



VALIDATION REPORT

“AES SAURASHTRA WINDFARMS” IN INDIA

REPORT No. 2011-9137

REVISION No. 01

DET NORSKE VERITAS



VALIDATION REPORT

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Date of first issue: 14 March 2011	ConCert Project No.: PRJC-287229-2011-CCS-IND
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Client: AES Saurashtra Windfarms Private Ltd. (ASW)	Client ref.: Mr. Surya Pratap Singh

Summary:
Project Name: AES Saurashtra Windfarms
Country: India
Methodology: ACM0002 **Version:** 12.2.0
GHG reducing Measure/Technology: Grid connected electricity generation from renewable energy sources (wind energy)
Technical area: TA 1.2 Energy generation from renewable energy sources **Sectoral Scope:** 1
ER estimate: 80 385 tCO₂e 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 "AES Saurashtra Windfarms" in India, as described in the PDD, version 4 of 6 January 2012, meets all relevant UNFCCC requirements for the CDM and correctly applies the baseline and monitoring methodology ACM0002, version 12.2.0. Hence, DNV requests the registration of the project as a CDM project activity.

Report No.: 2011-9137	Subject Group: Environment
Report title: "AES Saurashtra Windfarms" in India	
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Date of this revision: 12 January 2012	Rev. No.: 01
Number of pages: 30	

Indexing terms

Key words Climate Change Kyoto Protocol Validation Clean Development Mechanism
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Abbreviations

ASW	AES Saurashtra Windfarms Private Ltd
BM	Build Margin
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CEA	Central Electricity Authority
CER	Certified Emission Reduction(s)
CL	Clarification request
CM	Combined Margin
CO ₂	Carbon dioxide
CO ₂ e	Carbon dioxide equivalent
C-WET	Centre for Wind Energy Technology
DNV	Det Norske Veritas
DNA	Designated National Authority
EIL	Enercon India Limited
FAR	Forward Action Request
GEDA	Gujarat Energy Development Agency
GERC	Gujarat Electricity Regulatory Commission
GHG	Greenhouse gas(es)
GETCO	Gujarat Electricity Transmission Company
GUVNL	Gujarat UrjaVikas Nigam Limited
GWP	Global Warming Potential
IDC	Interest during construction
IPCC	Intergovernmental Panel on Climate Change
IRR	Internal Rate of Return
LoA	Letter of approval
MoEF	Ministry of Environment and Forestry
MoU	Memorandum of Understanding
NEWNE	North East West and North-Eastern Regional Grid of India
NGO	Non-governmental Organisation
ODA	Official Development Assistance
OM	Operating Margin
O & M	Operation and Maintenance
PDD	Project Design Document
PLF	Plant Load Factor
PO	Purchase Order
PPA	Power Purchase Agreement
PwC	Price Waterhouse Coopers
RBI	Reserve Bank of India
tCO ₂ e	Tonnes of CO ₂ equivalents
UNFCCC	United Nations Framework Convention on Climate Change
WEG	Wind Energy Generator



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1 EXECUTIVE SUMMARY – VALIDATION OPINION

DNV Climate Change Services AS (DNV) has performed a validation of the project activity “AES Saurashtra Windfarms” 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. The host Party fulfils the participation criteria and has approved the project and authorized the project participants AES Saurashtra Windfarms Private Ltd. (ASW). The DNA from India through its letter dated 5 September 2011 confirmed that the project assists in achieving sustainable development.

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

AES Saurashtra Windfarms project activity is located in the state of Gujarat and involves installation of 49 Wind Energy Generators (WEGs) of 0.8 MW capacity each, aggregating to the total installed capacity of 39.2 MW. By generating electricity from wind energy sources and exporting to the North East West and North-Eastern (NEWNE) grid of India, the project activity displaces an equivalent amount of grid power, which is pre-dominantly fossil fuel based. As a result, the project results in reductions of CO₂ emissions that are real, measurable and give long-term benefits to the mitigation of climate change. It is demonstrated that the project is not a likely baseline scenario. Emission reductions attributable to the project are hence additional to any that would occur in the absence of the project activity.

The total emission reductions from the project are estimated to be on the average 80 385 tCO₂e 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 “AES Saurashtra Windfarms” in India, as described in the PDD, version 4 dated 6 January 2012, meets all relevant UNFCCC requirements for the CDM and correctly applies the baseline and monitoring methodology ACM0002, version 12.2.0. Hence, DNV requests the registration of the project as a CDM project activity.

Bangalore and Oslo, 12 January 2012

Murali Govindarajulu
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Michael Lehmann
Director of Services and Technologies
DNV Climate Change Services AS



2 INTRODUCTION

AES Saurashtra Windfarms Private Ltd. (ASW) has commissioned DNV Climate Change Services AS (DNV) to perform a validation of the “AES Saurashtra Windfarms” 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 criteria are validated in order to confirm that the project design, as documented, is sound and reasonable and meets the identified criteria. Validation is a requirement for all CDM projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of certified emission reductions (CERs).

2.2 Scope

The validation scope is defined as an independent and objective review of the project design document (PDD). The PDD is reviewed against the criteria stated in Article 12 of the Kyoto Protocol, the CDM modalities and procedures as agreed in the Marrakech Accords and the relevant decisions by the CDM Executive Board, including the approved baseline and monitoring methodology ACM0002 (version 12.2.0) /33/. The validation was based on the recommendations in the Validation and Verification Manual /32/.

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

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

3.1.1 Documentation provided by the project participants

- /1/ ASW: CDM-PDD for project activity “AES Saurashtra Windfarms” in India, webhosted version 1 dated 18 January 2010 and the latest revised version 4 dated 6 January 2012.
- /2/ ASW: Financial Model.xls, version 1, dated 18 January 2010 and version 4 dated 6 January 2012
- /3/ ASW: Benchmark_ASW.xls, version 1, dated 18 January 2010 and version 4 dated 6 January 2012
- /4/ ASW: Board resolution passed at the meeting of the Board of Directors of ASW, dated 14 July 2010
- /5/ ASW: Copy of email with intention to seek CDM status for the project activity sent to MoEF, India dated 23 September 2010 and the acknowledgement from MoEF dated 27 September 2010.
- /6/ ASW: Copy of email with intention to seek CDM status for the project activity sent to UNFCCC, dated 23 September 2010 the acknowledgement from UNFCCC dated 7 October 2010
- /7/ ASW: Offer for the supply, erection & commissioning of the wind turbines and subsequent Memorandum of understanding between ASW and EIL 39.2 MW Wind Power Project in Gujarat, dated 10 May 2010.
- /8/ ASW: Purchase order for 39.2 MW Wind Farm Project in Gujarat, dated 22 October 2010.
- /9/ ASW: Copy of Application for financial assistance to IDFC for the project activity, dated 6 July 2010.
- /10/ IDFC: Loan sanction document from IDFC for the project activity, dated 19 October 2010.
- /11/ ASW: Lender’s Term Sheet for the project activity from IDFC bank dated 6 July 2010.
- /12/ ASW: Common rupee loan agreement among ASW, Banks & Financial Institutions as set forth in schedule IA hereto and IDFC dated 4 January 2011.
ASW: Letter sent to IDFC, who are the lender for the project activity, regarding location change of WEG and subsequent generation increase, dated 18 May 2011 and the acknowledgement received from IDFC bank dated 29 June 2011.
- /13/ ASW: Minutes of meeting, list of attendees and sample filled in questionnaire of the



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- local stakeholder meeting conducted for project activity held at Jamnagar dated 29 October 2010.
- /14/ Jamnagar Forest Department: Diversion of 52.95 hectare of forest land for construction of 39.2 MW wind power project dated 1 June 2010.
 - /15/ GEDA: Permission letter for setting up wind turbines accounting to an installing capacity of 39.2 MW in District Jamnagar dated 25 February 2011, 13 June 2011 and 21 June 2011 and 20 December 2011.
 - /16/ IPCC 2006: Chapter 1 and 2 of Guidelines for National Greenhouse Gas Inventories
 - /17/ Copy of Operation and Maintenance agreement between ASW and EIL dated 6 October 2010.
 - /18/ PwC: Proposal for consultancy services for the project activity dated 5 May 2010.
 - /19/ EIL: Undertaking by EIL for completion of formalities related to transfer of land lease for the project activity dated 1 December 2010.
 - /20/ Essent Trading (a merchant energy trading company): Support document for the CER price considered - A compliance buyer's perspective on post 2012 CERs.
 - /21/ Technical specification sheet of E-53 model WEG certified by DEWI-OCC Offshore and Certification Centre GmbH, Am Seedeich 9, D-27472Cuxhaven.
 - /22/ Tata consulting Engineers Limited: EIA study for the project activity dated November 2010.
 - /23/ Power Purchase Agreement signed between project proponent and Gujarat Urja Vikas Nigam Limited (GUVNL) for 32.8 MW dated 25 April 2011
 - /24/ EIL: Undertaking for "LCS meters are of auto tracking and hence not essential to calibrate separately" dated 10 August 2010.
 - /25/ ASW: Wind assessment report for 39.2 MW wind power project (PLF assessment report) dated 9 July 2010.
 - /26/ EIL: Email from EIL to ASW on local employment dated 29 June 2011.
 - /27/ ASW: The DNA communication to the project proponent regarding the Host country approval process dated 8 March 2011 and 15 June 2011
 - /28/ Marsh Asia: Insurance quotations from Marsh Asia, the world's leading insurance broker and risk advisor dated 12 November 2009.
 - /29/ ASW: Copy of the advertisement for local stakeholders consultation in a local newspaper "Sandesh" dated 14 October 2010.
 - /30/ ASW : Commissioning certificates issued by GEDA for 15.2 MW, 4.8 MW, 3.2 MW, 1.6 MW, 4 MW and 3.2 MW dated 28 June 2011, 28 July 2011, 25 August 2011, 17 November 2011, 9 December 2011 and 20 December 2011 respectively. Internal Communication regarding the commissioning of 44 WEGs dated 30 December 2011.

3.1.2 Letters of approval

- /31/ MoEF (DNA of India): Letter of approval dated 5 September 2011.

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

- /32/ CDM Executive Board: Validation and Verification Manual, version 1.2
- /33/ CDM Executive Board: ACM0002, "Consolidated baseline methodology for grid-connected electricity generation from renewable sources", version 12.2.0
- /34/ CDM Executive Board: Tool for the demonstration and assessment of additionality,

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version 05.2.1

- /35/ CDM Executive Board: Tool to calculate the emission factor for an electricity system, version 02.2
- /36/ CDM Executive Board: Guidelines for the reporting and validation of plant load factors version 01.
- /37/ CDM Executive Board: Guidelines on assessment of investment analysis, version 5
- /38/ CDM Executive Board: Guidelines on the demonstration and assessment of prior consideration of the CDM, version 04.
- /39/ CDM Executive Board: Glossary of CDM terms Version 05.

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

- /40/ CEA: CO₂ Baseline Database for the Indian Power Sector. Version 5, Date: November 2009.
http://www.cea.nic.in/reports/planning/cdm_co2/cdm_co2.htm
- /41/ MoEF: The Ministry of Environment and Forests (MoEF), Government of India notification, regarding the requirement of Environment Impact Assessment (EIA) studies, dated 14 September 2006.
<http://envfor.nic.in/legis/eia/so1533.pdf>
- /42/ GERC: Determination of the tariff for Procurement of Power by Distribution Licensees from Wind Energy Generators and other commercial issues dated 30 January 2010.
http://www.gercin.org/renewablepdf/en_1303211765.pdf
- /43/ Email sent by the project proponent regarding CDM consideration for the project activity to UNFCCC dated 23 September 2010
http://cdm.unfccc.int/Projects/PriorCDM/notifications/index_html
- /44/ Ministry of new and renewable energy sources: Generation Based Incentives for wind power projects in India:
<http://www.cwet.tn.nic.in/Docu/Grid%20Interactive%20Wind%20Power%20Projects.pdf>
- /45/ Wind Power Directory 2009: detailed list of wind power projects commissioned in all states of India.
- /46/ RBI: Risk free rate proposed by Reserve Bank of India for the year 2009-10
Historical Risk free rate form the Reserve Bank of India sourced from handbook of statistics on Indian economy 2010-11, dated 15 September 2011.
http://rbidocs.rbi.org.in/rdocs/Publications/PDFs/119T_HBSE200910.pdf
- /47/ Income Tax Act 1961, sourced from Income Tax Department, Ministry of Finance.
<http://law.incometaxindia.gov.in/DIT/Income-tax-acts.aspx>
Income Tax Act: Rates of depreciation applicable from Assessment year 2006-07 onwards: Appendix I (rule 5).
- /48/ Ministry of Corporate Affairs, Government of India: The Companies Act 1956, 18 January 1956
http://www.mca.gov.in/Ministry/actsbills/pdf/Companies_Act_1956_Part_1.pdf
- /49/ Ministry of new and renewable energy sources: Accelerated depreciation policy for wind power projects in India, pressnote published on 26 December 2009 :
<http://www.pressnote.in/MNRE-incentives-for-independent-power-producers->



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- /50/ Indian wind turbine manufacturers association: Indian Wind Energy Outlook 2009
http://www.indianwindpower.com/pdf/GWEO_A4_2008_India_LowRes.pdf
- /51/ Gujarat Urban Development Company Ltd: Bulletin on Clean development mechanism activities in Gujarat urban development limited, dated March 2008.
<http://www.gudcltd.com/public/CDM-Bulletin.pdf>

Main changes between the version of the PDD published for the 30 days stakeholder commenting period and the final version of the PDD submitted for registration:

- Details on of benchmark calculation including beta screen shots in the revised PDD (CAR 3)
- Revision in sensitivity analysis in line with the requirement of Tool for the demonstration and assessment of additionality, version 5.2.1 (CAR 4)
- Provision for monitoring the net electricity generation in order to calculate baseline emission has been formalized (CAR 5)
- Detailed chronology for CDM consideration in line with the requirement of Guidelines on the demonstration and assessment of prior consideration of the CDM version 03 (CL 3)
- Other changes related to the CAR's and CL's identified in the DNV's draft validation report.
- Revision in the start date of the crediting period in line with the revised timelines of validation.

3.2 Follow-up interviews with project stakeholders

On 7 March 2011 DNV visited the office of the AES Saurashtra Windfarms Private Ltd. Representative of the project participant (ASW) and project consultant (PwC) were interviewed to confirm the stated information and to resolve issues identified in the document review. As of 7 March 2011, no WEG forming part of this project was yet in place, and hence the interview were conducted at the project participant's office. During the interview, the relevant documents including Land clearance approval /14/, EIA /22/, loan sanction document /10/ were provided and assessed. The information about this project was confirmed from these documents. Based on the above mentioned reasons and the fact that the project is a Greenfield project and all relevant documents were available, DNV did not deem necessary to conduct a physical site visit for this project as part of the validation process. DNV can confirm the project design, operation and monitoring plan and all baseline scenario information based on the interviews and document verification. The main topics of the interviews are summarized in the table below. The main topics of the interviews are summarized in the table below.

Date	Name	Organization	Topic
/52/ 2011-03-07	Mr.Enamul Latifi Mr. Rahul Mishra Ms.Meetukarajgi Mr.Guru Inder	AES SaurashtraWindfar ms Private Ltd.	<ul style="list-style-type: none"> • Proof of CDM consideration • Applicability of methodology • Review of project design and



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Mr. Surya Pratap
Singh

Mr.Swarup Mohanti
Ms.Kripa Jagannathan
Mr.Ankit Gupta

Price Waterhouse
Coopers

technology used.

- Review of monitoring and verification procedure, management structure of the organization.
- Environmental consents and permits.
- Review of the stakeholder consultation process.
- Operation & maintenance procedures.
- Assessment of PLF
- Emission reduction calculations and data used therein.
- Financial of the project activity.
- Sensitivity analysis
- Benchmark analysis
- Common practice analysis

3.3 Resolution of outstanding issues

The objective of this phase of the validation is to resolve any outstanding issues which needed 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 "AES Saurashtra Windfarms" in India is enclosed in Appendix A to this report.

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

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

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



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



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

Validation Protocol Table 2: Requirement Checklist				
Checklist question	Reference	Means of verification (MoV)	Assessment by DNV	Draft and/or Final Conclusion
<i>The various requirements in Table 1 are linked to checklist questions the project should meet. The checklist is organised in different sections, following the logic of the CDM-PDD</i>	<i>Gives reference to documents where the answer to the checklist question or item is found.</i>	<i>Means of verification (MoV) are document review (DR), interview (I) or any other follow-up actions (e.g., on site visit and telephone or email interviews) and cross-checking (CC) with available information relating to projects or technologies similar to the proposed CDM project activity under validation.</i>	<i>The discussion on how the conclusion is arrived at and the conclusion on the compliance with the checklist question so far.</i>	<i>OK is used if the information and evidence provided is adequate to demonstrate compliance with CDM requirements. A corrective action request (CAR) 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 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) during validation is raised to highlight issues related to project implementation that require review during the first verification of the project activity.</i>

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

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

Figure 1: Validation protocol tables



3.4 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.

