methodology /22/ has been correctly applied to identify realistic and credible baseline scenario, 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.

## 4.6 Additionality

The additionality of the project activity has been demonstrated by applying the step-wise approach given in the “Tool for demonstration and assessment of additionality”, version 06.0.0/24/. Following steps have been included:

1. Identification of alternatives to the project activity
2. Investment analysis to determine that the project activity is not financially feasible, and,
3. Common practice analysis.

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

The PP has submitted a copy of resolution /3/ passed at a meeting of the Board of Partners of the company, Vish Wind Infrastructure LLP, on 1 April 2011, in which the proposed 50.4 MW Wind Power Project at Jamangar and Kutch Districts of Gujarat have been considered. The resolution specifically states “--- the expected returns from the project were assessed and it was concluded that the project would not be financially viable as a stand-alone basis



through sale of electricity”. The Board further proposes that the “financial risk posed by the project can be mitigated through CDM ....” and concludes that early steps should be taken to obtain CDM registration for the project.

The PP has placed the orders for supply of wind energy turbines /11/ required for the project activity vide purchase orders dated 2 April 2011; the documents evidencing the lease of land for the project activity are dated 8 June 2011, 14 June 2011 and 23 June 2011, the earliest being 8 June 2011 /15/. Accordingly, the earliest date on which either the implementation or construction or real action of a project activity begins or the earliest date when the PP has committed to expenditure related to project implementation is 2 April 2011; accordingly, 2 April 2011 has been considered as the start date of the project activity in line with the definition of starting date /27/.

The PP, Vish Wind Infrastructure LLP, has by an email dated 30 June 2011 /4/ confirmed its plans to implement a CDM project to the Secretariat, UNFCCC, in Kutch and Jamnagar districts of Gujarat. The e-mail also confirms that the project details are attached in the prescribed format as per EB 48, Annex 62.

In response, the CDM Team, UNFCCC Secretariat, confirms the receipt of notification of intimation of a CDM project /4/. Further, DNV has confirmed that the project can be located by searching for its title on the page /46/.

The PP has also intimated the National Clean Development Mechanism Authority (NCDMA), India, Ministry of Environment and Forests (MoEF) (host Party DNA), by email dated 30 June 2011 /5/, regarding the proposed project with complete details attached. The email also confirms that the prescribed online form has been duly filled and submitted. The NCDMA has duly acknowledged receipt and noting of the project information by email dated 8 July 2011 /5/. The intimation was made within six months from the start date of project activity on 2 April 2011.

The PP has submitted copies of communications sent to UNFCCC EB, /4/ and to the NCDMA /5/ by way of e-mails dated 30 June 2011 informing the UNFCCC secretariat and the host Party DNA of the commencement of the project activity and the desire to seek CDM status for the project; the acknowledgements received from NCDMA dated 8 July 2011 /5/ and from UNFCCC secretariat dated 29 July 2011 /4/ in confirmation of the receipt of the e-mail communication have also been submitted and verified by DNV.

Further, the project is webhosted for global stakeholder consultation on 4 August 2011 /47/ which is in vindication of the resolution of the Board to expedite the CDM registration of the project.

Thus, compliance with all the applicable requirements (section II (1), (2), (3), and (4) of EB 62, Annex 13) /25/ for prior consideration of CDM have been demonstrated and assessed as adequate. Further, the project title, entity name, and the name of the host Party, have been verified on the “prior Consideration of CDM” link on the UNFCCC website /46/. The date received indicated therein is 30 June 2011 which is found to be correct and in line with the documents submitted by the PP.

Thus, it is demonstrated that the CDM was seriously considered in the decision to proceed with the project activity and all the prescribed actions have been fulfilled to register the same in a verifiable manner. The intimation was made within six months from the start date of project activity on 2 April 2011. Further, the PDD was published for global stakeholder





consultation on 4 August 2011, within 2 years from the date of intimation. Therefore, DNV confirms that the proposed CDM project activity complies with the requirements of the latest version of the guidance on prior consideration of CDM /25/.

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

The applied methodology ACM0002 version 13.0.0 /22/ 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.

Two alternatives to the project activity have been considered as the baseline scenario. These are,

- i) Implementation of the project activity without CDM benefits, and,
- ii) continuation of current scenario (*status quo*)

In the event of the second scenario, an equivalent amount of electricity would, in the absence of the project activity, would have been generated by the operation of grid connected power plants and by the addition of new generation sources. Both alternatives are in compliance with the laws and regulations of India and might be considered as baseline scenarios.

DNV considers the listed alternatives to be credible and complete.

#### **4.6.3 Investment analysis**

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

The project proposes to export generated electricity to the grid, which generates revenues on account of sale of electricity, thus providing a stream of revenue other than of CDM. Thus, Simple Cost Analysis is not applicable.

The alternative of continuation of *status quo*, that is continuation of sourcing of power from the existing grid, does not involve any investment on the part of the project proponent. Thus, the alternative to the project does not involve any investment and hence investment comparison analysis is not applicable. This is in line with the EB “Guidelines on the assessment of investment analysis” /26/.

Thus, the project proponent has selected benchmark analysis for demonstrating the additionality of the project activity, which is considered appropriate.

##### **Benchmark selection**

The project has more than one potential investor and hence the benchmark shall be based on parameters that are standard in the market, considering the specific characteristics of the project type. Thus, the PP’s choice of expected / required return on equity on post-tax basis as the benchmark, calculated on parameters that are standard in the market, is considered appropriate. Further, as per paragraph 12 of the “Guidelines on the assessment of investment analysis” /26/, required/expected returns on equity are appropriate benchmarks for equity IRR. The PP has selected post-tax equity-IRR as the financial indicator for comparison against the required return on equity (post-tax). Tariff Policy notified by the GERC /49/ 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. DNV consider this is appropriate in the case of the current project activity.

In accordance with the “Guidelines on the assessment of investment analysis”, version 5, EB 62, Annex 5 /26/, the calculation of benchmark (when based on parameters that are standard in the market) may be done by using the values provided in the appendix to it /26/. The project activity as aforesaid is generation of electricity from renewable sources, which falls under the Sectoral Scope 1. The “Guidelines on investment analysis” /26/ arranges project activities in three different groups to reflect the risk of projects in different sectoral scopes. Sector Scope 1 figures under Group I /26/, default value for the post-tax expected return on equity for Group I projects from India being 11.75%. The selection of default value is appropriate, since the project activity falls under Group 1, Energy Industries. This is the real term value and the “Guidelines on investment analysis” /26/ also provides guidance on converting this to nominal terms by factoring in the predicted inflation rate.

The relation between the real and nominal rates of return is provided by the Fisher formula /59/ which is of the type,

$R_n = (1+R_r) * (1+R_i) - 1$ , where,  $R_n$  denotes nominal rate,  $R_r$  the real rate and  $R_i$ , the inflation rate.

The Reserve Bank of India (RBI) has published forecast Expected Inflation Rate as 5.3% over the next ten years as per the “Survey of Professional forecasters” dated 2 February 2011 /48/.

The PP has substituted the values for real benchmark /7/ from the default value provided and the expected inflation rate in the following formula:

Nominal Benchmark =  $\{(1 + \text{Real Benchmark}) * (1 + \text{Expected Inflation Rate}) - 1\}$ , to arrive at the real benchmark of the required rate of return on equity as being equal to 17.67% /7/.

DNV confirms that the MS excel sheet containing details of calculation of the benchmark /7/ for the project activity has been submitted by the PP which has been reviewed and confirmed to be correct and appropriate.

### Input parameters

The PP has also submitted an MS Excel sheet containing details of investment analysis /6/; a supporting sheet for having calculated the benchmark (required return on equity) /7/ has also been submitted. The formula used are readable, all relevant cells are viewable and unprotected.

The investment analysis has been carried out for 20 years which is also the lifetime of the project activity /12/.

Parameter	Value of the parameter used in the investment analysis	Details of the process and results of validation
Installed capacity of the project	50.4 MW	As per section A.2 of the PDD /1/, PP proposes to install 63 Wind Energy Converters of Enercon make, model E-53, each of name plate capacity 800 kW. The basis for the





## VALIDATION REPORT

		<p>decision to invest in this project was the resolution passed by the partners of the company at the meeting held on 1 April 2011. The copy of the resolution submitted for verification /3/ clearly mentions the capacity of the project under consideration as 50.4 MW. The techno-commercial offer dated 7 February 2011 /10/ based on which the investment decision was taken, categorically mentions the model E-53; the proposal is for 63 such machines each of capacity 800 kW. Further, the copies of purchase orders /11/ reference numbers 11-12/17 and 11-12/21 dated 2 April 2011 are for 26.4 MW for Kutch site and 24 MW for Lalpur site, for an aggregate of 50.4 MW. Additionally, the specifications of the offered equipment /12/ have also been compared against the detailed purchase orders /11/. Finally, these were compared against the specifications approved by the Centre for Wind Energy and Technology (C-WET) /44/ for the manufacturer. The details in all the referred documents were found to be uniform and in line with the stated project design.</p>
Total project cost	INR 2 990.61 M	<p>Copies of offer from EIL dated 7 February 2011 /10/ for supply, necessary connected civil works, erection and commissioning, including cost of land and transfer of rights have been submitted by the PP, which formed the basis of the investment decision taken on 1 April 2011; the sum of costs indicated for land lease, transfer rights, supply of all machinery and equipment (turbines, transformers and evacuation systems), civil construction, erection and commissioning of all supplied equipment and machinery add up to the total project cost; this has been verified and is found to be equal to INR 2 990.61 M; the cost/MW of the proposed turbines comes to INR 59.34 M. As the PP has applied the values based on the suppliers' offer which was available at the time of decision making, this is justified.</p> <p>However, the cost as per purchase orders /11/ was computed which indicated a total project cost of INR 2 772 M (INR 55 M / MW). This is equal to a variation of about (-) 7.31%. In this connection, it is noted that the PP has presented a sensitivity analysis with 10% project cost variation from which it is seen that with a (-) 10% variation in project cost, the equity IRR comes to 12.11% which is still well below the benchmark. Thus, the lower cost of investment as per the actual purchase orders is covered under the ambit of the investment analysis carried out. Also, the project cost input to the financials of the project is compared and found to be on par with other registered CDM projects /30/ /31//32//33//34/ as per details presented</p>



## VALIDATION REPORT

		<p>below:</p> <table border="1"> <thead> <tr> <th>Project ID</th><th>Cost INR M / MW</th><th>Project start date</th></tr> </thead> <tbody> <tr> <td>4756</td><td>62.57</td><td>11.08.2008</td></tr> <tr> <td>4892</td><td>61.00</td><td>09.01.2008</td></tr> <tr> <td>4740</td><td>60.33</td><td>24.01.2008</td></tr> <tr> <td>5186</td><td>59.32</td><td>05.12.2009</td></tr> <tr> <td>4942</td><td>60.5</td><td>02.11.2009</td></tr> </tbody> </table> <p>The DVR was prepared in September 2011; accordingly, wind based power generation projects registered in India till 22 September 2011 were considered and five projects with most recent and comparable start dates were selected, details of which are provided in the above table; the investment cost of the project activity considered for investment analysis was compared against the investment costs of these registered projects; it is found that the costs used for financial analysis is on par and appropriate. Thus, the total project cost of INR 2 990.61 M considered for investment analysis is reasonable.</p>	Project ID	Cost INR M / MW	Project start date	4756	62.57	11.08.2008	4892	61.00	09.01.2008	4740	60.33	24.01.2008	5186	59.32	05.12.2009	4942	60.5	02.11.2009
Project ID	Cost INR M / MW	Project start date																		
4756	62.57	11.08.2008																		
4892	61.00	09.01.2008																		
4740	60.33	24.01.2008																		
5186	59.32	05.12.2009																		
4942	60.5	02.11.2009																		
Plant load factor	23.8% for Lalpur project sites and 24.5% for Kutch project sites	<p>These figures on the estimated power potential of the selected sites at Lalpur and Kutch area are based on the PLF determination report issued by True Wind International Certification dated 10 March 2011 /9/.</p> <p>This meets the requirement of EB guidance in the matter of reporting of PLF /29/. These work out to 16.67 GWh / WEC for Lalpur site and 17.17 GWh/WEC for Kutch sites. The suppliers' offer dated 7 February 2011 /10/ also has an estimate of possible power generation at 16.12 GWh / WEC for Lalpur site and 16.96 GWh / WEC for Kutch sites. The Gujarat Electricity Regulatory Commission has in its tariff order dated 31 January 2010 /49/ states that the tariff is based on 23% PLF.</p> <p>The PP has based the equity IRR calculations /6/ on the basis of the PLF report submitted by third party consultant /9/, which is the highest among all the choices available. It meets the requirement of EB guidance /29/ and hence appropriate.</p> <p>From the results of comparisons made as per above, DNV is of the opinion that the 24.5% PLF used for Kutch region and 23.8% used for Lalpur site is reasonable.</p>																		
Power tariff	INR 3.56 / kWh	<p>This is as per the GERC tariff order dated 30 January 2010 /49/ and is valid for both locations of proposed project activity for full life of the project (20 years) /12/. Under section 4 (Tariff determination) of the referred GERC order /49/, the commission has fixed a levellized tariff of</p>																		



		<p>INR 3.56 per kWh. The commission in its order confirms that the tariff determined is valid for the “entire project life of 25 years” and that “it is applicable to wind energy projects which commission brand new wind energy plants and equipment from 11 August 2009 onwards”. The PP has considered a lifetime of 20 years based on the information provided by the supplier of equipment prior to decision making /12/. Accordingly, the tariff of INR 3.56 per kWh is considered valid for the entire period of 20 years. The tariff used in other registered projects is as below; projects from the same state (Gujarat) of comparable time have been selected for this comparison, as the tariff changes with time and from state to state:</p> <table><tr><th>Registered Project ref no.</th><th>Tariff used (INR/kWh)</th></tr><tr><td>5141</td><td>3.56 (fixed for 20 years)</td></tr><tr><td>4964</td><td>3.56 (fixed for life)</td></tr><tr><td>4892</td><td>3.37</td></tr><tr><td>5239</td><td>3.37</td></tr><tr><td>5112</td><td>3.37</td></tr></table> <p>Thus, the tariff value and basis considered for this project is reasonable and is based on correct facts. Further, the tariff is applicable for “procurement of power by Distribution Licensees and others in Gujarat from wind energy projects” and so it is applicable for WECs in both the proposed sites. DNV has confirmed that the referred GERC order was the latest available to the PP at the time of decision making and hence the tariff of INR 3.56/kWh considered for investment analysis is appropriate.</p>	Registered Project ref no.	Tariff used (INR/kWh)	5141	3.56 (fixed for 20 years)	4964	3.56 (fixed for life)	4892	3.37	5239	3.37	5112	3.37
Registered Project ref no.	Tariff used (INR/kWh)													
5141	3.56 (fixed for 20 years)													
4964	3.56 (fixed for life)													
4892	3.37													
5239	3.37													
5112	3.37													
O&M costs	1.3% of project cost from 2 <sup>nd</sup> year onwards with 6% annual escalation	<p>This is as per the rates for operation and maintenance quoted by the supplier in their offer dated 7 February 2011 /10/. Clause 9 of the offer /10/ states that the supplier will provide free O&amp;M services during the first year of operation; from 2<sup>nd</sup> year onwards INR 0.62 M / WEC shall be payable; subsequently, it is subject to 6% annual escalation. This was compared against the recommended rates mentioned in the GERC order dated 30 January 2010 /49/ (INR 0.65M / MW from 1<sup>st</sup> year with 5% escalation). The return on equity rises marginally to 8.64% from 7.86% if O&amp;M costs based on GERC orders /49/ are applied, still below the benchmark.</p> <p>DNV has also compared O&amp;M charges for similar registered projects and the results of such comparative</p>												