3.5 Validation team

<i>Role</i>	<i>Last Name</i>	<i>First Name</i>	<i>Country</i>	<i>Type of involvement</i>						
				Desk review	Site visit / Interviews	Reporting	Supervision of work	Technical review	TAI.2 competence	Financial expertise
Team leader (Validator)	Govindarajulu	Murali	India	✓	✓	✓	✓		✓	
Assessor Under Training	Kaliaperumal	Thamizharasi	India	✓	✓	✓				
Financial Expert	Kapoor	Nitin	India	✓		✓				✓
Technical reviewer	Dudek	Agnes	Norway					✓	✓	

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 dated 6 January 2012.

4.1 Participation requirements

The project participant is AES Saurashtra Windfarms Private Ltd. (ASW) of the host Party India. No project participant from an Annex I Party has yet been identified. The host Party India meets all the requirements for participating in a CDM project.

A letter of approval (LoA) /31/ was issued by DNA of India on 5 September 2011, authorizing AES Saurashtra Windfarms Private Ltd. (ASW) as project participant and confirming that the project assists in achieving sustainable development.

The letter of approval was received from the project participants. Communications with DNA of India dated 8 March 2011 and 15 June 2011 regarding the host Party approval process have been witnessed by DNV /27/. DNV does not doubt the authenticity of the letter of approval and DNV considers the letter is in accordance with paragraphs 45- 48 of the VVM /32/.

No public funding from an Annex I Party is involved in the project 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 activity envisages implementation of a 39.2 MW wind power project consisting of 49 Wind Energy Generators (WEGs) of individual capacity of 0.8 MW at Chachlana, Jodhpar, Gorinja, Vachhu, Hadmatiya, Virpur Gangadi, Lamba, Kurunga and Okhamadhi villages in Jamnagar District of Gujarat state in India. The project construction has been already commenced and 44 WEGs have been commissioned as on 31 December 2011 /30/ and the remaining 5 WEGs have been scheduled to be commissioned during the month of January 2012. All the WEGs in the project have been supplied by Enercon (India) Ltd, which is also responsible for the operation, maintenance and management of the project. The technology used in the project activity is indigenously available in India and there is no transfer of technology envisaged.

The geographical coordinates of project extends between latitude 21°53'59.2" and 22°5'30.0"N and longitude 69°22'37.8" and 69°6'32.0"E.

The electricity generated from the wind farm will be exported to the regional electricity grid and sold to the state electricity utility thereby marginally contributing to reducing the energy demand supply gap in the state of Gujarat. The proposed project is expected to export 87.139 GWh per year at a plant load factor (PLF) of 25.38%. The plant load factor has been verified by DNV against the loan sanction document from IDFC bank /11/. DNV accepted the loan sanction document as proof for the project activity PLF since it is in line with the "Guidelines for the reporting and validation of plant load factors" clause 3 (a) /36/.

The starting date of the project activity has been identified as 22 October 2010, which is the date of purchase order placed to Enercon India Limited for the wind turbines of the project activity /8/. As per the technical specification sheet provided by Enercon India Limited



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(manufacturer of WEGs) the lifetime of the project is 20 years /21/, which is reasonable for a WEG and has been cross checked by DNV against GERC tariff order dated 30 January 2010 /42/. The project has selected a fixed crediting period of 10 years with the start date of the crediting period to be 1 March 2012 (or on the date of registration of the CDM project activity, whichever is later). The project is expected to result in 80 385 tCO₂e emission reductions per annum over the crediting period /1/.

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

4.3 Application of selected baseline and monitoring methodology

The project correctly applies the approved baseline methodology ACM0002 version 12.2.0 “Consolidated baseline methodology for grid-connected electricity generation from renewable sources” /33/. The applicability of this methodology is justified as:

- The project is a new installation of wind electricity generators which harnesses the wind potential available in the region and it displaces fossil fuel based electricity from the north east west north-eastern grid (NEWNE) of India and has been verified from (i) purchase order placed for the project activity dated 22 October 2010 /8/ and permission from Gujarat Energy Development Agency dated 25 February 2011, 13 June 2011 and 21 June 2011 /15/.
- The project activity is connected to the north east west north-eastern grid of India, and the system boundaries are clearly identified and information on the characteristics of this grid is available /40/.
- The project does not involve an on-site switch from fossil fuels to a renewable source.

The project activity being a renewable energy generation project, the rest of the applicability conditions as mentioned in the applied methodology ACM0002 version 12.2.0 do not apply to this project activity.

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

4.4 Project boundary

The geographic and system boundary includes the wind electricity generators installed as part of the project activity and the north east west north-eastern grid of India. The system boundary for the relevant electricity grid can be clearly identified and information on the characteristics of the grid is available /40/.

	GHGs involved	Description
Baseline emissions	CO ₂	The major emission source. The GHG emission reduction is achieved by displacing the electricity generated by fossil fuel based power plants in the north east west and north-



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		eastern regional grid of India.
Project emissions	No project emissions	NA
Leakage	No leakage	NA

The identified boundary and selected sources and gases are justified for the project activity. 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 12.2.0).

4.5 Baseline Identification

Baseline Scenario: Two alternatives to the project activity have been considered as the baseline scenario. These are i) the project activity without CDM benefits and ii) continuation of current scenario of power generation from existing grid-connected power plants. Both alternatives are in compliance with the laws and regulations of India and might be considered as baseline scenarios.

However, the implementation of the project activity without CDM benefits faces investment barriers (c.f. section B.4.4) and hence the selected baseline scenario is that in the absence of the project activity an equivalent amount of electricity would have been generated by the operation of grid connected power plants and by the addition of new generation sources. DNV considers the list of realistic and credible alternatives to be complete and the determination of the baseline transparent.

As the project activity supplies electricity to the Gujarat state electricity grid which forms a part of north east west and north-eastern regional grid of India, the baseline for this project activity is a function of the generation mix of the north east west and north-eastern regional grid of India. The selection of the north east west and north-eastern regional grid of India as the grid system boundary for the project activity is in line with the EB guidance for large countries such as India. In line with the guidance provided in the “Tool to calculate the emission factor for an electricity system” /35/, the weights for OM and BM have been taken as 75:25. The combined margin emission coefficient for the north east west and north-eastern regional grid of India has been calculated to be 0.9225 tCO₂e/MWh and is fixed *ex ante* for the entire fixed crediting period. The CM emission factor value has been sourced from the data published by the Central Electricity Authority (CEA) of the Ministry of Power, Government of India /40/. CEA has published the database of carbon dioxide emission factor for the power sector in India based on detailed authentic information obtained from all operating power stations in the country. This CO₂ baseline database provides information about the OM and BM factors of all the regional electricity grids in India. DNV confirms that the database is an official publication of the Government of India for the purpose of CDM baselines /40/. The emission factors for coal and lignite were based on the values provided in India’s Initial National Communication under the UNFCCC (Ministry of Environment & Forests, 2004). The emission factor for coal is supported by the results of an analysis of approximately 120 coal samples collected from different Indian coal fields. For all other fuels, default emission factors were derived from the IPCC 2006 Guidelines /16/. DNV confirms that the CEA database version 5 used to calculate the combined margin emission factor was the latest database available at the time of start of validation, which is in line with the “Tool to

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calculate the emission factor for an electricity system”, which states “*For grid power plants, use a 3-year generation-weighted average, based on the most recent data available at the time of submission of the CDM-PDD to the DOE for validation*” /35/. DNV also confirms that the combined margin emission factor for the north east west and north-eastern regional grid of India is fixed *ex-ante* for the entire crediting period for the project activity.

DNV confirms that the approved baseline methodology ACM0002 version 12.2.0 has been correctly applied to identify a complete list of realistic and credible baseline scenarios, and the identified baseline scenario most reasonably represents what would occur in the absence of the proposed CDM project activity.

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

4.6 Additionality

The additionality of the project activity has been demonstrated by applying the “Tool for demonstration and assessment of additionality”, version 5.2.1 /34/, and primarily through a financial analysis.

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

Start Date:

The start date of the project activity has been identified as 22 October 2010, which is the date of purchase order placed to Enercon India Limited for the wind turbines of the project activity /8/. Any civil work or transmission network can only be started after the placement of purchase order for the wind turbines and hence the date of purchase order is considered to be the earliest financial commitment thereby confirming to the requirements of the EB guidance on start date of project activity /39/.

Serious consideration of CDM:

Since the start date of the project activity is 22 October 2010 (which is after 2 August 2008), the project proponent through an email communication has notified the DNA of India and UNFCCC secretariat on 23 September 2010 /5//6/, regarding their intentions to apply for CDM for the project activity. On 27 September 2010 project proponent had received the acknowledgement email from DNA of India /5/ and on 7 October 2010 the acknowledgement from UNFCCC secretariat /6/. Hence, notifications were submitted prior to the project start date. DNV has also evidenced the CDM consideration from the board approval dated 14 July 2010 /4/ for the project activity, which is before the starting date of the project activity which clearly states that “*the project does not generate enough returns without CDM and requires CDM revenue to improve the project cash flows. Further the board noted that the project may become financially viable only with CDM and that in investment in the wind power project can be recommended only taking into account the revenue accrued from CERs generated by the project*”. CDM was therefore found to be seriously considered in the decision to proceed with the project activity.

**Continuous actions to Secure CDM status:**

On 29 January 2011, the PDD for the project activity was published on the CDM web site for the 30 day global stakeholder consultation process, which is within five months from the date of submitting the CDM consideration form to UNFCCC, thus demonstrating that sufficient actions have been taken to secure CDM status in parallel to the project execution.

It is DNV's opinion that the proposed CDM project activity complies with the requirements of the latest version of the guidance on prior consideration of CDM /38/.

4.6.2 Identification of alternatives to the project activity

Two alternatives to the project activity have been identified and discussed:

- i) the project activity without CDM benefits and
- ii) continuation of current scenario, in this case that an equivalent amount of electricity would, in the absence of the project activity, 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.

Both the identified alternatives are consistent with current laws and regulations as potential alternatives and thus will be discussed at the next steps. DNV considers the listed alternatives to be credible and complete.

4.6.3 Investment analysis**Choice of approach**

The project proponent has selected a benchmark analysis for demonstrating the additionality of the project activity. The project generates revenues without CDM and the alternative of grid based electricity generation does not involve any investment on the part of the project proponent. Therefore the selected benchmark analysis is considered justified for demonstrating the additionality of the project.

Benchmark selection

The benchmark selected for the project activity is as per the CDM EB guidance on assessment of investment analysis /37/. The project activity is electricity generation based on wind energy which could be developed by an entity other than project participant. The benchmark should thus be based on publicly available data sources. The financial indicator applied for the project activity is post tax equity IRR and the benchmark used for the project activity is required rate of return on equity for the project calculated using the Capital Asset Pricing Model (CAPM). As per CAPM, the required return on equity investment is the return of a risk-free security plus beta times the difference between the market return and the risk-free return. The Government Securities have been taken to represent the risk free return. Stock index has been used to represent the market return. Power industry specific beta value has been applied to represent the market returns relevant to the risk of the project activity sector. The key parameters of the CAPM model have been calculated as follows:



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- An average government bond rate (risk free rate) applicable at the time of investment decision (in the year of 2009-2010) for long term investment (for 20 years) has been considered. The project participant has sourced this value ($R_f = 7.23\%$ for the period 2009 -2010) from the government bond rates published by Reserve Bank of India /46/. Reserve Bank of India is the central bank and its database is an official source of information in India. DNV accepted this value as it has been sourced directly from the RBI report and was latest at the time of investment decision.
- Risk Premium ($R_m - R_f$): The most common approach for estimating the risk premium is to base it on historical data. In the CAPM, the premium is estimated by looking at the difference between average return on stocks and average return on government securities over an extended period of history. Therefore, the risk premium has been calculated as the difference in compounded annual return between the Government bond rates (7.23%) and the BSE-200 (15.82%) and computed to be 8.59%. BSE-200 data have been considered since (i) it has a long term data since inception of BSE Sensex, i.e. 1983 – 2010, (ii) it represents a wider portfolio i.e. 200 companies and (iii) the market return computed on the BSE 200 index is the lowest amongst all BSE indices i.e. BSE-Sensex, BSE 100, BSE 200 and BSE 500. Hence DNV considers usage of BSE -200 index as the most conservative approach.
- The minimum raw equity beta value of 1.05 (coefficient reflecting the volatility of the stock relative to the market) is calculated for the period of three years weekly average beta (July 2007 to July 2010) using BSE index of the market portfolio for the companies in the power sector that were listed at the time of decision making: Tata Power (1.05), CESC limited (1.14), Reliance Infrastructure Limited (1.763) and BF Utilities (1.16). These values were sourced from Bloomberg web site and screenshots of the same are provided in Appendix 2 of PDD.

Based on Capital Asset Pricing Model expected cost of equity works out to be 16.23%. The expected cost of equity calculation has been verified by DNV and was found to be correct.

Input parameters

The input parameters used in the financial analysis of the project activity have been sourced from the MoU made with the WEG supplier dated 10 May 2010 /7/, Lender's term sheet dated 6 July 2010 /11/ and the GERC tariff order dated 30 January 2010 /42/.

In line with the requirement of VVM Para 111, a detailed assessment of input parameters used for input parameters is provided below:

Input parameter	Values provided in DPR	Source of the value used in the investment analysis	Reference used by DNV for cross checking
Technical Parameters			
Capacity of machine in kW	800 kW	EIL offers for the supply, erection & commissioning and subsequent MoU signed with Enercon (India) Limited dated 10 May 2010 /7/.	The capacity of individual machine has been cross checked against the purchase order /8/ placed to Enercon India Limited for the project activity dated 22 October 2010 and the technical specification sheet for the E 53 model /21/.
Number of	49	EIL offers for the supply,	The total number of machine has been



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Machines		erection & commissioning and subsequent MoU signed with Enercon (India) Limited dated 10 May 2010 /7/.	cross checked against the purchase order placed to Enercon India Limited for the project activity dated 22 October 2010 /8/.
Capacity of the project in MW	39.2 MW	Calculated as a product of number of machines and capacity of individual machine (WEG).	Calculated as a product of number of machines and capacity of individual machine (WEG).
Operational Parameters:			
Plant Load Factor	25.38%	Wind assessment report for the project activity by ASW dated 9 July 2010, has been witnessed by DNV /25/	The plant load factor has been cross checked by DNV against the loan sanction document from IDFC bank /12/. It is DNV's opinion that the PLF used in the project activity is appropriate since: <ul style="list-style-type: none"> a) It is in line with the "guidelines for the reporting and validation of plant load factors" clause 3 (a). b) Application of this value for investment analysis is more conservative than the value considered in the GERC tariff order (23%) for tariff determination. c) This revised PLF value of 25.38% arrived based on the changes in the 20 locations out of 49 proposed wind turbines is found to be conservative than 24.3% used in the webhosted PDD applicable for the locations considered initially.
Insurance charges (% of project cost)	0.13%	Insurance charges considered are based on the insurance quotes /28/.	The GERC tariff order /42/ does not provide separate value for insurance charges. GERC tariff order considers insurance charges as a part of O&M cost and provides 1.5% of the total project cost as O&M cost. DNV has cross checked that after considering insurance charges with operation and maintenance cost, the total cost is 1.45% of the project cost which is below than the O&M cost provided in GERC order (1.5% of the project cost). DNV has also cross-checked the insurance cost considered for the project



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			activity against the insurance cost considered by various other CDM projects (UNFCCC Ref No: 3611, 3142, 2819 & 3854) and the value found to be 0.18% of the project cost, hence the value considered in the financial analysis was found to be reasonable.
O&M cost (% of project cost)	1.32%	EIL offers for the supply, erection & commissioning and subsequent MoU signed with Enercon (India) Limited dated 10 May 2010 /7/.	The O&M cost has been cross checked based on the GERC tariff order dated 30 January 2010 /42/. The insurance charge has been considered as part of O&M cost (1.5% of the total project cost) in the GERC tariff order /42/. It has been checked that the O&M cost along with insurance cost for the project activity works out to 1.45% of the project cost which is below the O & M cost indicated in GERC order. Hence the value considered was found to be reasonable.
Annual escalation in O&M cost (in %)	5%	MoU signed with Enercon (India) Limited dated 10 May 2010 /7/.	Annual escalation in the O&M cost has been cross checked based on the GERC tariff order dated 30 January 2010, indicating 5% annual escalation /42/. Hence the value considered was found to be reasonable.
Project Revenue			
Electricity tariff (in INR/kWh)	3.56 INR/kWh fixed for 20 years without any escalation	The electricity tariff considered was based on the GERC tariff order dated 30 January 2010 /42/.	The electricity tariff considered in the investment analysis was based on the GERC tariff order dated 30 January 2010 /42/. DNV has cross-checked the electricity tariff applicable for the project activity against the power purchase agreement signed on 25 April 2011 with GUVNL /23/. Thus the considered tariff of 3.56 INR/kWh is appropriate for the project activity. Moreover, DNV has verified from the actual power purchase agreement that the applicable tariff rate for the project activity is 3.56 INR/kWh without any escalation and is fixed for 20 years /23/.
Generation based incentive (in INR/kWh),	0.5 INR/kWh	Incentive provided by Ministry of new and renewable energy sources	Ministry of new and renewable energy sources, government of India offers two types of incentives for wind power



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applicable to wind power projects with cap of 6.2 Million INR/MW		for wind energy projects /44/.	<p>projects /44/, project activity can claim any one out of these two:</p> <p>a) 80% accelerated depreciation under the Income Tax Act</p> <p>b) Generation based incentives (GBI) of 0.5 INR/kWh with cap of 6.2 Million INR/MW of installed capacity. This 6.2 Million INR/MW can be claimed in a period not less than 4 years and a maximum period of 10 years.</p> <p>The project activity has applied for generation based incentives and it has been verified by DNV that project proponent can avail only under one scheme as project proponent have to intimate first to Ministry about the option opted and ministry have procedure in place to track that project can avail benefit under one scheme only.</p>
Total Project Cost (INR Million)			
EPC Contract Price	2 132	MoU signed with Enercon (India) Limited dated 10 May 2010 /7/.	Cross checked based on the Lender's term sheet from IDFC /11/. The value is found to be appropriate.
Pre-Operative Cost	61	Lender's term sheet from IDFC, dated 6 July 2010 /11/.	Pre-operative cost has been cross checked from the loan agreement dated 4 January 2011 /12/
DSRA (Debt Service Reserve Account) funding	158	Lender's term sheet from IDFC, dated 6 July 2010 /11/.	DSRA funding has been cross checked from the loan agreement 4 January 2011 /12/
Margin Money for Working capital	7	Lender's term sheet from IDFC, dated 6 July 2010 /11/.	Margin money for working capital has been cross checked from the loan agreement 4 January 2011 /12/
Contingency	49	Lender's term sheet from IDFC, dated 6 July 2010 /11/.	Contingency has been cross checked from the loan agreement 4 January 2011 /12/.
Financing charges	9	Lender's term sheet from IDFC, dated 6 July 2010 /11/.	Financing charges has been cross checked from the loan agreement 4 January 2011 /12/.
IDC	52	Lender's term sheet from IDFC, dated 6 July 2010 /11/.	IDC has been cross checked from the loan agreement 4 January 2011 /12/.
Total project cost in million	2 468	Lender's term sheet from IDFC, dated 6 July 2010	Total project cost has been cross checked from the loan agreement 4 January 2011



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INR (for 49 WEGs)		/11/.	/12/.
Means of Finance:			
Equity in %	35%	The debt equity ratio of 65:35 considered in the investment analysis was based on the debt equity ratio indicated in the lender's term sheet, dated 6 July 2010 /11/.	DNV has cross-checked the debt equity ratio of 65:35 considered in the investment analysis with the actual debt equity ratio provided in the loan agreement signed with IDFC /12/ dated 4 January 2011 and the value was found to be consistent.
Debt in %	65%	The debt equity ratio of 65:35 considered in the investment analysis was based on the debt equity ratio indicated in the lender's term sheet, dated 6 July 2010 /11/.	DNV has cross-checked the debt equity ratio of 65:35 considered in the investment analysis with the actual debt equity ratio provided in the loan agreement signed with IDFC /12/ dated 4 January 2011 and the value was found to be consistent.
Terms of loan			
Interest rate	10.75%	The interest rate considered in the investment analysis was based on the interest provided by the lender /11/.	DNV has cross checked the interest rate considered in the investment analysis, against the interest rate applicable to the project, provided in the loan agreement signed with IDFC /12/ dated 4 January 2011 and the actual value was found to be 10.75%.
Loan tenure (years)	13.5	The loan tenure considered in the investment analysis was based on the interest provided by the lender /11/.	DNV has cross checked the loan tenure considered in the investment analysis, against the loan tenure applicable to the project, provided in the loan agreement signed with IDFC /12/ dated 4 January 2011 and the actual value was found to be 13.5 years.
Depreciation Rate			
Income tax depreciation rate on WEGs	7.69%	The depreciation rate considered was based on the Income Tax act /47/.	DNV has verified from the income tax act that the depreciation rate applied is in line with Income Tax Act 1961 of India.
Book depreciation rate (as per straight line method) on all assets	5.28%	As per the Companies Act 1956 /48/.	As per the Companies Act 1956.
Book depreciation up to (% of asset	95%	As per Companies Act /48/.	The project participant has considered the book depreciation rate as per the Companies Act. DNV has verified from



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value)			the GERC final order on “Determination of the tariff for Procurement of Power by Distribution Licensees from Wind Energy Generators and other commercial issues dated 30 January 2010 /42/ that depreciation can be claimed for 90% of the asset (except land). Even after considering 90% depreciation, as per the GERC tariff order, there is no change in the equity IRR.
Salvage Value	5%	A salvage of 5% has been considered in investment analysis and same has been added back in last year cash flow.	A salvage of 5% has been considered in investment analysis and same has been added back in last year cash flow. The land for the project activity has been taken under lease and hence not added as part of salvage value at the last year. DNV has assessed that even after considering 10% salvage value, the equity IRR for the project activity remains below that the benchmark applied for the project.
Income Tax Rates:			
Corporate Tax	33.22%	As per Indian Income Tax Act 1961 /47/.	As per Indian Income Tax Act 1961.
Minimum Alternative Tax	19.93%	As per Indian Income Tax Act 1961 /47/.	As per Indian Income Tax Act 1961.
Working Capital			
Receivables (no of days)	30	As per GERC draft order “Determination of the tariff for Procurement of Power by Distribution Licensees from Wind Energy Generators and other commercial issues” dated 30 January 2010 /42/.	DNV confirms that the value applied is consistent with GERC final order on “Determination of the tariff for Procurement of Power by Distribution Licensees from Wind Energy Generators and other commercial issues” dated 30 January 2010 /42/.
O&M expenses (no of days)	90	As per GERC draft order “Determination of the tariff for Procurement of Power by Distribution Licensees from Wind Energy Generators and other commercial issues” dated 30 January 2010 /42/.	DNV confirms that the value applied is consistent with GERC final order on “Determination of the tariff for Procurement of Power by Distribution Licensees from Wind Energy Generators and other commercial issues” dated 30 January 2010 /42/.



Calculation and conclusion

The post tax equity IRR calculations and assumptions provided in a spreadsheet are consistent with the values provided in the MoU signed with the WEG supplier and the GERC tariff order and have been cross checked by DNV. The calculations were verified and found to be in line with CDM EB's guidance on assessment of investment analysis /37/. The assumptions used in the calculations are appropriate and have been verified by DNV. The equity IRR of the project over 20 years is 6.96% without the income from CERs /2/. The project is therefore not financially attractive compared to the benchmark of 16.23% in the absence of CDM benefits. CDM revenues, improves the financial viability of project.

Sensitivity analysis:

A sensitivity analysis has been carried out for parameters contributing to more than 20% to revenues or costs to check the robustness of the financial analysis. Reasonable variations of the capital cost, plant load factor, operation & maintenance costs and electricity tariff were checked by calculating the variation necessary to reach the benchmark and then discussing the likelihood for that to happen.

Decrease in capital cost: The total project cost considered for sensitivity analysis was based on the final price offer as per the MoU signed between the WEG supplier and the project participant dated 14 May 2010 /7/. With a decrease in investment cost by 25.2% (from the cost considered in the MoU, available at the time of investment decision) the equity IRR exceeds the benchmark value of 16.23%. However in DNV's opinion a decrease of 25.2% in capital cost is unrealistic as the purchase order is already placed; hence any decrease in capital cost is not realistic.

Increase in electricity tariff: The electricity tariff considered for sensitivity analysis was based on the GERC "Determination of the tariff for Procurement of Power by Distribution Licensees from Wind Energy Generators and other commercial issues" of 30 January 2010 /42/ applicable at the time of investment decision. However, DNV has verified from the actual power purchase agreement signed dated 25 April 2011 with Gujarat Urja Vikas Nigam Limited (GUVNL), that the applicable tariff rate for the project activity is 3.56 INR/kWh without any escalation and is fixed for 20 years /23/. With an increase of 38.8% in electricity tariff the equity IRR exceeds the benchmark value of 16.23%. However, in DNV's opinion an increase of 38.8% in electricity tariff is highly unlikely as the power purchase agreement for the project activity is already signed for the project and the tariff is fixed for 20 years without any escalation.

Increase in plant load factor: With an increase in generation by 37.8% (at 34.97% PLF) the equity IRR exceeds the benchmark value of 16.23%. The PLF of 25.38% considered in the financial analysis is based on the loan sanction document from IDFC bank /10/.

Gujarat Electricity Regulatory Commission (GERC) has considered an average PLF of 23% in its final tariff order dated 30 January 2010 /42/ for the purposes of tariff working. Hence an increase of 37.8% in electricity generation to achieve a PLF of 34.97% is highly unlikely.



Decrease in O&M cost: Even with no O&M costs the project IRR for the project activity is 9.59%, which is lower than the benchmark return. Hence this parameter is not sensitive for the project activity

4.6.4 Common practice analysis

In India, though the policies for the power sector in general and renewable energy in particular is issued by the central government, the regulations and tariff orders applicable for different states are implemented at the state level, thus making the respective state as more appropriate geographical scope for common practice analysis. Hence, it is in DNV's opinion that the state of Gujarat considered for assessing the common practice is appropriate. The state of Gujarat as on 31 March 2009, has an installed wind power capacity of 1 565.61 MW /50/. All the wind power projects involving individual investors with capacity more than 15 MW size (comparable size) in state of Gujarat have been considered for common practice analysis sourced from the wind power directory 2009 /45/ which is the latest available during project the decision making time. DNV has verified that in the state of Gujarat 720.95 MW capacity is added by wind power projects with capacity more than 15 MW size (comparable size) and this entire 720.95 MW capacity is under CDM pipeline and the same has been verified by DNV from the UNFCCC website and Gujarat urban development company limited bulletin /51/. A list of these projects with CDM web-links has been included in section B.5 of the PDD and same has been verified by DNV.

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 have happened in absence of the project.

4.7 Monitoring

The project monitoring plan is in compliance with the monitoring methodology ACM0002 (version 12.2.0). The monitoring plan will give opportunity for real measurement of emission reductions achieved. Since the project is a wind energy generation activity, no project emission is envisaged. Leakage accounting has not been considered for the project since the renewable energy technology equipment used is new and not transferred from another activity. It is DNV's opinion, that the project participant is able to implement the monitoring plan.

As required by the DNA of India, the project proponent has committed to spend 2% of the CERs revenue every year for Sustainable Development including society/community development. The monitor-able action plan for the same has been included as Appendix 1 in the PDD.

4.7.1 Parameters determined ex-ante

The combined margin emission coefficient for the north east west north eastern grid of India has been calculated at 0.9225 tCO₂e/MWh (considering OM and BM at a weight of 75:25), and is fixed *ex-ante* for the entire crediting period. The CM emission factor value has been sourced from the data by the Central Electricity Authority (CEA) of the Ministry of Power, Government of India /40/. CEA has published a database of carbon dioxide emission factors for the power sector in India based on detailed authenticated information obtained from all operating power stations in the country. This CO₂ baseline database provides information



about the OM and BM factors of electricity grids in India, which has been established as per the “Tool to calculate the emission factor for an electricity system”. DNV confirms that the database is an official publication of the Government of India for the purpose of CDM baselines and the OM in the CEA database is calculated *ex-ante* using the simple OM approach based on the generation-weighted average emissions per electricity unit over a three year period of 2007-08, 2007-08 and 2008-09 /40/. BM is calculated *ex-ante* based on the 20% most recent capacity additions in the grid based on net generation for the year 2008-09. The operating margin has been determined to be 1.0049 tCO₂e/MWh and the build margin to be 0.6752 tCO₂e/MWh. DNV confirms that the database version 5 /40/ used to calculate the combined margin emission factor was the latest database available at the time of start of validation and the combined margin emission factor for the north east west north eastern grid of India is fixed *ex-ante* for the entire crediting period.

4.7.2 Parameters monitored ex-post

The net electricity generated will be calculated from the readings of export and import indicated by the main GETCO meter (also known as revenue meter) at the Bhogat substation maintained by Enercon (India) Limited. During the site visit interview it was observed that wind turbines installed by the project proponent and wind turbines installed by other project owners will be connected to the same main meter. However the WEGs of a single customer (ASW in this case) are divided into clusters and each cluster has dedicated metering system. Different clusters are connected to different Vacuum Circuit Breaker metering yards (VCB) which ultimately lead to the shared main GETCO meter (also known as revenue meter) at the Bhogat substation maintained by Enercon (India) Limited. The meter reading at these metering points will be taken jointly by the representatives of Enercon. Gujarat Electricity Development Authority (GEDA) will apportion the net electricity supplied to the grid at the Enercon substation to all the project owners after adjusting the transmission losses to the meter readings taken at dedicated cluster meters of different project owners. Based on which GETCO will issue a share certificate to each project owner for net electricity exported to the grid and each project owner raises sales invoices to the state electricity board based on the net electricity figures provided in the share certificates. Hence net electricity generation figures provided in the share certificate will be used for emission reduction calculation and same will be cross checked against the sales invoices raised to the state electricity board. The procedures for metering defined above are in line with the provisions of the power purchase agreement.

The main meters installed at the Enercon substation (EIL Bhogat) will be sealed by GEDA and will be calibrated once in three years as per the PPA /23/. If during meter calibration the main meter at the Enercon substation is found beyond the permissible limit of error, the meter reading will be taken from the main meter located at the utility (GETCO) substation at Bhatia after addition of average historical transmission losses.

If during meter testing the cluster meters are found beyond the permissible limit of error, the sum of panel meter (LCS meter) readings located at each wind turbine of the project activity will be provided to GEDA for purpose of apportioning net electricity supplied to the grid. The LCS meters do not require calibration as the energy readings of electricity generated at the LCS meter is cross verified by the energy calculated by inverting system installed in the WEGs. In case there is any mismatch in the energy values recorded by the LCS meter and the



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energy values calculated by the inverting system; the machine will stop working and generate the error report. The WEG can be restarted only after the defective LCS meter is replaced with a new one by the operations and maintenance staff.

The QA/QC responsibility of individual tower reading lies with Enercon India Limited (O and M contractor for the wind farm). Enercon India Limited is an ISO 9001:2000 certified company and follows documentation practices to ensure the reliability and availability of data for all the activities as required from the site identification, logistic, construction commissioning, operation, maintenance of the wind farm and have well established monitoring, recording and archiving system in place. All data used for emission reduction calculation will be archived for 2 years after the end of crediting period. Since the project involves electricity generation from wind sources, no monitoring is required for project emissions or leakages due to the project activity.

4.7.3 Management system and quality assurance

The responsibility of overall project management lies with is AES Saurashtra Windfarms Private Ltd. (ASW). The main and check meters at the uploading station are two way meters with an accuracy class of 0.2 S and are in custody of State Electricity Board. The readings in these meters are taken by State Electricity Board officials and used for billing purposes and will be used for calculation for the emission reductions from the project activity. These meters are annually tested and calibrated by officials of State Electricity Board. The monthly electricity sales receipts will also be archived until 2 years after the crediting period to facilitate cross-checking during the crediting period.

4.8 Algorithms and/or formulae used to determine emission reductions

The GHG emission calculations are well documented in line with the consolidated baseline and monitoring methodology ACM0002 version 12.2.0.

The project is electricity generation from the wind power and no project emissions and leakage is associated with the project activity. As the project activity supplies electricity to the north east west north eastern grid of India, 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 north east west north eastern grid of India.

In line with the guidance provided in the Tool to calculate the emission factor for an electricity system /35/, the weights for OM and BM have been taken as 75:25.

The combined margin emission coefficient for the north east west and north-eastern regional grid of India has been calculated to be 0.9225 tCO₂e/MWh and is fixed *ex ante* for the entire fixed crediting period.

The OM for the project activity is calculated *ex-ante* using the simple OM approach based on the generation-weighted average emissions per electricity unit over a three year period of 2006-07, 2007-08 and 2008-09, values sourced from CEA database /40/. Simple OM approach is opted since the percentage of total grid generation by low cost/must run plants (on the basis of average of five most recent years) for the NEWNE grid is lesser than 50 % of the total generation, which is evidenced from the CO₂ Baseline Database for the Indian Power Sector published by Central Electricity Authority /40/.

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BM is calculated *ex-ante* based on the 20% most recent capacity additions in the north east west and north-eastern regional grid of India based on net generation for the year 2008-09.

The operating margin has been determined to be 1.0049 tCO₂e/MWh and the build margin to be 0.6752 tCO₂e/MWh.

DNV confirms that the CEA database version 5 used to calculate the combined margin emission factor was the latest database available at the time of start of validation and also confirms that the combined margin emission factor for the north east west and north-eastern regional grid of India is fixed *ex-ante* for the entire crediting period for the project activity.