		<p>study are as below:</p> <ol style="list-style-type: none"> <li>1. Registered project no. 5112: 1.23% of capital cost as O&amp;M Charges (INR 15.674 M /INR 1271 M) and an additional 1% as administrative expense, total: 2.23% of capital cost as O&amp;M Charges /38/. Annual escalation of 5% on O&amp;M and 4.5% on admin charges; net escalation 4.29%; 29% more expensive over 20 years</li> <li>2. Registered project no. 4964: 1.3% of capital cost as O&amp;M Charges /37/; 6% annual escalation; on par</li> <li>3. Registered project no. 4700: 1.3% of capital cost as O&amp;M Charges /39/; 6% annual escalation; on par</li> <li>4. Registered project no. 4959: 1.28% of capital cost as O&amp;M Charges /40/; 10% annual escalation; 75% more expensive over 20 years</li> <li>5. Registered project no. 5141: 1.5% of capital cost from base year as O&amp;M charges with 5% escalation; 13% more expensive over 20 years</li> <li>6. Registered project no. 5186: 1.3% of capital cost as O&amp;M Charges /37/; 6% annual escalation; on par</li> </ol> <p>Based on such comparative analysis, DNV is of the opinion that the assumed O&amp;M costs on which the investment analysis has been carried out is reasonable.</p>
Insurance charges	0.12%	<p>The O&amp;M guidance value @ INR 0.65 M /MW, as per GERC order /49/ is inclusive of insurance charges; however, GERC rates are applicable from first year onwards with 5% annual escalation.</p> <p>In the investment analysis presented, PP has charged O&amp;M charges as per suppliers' offer @ 1.3% with 6% annual escalation chargeable from second year (first year free). In addition, insurance expenses @ 0.12% of the asset value is considered as a separate expense; This is in line with the estimate as per equipment suppliers' offer /10/; under section 11 of the referred offer, insurance costs after commissioning are to the account of PP.</p> <p>DNV verified that even if the insurance charges are removed it makes negligible difference to the financial indicator calculated, as the equity-IRR marginally improves from 7.86% to 8.18%.</p>
Rate of interest	11.5%	<p>The Power Finance Corporation, a Government of India undertaking, dedicated to power sector financing has indicated 11.5% as rate of interest applicable for Rupee Term loans for power generating companies with AAA</p>



## VALIDATION REPORT

		<p>rating /52/. Considering that it is the lowest rate and specific for power producing companies, applying 11.5% as the rate of interest is found reflective of actual prevailing market conditions and hence reasonable. This is cross checked from the IREDA loan sanction letter submitted by PP dated 27 July 2011 /16/, wherein it is stated that the applicable rate of interest rate is 11.25% and an additional 0.5% shall be charged during implementation stage. At 11.75% interest rate, the equity IRR works out to be 7.69% which is lower than the projected IRR.</p> <p>The rate of 11.5% assumed by the PP is based on the rates announced by PFC /52/ and was available to the PP at the time of taking the decision, it is considered appropriate and reasonable. The actual rate paid by PP as per loan sanction letter /16/ is 11.75%, which if applied for financial analysis, the equity IRR works comes down to 7.69% from 7.86%.</p>
Debt : equity ratio	70 : 30	<p>The GERC in section 4 of its tariff order /49/ specifies debt: equity ratio as 70:30 for fixing a tariff of INR 3.56 / kWh. The debt equity ratio is cross checked from the IREDA loan sanction letter /16/ submitted by PP, sanctioning an amount of INR 1 982.4 M for the project activity, which is 71% of the actual project cost. Bank has considered project cost as INR 2772 M plus preparatory costs of INR 60 M and has sanctioned INR 1982.4 M, which is 70% of the project cost as appraised by the bank. Thus, DNV confirms that the assumption of loan of 70% of the estimated cost of the project for financial analysis as reasonable.</p>
Loan tenure	10 years	<p>The loan tenure assumed by PP is in line with the GERC tariff order /49/. The loan document from IREDA /16/ confirms the loan tenure as 10 years with one year moratorium; applying the moratorium period has a very marginal change (0.04%) in the Debt Service Coverage Ratio and hence it is not expected to affect the equity IRR in any appreciable manner and hence the assumption of 10 years considered for investment analysis of the project is considered reasonable.</p>
Rs. 2990.61 is the estimated costRate of depreciation (IT)	80%	<p>The rate of depreciation applied for purpose of calculating the incidence of income tax on the income from energy business by the PP is 80% which is found to be in order as per IT Department "Rates of depreciation as per IT Act", section III, 8 G (xiii)(l) /53/. The permitted accelerated rate of depreciation for computation of income tax payable /54/ has been calculated on total project cost less cost of land,</p>



## VALIDATION REPORT

		<p>transportation, and transfer rights.</p> <p>Thus, DNV confirms that the rate of depreciation applied for investment analysis and method of calculation adopted is as per the applicable statutory provisions /53/ for limited liability partnership firms.</p>
Rate of depreciation (book)	4.5%	<p>Section 205, 2 (b), of the Companies Act, 1956 /67/ states that depreciation shall be provided “in respect of each item of depreciable asset such an amount as is arrived at by dividing 95% of the original cost thereof to the company by the specified period in respect of such asset”. The life of equipment is given as 20 years by the equipment manufacturer /12/. The PP has, on a conservative basis, assumed 10% of the value of all depreciable assets plus cost of land as the residual value; thus, rate of depreciation is arrived at as equal to 90% of the value of the equipment that has to be depreciated divided by the life of such asset (20 years). Thus, a straight line method of calculating book depreciation has been employed to calculate depreciation @ 4.5% per annum on total project cost less cost of land, transportation, and transfer rights (total of depreciable assets).</p> <p>The procedure adopted for calculating the book depreciation by straight line method and the rate of 4.5% adopted is thus found to be meeting the statutory requirements /67/.</p>
Income tax rate	30.9%	<p>The Income tax rates applicable for limited liability partnership (LLP) firms /54/ are 30% flat tax rate <i>plus</i> 3% education cess. The PP is a LLP as evidenced by the copy of the registration certificate /2/ which has been verified. Thus, eligibility of the PP firm for the IT rate of 30.9% is established and its application found appropriate.</p>
Salvage value	10% of machinery value plus land cost	<p>The life time of 20 years for the project activity is based on the specifications provided by the supplier /12/. PP has applied 4.5% depreciation rate on Straight Line Method basis over the life time of the project to depreciate 90% of project value; accordingly 10% of machinery cost <i>plus</i> the original investment on land is reckoned as salvage value and has been included in the cash flow of the 20<sup>th</sup> year. A residual value of 10% of original cost after the end of life time is considered reasonable.</p>
Income tax holiday	100% income exempt for power producing companies for	<p>Section 80-IA of the Income Tax Act 1961 /53/ provides for deduction from the total income from an undertaking for the generation of power. The amount of deduction is equal to 100% of the profits from such undertaking and can be availed at the option of the assessee for any ten</p>





## VALIDATION REPORT

	10 years	consecutive assessment years out of 15 years beginning from the year in which the undertaking starts generation of power or transmission/distribution /53/.  It can be seen that PP makes a taxable profit after adjusting carried over losses only in the 14 <sup>th</sup> year after commissioning; PP has claimed exemption from 100% IT payable for the 14 <sup>th</sup> and 15 <sup>th</sup> year. This is in line with the prevailing incentive scheme applicable /53/ for power generating projects such as the current project.
Working capital	(i) Bills payable for one month (ii) O&M Charges payable for 3 months  INR 61.4 M added back to cash flow in 21 <sup>st</sup> year.	Under section 3.11 of the GERC tariff order /49/ the basis for the working capital requirement is provided by the GERC as (i) bills payable for one month and (ii) O&M charges payable for one month. However, as per the offer /10/ given by supplier O&M charges need to be paid in advance for every quarter. PP has considered O&M charges for three months. No interest is charged on working capital requirements though GERC allows for 11.5% interest on working capital.  DNV verified that without considering working capital requirement, the IRR marginally improves from 7.86% to 8.2%. The entire amount of working capital is added back to cash flow as increase in current assets which is in line with standard accounting practice.

**Conclusion**

Based on the assumptions as set out in the MS Excel sheet containing the investment analysis details /6/, the post-tax equity IRR worked out by the PP is 7.86% against the benchmark of required return on equity calculated at 17.67% /7/. The calculations have been based on information that was available to the PP at the time the decision to invest in the project was made; the basis of much of such information was based on information provided by the supplier; for information not provided by the equipment supplier, the PP has sourced such data from reliable sources which are independent, devoid of any bias, autonomous, and statutory, such as the Electricity Regulatory Commission of the respective state of the host Party or the income tax authorities, leading project financiers, etc.

DNV has counterchecked the accuracy of the all the data sourced, applicability, and correctness of applied formula and algorithms.

Based on these, DNV is of the opinion that the investment analysis /6/,/7/ as presented indicates the financial unattractiveness of the project proposal and that CDM revenues will considerably contribute to its mitigation.

**Sensitivity analysis**

The PP has also carried out a sensitivity analysis by varying the parameters of capital cost, PLF, and O&M costs, by 10%. These parameters selected for carrying out sensitivity analysis contribute more than 20% to revenues and or costs. The results may be tabulated as follows:

Favourable variation in	Resulting Equity IRR	Benchmark (in %)
-------------------------	----------------------	------------------



parameters	(Financial indicator) (in %)	
BASE CASE	7.86	17.67
(-) 10% Capital cost	12.15	
+10% PLF	10.93	
-10% O&M Charges	8.37	

Further, it is also demonstrated that the benchmark is breached only if the investment cost goes down by 18.64% or if the PLF increases by 31.74%.

DNV verified that the actual cost incurred is INR 2 772 million from the purchase orders placed on EIL /11/, which is 7.31% lower than the value used for financial analysis; DNV has verified recently registered projects /30//31//32//33//34/ from which it is seen that the capital cost range of registered projects varies from INR 59.32 M / MW to INR 62.57 M / MW against the actual cost of INR 55 / MW based on purchase order value. Thus, the purchase cost of the project equipment is competitive in comparison with other similar projects and the possibility of investment cost going down by 18.64% is not considered feasible.

The PLF assumed for investment analysis is based on the report /9/ issued by a third party consultant; the company, based on long term wind data (from 1 April 2006 to 1 April 2009) assessed the potential for both project sites and has predicted PLF of 23.8% for Lalpur and 24.5% for Kutch area; against this, the equipment supplier, in their offer /10/ has projected annual generation/WEC of 1 696 MWh for Lalpur site (24.2%) and 1 612 MWh (23%) for Kutch site based on their wind mast data; thus, it can be seen that the financial analysis has been based on PLF which is already higher by 3.5% for Lalpur area and 6.5% for Kutch area. Thus, an increase in PLF by 31.74% above the PLF applied for investment analysis estimated is not likely.

Another condition under which the financial indicator betters the benchmark is if the tariff goes up by 31.75%; the tariff used for the financial analysis is based on the tariff order passed by the state regulatory body in January 2010 /49/, that is fixed for 25 years. Thus, the possibility of any revision of the tariff by 31.75% is not likely to occur. Tariff for power has been based on the GERC order dated 30 January 2010 which is fixed for twenty years and hence considering the effects of a change in tariff would not be appropriate and hence has not been included under sensitivity analysis.

It is also to be noted that even with no O&M charges, the equity IRR does not equal or exceed the benchmark. Thus, none of the scenarios which permit breaching of benchmark by the financial indicator is likely to occur and hence the robustness of the conclusion of financial unattractiveness arrived at through the investment analysis /6/ is demonstrated clearly.

The Central Electricity Regulatory Commission (CERC) passed the notification no. L-1/12/2010-CERC dated 14 January 2010 /56/ covering the terms and conditions for recognition and issuance of Renewable Energy Certificates (REC); this was a market based instrument to promote renewable energy generation and to facilitate compliance with purchase obligations of renewable energy and was open to any grid connected renewable energy generation project which did not opt for the preferential tariff regime under a PPA. This project fulfilled the requirements and the PP did not rule out opting for the REC





mechanism during the site visit /71/. However, the PP claimed that since the policy came into effect post 11 November 2001, the REC mechanism came under the E- policy stipulations as detailed in EB 22, Annex 3 /41/.

As per details contained in Annexure 1 of the Order of CERC dated 1 June 2010 /56/, the APPC tariff for Gujarat for non-solar power is INR 2.10 / kWh; the average prices of REC traded at the IEC and PXIL /55//56/ is INR 2 190 / REC. (One REC equals 1 MWh renewable power generated). Accordingly, under the REC option, the PP gets INR 4.29 /kWh, which is 20.5% higher than the tariff used for financial analysis. As discussed earlier, the IRR crosses the benchmark only with an increase tariff of 31.75%. In the opinion of DNV, even if the PP opts for the REC, this will not affect the financial viability of the project. Thus, the project clearly needs CDM revenues to incentivise its implementation, without which it is not likely to be implemented.

#### 4.6.4 Barrier analysis

PP has proceeded to present common practice analysis as permitted by the “Tool for the demonstration and assessment of additionality” /24/.

#### 4.6.5 Common practice analysis

This project activity generates electrical power from wind energy and evacuates the generated power into the carbon intensive NEWNE grid. Thus, the project activity falls under the measure 6(b) of the “Tool for the demonstration and assessment of additionality” (version 06.0.0) /24/, namely “Switch of technology with or without change of energy source (including energy efficiency improvement as well as use of renewable energies)”. Thus, the 4-step credibility check as given under paragraph 47 of the tool /24/ is applied to demonstrate the common practice analysis. The PDD contains a detailed presentation of the steps and calculations involved under each step.

STEP 1: The capacity of the wind power project is 50.4 MW. Thus the applicable output range determined as per the relevant enunciated procedure in the tool /24/ ( $\pm 50\%$  of the design capacity).

Thus, the applicable output range for the project activity is from 25.2 MW to 75.6 MW.

The PP has chosen the entire host country, India as the applicable geographic area, in line with section 5 of the “Tool for the demonstration and assessment of additionality” (version 06.0.0) /24/. DNV considers the selection of the output range and geographical area is in accordance with the tool /24/.

STEP 2: All the projects within the applicable range that have started production by 2 April 2011 (project start date) within the geographic area are first considered for arriving at  $N_{all}$ . Since there is no single data base which provides such data, the PP has tabulated all power plants in the applicable range as per the database of Central Electricity Authority, version 6 /42/ which lists all the thermal and hydro power projects in India and the Directory of Indian Wind Power, July 2011 /70/ that lists all the private wind farm owners in India. DNV observes that there are no biomass based power projects within the applicable range of step 1. Then, those projects that are registered/applied for CDM benefit are eliminated by referring to the UNFCCC website.

From the above list, the number of thermal, hydro and wind power projects which are in the applicable range is worked out as 51, 8 and 2 respectively. The list of projects falling within the applicable range is provided as Appendix 2 of the PDD /1/.

The total number of projects ( $N_{all}$ ) falling under the range of 25.2 MW to 75.6 MW in the host country is 61. DNV crosschecked the details of projects provided in the list with the CEA



database version 6 /42/ and the Directory of Indian wind power /70/ and confirmed that the list is complete.

Step 3: The project activity is wind power project, hence the project activities ( $N_{diff}$ ) applying the technology different from wind out of the project activities listed in step 2 above is considered. Of the 61 projects identified (step 2) in the specified range (step 1), there are only two projects which apply the same technology as the project activity (wind project). Hence the number of projects which apply different technology than that of the project activity is  $(61-2) = 59$ .

Hence  $N_{diff}$  is arrived at as 59.

As per the tool, the proposed project activity is a common practice within a sector in the applicable geographical area if both the following conditions are fulfilled:

- (a) the factor F is greater than 0.2, and
- (b)  $N_{all} - N_{diff}$  is greater than 3.

Under step 4 the factor F is calculated in accordance with the guidelines.  $F = 1 - (N_{diff}/N_{all})$ . The factor F is arrived at 0.0327 which is less than 0.2. The difference between  $N_{all}$  and  $N_{diff}$  is 2, which is lower than 3. Since both the conditions are not met, the project is not a common practice within a sector in the applicable geographical area of India.

Hence, in accordance with the additionality tool version 6.0 /24/, DNV confirms that the establishment of 50.4 MW wind power project is not a common practice in the host country..

Thus, it is demonstrated that non-CDM wind generation projects is not common practice.

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 that would happen in absence of the project.

## 4.7 Monitoring

The project monitoring plan is in compliance with the monitoring methodology ACM0002 (version 13.0.0) /22/. The project generates electrical power from wind energy; thus the project emissions are zero. The methodology also clearly states that leakage is not to be considered.

That leaves only baseline emissions to be monitored; accordingly, the methodology requires that the power generated and exported to the grid as a result of the project activity be monitored; the net electricity supplied to the grid should be continuously measured and recorded at least once in a month. The quantity of measured / calculated electricity should be cross checked with records for sold electricity.

The WECs generate 3-phase power at 400 V which is continuously measured by meters installed in the control panel located within the tower and are recorded by microprocessor based electronic system. Various data, including generated power, are logged continuously and monitored by a Central Monitoring Station equipped with Supervisory Control and Data Acquisition (SCADA).

The transformer yard located adjacent to the WEC steps up the generated power to 33 kV and clusters of such WECs, including the project WECs, have common cluster metering points;



## VALIDATION REPORT

these are pooled together and transmitted to the Enercon/GEDA sub-station where the power is stepped up to 66 kV at Kutch and 220 kV at Lalpur, metered, and fed to the grid.

Based on the readings of the 33 kV and 66 kV / 200 kV meter monthly readings, the Gujarat Electricity Development Authority (GEDA), which controls the power distribution in the state of Gujarat, calculates the distribution losses, apportions it among the connected WECs, and issues a statement of net electricity supplied to the grid to each PP. The net electricity supplied to the grid can be cross checked from the sale invoice.

In all cases it is normally the main meter reading that is considered for billing and for ER calculations; however, if the main meter is found to be erroneous during checking, check meter readings will be used instead. Further, if both meters at 33 kV are found to be erroneous, readings from LCS meters (SCADA based system) are submitted to GEDA and are used for apportioning.

All meters installed are electronic bidirectional tri-vector meters with an accuracy class of 0.2s capable of measuring both export and import and are calibrated once in a year.

A planned monitoring organization structure with clearly allocated duties and responsibilities is proposed to be put in place; programme for providing training to personnel involved in operation and maintenance, including monitoring is in place.

The PP has contracted O&M as well as routine monitoring to Enercon India Limited (EIL) which has implemented a certified ISO Quality Management System, /69/ which ensures adequate document and record control, data retrieval, security and preservation procedures. Thus, in DNV's opinion, the project participant will be able to implement the monitoring plan as described in the PDD /1/, which meets the requirements of the monitoring methodology ACM0002 (version 13.0.0) /22/.

As required by the DNA of India, project proponent has committed to spend 2% of the revenue accruing out of sale of CERs, every year, for sustainable development of the local area. An action plan for it is included in section B.7.2 of the PDD /1/.

#### 4.7.1 Parameters monitored ex-ante

The project demands monitoring of total power exported to grid and the Combined Margin grid emission factor. The former is done as per the requirements of the applied consolidated methodology ACM0002, version 13.0.0 /22/, and the latter is prescribed to be done as per the "Tool to calculate the emission factor of an electricity system", version 2.2.1 /23/.

The NEWNE grid is identified as the relevant project electricity system in accordance with the requirements of STEP 1 of the tool /23/.

In India, Central Electricity Authority, under the Ministry of Power, Government of India, compiles and publishes a comprehensive database containing the necessary data on CO<sub>2</sub> emissions /42/ for all grid-connected power stations in India. This facilitates adoption of authentic baseline emissions data and also to ensure uniformity in the calculations of CO<sub>2</sub> emission reductions by CDM project developers.

The PP has exercised the option available under STEP 1 and has correctly chosen to calculate OM as the simple operating margin emission rate of the exporting grid, determined as described in Step 4 (a), by demonstrating that the conditions for this method, as described in STEP 3 of the tool apply to the system grid.

The low-cost / must run resources share varies from 15.9% to 19% of the total generation in the the NEWNE grid, during the years 2005-2010. This was verified against data available in the CEA CO<sub>2</sub> Baseline Database for Indian Power Sector, version 6, reproduced below /42/.



<b>Share of Must-Run (Hydro/Nuclear) (% of Net Generation)</b>					
	<b>2005-06</b>	<b>2006-07</b>	<b>2007-08</b>	<b>2008-09</b>	<b>2009-10</b>
NEWNE	18.0%	18.5%	19.0%	17.4%	15.9%
South	27.0%	28.3%	27.1%	22.8%	20.6%
India	20.1%	20.9%	21.0%	18.7%	17.1%

Thus, it is established that the system grid meets the condition described in STEP 3 of the tool and the choice of the PP to calculate OM as Simple OM is considered appropriate.

Under STEP 2, the PP exercises the option of considering only the grid power plants included in the calculation and excludes off-grid power plants. Having met the condition to employ Simple OM, the PP chooses the *ex-ante* option; as per this, the PP is required to consider a 3-year generation-weighted average for grid power plants, based on the most recent data available at the time of submission of the CDM-PDD for validation. This PDD was webhosted on 4 August 2011 /47/ and values from the CEA CO2 database version 6 dated March 2011 /42/ have been used, which fulfills the eligibility condition.

The 3-year generation weighted average of the grid power plants has been considered and the Simple OM is calculated on ex-ante basis; this is in line with the requirements of the tool /23/.

The build margin emission factor has been calculated on *ex-ante* basis in line with the requirements of option of STEP 5 of the tool /23/, based on the most recent information available on units already built for sample group *m* at the time of CDM – PDD submission to the DOE for validation. The value is directly sourced from the database /42/.

Further, the PP has calculated the CM emission factor of the NEWNE grid as the Weighted average CM in accordance with the option (a) of STEP 6 using the permitted default values for WOM (0.75) and WBM (0.25) applicable for wind powered projects.

Accordingly, the CM for the NEWNE grid is calculated as being equal to 0.94881 tCO<sub>2</sub>e/MWh for the entire crediting period.

DNV confirms that the method followed for calculating the simple OM, BM and CM is in compliance with the “Tool for calculating the emission factor of an electricity system” /23/, the version 6 of the database /42/ used for sourcing the data is appropriate and proper, the weightage factors used for calculating the CM is as stipulated in the tool /23/ and the value of CM arrived at on ex-ante basis is in order.

#### **4.7.2 Parameters monitored ex-post**

The quantity of net electricity supplied by the project activity to the grid. ( $EG_{\text{facility},y}$ ) is the only parameter monitored. This will be calculated based on 33 kV meter readings for import and export of electricity to the grid, after applying transmission losses (TL). TL is calculated by GETCO based on readings of export and import indicated by the GEDA meters (main and check meter) at the 220 kV/66kV substation and the 33 kV cluster meter readings. The 33 kV meters are connected to either one or a cluster of WECs belonging to the project activity. The meters at the 66/200 kV sub-stations are connected to both project WECs as well as other non-project WECs. The meter readings at these metering points are recorded by GETCO on a monthly basis.



As mentioned earlier, the generated power at 400 V is stepped up to 33 kV and are metered similarly by an ensemble of main and Check meters, either individually or a for a cluster of project WECs. GETCO receives such metering information from all connected WECs, which comprises of both project and non-project WECs.

Based on these two sets of data from the 33 kV meters and the 66/200 kv meter readings, which are measured continuously and recorded once in a month, GETCO calculates transmission loss between the 33 kV metering points and the 66/200 kV metering point and then apportions it for the 33 kV meter readings to arrive at the net power supplied to the grid by each WEC / cluster of WECs. All meters are bi-directional and measure both imported and exported power from and to the grid; GETCO issues an energy share certificate for the PP confirming the net energy exported by the project activity after adjusting for transmission losses and electricity imported, based on which the PP proceeds to calculate the emission reductions achieved by the project activity.

In addition to these, the power generated by the WECs is also continuously monitored by LCS meters installed in the WEC control panel. This SCADA based data is made available to the PP by the O&M Contractor on a monthly basis. These are submitted to GEDA and are used only during the emergency condition of total failure of 33 kV meter system.

The step-wise details of apportioning procedure are provided in the PDD /1/. The net power exported to the grid as per the certificate issued by GETCO is used by the PP for raising supply invoice and calculating the GHG emission reductions achieved by the project activity. Copies of such invoices shall be made available to the DOE during verification for cross-checking of the correctness of the exported power to the grid. The export and import readings of cluster meters and sub-station meters are used for apportioning are not indicated in the share certificate issued by GETCO to PP. The share certificate only mentions the net electricity supplied by the project activity to the grid, which will be monitored by the project participant.

#### **4.7.3 Management system and quality assurance**

The responsibility of overall project management lies with Vish Wind Infrastructure LLP. EIL has been retained by the PP for providing the requisite services of O&M including monitoring and data collection. All the meters installed for monitoring tri-vector electronic meters of 0.2s accuracy class and are tested prior to installation and are sealed to ensure data security and tamper proofing.

In the event of meter found not working or found to be working at accuracy levels beyond the specifications, suitable measures are planned and the details provided in the PDD. If all meters are working normally, the readings of main meter alone are considered. If main meter is found to be working beyond accuracy levels, the check meter readings shall be used, if found working satisfactorily.

In the event of both check and main meter failing, the readings of LCS meters will be provided to GEDA based on which transmission losses will be calculated and the same apportioned.

If a meter is found to be faulty / inaccurate during checking based on which previous readings have been finalized, then the error percentage shall be applied to all the readings since last calibration. Steps would be taken to replace the meter immediately.

The organization structure is well defined, duties and responsibilities assigned. It was confirmed during site visit interviews with the EIL personnel /71/ that the site personnel are provided the requisite training in operation, maintenance and monitoring procedures ensuring





adequate skill levels in these areas. Details are provided in the PDD. Appropriate training modules and procedures have been specified to ensure that monitoring personnel are completely equipped to carry out the plan as specified.

The organization entrusted with monitoring, EIL, is an ISO 9001:2008 certified unit /69/ and hence established procedures for document and record control, preservation, and retrieval, training of personnel, internal audits, and reviews will be in place and ensure adequate and satisfactory degree of quality assurance.

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

The project activity comprises of generation of electricity from wind power; as narrated under 4.7 above, project emissions and leakage are not to be considered as per the applied methodology ACM0002, version 13.0.0 /22/

The emission reductions are calculated as follows:

$ER_y = BE_y - PE_y - LE_y$ , where,

$ER_y$  = Emission reductions in year y,

$BE_y$  = Baseline emissions in year y,

$PE_y$  = project emissions in year y, and

$LE_y$  = leakage emissions in year y, all expressed in tCO<sub>2e</sub>/ MWh

It is seen that, project emissions and leakage emissions are zero, and therefore,

$ER_y = BE_y$

Baseline emissions are calculated as follows:

$BE_y = EG_y \cdot EF_y$ , where,

$EG_y$  = Net power exported to grid, and

$EF_y$  = Emission factor of the connected system grid (NEWNE), whose emission factor on ex-ante basis has been fixed at 0.94881 tCO<sub>2e</sub>

In actual practice, the net power exported to the grid is determined as per procedure mentioned in 4.7.2. For arriving at an estimate of the emission reductions likely to be effected by the implementation of the project, the power exported is assumed to be at the assumed PLF levels.

Accordingly,

$$EG_y = ((24 \text{ MW} \times 23.8\% + 26.4 \text{ MW} \times 24.5\%) \times 8,760) \\ = 106\,696.8 \text{ MWh}$$

The GHG emission calculations are well documented in line with the consolidated baseline and monitoring methodology ACM0002 version 13.0.0 /22/. The project is electricity generation from wind power and no project emissions and leakage is associated with the project activity. As the project activity supplies electricity to the NEWNE grid, the baseline emissions have been estimated based on net electricity supplied to the grid by the project activity and the combined margin emission factor of NEWNE grid.