Based on the calculations and results presented in the sections above the implementation of the project activity will result in an average *ex-ante* estimation of emission reduction conservatively calculated to be 80 385 tCO₂e per year for the selected 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 calculate project emissions, baseline emissions, leakage and emission reductions. All estimates of the baseline, project and leakage emissions can be replicated using the data and parameter values provided in the PDD.

No other project emission or leakage sources contributing more than 1% and not mentioned by the methodology have been found.

4.9 Environmental impacts

As per the Ministry of Environment and Forests (MoEF), India Environment Impact Notification S.O. 1533 dated 14 September 2006 /41/, wind power projects are not covered under any schedule and thus environmental impact assessment is not required for the project activity.

However, project participant had conducted an EIA /22/ for internal purpose and clarified that the project is not likely to create any adverse environmental effects. The project complies with environmental regulations in India.

4.10 Comments by local stakeholders

The local stakeholders were invited through local newspaper advertisement in “Sandesh” on 14 October 2010 by AES Saurashtra Windfarms Private Ltd. (ASW) /29/. The local stakeholder meeting for the project activity was conducted in Porbandar in Gujarat on 29 October 2010 /13/. The stakeholders included the members of the local village Panchayats and, resident villagers of the area, Enercon representatives as well as Project Participant (ASW) representative. Detailed minute of meeting, along with list of attendees with their signature have been verified by DNV /13/. A detailed description of stakeholder consultation has been provided in section E of PDD.

The questions raised during the stakeholder consultation shows that the proposed project received support from the local people. DNV considers the local stakeholder consultation has been carried out adequately.



 VALIDATION REPORT

4.11 Comments by Parties, stakeholders and NGOs

The PDD, version 01 dated 18 January 2010, was made publicly available on the CDM website and Parties, stakeholders and NGOs were through the CDM website <http://cdm.unfccc.int/Projects/Validation/DB/ELJ0DYSDJAEKR0IIPBV692EJ6I6HF9/view.html> invited to provide comments during a 30 days period from 29 January 2011 to 27 February 2011.

Two comments were received and these comments are given (in unedited form) in the below text boxex.

Comment by: Hiral Mehta/Mahesh Pandya

Accredited NGO

Party

Stakeholder

Inserted on:

Subject:

Comment:

1. PDD does not contain four sustainability criteria set by DNA to justify project.
2. Enercon has O & M contract for this project, so in case of accident or emergency, Enercon will be responsible or project proponent?
3. Any contract of O & M should be included in PDD.
4. What would be impact of negative environmental conditions in area upon project? What would be alternatives?
5. How many skilled/unskilled people from surrounding area were employed at this project during commissioning and operation?
6. Whether NOC from state departments has been issued to this project?
7. Which CSR activities are planned for local people? Please explain in detail.



VALIDATION REPORT

DNV requested the project participants to respond to the issues raised in the stakeholder comment and below is the response provided by the project participants:

Response by the project participant

1. The project's contribution to sustainable development including the four aspects of sustainable development stipulated by Ministry of Environment and Forests (MoEF) are discussed in section A.2 of the PDD.
2. Enercon will provide operation and maintenance services for the project and exercise its standard safety measures and techniques during the operation phase of the project activity. The project proponent will have suitable insurance cover for the project addressing these concerns.
3. All the necessary documentation regarding the O&M contract has been shared with the DOE as part of the document review process. The PDD is prepared as per the UNFCCC guidelines.
4. The project will pose no harm to the local environment. A detailed Environment Impact Assessment study has been shared with the DOE.
5. The project is into its construction phase which is being executed by Enercon. Project proponent will own and operate the project after commissioning. Local population will be employed by the WEG supplier and O&M contractor as required for the project activity.
6. All necessary clearances have been obtained by the project proponent and have been shared with the DOE as part of the document review process.
7. The Project Proponent will undertake informal discussions with the locals at the project site and will undertake developmental activities in areas that are of most concern to the local population.

These areas could include the following:

- Health
- Education
- Sanitation
- Skill development
- Infrastructure development, etc.



 VALIDATION REPORT

How DNV has considered the comment received in its validation

1. PDD has been checked out for the four sustainability criteria set by the DNA of India. Section A.2 of the PDD details on the four sustainability criteria set by the DNA of India.
2. EIL, the WEG supplier for the project activity, will provide operation and maintenance services for the project and exercise its standard safety measures including suitable insurance cover and techniques during the operation phase of the project activity /17/.
3. O&M details have been included in the PDD in section B.5 during webhosting time itself. DNV has verified all the necessary documentation regarding the O&M contract /17/.
4. A detailed Environment Impact Assessment study prepared by Tata Consulting Engineers Limited dated November 2010 for the project activity has been evidenced /22/.
5. The project is into its construction phase which is being executed by Enercon. Project proponent will own the project after commissioning. On behalf of ASW, EIL will take care of the operation & maintenance of the project activity, as per the O&M agreement between ASW and EIL dated 6 October 2010 /17/. Local population will be employed by the WEG supplier and O&M contractor as required for the project activity. An undertaking for the same has been verified by DNV.
6. GEDA clearance for the project activity dated 25 February 2011, 13 June 2011 and 21 June 2011 has been witnessed by DNV.
7. ASW has committed to use 2% of the revenue for sustainable development activities in the local areas. Acknowledgements from the relevant authorities / people associated with each of the sustainable development activities undertaken will also be collected and monitoring of these parameters have been covered in Appendix 1 of the revised PDD.

Comment by: Decosta, ranga.rajan.reddy@gmail.com

Accredited NGO

Party

Stakeholder

Inserted on:

Subject:

Comment:

The calculation of project IRR is not as per “Guidance on the Assessment of Investment Analysis’ Version 03, EB 51, Annex 58”.

- Whether pre-tax or post tax IRR is selected is not demonstrated in the PDD.
- The basis of calculation of benchmark is not documented in the section B.5. PLR is not acceptable benchmark for the project. WACC based on Government bonds, risk premiums should be taken.
- Derating factor, array efficiency of the wind energy system is not depicted in the PDD. Pls. clarify.
- Debt/Equity ratio should be based on recent investment done by the Project proponent.
- Prior consideration of CDM which is important for the determination of additionality is not documented in the section B.5 of the PDD.



DNV requested the project participants to respond to the issues raised in the stake holder comment and below is the response provided by the project participants

The project participant response:

1. The financial indicator calculated for investment analysis is post-tax equity IRR and it has been calculated in line with the “Guidance on the Assessment of Investment Analysis’ Version 03, EB 51, Annex 58”.
2. The investment analysis is carried out using post-tax equity IRR as the financial indicator. The same has been provided in the PDD.
3. The financial indicator used for investment analysis is the post-tax equity IRR. Therefore, cost of equity has been used as the appropriate benchmark. The details are discussed in the Annexure 5 of the PDD, included in the revised PDD.
4. The PLF presented in the PDD is the net PLF representing the net generation achievable by the project. De-rating factor has not been considered on a conservative basis. The generation estimates considers all other applicable factors including array efficiency.
5. The project activity is the first investment project under taken by the project proponent; therefore actual debt-equity ratio has been used for investment analysis
6. The details of the prior consideration of CDM are provided in section B.5 of the revised PDD.

How DNV has considered the comment received in its validation:

1. The financial analysis done by the project participant for the project activity is in line with the latest “Guidance on the Assessment of Investment Analysis’ Version 05, EB 62, Annex 5. DNV has verified the financial analysis and confirms workings are based on the latest EB guidelines.
2. The Benchmark calculation in details has been assessed by DNV and the calculations are found to be in line with the latest EB guidelines.
3. The plant load factor assessment study for the project activity has been verified by DNV and the PLF presented in the PDD is the net PLF after considering the transmission losses.
4. The project activity is the first investment project under taken by the project proponent; therefore actual debt-equity ratio has been used for investment analysis and the same has been verified by DNV
6. The prior consideration of CDM details, in line with the “Guidelines on the demonstration and assessment of prior consideration of the CDM”, EB 62, Annex 13 have been provided in section B.5 of the revised PDD and the documentary evidences for the same have been verified by DNV.

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APPENDIX A

CDM VALIDATION PROTOCOL

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

Requirement	Reference	Conclusion
About Parties		
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> The project shall assist non-Annex I Parties in contributing to the ultimate objective of the UNFCCC. 	Kyoto Protocol Art.12.2.	CAR1 OK
<ul style="list-style-type: none"> 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	CAR1 OK
<ul style="list-style-type: none"> 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	CAR1 OK
<ul style="list-style-type: none"> 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	No Public Funding is involved in project.
<ul style="list-style-type: none"> Parties participating in the CDM shall designate a national authority for the CDM. 	CDM Modalities and Procedures §29	OK
<ul style="list-style-type: none"> The host Party and the participating Annex I Party shall be a Party to the Kyoto Protocol. 	CDM Modalities §30/31a	OK
<ul style="list-style-type: none"> The participating Annex I Party's assigned amount shall have been calculated and recorded. 	CDM Modalities and Procedures §31b	OK
<ul style="list-style-type: none"> The participating Annex I Party shall have in place a national system for estimating GHG emissions and a national registry in accordance with Kyoto Protocol Article 5 and 7. 	CDM Modalities and Procedures §31b	OK
About additionality		
<ul style="list-style-type: none"> 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	CAR3 CAR4 CL4, CL5, CL6 OK
About forecast emission reductions and environmental impacts		
<ul style="list-style-type: none"> The emission reductions shall be real, measurable and give long-term benefits related to 	Kyoto Protocol Art. 12.5b	OK

Requirement	Reference	Conclusion
the mitigation of climate change.		
For large-scale projects only		
<ul style="list-style-type: none"> Documentation on the analysis of the environmental impacts of the project activity, including transboundary impacts, shall be submitted, and, if those impacts are considered significant by the project participants or the Host Party, an environmental impact assessment in accordance with procedures as required by the Host Party shall be carried out. 	CDM Modalities and Procedures §37c	OK
About stakeholder involvement		
<ul style="list-style-type: none"> Comments by local stakeholders shall be invited, a summary of these provided and how due account was taken of any comments received. 	CDM Modalities and Procedures §37b	OK
<ul style="list-style-type: none"> 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	CAR-6 OK
Other		
<ul style="list-style-type: none"> The baseline and monitoring methodology shall be previously approved by the CDM Executive Board. 	CDM Modalities and Procedures §37e	OK
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> Provisions for monitoring, verification and reporting shall be in accordance with the modalities described in the Marrakech Accords and relevant decisions of the COP/MOP. 	CDM Modalities and Procedures §37f	OK

Table 2 Requirements checklist

Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
General description of project activity						
Title of the project activity (VVM Para 55-57)						
1.0.1	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 type="checkbox"/> Date of the PDD is included. Date of the PDD mentioned (18 January 2010) is much earlier than the date of completion mentioned (18 January 2011) in the section B.8 of the PDD.	CL1	OK
1.0.2	Is the PDD is in accordance with the applicable requirements for completing PDDs?	/1/	DR	<input checked="" type="checkbox"/> Yes		OK
Description of the project activity (VVM Para 58-64)						
1.1.1	How was the design of the project assessed?	/1/	DR/I	<i>What type is the project?</i> <input type="checkbox"/> Project in existing facility or utilizing existing equipment(s) <input type="checkbox"/> Project is either a large scale project or a small scale project with emission reductions exceeding 15 000 tCO ₂ e per year. In this case, a site visit must be performed. <input type="checkbox"/> Project is a bundled small scale project, with each project in the bundle with emission reductions not exceeding 15,000 tCO ₂ 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		OK

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

Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
			<p>analysis.</p> <p><input type="checkbox"/> The project is an individual small scale project activity with emission reductions not exceeding 15 000 tCO₂e 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 type="checkbox"/> Physical site inspection</p> <p><input checked="" type="checkbox"/> Reviewing available designs and feasibility studies</p> <p>The proposed CDM project activity is installation of 49 numbers of Wind Energy Generators (39.2 MW) each of 800 kW capacities (Enercon model, E-53). The E 53 type of WEG to be installed as part of this project has been designed by Enercon India Limited. Enercon India Limited will also be responsible commissioning, operation and maintenance of the project activity. The electricity generated will be exported to the NEWNE grid of India.</p> <p>None of the WEGs commissioned at the time of validation site visit. The WEGs are expected to be commissioned by 1 July 2011.</p> <p>DNV performed interviews with the representative of the project participant (ASW) and project consultant (PwC) to confirm the stated information in the PDD and to resolve issues identified in the document review. Since none of the WEGs are commissioned, DNV does not consider a physical site visit of the project</p>		

Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
1.1.2	If a greenfield project, describe the physical implementation of the project when the validation was commenced.	/1/	DR/I	<p>activity as appropriate.</p> <p>The project is a Greenfield project. None of the WEGs commissioned at the time of validation site visit. The WEGs are expected to be commissioned by 1 July 2011.</p> <p>The project activity is installation of 49 numbers of Wind Energy Generators (39.2 MW) each of 800 kW capacities (E-53 model).</p> <p>Physical implementation of the project was under progress when the validation was commenced. The unique identification number, survey number, location number of all 49 WEGs need to be included in the PDD.</p>	CL2	OK
1.1.3	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 ₂ e per year), justify the sampling through a statistical analysis:	/1/	DR	Not applicable for the project activity.		OK
1.1.4	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/I	<p>The proposed CDM project activity is installation of 49 numbers of Wind Energy Generators (39.2 MW) each of 800 kW capacities (E-53). The WEGs to be installed under the project is designed by Enercon India Limited and will also be commissioned by Enercon India Limited.</p> <p>The electricity generated will be exported to the NEWNE grid of India.</p> <p>However, the unique identification number, survey number, location number of all 49 WEGs need to be included in the PDD.</p>	CL2	OK
1.1.5	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 activity is a greenfield project and does not involve alteration of any existing installation.		OK

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

Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.												
1.1.6	Does the project design engineering reflect current good practices?	/1/	DR/I	The project activity utilizes 49 machines of Enercon model E-53 WEG of 800 kW capacities which are approved by Centre for Wind Energy Technology, Government of India. The salient features of the E-53 models to be implemented under the project activity include gearless construction, variable speed, pitch functions and independent braking technology. DNV verified the technical specifications from the supply offer of EIL. Thus the project design reflects good practice.		OK												
1.1.7	Would the technology result in a significantly better performance than any commonly used technologies in the host country? Is any transfer of technology from any Annex-I Party involved?	/1/	DR	The technology is already available and widely used in the host country. There is no technology transfer from Annex-I party.		OK												
Participation requirements (VVM Para 51-54, 125-127)																		
1.2.1	Do all participating Parties fulfil the participation requirements as follows: a) Party has ratified the Kyoto Protocol b) Party has designated a Designated National Authority c) The assigned amount has been determined	/1/ /24/	DR	The Letter of Approval (LOA) from the DNA of India (Host) needs to be provided for verification. <table border="0" style="width:100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">India (host)</td> <td style="text-align: center;">CountyX</td> <td style="text-align: center;">Country Y</td> </tr> <tr> <td><input type="checkbox"/> Yes <input type="checkbox"/> No</td> <td><input type="checkbox"/> Yes <input type="checkbox"/> No</td> <td><input type="checkbox"/> Yes <input type="checkbox"/> No</td> </tr> <tr> <td><input type="checkbox"/> Yes <input type="checkbox"/> No</td> <td><input type="checkbox"/> Yes <input type="checkbox"/> No</td> <td><input type="checkbox"/> Yes <input type="checkbox"/> No</td> </tr> <tr> <td><input type="checkbox"/> Yes <input type="checkbox"/> No</td> <td><input type="checkbox"/> Yes <input type="checkbox"/> No</td> <td><input type="checkbox"/> Yes <input type="checkbox"/> No</td> </tr> </table>	India (host)	CountyX	Country Y	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	CAR-1	OK
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1.2.2	Do the letters of approval meet the following requirements? a) LoA confirms that Party has ratified the Kyoto Protocol b) LoA confirms that participation is voluntary c) The LoA confirms that the project contributes to the	/1/ /24/	DR	The Letter of Approval (LOA) from the DNA of India (Host) needs to be provided for verification. <table border="0" style="width:100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">India (host)</td> <td style="text-align: center;">CountyX</td> <td style="text-align: center;">Country Y</td> </tr> <tr> <td><input type="checkbox"/> Yes <input type="checkbox"/> No</td> <td><input type="checkbox"/> Yes <input type="checkbox"/> No</td> <td><input type="checkbox"/> Yes <input type="checkbox"/> No</td> </tr> <tr> <td><input type="checkbox"/> Yes <input type="checkbox"/> No</td> <td><input type="checkbox"/> Yes <input type="checkbox"/> No</td> <td><input type="checkbox"/> Yes <input type="checkbox"/> No</td> </tr> <tr> <td><input type="checkbox"/> Yes <input type="checkbox"/> No</td> <td style="text-align: center;">NA</td> <td style="text-align: center;">NA</td> </tr> </table>	India (host)	CountyX	Country Y	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	NA	NA	CAR-1	OK
India (host)	CountyX	Country Y																
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MoV = Means of Verification, DR= Document Review, I= Interview, CC= Cross-Checking

Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
sustainable development of the host country? d) The LoA refers to the precise project activity title in the PDD e) The LoA is unconditional with respect to (a) to (d) above f) The LoA is issued by the respective Party's DNA g) The LoA was received directly by the DNA or the PP h) In case of doubt regarding the authenticity of the letter of approval, describe how it was verified that the letter of approval is authentic			<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DNA <input type="checkbox"/> PP <input type="checkbox"/> DNA <input type="checkbox"/> PP <input type="checkbox"/> DNA <input type="checkbox"/> PP The Letter of Approval (LOA) from the DNA of India (Host) is pending.		
1.2.3 Have all private/public project participants been authorized by an involved Party?	/1/ /24/	DR	The Letter of Approval (LOA) from the DNA of India (Host) needs to be provided for verification.	CAR-1	OK
Technical description of the project activity (VVM Para 58-64)					
1.3.1 Is the project's location clearly defined?	/1/	DR/I	Yes, the project's spatial boundaries are defined. The project activity is spread across villages Chachlana, Jodhpar, Gaga, Gorinja, Vachhu, Hadmatiya in Jamnagar District of Gujarat state in India. Unique identification number, survey number, location number of all 49 WEGs, for better monitoring, to be included in the PDD.	CAR-2	OK
Public funding of the project activity					
1.4.1 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	/1/	DR	The project does not involve any public funding and hence, no diversion of funds from official development assistance is expected.		OK

Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
obligations of these Parties?					
Application of a baseline and monitoring methodology					
Methodology applied (VVM Para 65-76)					
2.0.1 Does the project apply an approved methodology and the correct and valid version thereof?	/1/	DR	The project correctly applies the approved baseline methodology “Consolidated baseline methodology for grid-connected electricity generation from renewable sources” ACM0002, version 12.2.0 for large scale CDM projects.		OK
2.0.2 If applicable, has any specific guidance provided by the CDM EB in respect to the applied methodology been considered?	/1/	DR	Not applicable for the project activity.		OK
Applicability of methodology (and tools) (VVM Para 65-76) <i>Insert a row for each applicability criteria of the applied methodology (and tools)</i>					
2.1.1 How was it validated that project complies with the following applicability criterion 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/	DR/I	The project activity involves installation of WEG for generation of power from wind energy to supply to the grid and is a green field project.		OK
2.1.2 How was it validated that project complies with the following applicability criterion 2: The project activity is the installation, capacity addition,	/1/	DR/I	The project activity is a green field project that uses wind energy to generate electricity and hence this applicability criterion is not applicable		OK

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

Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
retrofit or replacement of a power plant/unit of one of the following types: <ul style="list-style-type: none"> • 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 • tidal power plant/unit. 			for the project activity.		
2.1.3 How was it validated that project complies with the following applicability criterion 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/	DR/I	The project activity is a green field project that uses wind energy to generate electricity and hence this applicability criterion is not applicable for the project activity.		OK
2.1.4 How was it validated that project complies with the following applicability criterion 4: In case of hydro power plants, one of the following conditions must apply: <ul style="list-style-type: none"> • The project activity is implemented in an existing reservoir, with no change in the volume of reservoir. • The project activity is implemented in an existing reservoir, where the volume of reservoir is increased and the power density of the project activity, as per definitions given in the Project Emissions section, is greater than 4 W/m². The project activity results in new reservoirs and the power density of the power plant, as per definitions given	/1/	DR/I	The project activity is a green field project that uses wind energy to generate electricity and hence this applicability criterion is not applicable for the project activity.		OK

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

Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
in the Project Emissions section, is greater than 4 W/m ² .						
2.1.5	<p>How was it validated that project complies with the following applicability criteria: insert applicability criterion 5:</p> <p>In the case of retrofits, replacements, or capacity additions, this methodology is only applicable if the most plausible baseline scenario, as a result of the identification of baseline scenario, is “the continuation of the current situation, i.e. to use the power generation equipment that was already in use prior to the implementation of the project activity and undertaking business as usual maintenance”.</p>	/1/	DR/I	The project activity is a green field project that uses wind energy to generate electricity and hence this applicability criterion is not applicable for the project activity.		OK
2.1.6	Is the selected baseline on of the baseline(s) described in the methodology and this hence confirms the applicability of the methodology?	/1/	DR	<p>Yes the selected baseline corresponds to “the baseline emissions are the product of net electrical energy generation $EG_{PJ,y}$ expressed in MWh, that is produced and fed into the grid as a result of the implementation of the project activity multiplied by combined margin CO_2 emission factor for the grid connected power generation expressed in tCO_2/MWh” as prescribed in the applied methodology.</p> $BE_y = EG_{PJ,y} * EF_{grid,CM,y}$		OK
Project boundary (VVM Para 78-80)						
2.2.1	What are the project’s system boundaries (components and facilities used to mitigate GHGs)? Are they clearly defined and in accordance with the methodology?	/1/	DR/I	<p>Yes, the project boundary includes:</p> <p>(i) The project activity is spread across villages Chachlana, Jodhpar, Gaga, Gorinja, Vachhu, Hadmatiya in Jamnagar District of Gujarat state in India.</p> <p>(ii) The spatial boundary of the project also includes transmission network for the evacuation of electricity to the NEWNE grid</p>		OK

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Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
			to which the project activity is connected. The project boundary has been defined clearly in the PDD.		
2.2.2 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/	DR	Baseline GHG sources identified for the project activity are CO ₂ – Included as it is the main emission source CH ₄ – Excluded as it is a minor emission source N ₂ O – Excluded as it is a minor emission source No project activity emission for Wind power plant. This is in line with the applicable methodology ACM0002version 12.2.0, Table 1.		OK
2.2.3 Does the project involve other emissions sources not foreseen by the methodologies that may question the applicability of the methodology? Do these sources contribute with more than 1% of the estimated emission reductions of the project?	/1/	DR	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
<p>Baseline scenario determination (VVM Para 81-88, 105-107)</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 assess the justification for this.</i></p>					
2.3.1 Which baseline scenarios have been identified? Is the list of baseline scenarios complete?	/1/	DR	The baseline scenario has been chosen as per the methodology ACM0002version 12.2.0. According to the methodology the baseline scenario is, electricity delivered to the grid by the		OK

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			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”.		
2.3.2 How have the other baseline scenarios been eliminated in order to determine the baseline?	/1/	DR	Yes, it has been argued that implementation of project activity without CDM revenue is not economically attractive and hence can not be considered as alternative to the project activity.		OK
2.3.3 What is the baseline scenario?	/1/	DR	As per the methodology ACM0002version 12.2.0, if the project activity is installation of a new grid-connected renewable power plant/unit, the baseline scenario is electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources as reflected in the combined margin (CM) calculations described in the “Tool to calculate the emission factor for an electricity system”. The same baseline scenario is used in the project activity which is in line with the applied methodology. The combined margin emission factor for the NEWNE regional grid of India has been sourced from CEA database version 05.		OK
2.3.4 Is the determination of the baseline scenario in accordance with the guidance in the methodology?	/1/	DR	Yes the baseline scenario has been identified inline with applied methodology ACM0002version 12.2.0, the baseline scenario identified is electricity delivered to the grid by		OK

Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
				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 02.		
2.3.5	Has the baseline scenario been determined using conservative assumptions where possible?	/1/	DR	<p>Inline with the applied methodology ACM0002version 12.2.0, the baseline scenario identified is electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in the “Tool to calculate the emission factor for an electricity system”.</p> <p>The combined margin emission factor for the NEW & NE regional grid of India has been sourced from CEA database version 05.</p> <p>The values mentioned in the PDD for OM emission factor and combined margin emission factor, are not matching with the calculated value sourced from the CEA database version 5 and the values mentioned in the project CER worksheet.</p>	CAR-2	OK
2.3.6	Does the baseline scenario sufficiently take into account relevant national and/or sectoral policies, macro-economic trends and political aspirations?	/1/		Yes, national and sectoral policies have been taken into consideration for selecting the baseline scenario.		OK
2.3.7	Is the baseline scenario determination compatible with the available data and are all literature and sources clearly referenced?	/1/	DR	The project is located in the state of Gujarat which forms a part of the NEWNE Grid. Hence the baseline scenario has been appropriately considered to be the grid mix in the NEWNE		OK

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			<p>grid. The baseline determination is compatible with the available data. The combined margin emission factor value for the NEWNE grid has been sourced from data by the Central Electricity Authority (CEA) of the Ministry of Power, Government of India. CEA has published a database of carbon dioxide emission factors from the power sector in India based on detailed authenticated information obtained from all operating power stations in the country. This CO₂ baseline database provides information about the OM and BM factors of all the regional electricity grids in India. DNV confirms that the CEA database version 05 used for calculation of combined margin emission coefficient for the NEWNE regional grid of India was the latest data available at the time of the commencement of validation (inline with the requirement of “Tool to calculate the emission factor for an electricity system”) and same was used during the webhosting of the PDD.</p> <p>The OM EF is calculated <i>ex-ante</i> using the simple OM approach based on the generation-weighted average emissions per electricity unit over a three year period of 2006-2007, 2007-2008 and 2008-2009, sourced from the CEA database, version 5. BM is calculated ex ante based on the 20% most recent capacity additions in the NEWNE grid based on net generation for the year 2008-09 as described in “Tool to calculate the emission factor for an electricity system” version 02.</p> <p>The BM EF has been determined to be 0.67518</p>	CAR-2	

Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
				tCO ₂ e/MWh. The value mentioned in the PDD for OM EF, when fixed ex-ante, is not matching with the calculated value sourced from the CEA database version 5 and the value mentioned in the project CER worksheet. Inline with the tool, the weights for OM and BM are 0.75 and 0.25 respectively and the same values have been used to arrive at the CM EF value.		
2.3.8	<p>Is the baseline determination adequately documented in the PDD?</p> <ul style="list-style-type: none"> 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. All documentation is relevant as well as correctly quoted and interpreted. Assumptions and data can be deemed reasonable Relevant national and/or sectoral policies and circumstances are considered and listed in the PDD. The methodology has been correctly applied to identify what would occurred in the absence of the proposed CDM project activity 	/1/	DR	<p>Inline with the applied methodology ACM0002 version 12.2.0, the baseline scenario identified is electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in the “Tool to calculate the emission factor for an electricity system”.</p> <p>The values mentioned in the PDD for OM emission factor and combined margin emission factor, are not matching with the calculated value sourced from the CEA database version 5 and the values mentioned in the project CER worksheet.</p>	CAR-2	OK
Additionality determination (VVM Para 94-121)						
2.4.1	What approach/tool does the project use to assess additionality? Is this in line with the methodology?	/1/	DR	The tool to demonstrate additionality version 5.2 has been used. Yes this is in line with the methodology for new grid connected renewable energy project.		OK
2.4.2	Have the regulatory requirements correctly been taken into account to evaluate the project activity and the	/1/	DR	Yes the regulatory requirements have been taken into account to evaluate the alternatives to the		OK

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	alternatives?			project activity.		
2.4.3	Is sufficient evidence provided to support the relevance of the arguments made?	/1/	DR	Yes. The relevant approvals have been provided for verification and this has been verified and found to be in order by DNV.		OK
2.4.4	What is the project additionality mainly based on (Investment analysis or barrier analysis)?	/1/	DR	The project additionality has been mainly based on investment analysis.		OK
Prior consideration of CDM (VVM Para 98-103)						
2.4.5	What is the evidence for serious consideration of CDM prior to the time of decision to proceed with the project activity?	/1/	DR	<p>The start date of the project activity (22 October 2010) is after 2 August 2008 (CDM EB guidelines on CDM consideration).</p> <p>The project proponent through an email communication has notified the DNA of India and the UNFCCC secretariat on 23 September 2010 regarding the commencement of the CDM project activity and received the acknowledgement from DNA India on 27 September 2010 and from the UNFCCC secretariat on 7 October 2010.</p> <p>Prior CDM consideration chronology to be included in the PDD. Supportive documents for the same to be provided.</p>	CL3	OK
2.4.6	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/	DR	<p>The start date of the project activity (22 October 2010) is after 2 August 2008 (CDM EB guidelines on CDM consideration).</p> <p>The project proponent through an email communication has notified the DNA of India and the UNFCCC secretariat on 23 September 2010 regarding the commencement of the CDM project activity. DNV has confirmed from the UNFCCC website that the secretariat had received the PP's CDM prior consideration email</p>		OK

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			on 23 September 2010. DNV has cross checked the acknowledgement received from DNA India dated 27 September 2010 and from the UNFCCC secretariat dated 7 October 2010.		
Continuous efforts to secure CDM status (only to be completed if starting date is before 2 August 2008)					
2.4.7 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 22 October 2010, after 2 August 2008 (CDM EB guidelines on CDM consideration) and hence this is not applicable.		OK
Investment analysis (VVM Para 108-114) <i>The list of questions below must be adjusted to the parameters in the investment analysis relevant to the project under validation.</i>					
2.4.8 Does the project activity or any of the remaining alternatives generate revenues apart from CDM? Is this reflected in the PDD?	/1/	DR	Yes, the project activity generates revenue from sale of power to the grid and same is mentioned in the PDD.		OK
2.4.9 Do any of the alternatives to the project activity involve investment? Is this reflected in the PDD?	/1/	DR	No, the alternative to the project activity does not require any investment and this is indicated in the PDD.		OK
2.4.10 Is the choice of benchmark analysis, investment comparison or simple cost analysis correct?	/1/	DR	The project participant has applied benchmark analysis to demonstrate the additionality of the project. This is inline with CDM EB guideline on assessment of investment analysis Para 16 which states that "if the alternative to the project activity is the supply of electricity from a grid this is not to be considered as investment and a benchmark approach is considered appropriate".		OK
2.4.11 Is the benchmark/discount rate the latest available at the time of decision?	/1/	DR	PP to provide information in the PDD 1. The details on the dates of decision making	CAR-3	OK

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			<p>and the relevance of the inputs parameters at the time of decision making.</p> <p>2. The details of the input parameters used for the benchmark calculations need to be further elaborated in the PDD. Also, the suitability of the benchmark adopted for the project activity need to be elaborated further in light of the values used for the decision making.</p>		
<p>2.4.12 What is the financial indicator? Is it on equity/project basis? Before/after tax? Is the financial indicator in correspondence with the benchmark?</p>	/1/	DR	<p>The financial indicator chosen by the project proponent for the purpose of investment analysis is post tax equity IRR.</p>		OK
<p>2.4.13 Are the underlying assumptions appropriate, e.g. what is considered as waste in the baseline is considered to have zero value?</p>	/1/	DR	<p>The appropriateness of input parameters has been evaluated in the subsequent sections.</p>		
<p>2.4.14 Does the income tax calculation take depreciation into account? Is the depreciation year in accordance with normal accounting practice in the host country?</p>	/1/	DR	<p>Yes, the income tax calculation takes depreciation into account. The depreciation considered is as per the accounting practice allowable for such type of projects as per the Income tax act of India.</p>		OK
<p>2.4.15 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?</p>	/1/	DR	<p>A salvage value of 5% of capital cost has been considered for investment analysis and has been added back in cash flow in the last year of operation of project activity.</p> <p>PP to clarify</p> <ol style="list-style-type: none"> 1. 20 years operating life has been considered for WEG and the time period for the investment analysis is taken as 21 years. 2. Explain the conservativeness on the usage of 5% of salvage value. 3. PP also to provide the back up documents for the CER price considered at the time of decision making. 	CL-4	OK

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			4. The depreciation accounted in project activity need to be justified with the suitable reference to the accounting standards.		
2.4.16 When 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	PP to provide information in the PDD 1. The details on the dates of decision making and the relevance of the inputs parameters at the time of decision making. 2. Investment analysis to be elaborated further taking into account the Board standard.	CL-3	OK
2.4.17 How was the amount of output (e.g. sales of electricity) assessed? Remember to include all the data sources used and list all the projects that have been used for cross-checking in accordance with VVM paragraph 95.	/1/	DR	<input checked="" 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 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. Plant load factor used in investment analysis is as per the Guidelines on reporting and validation of PLF – EB 48, Annex 11. DNV has verified the copy of the plant load factor provided to equity financiers for the project activity financing. PP to provide background information for considering a PLF of 24.3% for the project activity.	CL-5	OK
2.4.18 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-	/1/	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		OK