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 calculated to be 101 234 tCO<sub>2e</sub> 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. 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 eliminate project emissions and leakage and to calculate baseline emissions and emission reductions. Estimates of baseline emissions and emission reductions can be replicated using the data and values provided in the PDD. No other project emission or leakage sources contributing more than 1% and not mentioned by the methodology have been found.

#### 4.9 Environmental impacts

In India the Ministry of Environment and Forests (MoEF) has finalized the list of industrial activities that need to complete a study of Environmental Impact Analysis (EIA) and has included it in the Schedule 1 to notification by Ministry of Environment and Forests (Government of India) dated January 27, 1994 and EIA Notification (S.O 1533) dated 14<sup>th</sup> September, 2006, amended by notification dated 1 December 2009 /43/. Environmental clearance for such listed activities is accorded after review of the EIA by the state level or central committee. However, the activity of power generation from wind energy is not listed in the said schedule and thus no such EIA is required and hence has not been conducted for this project.

The documents pertaining to the lease of land required for establishing the project /15/ have been verified from the stamp paper deed duly registered in the jurisdictional sub-registrar's office /15/. Thus, the project is found to meet the necessary statutory requirements to establish the project.

#### 4.10 Comments by local stakeholders

The PP has authorised EIL, to conduct the local stakeholder consultation meeting /14/. Advertisements /13/ have been inserted in the local newspapers dated 28 and 29 June 2011 informing the stakeholders about the meeting scheduled on 15 and 16 July 2011 .

The attendance records for the meeting conducted on 15 July 2011 at Lalpur and on 16 July at Kutch, as per the schedule and copies of minutes of meeting /13/ have also been submitted for verification. A summary of the questions raised have also been presented in the PDD /1/.

It is noted that the local stakeholder consultation meetings were attended by the following:

1. Employees from EIL at both sites
2. Representatives of PP at both sites
3. 20 local village level stakeholders at Rasaliya village (Kutch) and 13 at Dharmapur (Lalpur site).

Salient features of the project, nature of the technology employed and its environment friendliness, were explained to the gathering during introductory sessions; subsequently, questions were invited from the local stakeholders; questions put ranged from nature of CDM concepts, wind mill working, likely effect on local land prices, safety measures being undertaken, earthing arrangements and safety to grazing animals. The minutes of the meeting indicate that the questions raised by the stakeholders have been adequately and satisfactorily addressed by EIL. There were no negative or adverse comments that needed a review of the project implementation.



DNV considers the local stakeholder consultation carried out was adequate.

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

The PDD, version 1.0, dated 25 July 2011 /1/, was made publicly available on the CDM website

<http://cdm.unfccc.int/Projects/Validation/DB/IK1BYLA1OA6M6X4NT9D8FKKFF77CQZ/view.html> and Parties, stakeholders and NGOs were invited through the CDM website to provide comments during a 30 days period from 4 August 2011 to 2 September 2011 /48/. One comment was received and is given (in unedited form) in the below text box.

##### Comment by:

☐ Accredited NGO

☐ Party

☒ Stakeholder

Inserted on: 14 August 2011

Subject:

Comment:

- Does project proponent have any experience in wind energy generation?
- What would be impact of negative environmental conditions of area upon project? What would be alternatives in that case?
- How many skilled/unskilled people from surrounding area were employed at this project during commissioning and operation as mentioned in social well being section?
- Please give details on how 2% revenue will be used towards sustainability and community development measures?

##### 1) Does project proponent have any experience in wind energy generation?

*Response: PP has around 75 MW of wind power project installed in different states of India. All of the wind power projects are under CDM pipeline.*

DNV assessment: DNV has checked the wind power projects by the same PP, which have obtained Host Country approval; following three projects by the same PP have already received host Country approval, details of which are as below:

1. "Wind Power Project in Tamil Nadu", Project ID 330/11/2010, Capacity: 10 x 800 kW; promoter: VWILLP
2. "Renewable Energy Wind Power Project in Rajasthan", Project ID: 396/12/2010, Capacity: 37 x 800 kW; promoter: VWILLP
3. "Renewable Energy Wind Power Project in Karnataka", Project ID: 415/01/2011, Capacity: 10 x 800 kW; promoter: VWILLP

Further, this project is being handled on a turn-key basis by Enercon India Limited who have a good track record in the matter of establishing such wind power plants.

##### 2) What would be impact of negative environmental conditions of area upon project? What would be alternatives in that case?

*Response: There is no negative impact of project upon environmental condition.*

DNV assessment: Wind based power projects do not require to carry EIA studies as per the Indian regulations, as discussed in section 4.9 of the report.

##### 3) How many skilled/unskilled people from surrounding area were employed at this project during commissioning and operation as mentioned in social well being section?





*Response: Project is still under the commissioning phase. There would be about 20 workers from the surrounding villages who are employed during the construction phase of project activity.*

DNV assessment: During site visit DNV has observed that locals are employed in various jobs including security, transportation and canteen facilities /71/.

- 4) Please give details on how 2% revenue will be used towards sustainability and community development measures?

*Response: The details on how 2% revenue will be used towards sustainability and community development measures has been given in section B.7.2 of revised PDD.*

DNV assessment: Details provided in the PDD.

***How DNV has considered the comment received in its validation:***

It is our opinion that the issues raised by the stakeholders have been adequately addressed by DNV as described in the sections above and the validation protocol.

- o0o -

## **APPENDIX A**

---

### **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	OK
2. The project shall assist non-Annex I Parties in contributing to the ultimate objective of the UNFCCC.	Kyoto Protocol Art.12.2.	<del>CAR-1</del> OK
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>CAR-1</del> OK
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	<del>CAR-1</del> 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	NA
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	NA

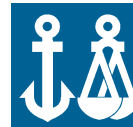
Requirement	Reference	Conclusion
<b>About additionality</b>		
10. Reduction in GHG emissions shall be additional to any that would occur in the absence of the project activity, i.e. a CDM project activity is additional if anthropogenic emissions of greenhouse gases by sources are reduced below those that would have occurred in the absence of the registered CDM project activity.	Kyoto Protocol Art. 12.5c, CDM Modalities and Procedures §43	<del>CAR-2</del> <del>CAR-3</del> <del>CAR-4</del> <del>CAR-5</del> <del>CAR-7</del> <del>CAR-8</del> OK
<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	NA
<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	<del>CL-5</del> 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	<del>CL-5</del> 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



Requirement	Reference	Conclusion
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	<del>CAR-10</del> <del>CL4</del> <del>CL6</del> 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 and VVM para 135 and 136 (a) &amp; (c) for small-scale project activities, as applicable)</b>					



Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
A.2.1 How was the design of the project assessed?	/1/ /8/ /11/ /71/	DR	<p><i>What type is the project?</i></p> <p><input type="checkbox"/> Project in existing facility or utilizing existing equipment(s)</p> <p><input type="checkbox"/> Project is either a large scale project or a small scale project with emission reductions exceeding 15 000 tCO<sub>2</sub>e per year. In this case, a site visit must be performed.</p> <p><input type="checkbox"/> Project is a bundled small scale project, with each project in the bundle with emission reductions not exceeding 15,000 tCO<sub>2</sub>e per year. In such case the number of physical site visits may be based on sampling, if the sampling size is appropriately justified through statistical analysis.</p> <p><input type="checkbox"/> The project is an individual small scale project activity with emission reductions not exceeding 15 000 tCO<sub>2</sub>e per year. In this case, DOE may not conduct a physical site visit as appropriate.</p> <p><input checked="" type="checkbox"/> Greenfield project</p> <p><i>How was the design of the project assessed?</i></p> <p><input checked="" type="checkbox"/> Physical site inspection</p> <p><input type="checkbox"/> Reviewing available designs and feasibility studies</p> <p>The offers received from supplier and purchase orders placed were also reviewed.</p> <p>The proposed CDM project activity entails</p>		OK

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





			installation of 63 numbers of Wind Energy Generators each of 800 kW capacities (E-53 model) totalling 50.4 MW. The WEGs to be installed under the project have been designed, installed and commissioned by Enercon India Limited. The electricity generated will be exported to the NEWNE grid of India. The site visit of the project was done on 15 September 2011.		
A.2.2	If a greenfield project, describe the physical implementation of the project when the validation was commenced.	/1/ /10/ /11/ /71/	DR	Equipment have been ordered for the project and construction and erection of project equipment was in progress at the time of site visit on 15 September 2011.	OK
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	<i>NOT APPLICABLE</i>	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 63 numbers of Wind Energy Generators each of 800 kW capacities (E-53 model) totaling 50.4 MW. The electricity generated will be exported to the NEWNE grid of India. Details provided under A.4.13 and A.4.1.4 are inadequate; official name of the village, name of the jurisdictional tehsil / taluk, and geographical coordinates of the individual wind mill site, to enable unique identification of the proposed wind mill installation have not been provided.	<del>CL-1</del> 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	/1/	DR	The wind farm utilizes 63 machines of Enercon	OK

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



practices?	/44/		model E-53 WEG of 800 kW capacity which are approved by Centre for Wind Energy Technology, Government of India.		
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/ /11/ /12/	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, 125-127)</b>					
A.3.1 Do all participating Parties fulfil the participation requirements as follows:	/1/ /20/	DR	The requirement of submission of approval of voluntary participation of the PP in the project activity from the Designated National Authority of the host Party confirming that the project activity contributes to sustainable development is not fulfilled.	CAR +	OK
	India (host)		County X	Country Y	
a) Party has ratified the Kyoto Protocol	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
b) Party has designated a Designated National Authority	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
c) The assigned amount has been determined	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
A.3.2 Do the letters of approval meet the following requirements?	/1/ /20/	DR			
	India (host)		County X	Country Y	
a) LoA confirms that Party has ratified the Kyoto Protocol	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
b) LoA confirms that participation is voluntary	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<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	NA	NA	
d) The LoA refers to the precise project activity title in the PDD	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<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	<input type="checkbox"/> Yes <input type="checkbox"/> No	<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	<input type="checkbox"/> Yes <input type="checkbox"/> No	<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	<input type="checkbox"/> DNA <input type="checkbox"/> PP	<input type="checkbox"/> DNA <input type="checkbox"/> PP	
				CAR +	OK



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				.Issuance and registration status confirmed by referring to information on NCDMA website.	DNV	
A.3.3	Have all private/public project participants been authorized by an involved Party?	/1/ /20/	DR	The requirement of submission of approval of voluntary participation of the PP in the project activity from the Designated National Authority of the host Party confirming that the project activity contributes to sustainable development is not fulfilled. Yes.	<del>CAR</del> 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	Unique identification number of WEGs and their geographical co-ordinates to be indicated in the PDD. Name of the substations to which the project activity are connected also to be indicated. Yes, the project's spatial boundaries are defined. The project activity is spread across Kutch and Lalpur sites in Kutch and Jamnagar districts of the state of Gujarat, India.	<del>CL</del> 1	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 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?	/1/	DR	The project does not involve any public funding and hence no diversion of funds from official development assistance is expected.		OK
<b>B Application of a baseline and monitoring methodology</b>						
<b>B.1 Methodology applied (VVM para 65-76 and VVM para 136 (b) for small-scale project activities, as applicable)</b>						



B.1.1	Does the project apply an approved methodology and the correct and valid version thereof? <i>If during the course of validation the originally applied version of the methodology expires, a CAR shall be raised in Table 3 of the validation protocol. Any new requirements of the revised version of the methodology not yet validated in Table 2 of the validation protocol shall be validated in Table 3 as part of the assessment of the CAR raised.</i>	/1/ /22/	DR	The project correctly applies the “Approved consolidated baseline and monitoring methodology” titled “ACM 0002/Version 12.1” “Consolidated baseline methodology for grid connected electricity generation from renewable sources”. The version applied in the revised PDD for the project is 13.0.0, which is valid from 25 November 2011 to 2 March 2012.	CAR 44	OK
B.1.2	If applicable, has any specific guidance provided by the CDM EB in respect to the applied methodology been considered?	/1/	DR	EB 65, Meeting report, Clause 89: For all revised methodologies and tools that were approved by the Board at this meeting, the DOEs may upload not later than 25 July 2012 (24:00 GMT) for registration the project design documents (PDDs) of project activities in which the previous version of an approved methodology or an approved tool has been applied, in accordance with paragraph 36 of the “Procedure for the submission and consideration of requests for revision of approved baseline and monitoring methodologies and tools for large scale CDM project activities”.		OK
<b>B.2</b>	<b>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: insert applicability criteria 1? 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/ /22/ /11/ /12/	DR	The project activity is installation of WEG for generation of power from wind energy to supply to the North East West North-East (NEWNE) grid and is a green field project.		OK



B.2.2	How was it validated that project complies with the following applicability criteria: insert applicability criteria 2? 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/ /3/ /10/ /22/ /12/	DR	The project activity is a green field project that uses wind energy to generate electricity. It proposes to install 63 x 800 kW capacity wind mills to achieve this objective.		OK
B.2.3	How was it validated that project complies with the following applicability criteria: insert applicability criteria 3? 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/ /3/ /10/ /11/ /12/ /22/	DR	The project activity is not one of capacity addition, retrofit or replacement. Installation and commissioning of the turbines were in progress at the time of site visit.		OK
B.2.4	How was it validated that project complies with the following applicability criteria: insert applicability criteria 4? 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/ /22/ /3/ /11/ /71/	DR	The project activity does not involve fuel switch. Also it is neither a biomass fired power plant nor a hydropower plant. It involves installation and operation of wind power generators. This is evidenced by the activities observed during site visit. The purchased wind mills were being installed, commissioning was under progress.		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/ /22/	DR	Project activity is installation and operation of a new grid connected renewable power generating unit and baseline chosen is appropriate for such projects as defined in section II of the methodology.		OK
B.2.6	How was it validated that project complies with the	/1/		Start date of project is before date of validation as		OK



	<p>following applicability criterion of the “Tool for demonstration and assessment of additionality”, version 5.2.1</p> <p>Project activities with a start date before the date of validation shall specifically take into account the guidance provided in Chapter B “Specific guidelines for completing the Project Design Document (CDM-PDD)” section B, sub-section B-5. The “start date of a project activity” is as defined in paragraph 76 of thirty-third report of the Board.</p> <p>Project activities that apply this tool in context of approved consolidated methodology ACM0002, only need to identify that there is at least one credible and feasible alternative that would be more attractive than the proposed project activity</p>	/11/		<p>evidenced by validation contract review.</p> <p>Guidance provided in Chapter B “Specific guidelines for completing the Project Design Document (CDM-PDD)” section B, sub-section B-5, has been taken into account.</p> <p>The PP has identified two credible alternatives and has subsequently met the step-wise requirements of the tool. The alternative of continuing the status quo is proved to be economically more attractive than implementing the project by conducting benchmark investment analysis</p>		
<b>B.2.7</b>	<p>How was it validated that project complies with the following applicability criterion of the “Tool to calculate the emission factor of an electricity system”, version 2.2</p> <p>This tool may be applied to estimate the OM, BM and/or CM when calculating baseline emissions for a project activity that substitutes grid electricity, i.e. where a project activity supplies electricity to a grid or a project activity that results in savings of electricity that would have been provided by the grid (e.g.demand-side energy efficiency projects).</p> <p>Under this tool, the emission factor for the project electricity system can be calculated either for grid power plants only or, as an option, can include off-grid power plants.</p> <p>The tool is not applicable if the project electricity system is located partially or totally in an Annex-I country.</p>	<p>/1/ /42/ /20/ /23/</p>		<p>The project activity is not a demand-side energy efficiency project. It involves power generation from renewable resources and feeding it to a distribution grid.</p> <p>Emission factor for the project system is calculated for grid power plants only.</p> <p>The project activity is located in India, a non-Annex 1 country.</p>		OK
<b>B.3</b>	<b>Project boundary (VVM para 78-80)</b>					
B.3.1	<p>What are the project’s system boundaries (components and facilities used to mitigate GHGs)? Are they clearly defined and in accordance with the methodology?</p>	<p>/1/ /22/</p>	DR	<p>The project boundary comprises of various components of the power plant such as the wind energy turbines, transformer yard, metering stations, connected sub-stations and all power plants physically connected to the NEWNE</p>		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/ /22/	DR	<p>system grid.</p> <p>All 63 wind energy converters of this project along with the attendant transformers, evacuation system, sub-station, other non-project WECs connected to the same sub-station, the system (NEWNE) grid and all the power plants connected to the NEWNE grid define the project boundary.</p> <p>In the baseline scenario, equivalent amount of power would have been sourced from the carbon intensive NEWNE grid and hence the baseline emissions consist of CO<sub>2</sub> emissions equivalent to the displaced electricity.</p> <p>In the project activity scenario, no emissions occur as power is generated by the conversion of renewable wind power.</p> <p>All these are correctly taken into account as per the selected methodology and accordingly described in the PDD.</p>		
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/ /22/	DR	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</b>	<p><b>Baseline scenario determination (VVM para 81-88, 105-107)</b></p> <p><i>Ensure that the evaluation of all alternatives provided in the PDD and required by the methodology and also possible alternatives/offshoots of alternatives are discussed. Check that all alternatives required to be considered by the methodology are included in the final PDD. If baseline alternatives required to be considered by the methodology are considered not applicable, please</i></p>					





<i>assess the justification for this.</i>					
B.4.1	Which baseline scenarios have been identified? Is the list of baseline scenarios complete?	/1/ /22/	DR	As per the methodology, baseline for a new grid connected renewable power generating activity is clearly defined under section II.  As the baseline is defined by the methodology which is applicable for the project under consideration, no alternatives need to be considered.	OK
B.4.2	How have the other baseline scenarios been eliminated in order to determine the baseline?	/1/ /22/	DR	According to the methodology, there is only one baseline scenario. Thus, the requirement of having to consider and eliminate other baseline scenarios is not applicable.	OK
B.4.3	What is the baseline scenario?	/1/ /22/ /23/ /42/	DR	The baseline applicable for a new, renewable energy based, grid connected power plant is specified by the methodology as being the “Electricity delivered to the grid by the project activity that 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, which is the system grid, has been sourced from CEA database version 6.	OK
B.4.4	Is the determination of the baseline scenario in accordance with the guidance in the methodology?	/1/	DR	The identified baseline is as per the scenario defined by the methodology.	OK
B.4.5	Has the baseline scenario been determined using conservative assumptions where possible?	/1/ /42/ /22/	DR	The grid considered is the regional grid comprising of grids serving the states in the North, East, West and North East regions of India. This is in line with the EB guidance and is conservative. The baseline scenario itself is based	OK



DNV

			on the directions contained in the selected methodology.		
B.4.6	Does the baseline scenario sufficiently take into account relevant national and/or sectoral policies, macro-economic trends and political aspirations?	/1/ /45/	DR	National priority and sectoral policies dictate that renewable energy generation be given a fillip. Political aspirations comprising of investment return on business require that profitable power generation based on fossil fuels be taken up. The PDD refers to the macro-economic trends of fossil fuel based power generation activities and the effect it has had on the GHG inventory of the country.	OK
B.4.7	Is the baseline scenario determination compatible with the available data and are all literature and sources clearly referenced?	/1/	DR	The baseline determination is compatible with available data.	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/ /45/ /22/	DR	<ul style="list-style-type: none"> <li>Assumptions used are listed in the PDD and the data are correctly referenced.</li> <li>Quoted data are relevant and correct.</li> <li>Assumptions are reasonable</li> <li>Yes, national and sectoral circumstances are considered and listed in the PDD</li> <li>The application of methodology is correct and identification of the scenario in the absence of project activity is reasonable.</li> </ul>	OK
<b>B.5 Additionality determination (VVM para 94-121 and VVM para 137 for small-scale project activities, as applicable)</b>					
B.5.1	What approach/tool does the project use to assess additionality? Is this in line with the methodology?	/1/ /24/	DR	The “Tool for demonstration and assessment of additionality”, Version 06.0.0, is used for	OK

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


**DNV**

			assessing additionality, which is in line with the requirements of the applied methodology		
B.5.2	Have the regulatory requirements correctly been taken into account to evaluate the project activity and the alternatives?	/1/	DR	Two alternatives have been identified for the project activity: (1) Implementation of the activity as a non-CDM project (2) Continuation of the status quo. There is no legal or regulatory impediment to either of the two alternatives. On the contrary, alternative (1) is a policy aspiration of the country's power sector and is actively encouraged by policy initiatives.	OK
B.5.3	Is sufficient evidence provided to support the relevance of the arguments made?	/1/	DR	Yes. The relevance of arguments are backed by sufficient evidence.	OK
B.5.4	What is the project additionality mainly based on (Investment analysis or barrier analysis)?	/1/ /24/	DR	The project additionality has been mainly based on investment analysis followed by Common Practice Analysis.	OK
<b>Prior consideration of CDM (VVM para 98-103)</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/ /3/	DR	The starting date is after 2 August 2008. Prior consideration of the CDM was a major element and CDM benefits was considered necessary in the decision to undertake the project as a CDM project activity as evidenced by the investment decision.	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/ /3/ /11/ /4/ /5/ /25/	DR	The start date of the project activity (2 April 2011) is after 2 August 2008. The PO dated 2 April 2011 has been verified to confirm the start date of project as 2 April 2011. The project was webhosted on 4 August 2011. Thus, the project start date is after 2 August 2008 and before the webhosting of the project. The PP has informed the EB, UNFCCC by e-mail dated 29 June 2011 attaching the project details in the prescribed format. The date of receipt (30 Jul 2011) at EB, UNFCCC, has been checked by verifying the "Prior Consideration" tab on	OK



			<p><a href="http://cdm.unfccc.int">http://cdm.unfccc.int</a>. This has also been confirmed by copy of acknowledgement mail received by the PP.</p> <p>The PP has informed the NCDMA, MoEF, by e-mail dated 30 June 2011 regarding its intention to start the project, which has been acknowledged by NCDMA by mail dated 06 July 2011.</p> <p>Thus, it is confirmed that such intimation has been given within six months of start date as per the guidelines for ascertaining Prior CDM consideration. This demonstrates prior consideration of CDM for the project activity.</p>		
<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/	DR	The start date of the project activity is 02 Apr 2011, being the date of purchase order for project equipment. Thus, this is not applicable.	OK
B.5.8	When did the construction of the project activity start?	/1/	DR	Not applicable	OK
B.5.9	When was the project commissioned?	/1/	DR	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	Not applicable	OK
<b>Investment analysis (VVM para 108-114)</b> <i>The list of questions below must be adjusted to the parameters in the investment analysis relevant to the project under validation. <u>All</u> input parameters need to be assessed.</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/ /6/ /26/	DR	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	/1/	DR	The alternative to the project activity is continued	OK

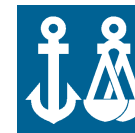


	investment? Is this reflected in the PDD?	/26/		supply of power from the grid. As per guidelines this is not to be considered as an investment. This is reflected in the PDD.		
B.5.13	Is the choice of benchmark analysis, investment comparison or simple cost analysis correct?	/1/ /26/	DR	In respect of this project, there is a source of revenue other than the CER revenues; the baseline does not call for any investment and is outside the direct control of the PP. Thus, this falls under the category of projects where the choice is either to invest or not to invest. A benchmark analysis is the appropriate approach. Accordingly, the PP has carried out a benchmark analysis which is in line with the guidelines.		OK
B.5.14	Is the benchmark/discount rate the latest available at the time of decision?	/1/ /6/ /7/ /26/	DR	The benchmark (required return on equity) is calculated by using the WPI inflation rate which is sourced from Reserve Bank of India document that gives a forecast rate of 6% for the subsequent five years and 5.5% for subsequent 10 years. The higher rate of the two (6%) has been used resulting in overstating of benchmark. The PDD does not justify the benchmark arrived at on grounds of accuracy, conservativeness and appropriateness.	<del>CAR</del> 2	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/ /6/ /26/	DR	The financial indicator used is the post-tax equity IRR. The financial indicator used is in correspondence with the benchmark used because the benchmark used is equity IRR. Justification for benchmark used is to be provided.	<del>CAR</del> 2	OK
B.5.16	Are the underlying assumptions appropriate, e.g. what is considered as waste in the baseline is considered to have zero value?	/1/ /7/ /10/	DR	O&M costs considered for the full project duration is higher than the standard O&M charges allowed as per the GERC order no. 1/2010. Also, insurance charges are included in	<del>CAR</del> 3 <del>CAR</del> 6	OK

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



	/26/ /49/ /15/ /16/ /31/ /32/ /33/ /34/ /35/ /36/ /37/ /38/ /39/ /40		<p>the guidance value of O&amp;M charges of GERC order whereas in the assumptions of IRR calculations, insurance charges are considered separately.</p> <p>GERC in its order no. 1/2010 has estimated total capital cost for wind power projects at INR 50 M / MW. The purchase order price works out to INR 55 M / MW, whereas the estimated project cost is INR 59.34/MW which has been used for investment analysis.</p> <p>During site visit it was affirmed that the project is considering registering for Renewable Energy Certificate revenue. The investment analysis for calculating equity IRR does not reflect the same.</p> <p>In respect of assumptions used for investment analysis, clarifications and documents in respect of following are needed:</p> <ol style="list-style-type: none"> <li>1. Clarify the nature of right of land possession, whether owned or leasehold, cost thereof, with necessary documentary evidence</li> <li>2. Basis for insurance charges and clarification as to why it is not included as part of O&amp;M charges</li> <li>3. Loan document / s with interest rate details, moratorium and repayment details</li> <li>4. Copy of power purchase agreement or document justifying the assumed power tariff</li> <li>5. Justification of residual value</li> <li>6. Copy of Feasibility Study / Detailed Project report</li> </ol>		
B.5.17 Does the income tax calculation take depreciation into account? Is the depreciation year in accordance with normal	/1/ /6/	DR	Details in respect of the type of organizational structure of the PP, rate of applicable tax	<del>CAR</del> &	OK



	accounting practice in the host country?	/26/ /2/		depreciation and tax rates, with the relevant link have not been provided.		
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/ /6/ /26/	DR	Operational life time of the project equipment is considered as twenty years as per specifications of the manufacturer's model details which is considered realistic. The investment analysis has been done for the entire life time of the project that is 20 years. Salvage value has been considered as the entire cost of land <i>plus</i> 10% of the initial value of equipment. The residual value of assets added back to the cash inflow at the end of the period of analysis (20 years) is considered reasonable.		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/	DR	Wind mills in India do not need a prior approval of the FSR. Thus, the basis for investment analysis is not derived from any FSR.		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/ /9/ /29/ /49/ /26/	DR	<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. <i>Provide details on how the load factor was validated::</i> The electricity output has been based on the certificate of Plant Load Factor (PLF) dated 10 March 2011 issued by True Wind International Certification, a third part technical consultant. .		OK





Based on published data made available by C-WET and using WASP software, the third party engineering consultants have certified that a PLF of 24.5% for the Kutch site and 23.8% for Jamnagar site is likely to be achieved.

PP has used these figures for calculating the amount of power likely to be generated from the project. This fulfils the requirement contained in section II (b) of EB 48, Annex 11.

Further, this assumed PLF is higher than the 23% PLF assumed by GERC in its tariff order no.1 of 2010.