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checking in accordance with VVM paragraph 95.			<p>related to the project and the project participants</p> <p>The electricity tariff considered by the PP is based on the GERC draft order dated 30 January 2010, the latest tariff order of GERC as at the time of decision making.</p>		
<p>2.4.19 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.</p>	/1/	DR	<p><input type="checkbox"/> Cross-check against third-party or publicly available sources (e.g. invoices or price indices)</p> <p><input type="checkbox"/> Review of feasibility reports, public announcements, contracts and annual financial reports related to the project and the project participants</p> <p>PP to provide information in the PDD</p> <ol style="list-style-type: none"> The details on the dates of decision making and the relevance of the inputs parameters at the time of decision making. Investment analysis to be elaborated further taking into account the Board standard. 	CAR-3	OK
<p>2.4.20 How were the O&M costs assessed? Were the data available and valid at the time of decision? Remember to include all the data sources used and list all the projects that have been used for cross-checking in accordance with VVM paragraph 95.</p>	/1/	DR	<p><input type="checkbox"/> Cross-check against third-party or publicly available sources (e.g. invoices or price indices)</p> <p><input checked="" type="checkbox"/> Review of feasibility reports, public announcements and annual financial reports related to the project and the project participants</p> <p>The O&M Cost considered is based on the offer received from Enercon India Limited (O&M contractor for the project activity).</p> <p>Supportive documents for % of escalation per annum on additional O&M charges and on administrative expenses to be provided.</p>	CL-5	OK
<p>2.4.21 Describe the assessment of the other input parameters. Were the data available and valid at the time of decision?</p>	/1/	DR	<p><input type="checkbox"/> Cross-check against third-party or publicly available sources (e.g. invoices or price indices)</p>		OK

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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.				<input checked="" type="checkbox"/> Review of feasibility reports, public announcements and annual financial reports related to the project and the project participants PP to provide information in the PDD 1. The details on the dates of decision making and the relevance of the inputs parameters at the time of decision making. 2. Investment analysis to be elaborated further taking into account the Board standard. 3. Clarification on the mismatch in the lifetime of project activity – 20 years stated in the PDD and 21 years considered for financial analysis	CAR-3 CL-4	
2.4.22	Was the financial calculation spreadsheet verified and found to be correct?	/1/	DR	The financial calculation spread sheet has been checked and clarification stated above has been asked and based on the PP response final conclusion will be made.	CAR-3 CL-4 CL-5	OK
2.4.23	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/	DR	The key parameters contributing to more than 20% of the revenue/costs during operating or implementation have been identified and the possible correlation between the parameters has been considered. PP to conduct the sensitivity analysis 1. For the minimum range of +10 % to -10% as per the guidelines for the tariff, even though it is fixed for 20 years for the project activity	CAR-4	OK
2.4.24	Sensitivity analysis: Is the range of variations is reasonable in the project context?	/1/	DR	PP has carried a sensitivity analysis to analyse the effect of + 10% variation in capital cost, electricity generation and O&M cost of the project. PP to conduct the sensitivity analysis		OK

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			1. For the minimum range of +10 % to -10% as per the guidelines, for the tariff, even though it is fixed for 20 years for the project activity Also the sensitivity analysis needs to be performed in the parameters till they touch the benchmark and the likelihood of that being achieved need to be indicated.	CAR-4	
2.4.25 Have the key parameters been varied to reach the benchmark and the likelihood of this to happen been justified to be small?	/1/	DR	No, key parameters have not been varied to reach the benchmark. The sensitivity analysis needs to be performed in the parameters till they touch the benchmark and the likelihood of that being achieved need to be indicated.	CAR-4	OK
Barrier analysis (VVM Para 115-118)					
2.4.26 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 opted for barrier analysis to demonstrate the additionality of the project		OK
Common practice analysis (VVM Para 119-121)					
2.4.27 What is the geographical scope of the common practice analysis? Is this justified?	/1/	DR	The state of Gujarat has been considered for assessing the common practice. Since the policies and tariff regime is consistent throughout the state of Gujarat, DNV considers the selection of the region is appropriate. In the State of Gujarat all wind projects above 15 MW has been considered for common practice analysis. It was noted that all wind power project from single investor above 15MW is under CDM pipeline. Hence it has been demonstrated that investment in large scale wind power project in Gujarat is not a common practice.		OK

Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
2.4.28	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	The state of Gujarat has been considered for assessing the common practice. Since the policies and tariff regime is consistent throughout the state of Gujarat, DNV considers the selection of the region is appropriate. In the State of Gujarat all wind projects above 15 MW has been considered for common practice analysis. It was noted that all wind power project from single investor above 15MW is under CDM pipeline. Hence it has been demonstrated that investment in large scale wind power project in Gujarat is not a common practice.		OK
2.4.29	What is the data source(s) used for the common practice analysis?	/1/	DR	The data source used for the common practice analysis to be provided and also to be included in the PDD.	CL-6	OK
2.4.30	How many similar non-CDM-projects exist in the region within the scope?	/1/	DR	The data source used for the common practice analysis to be provided and also to be included in the PDD.	CL-6	OK
2.4.31	How were possible essential distinctions between the project activity and similar activities assessed?	/1/	DR	The data source used for the common practice analysis to be provided and also to be included in the PDD.	CL-6	OK
B.4.32	What is the conclusion of the common practice analysis?	/1/	DR	The conclusion of the common practice analysis calls for the responses to the clarifications raised for Common Practice analysis by the PP.	CL-6	OK
Conclusion						
2.4.33	What is the conclusion with regard to the additionality of the project activity?	/1/	DR	Conclusion on additionality of the project activity calls for all the CLs and CARs mentioned in the additionality section to be addressed.	CAR-3 CAR-4 CL-4, CL-5, CL-6	OK

Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
Calculations of GHG emission reductions						
Data and parameters that are available at validation and that are not monitored (VVM Para 199-203)						
2.5.1	How was the OM emission factor for NEWNE regional grid available at validation verified?	/1/	DR	<p>The OM emission factor has been computed using the simple OM approach based on the generation-weighted average emissions per electricity unit over a three year period of 2006-2007, 2007-2008 and 2008-2009 available in the CEA database version 5, for the NEWNE regional grid, inline with approach prescribed in "Tool to calculate the emission factor for an electricity system" version 02 .</p> <p>The values mentioned in the PDD for OM emission factor is not matching with the calculated value sourced from the CEA database version 5 and the values mentioned in the project CER worksheet</p>	CAR2	OK
2.5.2	How was the BM emission factor for NEWNE regional grid available at validation verified?	/1/	DR	<p>BM emission factor is calculated based on the 20% most recent capacity additions in the grid based on net generation for the year 2008-09, in accordance with "Tool to calculate the emission factor for an electricity system" version 02. This value is sourced from CEA database version 5 and is fixed ex-ante. The BM EF sourced from CEA database is 0.67518 tCO₂e/MWh</p>		OK
2.5.3	How was the CM _{CO2} emission factor for NEWNE regional grid available at validation verified?	/1/	DR	<p>The baseline emission factor for the project has been calculated as the weighted average of the operating margin (OM) and the build margin (BM) emission factor in the ratio of 75:25 as applicable for wind projects.</p> <p>The values mentioned in the PDD for OM emission factor and combined margin emission</p>	CAR-2	OK

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				factor, are not matching with the calculated value sourced from the CEA database version 5 and the values mentioned in the project CER worksheet		
Baseline emissions (VVM Para 89-93)						
2.5.4	Are the calculations documented according to the approved methodology and in a complete and transparent manner?	/1/	DR	Yes. The baseline emission calculations are in accordance with the baseline methodology.		OK
2.5.5	Have conservative assumptions been used when calculating the baseline emissions?	/1/	DR	Yes. Conservative assumptions have been used while calculating the baseline emissions.		OK
2.5.6	Are uncertainties in the baseline emission estimates properly addressed?	/1/	DR	There are no uncertainties in the baseline emissions.		OK
Project emissions (VVM Para 89-93)						
B.5.7	Are the calculations documented according to the approved methodology and in a complete and transparent manner?	/1/	DR/I	Since the project activity is electricity generation from wind energy there is no project GHG emission and this complies with the methodology with respect to project emission computation.		OK
Leakage (VVM Para 89-93)						
B.5.8	Are the leakage calculations documented according to the approved methodology and in a complete and transparent manner?	/1/	DR	This is not applicable as the project activity is electricity generation from wind energy.		OK
Emission Reductions (VVM Para 89-93)						
2.5.9	Algorithms and/or formulae used to determine emission reductions: <ul style="list-style-type: none"> All assumptions and data used by the project participants are listed in the PDD and related document submitted for registration. The data are properly referenced All documentation is correctly quoted and interpreted. All values used can be deemed reasonable in the context of the project activity The methodology has been correctly applied to calculate 	/1/	DR	All the assumptions and data used by the project participants are listed in the PDD and the data are properly referenced.		OK

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the emission reductions and this can be replicated by the data provided in the PDD and supporting files to be submitted for registration.						
Monitoring plan (VVM Para 122-124)						
Data and parameters monitored						
2.6.1	Do the means of monitoring described in the plan comply with the requirements of the methodology?	/1/	DR/I	<p>No, PP to clarify how the current monitoring arrangement defined in the PDD meets the requirement of the applied version of methodology, which requires “Quantity of net electricity generation supplied by the project plant/unit to the grid in year” need to be monitored, whereas the current arrangement mentioned in the PDD calculates net electricity based on the apportioning of electricity recorded by the common meter (meter to which machines of other investors are also connected).</p> <p>PP to explain the detailed procedures for apportioning of net electricity exported to the grid, in Annex 4 of the PDD, along with the accuracy, calibration frequency, recording & monitoring frequency and maintenance details of the electricity meters involved in the project activity.</p> <p>Also PP to include the following in the monitoring plan.</p> <ol style="list-style-type: none"> 1. Data collection procedures (information flow including data generation, aggregation, recording, calculation and reporting) 2. Emergency procedures for the monitoring system. 	CAR-5	OK
B.6.2	Does the monitoring plan contains all necessary parameters, and are they clearly described?	/1/	DR	Refer section B.7.1 of the report	CAR-5	OK

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Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
B.6.3	In case parameters are measured, is the measurement equipment described? Describe each relevant parameter.	/1/	DR	Refer section B.7.1 of the report	CAR-5	OK
2.6.4	In case parameters are measured, is the measurement accuracy addressed and deemed appropriate? Describe each relevant parameter.	/1/	DR	Refer section B.7.1 of the report	CAR-5	OK
B.6.5	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	Refer section B.7.1 of the report	CAR-5	OK
2.6.6	Is the monitoring frequency adequate for all monitoring parameters? Describe each parameter.	/1/	DR	Refer section B.7.1 of the report	CAR-5	OK
2.6.7	Is the recording frequency adequate for all monitoring parameters? Describe each parameter.	/1/	DR	Refer section B.7.1 of the report	CAR-5	OK
Ability of project participants to implement monitoring plan						
2.6.8	How has it been assessed that the monitoring arrangements described in the monitoring plan are feasible within the project design?	/1/	DR	Unless the issue of current monitoring arrangement to be inline with the methodology is not resolved no conclusion can be drawn in this regard.	CAR-5	OK
2.6.9	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/		For the operation and maintenance of the facility, contract has been entered with Enercon (India) Limited and they will be providing daily generation report. The QA/QC procedures indicated in Annex 4 need to be further formalized by including the role of PP and the requirements of CDM.	CAR-5	OK
2.6.10	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	Yes. The systems and procedures detailed are adequate to ensure the verification of emissions reductions from the project activity.		OK
2.6.11	Will all monitored data required for verification and	/1/	DR	The monthly data of electricity generated (JMR		OK

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Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
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?			sheet, Invoice & controller data) will be collected in both print and electronic form. The data will 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.		
Monitoring of sustainable development indicators/ environmental impacts					
2.6.12 Is the monitoring of sustainable development indicators/ environmental impacts warranted by legislation in the host country?	/1/	DR	As per DNA of India website for large scale CDM projects activities PP shall commit a certain percentage of the CERs revenue every year (subject to a minimum of 2%) for Sustainable Development and shall make action plan for the same and these needs to be included in the PCN and PDD. However this action plan is not clear from webhosted PDD. PP to provide the DNA approval for the project activity for confirmation and in case if the DNA approval talks about the same and this action plan needs to be incorporated in the revised PDD.	CAR-1	OK
B.6.13 Does the monitoring plan provide for the collection and archiving of relevant data concerning environmental, social and economic impacts?	/1/	DR	The monitoring plan does not provide for the collection and archiving of relevant data concerning environmental, social and economic impacts and this is not warranted by the current legislation. However PP to detail the action plan for monitoring 2% of the CER revenue to be spent on sustainable development activities of the local population.	CAR-1	OK
2.6.14 Are the sustainable development indicators in line with stated national priorities in the host country?	/1/	DR	The Letter of approval from the DNA of India needs to be submitted for verification.	CAR-1	OK

Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
Duration of the project activity / crediting period						
3.0.1	Start date of project activity (VVM Para 99-100, 104)					
C.0.2	How has the starting date of the project activity been determined? What are the dates of the first contracts for the project activity? When was the first construction activity?	/1/	DR	The start date of the project activity is stated to be 22 October 2010, which is the date of purchase order placed for the supply of 49 WEGs for the project activity. The purchase order dated 22 October 2010 has been verified by DNV.		OK
3.0.3	Is the stated expected operational lifetime of the project activity reasonable?	/1/	DR	The operational lifetime of the project activity has been mentioned as 20 years. Documentary evidence for the operational lifetime of the project activity to be provided.	CL-7	OK
3.0.4	Is the start date, the type (renewable/fixed) and the length of the crediting period clearly defined and reasonable?	/1/	DR	The project has chosen a fixed crediting period of 10 years with the start date of the crediting period being 1 July 2011 or the date of project registration with UNFCCC, whichever occurs later.		OK
Environmental Impacts (VVM Para 131-133)						
4.0.1	Are there any host country requirements for an Environmental Impact Assessment (EIA), and if yes, is an EIA approved? Does the approval contain any conditions that need monitoring?	/1/	DR/I	There are no host country requirements for an Environmental Impact Assessment (EIA), for a wind power plant project activity. GEDA approval to AES Saurashtra Windfarms Private Ltd. (ASW) for setting up 28 MW has been verified by DNV. GEDA approval for the remaining 11.2 MW has to be provided. The deed lease provided by the Divisional Forest Officer, Jamnagar is subject to detailed study on	CL-8	OK

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Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
				<p>“Impact of wind power projects on wildlife of the area” as per the terms of reference finalized by the MoEF.</p> <p>The same study to be provided for verification.</p> <p>Also a copy of the EIA assessment conducted for internal purpose need to be provided.</p>		
D.0.2	Does the project comply with environmental legislation in the host country?	/1/	DR/I	<p>As per the Ministry of Environment and Forests (MoEF), India Environment Impact Notification S.O. 1533 dated 14 September 2006, wind power projects are not covered under any schedule and thus environmental impact assessment is not required for the project activity.</p> <p>The deed lease provided by the Divisional Forest Officer, Jamnagar is subject to detailed study on “Impact of wind power projects on wildlife of the area” as per the terms of reference finalized by the MoEF.</p> <p>The same study to be provided for verification.</p> <p>Also a copy of the EIA assessment conducted for internal purpose need to be provided.</p>	CL-8	OK
D.0.3	Will the project create any adverse environmental effects?	/1/	DR/I	Being wind energy based power project, the project is not expected to have any significant impact on the environment.		OK
4.0.4	Have identified environmental impacts been addressed in the project design?	/1/	DR/I	Conclusion on environmental impacts by the project activity calls for CL to be addressed.	CL-8	
Stakeholder Comments (VVM Para 128-130)						
5.0.1	Have relevant stakeholders been consulted?	/1/	DR	<p>Yes. The stake holders meeting was conducted on 29 October 2010 in Porbandar, Gujarat.</p> <p>The stakeholders consulted were local villagers, local village Panchayats, representatives of</p>		OK