Further, this has been compared against following recently registered projects in Gujarat, details of which are as follows:

Sl No	CDM Reg No	Region	PLF (%)
1	4964	Jamnagar / Gujarat	23.9-24.5
2	4892	Porbandar /Gujarat	28.69
3	4756	Kutch / Gujarat	21.84
4	4700	Jamnagar / Gujarat	25.71
5	4072	Kalavad / Gujarat	24.97

The projects at 1, 3 & 4 are in the same region of Gujarat. The PLF of 1 is the same



			as in this project; PLF of 3 is lower by more than 10% than in this project for the same region. Only the PLF considered for project at no. 4 is slightly higher (by 4.1%) than that considered for this project but is covered by the variation of 10% for which sensitivity analysis has been conducted.		
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/ /49/ /26/	DR	<input checked="" type="checkbox"/> Cross-check against third-party or publicly available sources (e.g. invoices or price indices) <input type="checkbox"/> Review of feasibility reports, public announcements and annual financial reports related to the project and the project participants <i>Provide details on how the output price was validated:</i> The tariff used for calculation is INR 3.56 / kWh which is as per the tariff order no. 1 / 2010 passed by the Gujarat Electricity Regulatory Commission (GERC). This was the most recent data available at the time of decision making and hence is found to be in order.	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/ /10/ /3/ /11/ /30/ /31/ /32/ /33/ /33/ /34/ /49/ /26/	DR	<input checked="" 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, contracts and annual financial reports related to the project and the project participants <i>Provide details on how the investment costs were validated:</i> GERC in its order no. 1/2010 has estimated total capital cost for wind power projects at INR 50 M / MW. The purchase order price works out to INR 55 M / MW, whereas the estimated project cost is INR 59.34/MW which has been used for investment analysis.	CAR 4 OK

OK

CAR  
3

CL-3



<p>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.</p>	<p>/6/ /52/ /53/ /54/ /55/ /56/ /48/ /49/ /71/ /55// 56/</p>	<p>available sources (e.g. invoices or price indices) <input type="checkbox"/> Review of feasibility reports, public announcements and annual financial reports related to the project and the project participants <i>Provide details on how other input parameters were validated:</i> The benchmark (required return on equity) is calculated by using the WPI inflation rate which is sourced from Reserve Bank of India document that gives a forecast rate of 6% for the subsequent five years and 5.5% for subsequent 10 years. The higher rate of the two (6%) has been used resulting in overstating of benchmark. The PDD does not justify the benchmark arrived at on grounds of accuracy, conservativeness and appropriateness. During site visit it was affirmed that the project is also considering registering for Renewable Energy Certificate revenue. The investment analysis for calculating equity IRR does not reflect the same. In respect of assumptions used for investment analysis, clarifications and documents in respect of following are needed:</p> <ol style="list-style-type: none"> <li>1. Clarify the nature of right of land possession, whether owned or leasehold, cost thereof, with necessary documentary evidence</li> <li>2. Basis for insurance charges and clarification as to why it is not included as part of O&amp;M charges</li> <li>3. Loan document / s with interest rate details, moratorium and repayment details</li> <li>4. Copy of power purchase agreement or</li> </ol>	<p><del>CAR</del> 2</p> <p><del>CAR</del> 5</p>	
--	--	---	---	--

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

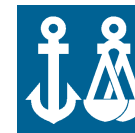


				document justifying the assumed power tariff 5. Justification of residual value 6. Copy of Feasibility Study / Detailed Project report	<div>CAR 6</div> <div>DNV</div>	
B.5.25	Was the financial calculation spreadsheet verified and found to be correct?	/1/ /6/ /26/	DR	The financial calculation spread sheet has been checked and CAR and CL have been raised.	<div>CAR 2</div> <div>CAR 3</div> <div>CAR 4</div> <div>CAR 5</div> <div>CAR 6</div> <div>CAR 7</div> <div>CL 3</div>	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/ /6/ /26/	DR	PP has carried out a sensitivity analysis to analyse the effect of ± 10% variation in capital cost of the project, O&M expenses, and Cost of the project.  Sensitivity analysis has been carried out to determine under what conditions variations in results would occur but the likelihood of occurrence of such events has not been satisfactorily analysed.  This is included in the revised PDD.	<div>CAR 8</div>	OK
B.5.27	Sensitivity analysis: Is the range of variations is reasonable in the project context?	/1/ /6/ /26/	DR	A range of ± 10% has been adopted for the following variables: 1. Investment cost 2. PLF		OK

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



			3. O&M Cost Since the tariff is fixed for 20 years, the extent to which tariff needs to change if the project should become financially viable has been discussed in PDD. The choice of variables and the range are considered reasonable and satisfactory.		
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/ /6/ /26/	DR	Likelihood of occurrence of events that change the financial results calculated has not been satisfactorily analysed	CAR & OK
<b>Barrier analysis (VVM para 115-118)</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	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	The project does face barrier due to insufficient financial returns. PP has not cited any barrier of difficulty for obtaining the required investment.	OK
B.5.31	How does CDM alleviate the investment barriers?	/1/	DR	The CDM revenues contribute to mitigation of the financial unattractiveness of the project which is a major barrier for project implementation.	OK
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	There are two alternatives to project activity: 1. Continuation of status quo (supply from grid) requires no investment from PP and hence is feasible. 2. Implementation of project activity as a non-CDM project faces barrier of insufficient returns is not feasible. Implementation of project activity as a CDM project activity considerably mitigates the barrier of insufficient returns and is environmentally beneficial.	OK
B.5.33	How were the <u>technological barriers</u> assessed to be real? Are the technological barriers substantiated by a source	/1/	DR	The project activity does not face any technological barrier and so this is not applicable.	OK



	independent of the project participants?				
B.5.34	How does CDM alleviate the technological barriers?	/1/	DR	The project activity does not face any technological barrier and so this is not applicable.	
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	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	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	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	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	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	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 feasible under the same circumstances?	/1/	DR	The project activity does not face any barrier due to prevailing practice and so this is not applicable.	OK
<b>Common practice analysis (VVM para 119-121)</b>					
B.5.42	What is the geographical scope of the common practice analysis? Is this justified?	/1/ /62/ /64/ /65/	DR	The geographical scope is considered as the state of Gujarat. This is justified as the policies, guidelines and incentive schemes differ from state to state in India and the entire country cannot be treated as one single unit.	OK





	/66/				
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	Wind power projects in Gujarat above 15 MW have been considered for carrying out common practice analysis. Bundled projects and projects below 15 MW, as also projects in which public sector units have invested have not been considered; this is justified as the nature of investment risk is distinctly different for a private investor investing in a large scale wind power project.	OK
B.5.44	What is the data source(s) used for the common practice analysis?	/1/ /58/	DR	The Indian Wind Power Directory 10th edition published in August 2010 is the source of data used for carrying out the Common Practice Analysis..	OK
B.5.45	How many similar non-CDM-projects exist in the region within the scope?	/1/	DR	All projects considered are either registered or are at various stage of obtaining CDM validation.	OK
B.5.46	How were possible essential distinctions between the project activity and similar activities assessed?	/1/	DR	No similar activities were found which had opted to invest without CDM support.	OK
B.5.47	What is the conclusion of the common practice analysis?	/1/	DR	That all large scale projects by private investors have relied on CDM support for rendering them financially viable. Thus, non-CDM large scale private investment for funding wind power projects in Gujarat is not common practice and hence project is additional.	OK
<b>Conclusion</b>					
B.5.48	What is the conclusion with regard to the additionality of the project activity?	/1/ /24/	DR	The project is financially not feasible without CDM revenues; this is demonstrated by an investment analysis and calculating the return on equity against the required return on equity. Further, it is demonstrated that non-CDM large scale wind power project investment is not common practice in the State of Gujarat.	OK



			Therefore, as per the tool, the project is additional.		
<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 199-203)</b>					
B.6.1	How was the EF <sub>OM,y</sub> Operating Margin Emission Factor of NEWNE Grid verified?	/1/ /42/ /23/	DR	The CEA CO <sub>2</sub> baseline database, version 6, has been used for obtaining the OM for the NEWNE grid. The database uses the Simple OM approach and provides data in respect of OM (ex-post), BM and CM in accordance with the requirements of the "Tool to calculate the emission factor for an electricity system" The OM has been calculated as the "average" of the Simple OM for the three preceding years, 2007-08, 2008-09, and 2009-10. However, under section (a), STEP 4, of the referred tool, the Simple OM to be calculated as per Option A, is the generation weighted average CO <sub>2</sub> emissions per unit electricity generation.	<del>CAR</del> 9 OK
B.6.2	How was the EF <sub>BM,y</sub> Build Margin Emission Factor of the NEWNE Grid verified?	/42/ /1/ /23/	DR	The CEA CO <sub>2</sub> baseline database, version 6, has been used for obtaining the BM for the NEWNE grid. The BM emission factor using the simple OM approach is in accordance with "Tool to calculate the emission factor for an electricity system". Option 1 of STEP 5 of the referred tool has been applied to calculate the BM for the first crediting period ex-ante. Accordingly, the value for the most recent information available is for 2009-2010 and the value indicated for the NEWNE grid in the database is 0.81231 tCO <sub>2</sub> /MWh.	OK



B.6.3	How was the EF <sub>y</sub> Emission Factor for the NEWNE grid of India verified?	/1/ /23/ /42/	DR	The CM has been calculated as the weighted average as per STEP 6 (a) of the “Tool to calculate the emission factor for an electricity system”. Owing to its intermittent and non-despatchable nature, wind based power generation activities are allowed to use weightage factors of 0.75 for OM and 0.25 for BM throughout their crediting periods. These directions have been complied with and the CM has been calculated accordingly. Calculation of CM to be revised	CAR 9	OK
<b>Baseline emissions (VVM para 89-93)</b>						
B.6.4	Are the calculations documented according to the approved methodology and in a complete and transparent manner?	/1/ /22/ /23/ /42/ /8/ /9/	DR	Baseline emissions include only CO <sub>2</sub> emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity. Accordingly, 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; this is in accordance with equation (6) of the selected methodology. The CM for the system grid (NEWNE) has been calculated as a combination of Simple OM and BM by applying permitted weightage factors for wind power generation. The values for OM and BM are calculated and sourced based on data available from the official website of the Central Electricity authority (CEA) CO <sub>2</sub> Baseline Database - Version 6.0.		OK
B.6.5	Have conservative assumptions been used when calculating the baseline emissions?	/1/ /42/ /9/ /29/	DR	The emission factor has been sourced from the CEA database version 6; the User Guide to the database provides a detailed approach adopted for arriving at the various values in the published		OK



			database. Section 4.5 of the User Guide lists out the various measures taken to ensure conservativeness. The other factor contributing to the calculation of baseline emissions is power exported to the grid which is estimated based on the PLF certificate issued by a third party.		
B.6.6	Are uncertainties in the baseline emission estimates properly addressed?	/1/ /42/	DR	On page 2 of the User Guide to the CEA database, and in section 4.5, the measures taken to address uncertainty have been detailed.	OK
<b>Project emissions (VVM para 89-93)</b>					
B.6.7	Are the calculations documented according to the approved methodology and in a complete and transparent manner?	/1/ /22/	DR	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.6.8	Have conservative assumptions been used when calculating the project emissions?	/1/	DR	Not applicable	OK
B.6.9	Are uncertainties in the project emission estimates properly addressed?	/1/	DR	Not applicable	OK
<b>Leakage (VVM para 89-93)</b>					
B.6.10	Are the leakage calculations documented according to the approved methodology and in a complete and transparent manner?	/1/ /22/	DR	This is not applicable as the project activity is electricity generation from wind energy. This is in compliance with the requirements of the methodology in this regard.	OK
B.6.11	Have conservative assumptions been used when calculating the leakage emissions?	/1/	DR	Not Applicable	OK
B.6.12	Are uncertainties in the leakage emission estimates properly addressed?	/1/	DR	Not applicable	OK
<b>Emission Reductions (VVM para 89-93)</b>					
B.6.13	Algorithms and/or formulae used to determine emission reductions: • All assumptions and data used by the project participants	/1/ /22/ /8/	DR	All assumptions and data used are listed in the PDD and are properly referenced. Documents are correctly interpreted, values are reasonable, and	OK



	<p>are listed in the PDD and related document submitted for 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>			the methodology has been correctly applied as detailed in above paragraphs.		
<b>B.7 Monitoring plan (VVM para 122-124)</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/ /71/	DR	The monitoring plan is not in line with the actual practice at site.	<del>CL-4</del> CAR +0	OK
B.7.2	Does the monitoring plan contains all necessary parameters, and are they clearly described?	/1/ /22/	DR	A schematic diagram to accurately explain the monitoring and measurement procedure as outlined in B.7.2 of the PDD has not been included.	<del>CL-4</del>	OK
B.7.3	In case parameters are measured, is the measurement equipment described? Describe each relevant parameter.	/1/	DR	The accuracy class and complete description of all the meters installed at various points, specifically at the utility sub-station and at the clusters are not available.	<del>CL-6</del>	OK
B.7.4	In case parameters are measured, is the measurement accuracy addressed and deemed appropriate? Describe each relevant parameter.	/1/	DR	Accuracy details not provided	<del>CL-4</del> CAR +0	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	.Complete details not available	<del>CL-4</del> CAR +0	OK
B.7.6	Is the monitoring frequency adequate for all monitoring	/1/	DR	Complete details not available	<del>CL-4</del>	OK

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



	parameters? Describe each parameter.				CAR 40	
B.7.7	Is the recording frequency adequate for all monitoring parameters? Describe each parameter.	/1/	DR	Complete details not available	CL-4 CAR 40	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 plan as presented in Annex 4 of the revised PDD is assessed as follows: The project generates power at 400 V which is continuously monitored, measured and recorded by the in-built control panel in the auto mode; the power stepped up to 33 kV is monitored and measured by suitable metering arrangement either individually or a cluster of project WECs; the power stepped up to 66kV/220 kV is again measured at the transmitting sub-station by suitable metering arrangement attached to a feeder which has both project and non-project WECs connected to it. Thus, the monitoring arrangement is considered feasible within the project design; as the PP has to obtain revenues based on the net power exported to grid, PP will certainly develop the requisite capability to implement the same; moreover, the equipment supplier also doubles up as the O&M service provider and is entrusted with monitoring the performance of the WEC; EIL is well experienced, has trained personnel and has a certified QMS in place and should be able to implement the monitoring plan as described.		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	The monitoring plan is well defined, has clearly delineated duties and responsibilities, and has adequate training procedures to prepare the personnel; EIL is a ISO 9001:2008 certified company and hence list of records, control and preservation of records are carried out as per well-defined procedures.		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	All the monitoring equipment proposed to be installed meet the stipulated standards; calibration is specified to be done once in a year; procedures for faulty working meters are in place; dual metering (Main and Check) permits easy and early detection of faulty meter working; meters are sealed and access controlled to ensure data integrity.		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	Yes, this requirement of archiving of monitoring records is a stated part of the monitoring plan and will be complied with.		OK
<b>Monitoring of sustainable development indicators/ environmental impacts</b>						
B.7.12	Is the monitoring of sustainable development indicators/ environmental impacts warranted by legislation in the host country?	/1/	DR	The plan proposed for utilization of 2% of CDM revenues for sustainable development as per the requirement of DNA is not included in the PDD.	<del>CL-2</del>	OK
B.7.13	Does the monitoring plan provide for the collection and archiving of relevant data concerning environmental, social and economic impacts?	/1/	DR	Please refer B.7.12	<del>CL-2</del>	OK
B.7.14	Are the sustainable development indicators in line with stated national priorities in the host country?	/1/	DR	The requirement of submission of approval of voluntary participation of the PP in the project activity from the Designated National Authority of the host Party confirming that the project activity contributes to sustainable development is not fulfilled.	<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 99-100, 104)</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/ /27/ /11/ 15/	DR	The start date of the project activity is stated to be 2 April 2011 being the date of the purchase orders placed for supply of equipment. Copies of purchase orders have been verified and this has been confirmed to be correct. This signifies the date on which an irrevocable commitment has been made for implementation of the project and hence is appropriate.	OK
C.1.3	Is the stated expected operational lifetime of the project activity reasonable?	/1/ /12/	DR	Operational lifetime of the project has been mentioned as 20 years which is reasonable and has been verified by DNV from specifications submitted by the suppliers of equipment.	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	The start date of the fixed crediting period of ten years opted by the PP is 1 May 2012 or the registration date whichever is later. These are clearly mentioned in the revised PDD and are reasonable.	OK
<b>D Environmental Impacts (VVM para 131-133 and VVM para 136 (d) for small-scale project activities, as applicable))</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/ /43/	DR	Indian legislation in vogue does not warrant an EIA to be done for this type of project activity.	OK
D.1.2	Does the project comply with environmental legislation in the host country?	/1/ /43/	DR	As per the Ministry of Environment and Forests (MoEF), Government of India, Environment Impact Notification S.O. 1533 dated 14 September 2006, read together with notification number S.O.695 (E) dated 4 April 2011, wind	OK