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Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
				Enercon India Limited (EPC & O&M contractor of the wind farm) and ASW representatives. Copy of invitation published in local newspaper, personal invitations sent, sample filled in questionnaire and minutes of the meeting of the local stakeholder consultation have been verified by DNV.		
E.0.2	Have appropriate media been used to invite comments by local stakeholders?	/1/	DR	Yes. The local stakeholders were invited through newspaper advertisement and individual invitations sent to village representatives. The advertisement was published in local language newspaper on 14 October 2010 by project proponent. Copy of invitation published in local newspaper, personal invitations sent, sample filled in questionnaire and minutes of the meeting of the local stakeholder consultation have been verified by DNV.		OK
E.0.3	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	A stakeholder consultation process is not required by regulations/laws in India, the host country, for wind energy projects.		OK
E.0.4	Is a summary of the stakeholder comments received provided?	/1/	DR	A summary of the comments received has been provided in the PDD.		OK
5.0.5	Has due account been taken of any stakeholder comments received?	/1/	DR	There were no adverse comments received from the stakeholders and the net beneficial effects of the project activity were acknowledged by the stakeholders present.		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
<p>CAR 1 The Letter of Approval (LOA) from the DNA of India (Host) has not been provided for verification. As per DNA of India website for large scale CDM projects activities PP shall commit a certain percentage of the CERs revenue every year (subject to a minimum of 2%) for Sustainable Development and shall make action plan for the same and these needs to be included in the PDD. The PDD do not indicate anything on the action plan to spend 2% of the CER revenue for sustainable development as required by DNA of India.</p>	<p>A.3.1 A.3.2 A.3.3 B.7.12 B.7.13 B.7.14</p>	<p>The Host Country Approval has been provided to DoE. The action plan for sustainable development has been included in the PDD as Appendix 1.</p>	<p>The Host Country Approval received from DNA of India dated 5 September 2011 has been verified by DNV. As required by DNA of India requires project proponent has committed to spend 2% percentage of the CERs revenue every year for Sustainable Development including society/community development. The monitor-able action plan for the same has been included in the PDD as Appendix 1. OK accepted. CAR 1 closed.</p>
<p>CAR 2 The values mentioned in the PDD for OM emission factor and combined margin emission factor, are not matching with the calculated value sourced from the CEA database version 5 and the values mentioned in the project CER worksheet.</p>	<p>B.4.5 B.4.7 B.4.8 B.6.1 B.6.3</p>	<p>The values for EF_{OM} and EF_{CM} have been corrected in revised PDD and CER excel spread sheet. In line with Tools to Calculate Emission Factor for an Electricity System version 2, three year generation weighted average has been considered for calculating EF_{OM} from CEA database version 5.</p>	<p>Revised PDD and the excel spread sheet have been checked out for the EF_{OM} and EF_{CM} values sourced from the CEA database version 5. OK accepted CAR 2 closed.</p>
<p>CAR 3 PDD and the supporting documents submitted do not clearly justify the following issues: 1. The details on the dates of decision</p>	<p>B.5.11 B.5.16 B.5.19</p>	<p>1. <u>Date of Investment Decision</u> The decision to invest in the project activity was taken on 14th of July 2010</p>	<p>1. The documents submitted for justifying the relevance of the input parameters applicable at the time of decision making were verified by</p>

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
<p>making and the relevance of the inputs parameters at the time of decision making.</p> <p>2. The details of the input parameters used for the benchmark calculations need to be further elaborated in the PDD. Also, the suitability of the benchmark adopted for the project activity need to be elaborated further in light of the values used for the decision making.</p> <p><u>Round II</u></p> <ul style="list-style-type: none"> Supporting documents on the break up indicated on the project cost of the financials has not been provided. The beta screen shots have not been included in the PDD. The Excel sheet has not been updated with the period range considered for beta. Period chosen for beta need to be justified (in this case this is considered from 7 August 2007 to 7 April 2010.). Project participant has considered beta values until April 2010, which was available at the time of investment decision, whereas other parameters used in CAPM model considered are till July. Application of equity IRR instead of Project IRR need to be justified. (To justify when 65% of the project activity is 	<p>B.5.21 B.5.22 B.5.33</p>	<p>vide Board resolution of AES SaurashtraWindfarms Private Limited [Submitted to DOE during site visit].</p> <p><u>Input Parameters at time of investment decision making</u></p> <p>The input parameters applicable at the time of investment decision making have been taken from the board note that details the discussion points for the Board Meeting. These parameters formed the basis of project evaluation and subsequent approval of investment. The Board note has also been submitted to the DOE during the site visit. In particular, the note refers to the following key sources for the various input parameters:</p> <ul style="list-style-type: none"> MoU with Enercon(14 May 2010) for the supply cost, capacity and design of project IDFC’s loan term sheet (July 6 2010) for total project cost, debt equity and other loan details Generation estimate by AES wind group GERC wind tariff INR 3.56 per kWh (GERC wind tariff order 30.01.2010) Carbon Revenue based on CDM 	<p>DNV and the values were found to be matching with the source and the financial analysis presented at the beginning of the validation. The details of the supporting evidences have been included as part of the reference documents of this report for transparency.</p> <p>The revised PDD has been updated for the dates of decision making and the input parameters at the time of decision making.</p> <p>2. The benchmark calculation has been verified for the references of the input parameters mentioned in the PDD. The details of the Screen shots presented in the revised PDD has been verified and found to be consistent with the source and the values used in the benchmark working. The values were also found to be relevant at the time of decision making. The revised excel sheet and the PDD indicating the values and sources of the input parameters has been reviewed and accepted.</p> <p>The usage of Equity IRR as the financial indicator is as per the guidance on investment analysis and the finance</p>

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
<p>financed through debt and without debt component the project activity would have not come up).</p>		<p>consultant's advise</p> <p>2. A detailed note on procedure used for benchmark calculation has been provided in Annex 5 of the revised PDD.</p> <p><u>Appropriateness of financial indicator</u></p> <p>IRR is a widely accepted financial metric used by many corporations and financial institutions for investment decision-making and is a long-established benchmark for investment decisions in the Indian power sector. Hence the post tax IRR is chosen as the appropriate financial indicator for carrying out the investment analysis.</p> <p><u>Appropriateness of Benchmark</u></p> <p>The project is a greenfield wind electricity generation project. In accordance with the guidance on assessment of investment analysis Para 13, EB51 Annex 58, the cases of projects which could be developed by an entity other than the project participant the benchmark should be based on publicly available data sources which can be clearly validated by the DOE. Accordingly, the external benchmark has been calculated using publically available financial data that is</p>	<p>structure of the project participant has also been verified and the justification provided is found to be acceptable.</p> <p>OK accepted. CAR 3 Closed.</p>

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
		<p>applicable at the time of investment decision making. As per Para12 EB51 Annex 58, return on equity is an appropriate benchmark for equity IRR accordingly same has been considered.</p> <p><u>Calculation of Benchmark</u></p> <p>The cost of equity has been calculated as per the Capital Asset Pricing Model method.</p> <p>The benchmark has been calculated as follows:</p> $K_e = R_f + B \times (R_m - R_f)$ <p>Where: K_e = Rate of return on equity; R_f = Risk-free rate of return; B = Beta; R_m = Market return</p> <p><i>Risk free rate</i> - has been taken from long dated Indian government bond rates available at the time of decision to invest in the project (July 14, 2010).</p> <p><i>Risk premium</i> - has been calculated as the difference in compounded annual return between the Government bond rates and the BSE-Sensex (as long term data since inception of BSE Sensex, i.e. 1979 – 80 is available for the same).</p> <p><i>Beta values</i> - have been considered of listed private electricity generating companies in India. The group of</p>	

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
		<p>companies includes private sector power generating companies that are involved in conventional power generation as well as renewable energy. Three years weekly Beta values of individual companies prior to investment decision have been sourced from Bloomberg. The snapshots are attached as Annexure 07 to these replies.</p> <p><u>Applicability of benchmark at time of investment decision</u></p> <p>All the parameters considered in calculating benchmark are applicable at the time of decision making. i.e. 14 July 2010.</p> <ul style="list-style-type: none"> • Risk Free Rate has been taken for the year 2009-10 which was the latest data available • Market Return has been taken as on month ending June 2010 • Beta Values have been taken for the 3 years from July 2007 to July 2010. <p>There was a slight typological error in the beta values given in the earlier benchmark (the third decimal places were not consistent with the Beta snapshots), the same has been rectified and being sent along with these replies</p>	

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
		<p>along with Beta Snapshots. The benchmark has hence changed slightly to 18.72% from 18.77%.</p> <p><u>Round II</u></p> <ol style="list-style-type: none"> 1. The Project cost break up has been provided in detail as Annexure 34 along with the necessary evidences (Annexure 11-27). 2. The screen shots have been included in the PDD as Appendix 2. The period range considered for beta has been included in the Excel sheet. 3. The Beta numbers are to be read in the MM DD YY format; Beta values have been computed for the period July 2007 to July 2010. <p>The Benchmark has been recomputed using BSE 200 index. The BSE 200 index represents a wider portfolio i.e. 200 companies as against 30 companies of the BSE Sensex. Further, the market return computed on the BSE 200 index is the lowest amongst all BSE indices i.e. BSE-Sensex, BSE 100, BSE 200 and BSE 500. Therefore the BSE 200 index results in the most</p>	

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
		<p>conservative value of the Benchmark. The revised calculations are presented in the “Benchmark” sheet.</p> <p>Beta values (3 year, weekly) have also been recomputed to account for the change in index due to which the Beta value used for Benchmark calculation has reduced marginally. The Beta values are being re-submitted as Annexure 7.</p> <p>The revised benchmark is 16.23%.</p> <p>We would also like to submit that the benchmark considered by us is conservative than the benchmark prescribed in the Guidance for Assessment of Investment Analysis (EB 60). The estimate of long term inflation rate in India over the 20 year period from 2011 to 2030 is 5.54% (Source: The Economist Intelligence Unit, Annexure 35). Therefore in real terms the 16.23% benchmark translates to a benchmark of 10.2 %. This is lower than the 11.75% real benchmark prescribed under the Guidance for Investment Analysis (EB 60).</p> <p>Relationship between real and</p>	

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
		<p>nominal benchmark: $(1 + \text{Benchmark real}) * (1 + \text{inflation rate}) = (1 + \text{Benchmark nominal})$ i.e. Real Benchmark = $[(1 + 16.23\%) / (1 + 5.4\%)] - 1 = 10.2\%$</p> <p>4. As per the “Tool for demonstration of additionality Sub-step 2 (b)” Financial indicators chosen for investment analysis should be most suitable to the project type and decision context. The section below describes how the chosen financial indicator fulfils these conditions.</p> <p>4.1 Indicator most suitable for Project Type: Post-tax equity IRR has been a long-established benchmark for investment decisions in the Indian power sector. Recognizing this, the Central as well as the State electricity regulatory commissions in India use post tax return on equity values for tariff determination of power generation projects in India.</p> <p>4.2 Indicator most suitable in the decision making context: The investment decision for the project is taken by the equity investor and therefore the decision to invest in the</p>	

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
		<p>project is based on the return derived by the equity investor i.e. Equity IRR.</p> <p>Project IRR does not take in to account effect of different financing structures on any project. Investment decisions are as much dependent on financing structures as they are on other project parameters and have significant impact on investment viability. Therefore it would not be appropriate to ignore the financing structure as it forms an important parameter to any investment decision.</p> <p>Considering above, post tax equity IRR is considered to be the most appropriate financial indicator for investment analysis.</p>	
<p>CAR4 The sensitivity analysis has not been performed for the minimum range of +10 % to -10% as per the guidelines, for the tariff, even though it is fixed for 20 years for the project activity.</p> <p>Round II a.Sensitivity analysis: For PLF – variation till reaching benchmark has not considered</p>	<p>B.5.23 B.5.24 B.5.25 B.5.33</p>	<p>Sensitivity has been carried out on ± 10% variation in tariff in revised PDD and IRR excel spread sheet. Sensitivity has also been carried out on parameters till they touch the benchmark and details are provided in the revised PDD. The likeliness of such occurrences is also detailed in revised PDD.</p>	<p>The updated PDD and the excel workings have been verified for the sensitivity analysis and found addressing the comment. OK accepted. CAR 4 closed.</p>

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
<p>the highest PLF achieved historically in the region.</p>		<p><u>Round II</u></p> <p>1. The entire project activity is not yet commissioned and therefore there is no data on actual highest performance. Further, the annual highest PLF observed for nearby Enercon machines during last two years is 26.2%. The sensitivity analysis for PLF presented in the PDD covers these numbers. Further, the PLF for wind power projects in Gujarat considered under the GERC tariff order [dated 30.01.2010) is 23%, which is lower than the PLF considered for the project.</p> <p>The PLF sensitivity analysis representing value at which returns reach benchmark is also included in the PDD. The PLF required to reach the benchmark is substantially higher than historic PLF of Enercon machines nearby as well as that mentioned in the GERC order and therefore is highly unlikely to be achieved.</p>	
<p>CAR5</p> <p>1. Project participant to clarify how the current monitoring arrangement defined in the PDD meets the requirement of the applied version of methodology, which requires “Quantity of net electricity generation</p>	<p>B.7.1 B.7.2 B.7.3 B.7.4</p>	<p>1. The methodology ACM0002 Version-12.2.0 requires monitoring of 'Quantity of net electricity generation supplied by the project plant/unit to the grid in a year'. WTGs of project activity are connected to the Bhogat</p>	<p>1. The details of the metering locations along with the diagram has been presented by the project participant and based on the arrangement it has been accepted that the current monitoring practice indicated in the PDD is</p>

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
<p>supplied by the project plant/unit to the grid in year” need to be monitored, whereas the current arrangement mentioned in the PDD calculates net electricity based on the apportioning of electricity recorded by the common meter (meter to which machines of other investors are also connected).</p> <p>2. Project participant to explain the detailed procedures for apportioning of net electricity exported to the grid, in Annex 4 of the PDD, along with the accuracy, calibration frequency, recording & monitoring frequency and maintenance details of the electricity meters involved in the project activity.</p> <p>3. The following issues have not been addressed clearly in the monitoring plan.</p> <ol style="list-style-type: none"> a. Data collection procedures (information flow including data generation, aggregation, recording, calculation and reporting) b. Emergency procedures for the monitoring system. <p>4. The QA/QC procedures indicated in Annex 4 do not indicate the role of project participant and the requirements of CDM.</p> <p>5. The supporting evidences for the argument of “LCS meters’ do not require calibration has not been provided.</p>	<p>B.7.5 B.7.6 B.7.7 B.7.8 B.7.9</p>	<p>sub-station in which WTGs of other investors are also connected. There is meter at sub-station from where GETCO records total net electricity exported to grid for all the WTGs. In addition, there are cluster meters for WTGs of different project developers at Vacuum Circuit Breaker (VCB) yard. Each of these cluster meters are exclusively for a single project proponent (in this case ASW). Based on electricity generation data recorded by the cluster meters at VCB yard (for individual cluster meters as well as the total net electricity supplied at sub-station by all cluster meters) apportioning is carried out by GEDA and this data is given to GETCO/SLDC. SLDC/GETCO certifies this data and a certificate for share of electricity is issued by SLDC/GETCO which states net electricity exported by each cluster meter. This certificate will be basis of calculating emission reductions and quantity of net electricity generation supplied by WTGs of project activity to the grid will be calculated based on certificate of share of electricity generated. Detailed procedure for</p>	<p>matching with the applied methodology.</p> <p>2. The detailed procedure on monitoring has been reviewed and has been accepted since it is confirming with the actual practice, The net electricity generated will be calculated from the readings of export and import indicated by the main GETCO meter (also known as revenue meter) at the Bhogat substation. During the interview it was found that wind turbines installed by the project proponent and wind turbines installed by other project owners will also be connected to the same main meter. However the WEGs of a single customer (ASW in this case) are divided into clusters and each cluster has dedicated metering system. Different clusters are connected to different Vacuum Circuit Breaker metering yards (VCB) which ultimately lead to the shared main GETCO meter (also known as revenue meter) at the Bhogat substation. The meter reading at these metering points will be taken jointly by the representatives of Enercon and GETCO in the form of Joint Meter Reading and Gujarat Electricity Development Authority (GEDA) will</p>

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
<p>Round II:</p> <ul style="list-style-type: none"> Accuracy of the energy meters not mentioned in the PDD. 		<p>metering, along with explanatory diagram, is included in Annex 4 of revised PDD.</p> <p>2. Detailed procedure for apportioning is included in Annex 4 of revised PDD. Accuracy of meter, calibration frequency, recording and monitoring frequency and maintenance details are included in Annex 4 of revised PDD.</p> <p>3. Data collection procedures including data generation, recording etc are included in revised PDD. Emergency procedures for monitoring are also included in Annex 4 of revised PDD.</p> <p>4. The role of the project participant in QA/QC has been included in the PDD.</p> <p>5. The evidence showing that LCS meter does not require calibration has been attached as Annexure 08 and Annexure 09.</p> <p><u>Round II</u></p> <p>1.Accuracy of energy meters have been included in the PDD</p>	<p>apportion the net electricity supplied to the grid at the Enercon substation to all the project owners after adjusting the transmission losses to the meter readings taken at dedicated cluster meters of different project owners. Based on which GETCO will issue a share certificate to each project owner for net electricity exported to the grid and each project owner raises sales invoices to the state electricity board based on the net electricity figures provided in the share certificates. Hence net electricity generation figures provided in the share certificate will be used for emission reduction calculation and same will be cross checked against the sales invoices raised to SEB.</p> <p>3&4 The project Management procedures along with the role of the project participant has been included in the PDD. The same has been reviewed and accepted.</p> <p>5. An undertaking from Enercon dated 10 August 2010 for certifying that LCS meters are of auto tracking type and hence is not essential to calibrate the LCS meters separately.</p>

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
			<p>The updated PDD has been verified for the apportioning details and the accuracy of the meters.</p> <p>OK accepted. CAR 5 closed.</p>
<p>CAR 6: The responses for the comments received during the global stakeholder consultation period need to be provided.</p>	<p>Table 1</p>	<p>Replies to comments received during global stakeholder consultation have been provided in Annexure 01 to these replies.</p>	<p>Responses for the comments received during the global stakeholder consultation have been reviewed. DNV's conclusion on the responses has been provided in the section 4.11 of this report.</p> <p>OK accepted. CAR 6 closed</p>
<p>CL 1 Date of the PDD mentioned (18 January 2010) is much earlier than the date of completion mentioned (18 January 2011) in the section B.8 of the PDD.</p>	<p>A.1.1</p>	<p>The typographical error in section A.1 has been corrected. The PDD version 2 dated 28/04/2011.</p>	<p>Revised PDD version 4 dated 6 January 2012 has been evidenced by DNV.</p> <p>OK accepted CL1 closed.</p>
<p>CL 2 Physical implementation of the project was under progress when the validation was commenced. The unique identification number, survey number, location number of all 49 WEGs not included in the PDD.</p> <p>Round II</p> <ul style="list-style-type: none"> The number of WEG installed till date say at the time of response to the DVR has not 	<p>A.2.2 A.2.4 A.4.1</p>	<p>The location numbers has already been stated in section A 4.1.4. The land Survey Numbers are included in the revised PDD. The Unique Identification Numbers will be provided by IREDA after commissioning of the project and will be provided on receipt of the commissioning certificates.</p> <p>Round II</p>	<p>The details of the unique identification number of the WEGs installed have been verified through the commissioning certificates. PPD has also been updated for the start date of the crediting period.</p> <p>OK accepted CL 2 Closed</p>

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
<p>been clarified.</p> <ul style="list-style-type: none"> • Start date of the crediting period has not been revised based on the revised timelines of validation. • To provide the PPA for the project activity 		<p>1. Status of the project activity has been included in the PDD.</p> <p>The project construction has already commenced and 23 WEGs have been commissioned as on 30th June 2011 and the remaining 26 WEGs are scheduled to be progressively commissioned during the months of July and August.</p> <p>2. The start date of the crediting period has been revised.</p> <p>3. Executed PPA's for 41 WEGs (32.8 MW) with GUVNL (27 and 14 locations each) are provided as Annexure 29. PPA for remaining 8 WEGs (6.4 MW) with GUVNL is expected to be signed shortly.</p>	
<p>CL 3 PDD do not indicate the chronology of events indicating the Prior CDM consideration. Supportive documents for the same to be provided.</p> <p><u>Round II</u> a. Details of acknowledgement from both the DNA and UNFCCC not indicated in the PDD.</p>	<p>B.5.5</p>	<p>Chronology for prior consideration has been included in revised PDD. Supporting documents have already been provided to the DOE during site visit.</p> <p><u>Round II</u> 1.The details of acknowledgement from both the DNA and UNFCCC have been included in the PDD under Section B 5.</p>	<p>Chronology for prior consideration has been included in revised PDD.</p> <ol style="list-style-type: none"> 1. AES India discussion of key project design, risks regarding wind projects and CER revenue being essential for making the projects viable dated 24 December 2009. 2. AES India discussion on creating a special purpose

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
<p>b. Details of acknowledgement from both the DNA and UNFCCC not indicated in the PDD.</p>			<p>vehicle for taking matters further regarding the investment in wind energy project dated 14 April 2010.</p> <ol style="list-style-type: none"> 3. Signing of MoU with EIL for their offer of 39.2 MW wind project in Gujarat on 10 May 2010. 4. Creation of SPV AES Saurashtra Windfarms Private Limited on 28 May 2010. 5. Decision to invest in 39.2 MW wind power project by AES Saurashtra Windfarms Private Limited on 14 July 2010. 6. Finalisation and appointment of CDM consultant on 3 August 2010. <p>The above mentioned activities have been verified based on the supporting evidences provided by the project participant.</p> <p>OK accepted CL 3 closed.</p>
<p>CL 4 Project participant to clarify the following: 1. 20 years operating life has been considered for WEG and the time period</p>	<p>B.5.15 B.5.21 B.5.22</p>	<p>1. Investment analysis has been carried out for 20 years only. The commissioning date is considered as 01 July 2011 and accordingly</p>	<p>1. The response has been accepted based on the review of the excel sheet.</p>

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
<p>for the investment analysis is taken as 21 years.</p> <p>2. Explain the conservativeness on the usage of 5% of salvage value.</p> <p>3. Relevance of the CER price considered at the time of decision making along with required back up documents.</p> <p>4. The depreciation accounted in project activity need to be justified with the suitable reference to the accounting standards.</p> <p>Round II</p> <ul style="list-style-type: none"> Book depreciation considered is 95%. But as per the GERC final order dated 30 January 2010 - depreciation can be claimed for 90% of the asset (except land). 	<p>B.5.33</p>	<p>generation for first 9 months is considered in the 1st year and generation for last 3 months is considered in the 21st year.</p> <p>2. As per companies act, the entire project cost has been depreciated upto 95% as per book of accounts. As can be seen in the book depreciation row of the excel sheet [row 32 of sheet “p&l”], the project cost of INR 2303 Million (Total project cost excluding margin money and DSRA) has been depreciated upto INR 2187.85 Million which is 95% of the cost (INR 2303 Million). Therefore, the rest of the value of the assets has been i.e. 5% has been taken as salvage value. The considered 5% salvage value is in accordance with accounting principles.</p> <p>3. The back-up document for the CER price dated 28 January 2010 has been provided as Annexure 02 to these replies. The assumption was based on CER price estimates available from sources applicable at the time of investment decision.</p> <p>4. The book depreciation rate considered as 5.28% (straight line) as per Rates of depreciation under</p>	<p>2. The salvage value of 5% used for the investment analysis has been found to be conservative than using higher salvage at the end of the accounting period as indicated in the GERC tariff order.</p> <p>3. The backup documents for the CER price applicable at the time of decision making has been verified and accepted.</p> <p>4. The depreciation rates adopted for the project activity has been checked based on the Schedule XIV- refer page 14/19 Annexure 03 and Annexure 03A.</p> <p>5. The board minutes has been checked and the Investment analysis working has been checked out for the various queries asked for and the documentary evidences for the same have been verified.</p> <p>OK accepted CL 4 closed.</p>

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
		<p>companies act Schedule XIV- refer page 14/19 Annexure 03 and Annexure 03A to these replies. Since the project is availing GBI benefits, as per GBI guidelines, accelerated depreciation is not applicable. The guideline issued by MNRE / IREDA for the same is attached as Annexure 04 to these replies. The depreciation rate for power generating units (Wind Turbines) is considered as 7.69% SLM as per the income tax act Refer page 13/19 Annexure 03.</p> <p><u>Round II</u></p> <p>1. The depreciation % has been considered as per Companies Act. GERC order considers depreciation solely for the purpose of tariff determination. As far as investment analysis are concerned, books are in companies' accounts and therefore Companies act will be the more appropriate input value for this, accordingly the depreciation upto 95% is considered.</p>	
<p>CL 5 The following issues to be clarified further: 1. PLF of 24.3% considered for the</p>	<p>B.5.17 B.5.20</p>	<ul style="list-style-type: none"> The plant load factor provided to IDFC (lender) while applying for project financing is used which in 	<p>The initial PLF assessment considering 24.3% PLF was verified by DNV. However after change in the locations</p>

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
<p>project activity along with relevant background information.</p> <p>2. Supportive documents for % of escalation per annum on additional O&M charges and on administrative expenses.</p> <p>Round II</p> <p>Following documents have not been provided:</p> <p>a.Loan application to justify the PLF considered (24.3%)</p> <p>b.Supportive documents for % of escalation per annum on additional O&M charges and on administrative expenses to be provided. (The O&M agreement in p.no 19&20 talk about additional O&M expenses which is less than 2% as mentioned in the investment analysis)</p>	<p>B.5.22</p> <p>B.5.33</p>	<p>line with EB-48 Annex11. The letter from IDFC stating the generation used during loan evaluation has already been provided to the DOE during site visit.</p> <ul style="list-style-type: none"> The % y-o-y escalation on additional O&M charges is taken as 2% on a conservative basis (5% is the normative escalation as per the O&M agreement) and % y-o-y escalation on administrative expenses has been taken at a normative level of 5%. <p>Round II</p> <p>1. The backup document was submitted as Annexure 10 with earlier submissions. The final report as available with our records dated 09/07/2010 is being sent again.</p> <p>2. The additional O&M cost includes the statutory and other expenses. The PP has assumed a conservative escalation percentage of 2% for both administrative as well as additional O&M expenses (lower than the 5% escalation assumed for O&M). Kindly note that the O&M agreement does not</p>	<p>of 20 WEGs as indicated under the responses of CL 8, the revised PLF assessment indicated a value of 25.38%. This value of 25.38% has been considered for financials and accepted by DNV since this value is conservative.</p> <p>The PLF assessment report for the revised PLF of 25.38%, has been verified by DNV. Also the communications from the financial institution lending the project activity was verified.</p> <p>Project participant had considered a value of 2% escalation for additional O&M. DNV has verified that, even after considering zero escalation in additional O&M, the equity IRR for the project activity remains the same.</p> <p>OK accepted CL5 closed.</p>

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
		provide for any escalation % for additional O&M charges and only states the present applicable charges which has been projected over the term of the Project considering an escalation of 2%.	
<p>CL 6 The data source used for the common practice analysis has not been provided and not included in the PDD.</p>	<p>B.5.29 B.5.30 B.5.31 B.5.32 B.5.33</p>	<p>The relevant links and sources have been added in section B.5 of the PDD.</p>	<p>The links and sources provided in the section B.5 of the revised PDD has been checked out. Project participant had analysed all wind power projects in the state of Gujarat with capacity more than 15 MW sourced from UNFCCC and Indian wind power directory 2009, the latest available during decision making time. OK accepted CL 6 Closed.</p>
<p>CL 7 Documentary evidence for the operational lifetime of the project activity to be provided.</p>	<p>C.1.3</p>	<p>The operational life of the project activity has been taken as 20 years. The certificate from the equipment supplier specifying the operational lifetime of the project activity is attached as Annexure 05 to these replies.</p>	<p>The operational life of the project activity has been taken as 20 years as evidenced from the certificate from the equipment supplier /21/ has been verified. The wind turbine model E-53 has been certified by DEWI-OCC Offshore and Certification Centre GmbH, Am Seedeich 9, D-27472Cuxhaven. OK accepted CL 7 closed.</p>
<p>CL 8</p>		<p>GEDA approval for the remaining 11.2</p>	<p>GEDA approval for all the 39.2 MW</p>

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
<p>GEDA approval to AES Saurashtra Windfarms Private Ltd. (ASW) for setting up 28 MW has been verified by DNV. GEDA approval for the remaining 11.2 MW has to be provided. The deed lease provided by the Divisional Forest Officer, Jamnagar is subject to detailed study on “Impact of wind power projects on wildlife of the area” as per the terms of reference finalized by the MoEF. The same study to be provided for verification. Also a copy of the EIA assessment conducted for internal purpose need to be provided.</p> <p><u>Round II:</u></p> <p>a. GEDA approval for only 28 MW is available with us. Approval for rest of the MW to be provided. b. As per the EIA: “10 wind turbine locations of Gaga falls within the 5 KM radius of the Gaga wild life sanctuary. As per discussion with Forest officials, only few species of the birds are observed at present, however it is recommended, AES to discuss with Chief Wildlife Warden to assess the applicability of permission for setting up wind turbine locations within the 5 km radius of the sanctuary.” - Project participant to clarify the status</p>	<p>D.1.1 D.1.2 D.1.4</p>	<p>MW is pending and has not been received by AES as yet. This will be submitted to the DOE on receipt.</p> <p>The impact of wind power projects on the wildlife of the area is part of the detailed EIA study conducted for the project. A copy of the same is being submitted as Annexure 06 to these replies. Please refer to Section 5.13.1 [Page 36 of 80] for the impact on wildlife.</p> <p><u>Round II</u></p> <p>Due to the proximity with the wildlife sanctuary, adverse soil conditions and Coastal Zone Regulation (CRZ) related issues, 20 locations out of the original 49 locations have been changed by the project participant and replaced with new locations.</p> <p>The board resolution for approval of change in locations is attached as Annexure 30.</p> <p>In line with this change, GEDA approval document is being resubmitted as Annexure 31, this contains approval</p>	<p>has been witnessed by DNV. 20 locations out of 49 locations have been changed due to adverse soil conditions and account of CRZ (Coastal Regulation Zone) applicability. The change of location has been intimated to the IDFC bank, who are the loan providers for the project activity.</p> <p>OK accepted CL 8 Closed.</p>

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
<p>with supporting evidences.</p>		<p>for all the 49 machines (including the new locations) of the project. In addition we are also submitting the following:</p> <ul style="list-style-type: none"> • Letter sent to IDFC regarding location change dated 18th May 2011 (Annexure 32) • Acknowledgement from IDFC on their approval on location change(Annexure 33) <p>The location details have also been updated in Section A of the PDD. On account of change in locations, the generation estimate for the project has increased from 83.44 GWh to 87.14 GWh. The same was also informed to IDFC along with details of change in location as a request for approval (Annexure 32). IDFC approval regarding the same is also attached (Annexure 33). As the revised PLF is higher, the PDD has been revised accordingly to incorporate this change.</p> <p>2. With change in locations, all the WEG locations which were within 5 kms radius of the Gaga Wildlife Sanctuary are no longer part of the</p>	

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
		project activity, hence the assessment quoted in the EIA is no longer required.	

Table 4 Forward action requests

Forward action request	Reference to Table 2	Response by project participants
FAR 1		
No FAR raised.		

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APPENDIX B

CURRICULA VITAE OF THE VALIDATION TEAM MEMBERS

Murali Govindarajulu

Mr. Murali Govindarajulu holds a Bachelor's Degree in Chemical Engineering and has done a Short term diploma course in Management. Having an overall experience of around twelve years. Prior to joining DNV having around seven years experience in Chemical process industry covering production, energy efficiency improvement and equipment design erection and commissioning. His experience also covers the fields of environmental management and resource conservation including identification of alternative fuels. He has also been actively involved in implementation of Management Systems such as ISO 140001 and OHSAS 18001 standards in chemical process industry for more than three years.

He has experience of around 5 years in validation and verification of numerous CDM projects in DNV, both in India & abroad. His qualification, industrial experience and experience in CDM demonstrate his sufficient sectoral competence in energy generation from renewable energy sources.

Thamizharasi Kaliaperumal

Ms Thamizharasi Kaliaperumal holds a Bachelor of Technology Degree in Chemical Engineering. She has an overall experience of around five years in Chemical /Petrochemical processing industries (Technical Services & Energy Management) and CDM Consultancy altogether. Her main areas of work in Energy Management include Pinch analysis, Thermography survey, Analysis of Specific consumption of energy, Additive addition in fuel oil, Steam Traps audit for condensate return, Performance of energy & mass balance and Energy Audits in Chemical /Petrochemical industries. Her scope of work in Technical Services include Production support, Process Trouble shooting of Ammonia plant operation, especially for Primary & Secondary Reformers, Shift converter, CO₂ Absorption section and Synthesis Loop sections, Assessment of catalyst performance, Project feasibility studies (Carbon di-oxide recovery plant) and Management Information System.

She has completed ISO 14001:2004 - Environmental Management System Auditor / Lead Auditor Program, certified by IRCA and DNV Training Programme on Corporate GHG Inventory.

Her qualification and industrial experience demonstrate her sufficient sectoral competence in areas of TA 1.2 Energy Generation from Renewable Energy Sources, TA 3.1 Energy Demand and TA 5.1/11.1/12.1 Chemical Processes Industries.

Nitin Kapoor

Mr Nitin Kapoor holds a Bachelor in Chemical Engineering from BITS-Pilani and is also a qualified Chartered Financial Analyst (CFA) He has an overall experience of 15 years and 4 months as on date (October 2010). Prior to joining DNV he had experience of 10 years and 5 months in Oil & Gas as well as manufacturing sector (food) with leading MNC's like ITC, Coca Cola and Enron Oil and Gas. During his stint in industry part his responsibilities included carrying out energy audits and to identify potential areas of improvement. His experience includes analysis of specific consumptions (primarily on energy, raw materials and utilities) of processes based on historical data, carrying out material balances (heat and mass), analysis of equipment performance and identification and measurement of energy saving opportunities. He has also been responsible for the operations of the complete Crude

Distillation Unit in the refinery, complete platform operations in Oil and Gas sector as well as for the utilities like steam, AHU while at ITC. He also has been responsible of the ETP operations in Coca Cola and ITC as well as Water and Sewage treatment plants while working offshore. He has been responsible for EMS and QMS at ITC and Coca Cola.

He has experience of around 3.5 years in validation and verification of numerous CDM projects within DNV. He is also a Lead Auditor for QMS, auditor for EMS and Safety. His qualification, industrial experience and project experience in CDM demonstrate his sufficient sectoral competence in Energy Generation from renewable energy sources, energy efficiency, heat distribution energy demand as well as waste handling and disposal.

His direct work experience in Oil and Gas and food sector demonstrates his sectoral competence in these industries as well.

Agnes Dudek holds a PhD Degree in applied physics. Having an overall experience of around 11 years. Prior to joining DNV having 7 years experience in scientific research covering satellite remote sensing, mesoscale weather forecast modelling and air pollution dispersion modelling and monitoring.

She has experience of around 4 years in validation and verification of numerous CDM projects.

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