			power projects are not covered under any schedule and thus environmental impact assessment is not required for the project activity. As per the present statutes no specific environmental clearances are required for wind energy based power generation projects in India		
D.1.3	Will the project create any adverse environmental effects?	/1/	DR	Being wind energy based power project, the project is not expected to have any significant adverse impact on the environment.	OK
D.1.4	Have identified environmental impacts been addressed in the project design?	/1/	DR	No negative impact has been identified.	OK
D.1.5	Has an analysis of the environmental impacts of the project activity been sufficiently described?	/1/	DR	Not applicable	OK
D.1.6	Are transboundary environmental impacts considered in the analysis?	/1/	DR	Not applicable	OK
<b>E Stakeholder Comments (VVM para 128-130)</b>					
E.1.1	Have relevant stakeholders been consulted?	/1/ /14/	DR	Yes. Stake holders meeting was held at Rasaliya and Dharmapura villages of Kutch and Jamnagar districts on 15 and 16 July 2011.  DNV is unable to conclude the adequacy of local stakeholder consultation and CDM related matters as the meeting has been organized and conducted not by the PP, but by EIL.	<del>CL-5</del> CL-5 OK
E.1.2	Have appropriate media been used to invite comments by local stakeholders?	/1/ /13/ /14/	DR	Yes. The stake holders were invited for the meeting through notices appearing in local newspapers, copies of which have been verified. This is considered appropriate as it provides wide publicity and ensures good participation of all interested parties.	<del>CL-5</del> OK



			Refer E.1.1		
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	Stakeholder consultation process is not specifically required for wind power projects as per current Indian legislation.	
E.1.4	Is a summary of the stakeholder comments received provided?	/1/ /14/	DR	A summary of the comments received and the responses provided has been provided in section E.3 of the PDD. A detailed minute of meeting has also been received and verified to confirm the correctness of the summary provided. Refer E.1.1	<del>CL-5</del> CL-5 OK
E.1.5	Has due account been taken of any stakeholder comments received?	/1/ /14/	DR	No adverse comment has 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 Host country approval for the project activity was not provided to DNV. The requirement of submission of approval of voluntary participation of the PP in the project activity from the Designated National Authority of the host Party confirming that the project activity contributes to sustainable development is not fulfilled.	A.3.1/A.3.2 /A.3.3 B.7.14	PP has provided copy of the approval of Designated National Authority for the project activity.	DNV has received Host Country Approval (HCA) no. 4/22/2011-CCC dated 15 December 2011 /20/ and has verified the name of the project participant (Vish Wind Infrastructure LLP) and the title of the project (“Wind Energy project in Gujarat”). Further, it is also noted that the HCA confirms that the host Party has ratified the Kyoto protocol in August 2002, that the participation of the project participant is voluntary, and that the project contributes to sustainable development in India (host Party). Thus, the project fulfils the requirements specifically mentioned under Kyoto protocol Art.12.2 and 12.5a, CDM Modalities and procedures, 40a. <b>CAR 1 is closed.</b>
<b>CAR 2</b> The benchmark (required return on equity) is calculated by using the WPI inflation rate which is sourced from Reserve Bank of India document that gives a forecast rate of 6% for the subsequent five years and 5.5% for subsequent 10 years. The higher rate of the two (6%) has been used resulting in overstating of benchmark. The PDD does not justify the benchmark arrived at on grounds of accuracy, conservativeness and appropriateness.	B.5.14/ B.5.15 B.5.25 B.5.24	PP has corrected the benchmark based on the conservative approach. WPI inflation rate of 5.3% has been selected in revised calculation and the revised benchmark value is 17.67%. Detailed procedure of benchmark calculation has been added in section B.5 of revised PDD.	The lower and applicable figure of WPI inflation rate published by RBI /48/ has been used for recalculating the benchmark of required return on equity. As a result, the benchmark has been lowered to 17.67% in the revised PDD from 18.46% in the webhosted PDD. The real term values provided in the table annexed to EB 62 Annex 5 has been used together with the inflation data forecast by Reserve Bank of India for the duration of the crediting period. The calculations are presented transparently in the revised PDD /1/ and spread sheet /7/ has been verified by DNV. <b>CAR 2 is closed.</b>

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
<p>CAR 3</p> <p>O&amp;M costs considered for the full project duration is higher than the standard O&amp;M charges allowed as per the GERC order no. 1/2010. Also, insurance charges are included in the guidance value of O&amp;M charges of GERC order whereas in the assumptions of IRR calculations, insurance charges are considered separately.</p>	<p>B.5.16</p> <p>B.5.23</p> <p>B.5.25</p>	<p>We would like to submit to DOE that as per the “Guidelines on the assessment of investment analysis”, Ver 5.0, EB 62, annex 5, all 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.</p> <p>PP has considered all the input values available from WEG supplier offer which was available at the time of investment decision.</p> <p>As per the GERC order no. 1/2010 the O&amp;M cost is INR 0.65 million per MW for the first year with an escalation of 5% every year. As per the Supplier offer available at the time of investment decision the O&amp;M will be carried free of cost for first year and charges from 2<sup>nd</sup> year will be INR 0.62 million per WEG (0.775 million/MW) with an escalation of 6% every year. PP has done the sensitivity of -10% in O&amp;M cost in PDD i.e. INR 0.69 million per MW. Applying O&amp;M cost as per GERC order INR 0.65 million per MW (.65x 50.4/2990.61 = 1.10% of capital cost) at escalation of 5% (insurance 0%) the equity IRR is 9.10% which is below than the benchmark. The project does not cross the benchmark at zero O&amp;M cost which is not realistic.</p>	<p>It is to be noted that the GERC order considered O&amp;M charges (INR 0.65M /MW right from the first year of operation with annual escalation of 5% from 2<sup>nd</sup> year onwards; however, the WEC supplier’s offer for O&amp;M (INR 0.62 M / WEC of capacity 0.8 MW; hence INR 0.775 M / MW with 6% annual escalation) provides free O&amp;M services during the first year (equipment warranty period). Further, while the GERC O&amp;M charges include insurance charges, PP has considered insurance charges @0.12% separately, as per the offer received from suppliers. The total O&amp;M cost works out to 4.63% including the insurance charges. The O&amp;M cost are very small and as discussed in section 4.6.3 of the report, even if O&amp;M cost is taken as nil, the IRR does not cross the benchmark.</p> <p>Above all, the information as per supplier’s offer was available to the PP at the time of taking the investment decision; substituting it with guidance value provided by GERC does not alter the outcome of the financial analysis to any appreciable degree. Hence, <b>CAR 3 is closed.</b></p>
CAR 4	B.5.22	We would like to submit to DOE that as per	GERC guidelines stipulate investment cost of INR

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion																		
GERC in its order no. 1/2010 has estimated total capital cost for wind power projects at INR 50 M / MW. The purchase order price works out to INR 55 M / MW, whereas the estimated project cost is INR 59.34/MW which has been used for investment analysis.	B.5.25	<p>the “Guidelines on the assessment of investment analysis”, Ver 5.0, EB 62, annex 5, all 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.</p> <p>PP has considered all the input values from WEG supplier offer which was available at the time of investment decision.</p> <p>PP has done the sensitivity analysis of -10% in capital cost i.e. at 53.40 million/MW and the equity IRR is below than the benchmark. Further equity IRR crosses the benchmark at capital cost of 48.35 Million /MW (below than the cost mentioned in GERC order) i.e. at the variation of 18.51% which is not realistic for the project activity.</p> <p>In addition to above we would like to submit to DOE that based on the publicity available data, the average cost of supply of Enercon Make E-53 WEG in India for the project capacity in the range of 25 to 75 MW is INR 58.91 million/MW ( reference web-link is being submitted to DOE), which is under - 10% the sensitivity range.</p>	<p>50 M / MW including investment on evacuation systems; suppliers’ offer is higher by about 15.7%; using this value for investment analysis, the equity IRR works out to 16.39% which is still below the benchmark; further, it is seen that the indicator exceeds the benchmark only if the investment cost goes down by 18.64% which is even below the GERC guidance value. Considering that the GERC order was passed in October 2010 based on input values of October 2009 (date of public hearing) and that the start date for this project is 2 April 2011, the likelihood of investment cost going below GERC guidance value can be ruled out.</p> <p>Further, DNV has also checked the capital cost of five registered large scale Indian wind power projects, details of which are as below:</p> <table><tr><th>Project ID</th><th>Cost INR M / MW</th><th>Project start date</th></tr><tr><td>4756</td><td>62.57</td><td>11.08.2008</td></tr><tr><td>4892</td><td>61.00</td><td>09.01.2008</td></tr><tr><td>4740</td><td>60.33</td><td>24.01.2008</td></tr><tr><td>5186</td><td>59.32</td><td>05.12.2009</td></tr><tr><td>4942</td><td>60.5</td><td>02.11.2009</td></tr></table> <p>The project cost of the registered projects also indicates that the GERC guidance value is not very reflective of prevailing market conditions in April 2011. The capital cost considered for the investment analysis of this project is INR 59.34 million/ MW with a start date of 2 April 2011 which in the light of</p>	Project ID	Cost INR M / MW	Project start date	4756	62.57	11.08.2008	4892	61.00	09.01.2008	4740	60.33	24.01.2008	5186	59.32	05.12.2009	4942	60.5	02.11.2009
Project ID	Cost INR M / MW	Project start date																			
4756	62.57	11.08.2008																			
4892	61.00	09.01.2008																			
4740	60.33	24.01.2008																			
5186	59.32	05.12.2009																			
4942	60.5	02.11.2009																			



Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
			above facts is reasonable. <b>CAR 4 is closed.</b>



Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
<p>CAR 5</p> <p>During site visit it was understood that the project is considering registering for Renewable Energy Certificate revenue. The investment analysis for calculating equity IRR does not reflect the same.</p>	<p>B.5.24</p> <p>B.5.25</p>	<p>We would like to submit to DOE that as per para 8 of “<i>The application of E+/E- policies in the assessment of additionality</i>”, (EB 52, Annex 3), if a relevant national/ sectoral policy adopted after 11-Nov-2001 is E-policy than impacts of policy shall be negated and analysis shall be conducted as if the policy did not exist.</p> <p>The national policy of Renewable Energy Certificate (REC) revenue came in to the existence after 11 Nov 2001 and it comes under E- policy. Hence REC regime impact has to be negated as per CDM rules and preferential tariff regime has to be followed. Based on the above the investment analysis has been conducted based on preferential tariff regime.</p>	<p>The notification on REC was issued on 14 January 2010, thus is deemed as E- policy as per EB 22 Annex 3 /41/. Notwithstanding the implications of E- policy, the PP was directed to present the financial analysis based on the policy of Renewable Energy Certificate as it was an income opportunity available to the PP at the time of taking the investment decision. Accordingly, the PP submitted investment analysis based on income from a combination of APCC tariff /55/and average price of REC traded /56/; the return on equity is found to be 13.76% which is also well below the benchmark. The price of INR 4.29 / kWh cannot be treated as base tariff as it is uncertain; also it was not considered at the time of making the investment decision; hence analysed its impact under sensitivity analysis. Further, as per E- policy, REC need not be considered in the revenues , as discussed in section 4.6.3 of the report.</p> <p>CAR 5 is closed.</p>
<p>CAR 6</p> <p>In respect of assumptions used for investment analysis, clarifications and documents in respect of following are needed:</p> <ol style="list-style-type: none"> <li>1. Clarify the nature of right of land possession, whether owned or leasehold, cost thereof, with necessary documentary evidence</li> <li>2. Loan document / s with interest</li> </ol>	<p>B.5.16</p> <p>B.5.18</p> <p>B.5.19</p> <p>B.5.21</p> <p>B.5.24</p> <p>B.5.25</p>	<ol style="list-style-type: none"> <li>1. Sub lease deed for entire land is being provided to DOE for the reference for verification of possession.</li> <li>2. Loan sanction letter has been submitted to DOE for reference.</li> <li>3. GERC tariff order Dated 30.01.2010 has been submitted to DOE for verification of assumed power tariff.</li> <li>4. As per CERC tariff regulation dated 16 Sep 2009, which lay down that asset life</li> </ol>	<ol style="list-style-type: none"> <li>1. Land lease documents /15/ have been received and verified. The documents are stamped as per the statutory requirement and are duly registered in the jurisdictional registrar’s office. OK.</li> <li>2. Loan document from IREDA /16/ has been received and the details noted and the IRR analysis has been verified. OK</li> <li>3. The tariff for investment analysis has been sourced from GERC order of 2010 /49/ OK</li> </ol>

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
<p>rate details, moratorium and repayment details</p> <p>3. Copy of power purchase agreement or document justifying the assumed power tariff</p> <p>4. Justification of residual value</p> <p>5. Copy of Feasibility Study / Detailed Project report, if any</p>		<p>is to be depreciated up to 90% of its initial value (considering residual value as 10% of its initial value) over the entire asset life (which in present case was 20 years). As the life time specified by suppliers is 20 year for WECs and accounting practice is to have a 10 % residual value, the Straight Line Method is used to arrive at 4.5 % depreciation. For further reference please refer page 22 of GERC tariff order date 30.01. 2010.</p> <p>5. We would like to submit to DOE that as per the para 6 of <i>Guidance on the assessment of investment analysis</i>", (Annex 5, EB 62), "Input values used in all investment analysis should be valid and applicable at the time of the investment decision taken by the project participant".</p> <p>PP has submitted all the reference documents such as Supplier offer letter, web-links etc. for the reference of the input parameters used in investment analysis and which were available at the time of investment decision for reference.</p>	<p>4. 90% of equipment value is depreciated @4.5% pa over a period of 20 years. This is in line with Section 205, 2 (b), of the Companies Act, 1956/67/. Thus, residual value is reckoned as 10% of cost of equipment plus cost of land. OK</p> <p>5. PP clarified that there is no DPR or feasibility report prepared to check the viability of the project activity. The input parameters for financial analysis have been sourced from the supplier offer and third party/documents available in public domain, at the time of decision making. OK</p> <p><b>CAR 6 is closed.</b></p>
<p><b>CAR 7</b></p> <p>Details in respect of the type of organizational structure of the PP, rate of applicable tax depreciation and tax rates,</p>	B.5.25	<p>Details have been provided in the revised IRR sheet</p>	<p>Documents submitted by the PP are reviewed; the PP is a limited liability partnership company /2/and the rate of taxes applicable for the same has been correctly applied /54/. .</p>



Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
with the relevant link have not been provided.			The details provided in the PDD /1/ and IRR sheet /6/ have been noted. <b>CAR 7 is closed.</b>

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
<b>CAR 8</b> Sensitivity analysis has been carried out to determine under what conditions variations in results would occur but the likelihood of occurrence of such events has not been satisfactorily analysed.	B.5.17 B.5.26 B.5.28	Sensitivity analysis has been carried out till the point the IRR crosses the benchmark. Further the explanation has been made about the likelihood of occurrence of such events in the revised PDD.	Under sub-step 2(d) of the investment analysis presented in the revised PDD, the level at which the variables considered for sensitivity analysis (PLF, investment and O&M cost) equal the benchmark has been provided. It is confirmed that the results are likely to be different only if the investment costs go down by 18.64% or if the PLF goes up by 31.74%. Re: O&M costs, even if it is removed totally (-100%), the financial indicator does not cross the benchmark. A satisfactory justification as to why such a scenario is considered unlikely is also provided. <b>CAR 8 is closed.</b>
<b>CAR 9</b> The OM has been calculated as the “average” of the Simple OM for the three preceding years, 2007-08, 2008-09, and 2009-10. However, under section (a), STEP 4, of the referred tool, the Simple OM to be calculated as per Option A, is the generation weighted average CO2 emissions per unit electricity generation.	B.6.1 B.6.3	The OM is revised to incorporate weighted average CO2 emissions per unit electricity generation. The value of OM is revised from 0.99473 to 0.99431 tCO2/MWh and the revised value of combined margin is 0.94881 tCO2/MWh	Under STEP 4 of section B.6.1 of the revised PDD /1/ and emission reduction calculation sheet /8/, the Simple OM has been recalculated which is in line with the requirements of the applied tool. The combined margin emission factor also has been consequently recalculated. <b>CAR 9 is closed.</b>
<b>CAR 10</b> The monitoring plan is not in line with the actual practice at site.	B.7.1 B.7.4 B.7.5 B.7.6 B.7.7	The monitoring plan has been revised in line with the actual practice at site.	The revised monitoring plan provided in PDD /1/ has been reviewed based on information gathered during site visit /71/. It is found satisfactory. <b>CAR 10 is closed.</b>
<b>CAR 11</b> The revision to the methodology applied	B.1.1	The applied methodology has been changed to version 13.0.0.	ACM0002, Version 13.0.0, approved in EB 67, Annex 13, is valid from 11 May 2012. Hence, CAR

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
for the project activity has been approved in EB 65. A project submitted for registration must have applied a methodology valid on the day of submission of the request for registration.			11 is closed.
CL 1 Details provided under A.4.13 and A.4.1.4 are inadequate. Complete details consisting of unique identification number of the wind mill (where installed), HT Supply Connection reference number (if already commissioned and allotted), survey number of the land in which the wind mill is located, official name of the village, name of the jurisdictional tehsil / taluk, and geographical coordinates of the individual wind mill site, to enable unique identification of the proposed wind mill installation have not been provided.	A.2.4 A.4.1	We would like to submit to DOE that the project is under the implementation stage. Only after the completion of commissioning the each WEG will be allotted the unique identification number. The land documents have been provided to DOE for the reference of site locations. The detail of geographical coordinates along with the village name has been given in Appendix 1 of PDD. We assume that geographical coordinates along with the village name will suffice as a requirement for unique identification of the WECs included in the project activity.	Subsequent to this response of the PP, the installation, erection and commissioning of all turbines were completed. Accordingly, PP was asked to update the status of the project in the PDD. Name of villages, taluks, and district and geographical coordinates for all 33 sites at Kutch and 30 sites at Lalpur are provided in Appendix 1 to the revised PDD /1/ along with the turbine ID. The geographical co-ordinates have been verified by using Google lat-long tool /61/. <b>CL 1 is closed.</b>
CL 2 The plan proposed for utilization of 2% of CDM revenues for sustainable development as per the requirement of DNA is not include in the PDD.	B.7.12 B.7.13	Action plan for utilization of 2% of CDM revenue for sustainable development as per the requirement of DNA is has been included in revised PDD.	Under section B.7.2 of the revised PDD /1/, the PP has provided a procedure for identifying areas needing such investments and a commitment to establish Corporate Social Responsibility (CSR) team. <b>CL 2 is closed.</b>
CL 3 While considering estimated O&M costs	B.5.23 B.5.25	We would like to clarify to DOE that as per the supplier's offer the O&M cost is INR	The O&M cost considered for investment analysis was verified with the copy of offer from EIL /10/

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
the standard practice is to consider it as a percentage of investment made on equipment and machinery. It is seen that in the investment analysis submitted in the PDD, O&M charges are levied as percentage of project cost which includes investment on land, transport and development charges.		0.62 million/ WEG. Since the cost of WEG is INR 47.47 million/WEG (capital cost), hence the O&M cost is 1.3% ( $0.62/47.47 = 1.3\%$ ) of capital cost has been selected in the investment analysis.	made available to DNV. <b>CL 3 is closed.</b>
CL 4 A schematic diagram to accurately explain the monitoring and measurement procedure as outlined in B.7.2 of the PDD has not been included.	B.7.2 B.7.4 B.7.5 B.7.6	A schematic diagram explaining the monitoring and measurement procedure has been given in section B.7.2 of revised PDD.	The schematic indicating the monitoring equipment diagram has been included in the revised PDD /1/ provided. <b>CL 4 is closed.</b>
CL 5 DNV is unable to conclude the adequacy of local stakeholder consultation and CDM related matters as the meeting has been organized and conducted not by the PP, but by EIL.	E.1.1 E.1.2	We would like to clarify to DOE that PP has given the authorization of all the CDM activities to Enercon (India) Limited. As a part of CDM activities Enercon is authorised to organise stakeholders meeting for the said CDM project on behalf of Vish Wind Infrastructure LLP. Authorization letter from PP in the name of Enercon is being provided to DOE for reference.	Copy of letter dated 12 April 2011 issued by VWILLP authorizing EIL to conduct its CDM process activities and represent its interest in CDM matters is received /14/ and verified.  <b>CL 5 is closed.</b>
CL 6 The accuracy class and complete description of all the meters installed at various points, specifically at the utility sub-station and at the clusters are not available.	B.7.3 B.7.7	Accuracy class of all the cluster meters at project site & GETCO meters at Enercon sub-station will be 0.2s and same has been mentioned in annex 4 of PDD.	Accuracy class of monitoring instruments mentioned in Annex 4 of the revised PDD /1/. DNV considers the accuracy of the meters to be appropriate.  <b>CL 6 is closed.</b>
<b>CL 7</b>		The global stake holder comments were	Response to the comments received during global



Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
PP's responses to the comments received during global stake holder consultation have not been provided.		received as communicated by DOE and point wise response of same is is provided separately. .	stake holder is found satisfactory. It is our opinion that the issues raised by the stakeholders have been adequately addressed. The comments received, point wise response of PP and DNV's assessment has been discussed in section 4.11 of the report. <b>CL 7 is closed.</b>



**Table 4 Forward action requests**

Forward action request	Reference to Table 2	Response by project participants
No FAR is raised during the validation.		

- o0o -

**ANNEX 1****Latitude and longitude of all project WECs**

The location of each individual WEC as verified from the commissioning certificates /17//18//19/ and the longitude and latitude of each WEC is as shown below:

1. For Kutch site, (District: Kutch, State: Gujarat)

WEG Sr. No.	WEG ID NO	Village	Taluka	Latitude (N)	Longitude (E)
1	EIL/800/11-12/2469	Khombhadi Nani	Nakhatrana	23.41978	69.13057
2	EIL/800/11-12/2470			23.41771	69.13119
3	EIL/800/11-12/2471			23.41545	69.13154
4	EIL/800/11-12/2472			23.41463	69.13608
5	EIL/800/11-12/2475			23.42289	69.13727
6	EIL/800/11-12/2476			23.43353	69.13148
7	EIL/800/11-12/2473			23.43568	69.13101
8	EIL/800/11-12/2474			23.43891	69.13204
9	EIL/800/11-12/2477			23.44566	69.11901
10	EIL/800/11-12/2478			23.44863	69.11686
11	EIL/800/11-12/2479			23.45061	69.11676
12	EIL/800/11-12/2483	Vigodi		23.47575	69.10385
13	EIL/800/11-12/2587	Rampar Sarva		23.46789	69.08344
14	EIL/800/11-12/2494			23.46995	69.08482
15	EIL/800/11-12/2484	Vigodi		23.47102	69.08219
16	EIL/800/11-12/2485			23.47334	69.08353
17	EIL/800/11-12/2486			23.47239	69.08706
18	EIL/800/11-12/2487			23.47539	69.0833
19	EIL/800/11-12/2488			23.47627	69.08049
20	EIL/800/11-12/2489			23.47745	69.08687
21	EIL/800/11-12/2490			23.47913	69.08449
22	EIL/800/11-12/2491			23.48041	69.07762
23	EIL/800/11-12/2492			23.48258	69.06526
24	EIL/800/11-12/2493			23.48057	69.06784
25	EIL/800/11-12/2590	Khirsara (Netra)		23.47881	69.06922
26	EIL/800/11-12/2591			23.4768	69.07072
27	EIL/800/11-12/2589	Rampar		23.4423	69.07665

28	EIL/800/11-12/2495	Sarva		23.4402	69.07735
29	EIL/800/11-12/2496			23.43439	69.08006
30	EIL/800/11-12/2497	Bandiya	Abdasa	23.41617	69.02001
31	EIL/800/11-12/2480	Khombhadi Nani	Nakhatrana	23.43155	69.13112
32	EIL/800/11-12/2481			23.42959	69.13235
33	EIL/800/11-12/2482			23.4434	69.11945

## Lalpur Site (District: Jamnagar, State: Gujarat)

WEG Sr. No.	WEG ID NO	Village	Taluka	Latitude (N)	Longitude (E)
34	EIL/800/11-12/2161	Navi Pipar	Lalpur	22.15478	69.92386
35	EIL/800/11-12/2162			22.13751	69.91985
36	EIL/800/11-12/2163			22.1399	69.92042
37	EIL/800/11-12/2164			22.15693	69.90534
38	EIL/800/11-12/2165			22.15503	69.90582
39	EIL/800/11-12/2166	Govana		22.13969	69.89579
40	EIL/800/11-12/2167			22.14332	69.89474
41	EIL/800/11-12/2168			22.14399	69.89261
42	EIL/800/11-12/2169			22.14398	69.88783
43	EIL/800/11-12/2170			22.13915	69.87166
44	EIL/800/11-12/2171			22.15328	69.87057
45	EIL/800/11-12/2172			22.15533	69.8703
46	EIL/800/11-12/2173			22.15732	69.8699
47	EIL/800/11-12/2174			22.15861	69.86971

48	EIL/800/11-12/2175			22.16658	69.86708
49	EIL/800/11-12/2176			22.1688	69.86664
50	EIL/800/11-12/2177	Nani Rafudad		22.18928	69.84754
51	EIL/800/11-12/2178			22.19097	69.84445
52	EIL/800/11-12/2179	Kan Virdi		22.19205	69.84194
53	EIL/800/11-12/2180			22.19757	69.84555
54	EIL/800/11-12/2181	Babarzar		22.17319	69.82554
55	EIL/800/11-12/2186	Sanosari		22.06414	69.88709
56	EIL/800/11-12/2187			22.06724	69.89168
57	EIL/800/11-12/2188			22.07579	69.89075
58	EIL/800/11-12/2182	Dharampur	22.12138	69.89119	
59	EIL/800/11-12/2183		22.12647	69.89537	
60	EIL/800/11-12/2185	Bhangor	Bhanvad	22.12911	69.89381
61	EIL/800/11-12/2184	Dharampur	Lalpur	22.13197	69.90297
62	EIL/800/11-12/2189	Sanosari		22.09688	69.90079
63	EIL/800/11-12/2190			22.09475	69.90079

## **APPENDIX B**

---

### **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 Sridhar & 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.

#### **Komaranapura Venkatachar Sudarshan**

K.V. Sudarshan holds a bachelors' degree in Chemical Engineering and has nearly 35 years industrial experience in manufacture of aromatic chemicals, use and recovery of solvents, bulk drugs and pharmaceuticals, agro chemicals and plasticizers. This vast experience gave him the unique opportunity to be conversant with process selection, efficiency, and optimum utilization of all inputs including utilities. During his working in industries, he has had exposure to all facets of industrial chemical production, including handling of hazardous chemicals, solid and liquid effluents, waste and waste water treatment. A certified EMS auditor, he has worked as a consultant to design, establish, implement and operate Environmental and Occupational Health and Safety management systems at large industrial houses such as Raymond Textiles, Reliance Energy Industries, Saint Gobain Crystals and Detectors and at state government undertakings.

He has been associated with CDM since 2005 and has worked as a validator and verifier for various CDM and VCS project activities, both in India and abroad. The project activities assessed by him include renewable energy generation projects, waste handling including community bio-gas projects, and energy efficiency projects in process industries.

**Zuzana Andrtová**

Mrs. Zuzana Andrtová holds MSc. Degree in Technology of Protection Environment on Prague's University of Chemical Technologies. Has more than 12 years experience with implementation of quality systems in various type of organizations. Her experience also covers machine technology design, analytical laboratory processes and implementation of environmental system.

She has experience of 4 years in validation of CDM projects, determination and verification of JI projects in DNV and EU ETS verification as lead verifier. She participates as team member on accreditation audits for Czech Accreditation Institute as expert assessor for EU ETS scheme.

Her qualification, industrial experience and experience in CDM demonstrate her sufficient sectoral competence in Energy generation from renewable sources.

She has also been actively involved in Management System Audits such as ISO 9001, ISO 14001 and OHSAS 18001 standards in various industrial sectors for more than 5 years in DNV.