



VALIDATION REPORT

“Roaring 40s Wind Farms (Khandke) Private Limited - Phase II” in India

REPORT No. 2009-0328

REVISION No.: 02

DET NORSKE VERITAS



VALIDATION REPORT

DET NORSKE VERITAS
CERTIFICATION AS

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Approved by: Michael Lehmann	Organisational unit: Climate Change Services
Client: Roaring 40s Wind Farms (Khandke) Private Limited	Client ref.: Mr. Mahesh Makhija

Project Name: Roaring 40s Wind Farms (Khandke) Private Limited – Phase II

Country: India

Methodology: ACM0002

Version: 9

GHG reducing Measure/Technology: Grid-connected electricity generation from renewable energy sources (wind energy)

ER estimate: 33 319 tCO₂e/annum

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 "Roaring 40s Wind Farms (Khandke) Private Limited – Phase II" project in India, as described in the PDD version 3 of 15 June 2010, meets all relevant UNFCCC requirements for the CDM and all relevant host Party criteria and correctly applies the baseline and monitoring methodology ACM0002 version 9. DNV thus requests the registration of the "Roaring 40s Wind Farms (Khandke) Private Limited – Phase II" project in India as a CDM project activity.

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Report title: "Roaring 40s Wind Farms (Khandke) Private Limited – Phase II" in India		
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Abbreviations

BM	Build margin
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CEA	Central Electricity Authority
CEF	Carbon Emission Factor
CER	Certified Emission Reduction
CL	Clarification request
CM	Combined margin
CO ₂	Carbon dioxide
CO ₂ e	Carbon dioxide equivalent
DNA	Designated National Authority
DNV	Det Norske Veritas
EIL	Enercon India Limited
GHG	Greenhouse gas(es)
GWP	Global Warming Potential
HSBC	Hongkong and Shanghai Banking Corporation Limited
INR	Indian Rupee
IPCC	Intergovernmental Panel on Climate Change
IRR	Internal rate of return
LoA	Letter of Approval
MEDA	Maharashtra Energy Development Agency
MERC	Maharashtra Electricity Regulatory Commission
MNES	Ministry of Non-conventional Energy Sources
MoEF	Ministry of Environment and Forests
MP	Monitoring Plan
MSEDCL	Maharashtra State Electricity Distribution Company Limited
WREG	Western Regional Electricity Grid
NGO	Non-governmental Organisation
O&M	Operations & Maintenance
ODA	Official Development Assistance
OM	Operating margin
PDD	Project Design Document
PLF	Plant load factor
PP	Project Participant
PPA	Power purchase agreement
UNFCCC	United Nations Framework Convention on Climate Change
WEG	Wind Energy Generator



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1 EXECUTIVE SUMMARY – VALIDATION OPINION

Det Norske Veritas Certification AS (DNV) has performed a validation of the “Roaring 40s Wind Farms (Khandke) Private Limited – Phase II” in India. The validation was performed on the basis of UNFCCC criteria for the Clean Development Mechanism and host Party criteria, 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 project participant is Roaring 40s Wind Farms (Khandke) Private Limited of India. The host Party India meets all participation requirements and the DNA of India has approved the project on 4 August 2008 and authorized the project participant. The DNA of India also confirmed via the letter of approval that the project assists in achieving sustainable development /2/.

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.

The project correctly applies ACM0002 “Consolidated baseline methodology for grid-connected electricity generation from renewable sources”, version 9 /3/. The monitoring methodology is ACM0002 version 9.

By generating electricity from wind energy sources and exporting to the western regional electricity grid, the project activity displaces an equivalent amount of grid power, which is pre-dominantly fossil fuel based. Hence 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 33 319 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 methodology ACM0002 version 9 has been applied correctly. The procedures for monitoring, operating and maintenance have been elaborated as per the requirement of the methodology. Adequate training and monitoring procedures have been implemented.

In summary, it is DNV’s opinion that the “Roaring 40s Wind Farms (Khandke) Private Limited – Phase II” project in India, as described in the PDD version 3 dated 15 June 2010 /1/, meets all relevant UNFCCC requirements for the CDM and all relevant host Party criteria and correctly applies the baseline and monitoring methodology ACM0002 version 9 /3/. DNV thus requests the registration of the “Roaring 40s Wind Farms (Khandke) Private Limited - Phase II” project in India as a CDM project activity.



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2 INTRODUCTION

Roaring 40s Wind Farms (Khandke) Private Limited has commissioned Det Norske Veritas Certification AS (DNV) to perform a validation of the “Roaring 40s Wind Farms (Khandke) Private Limited – Phase II” project in India. 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. The validation report has been amended pursuant to the completeness check by the CDM Secretariat and to make reference to the changes in the revised PDD.

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 and host Party 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 9 /3/. The validation was based on the recommendations in the Validation and Verification Manual /4/.

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



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3 METHODOLOGY

The validation 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 table outlines the documentation reviewed during the validation:

- /1/ Roaring 40s: CDM-PDD initial version 1 dated 1 September 2008, version 2 dated 22 December 2009 and version 3, dated 15 June 2010.
- /2/ Letter of Approval from DNA of India dated 4 August 2008.
- /3/ CDM Executive Board: ACM0002, “Consolidated baseline methodology for grid-connected electricity generation from renewable sources”, version 9.
- /4/ CDM Executive Board: “Validation and Verification Manual”, version 1 and 1.1.
- /5/ CDM Executive Board: Tool for demonstration and assessment of additionality, Version 5.2.
- /6/ Confirmation Letter from HSBC bank that project activity was evaluated against the interest rate of 12.5%, and that CDM revenue was considered as a part of cash flow while evaluating the project activity, dated 26 May 2009.
- /7/ Purchase Order placed for Wind Energy Generators on Enercon India Limited, dated 19 April 2007.
- /8/ CEA: CO₂ Baseline Database for the Indian Power Sector, version 1.1, December 2006.
www.cea.nic.in
- /9/ Detailed Project Report prepared by Roaring 40s Wind Farms (Khandke) Private Limited dated 2 March 2007.
- /10/ Minutes of meeting of board of director’s held on 19 March 2007.
- /11/ Rapid Environmental Impact Assessment carried out by Care Sustainability dated January 2007.
- /12/ Roaring 40s generation estimate from Enercon India limited dated 14 February 2007.
- /13/ Final budgetary offers received from the Enercon India Limited dated 28 December 2006.
- /14/ MSEDCL: Commissioning certificates of Wind Energy Generators dated 20 February 2008, 3 April 2008, 13 May 2008, 26 May 2008, 30 May 2008 and 2 June 2008.
- /15/ CDM Executive Board: Guidance on Investment Analysis, version 3.
- /16/ Maharashtra Electricity Regulatory Commission tariff order dated 24 Nov 2003.
- /17/ Financial analysis spreadsheet for roaring 40s phase II, dated 29 June 2010
- /18/ MEDA electricity generation data of Ahmednagar for year 2004-05.
- /19/ Electricity generation data of Tata 17 MW wind power project for year 2002-03 & 2004-05 available with project proponent.



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- /20/ <http://www.windpowerindia.com/statyear.html> to demonstrate wind capacity in state of Maharashtra at the time of start date of the project activity (19 April 2007) and project commissioning.
- /21/ Maharashtra wind power policy 1998 to demonstrate sales tax benefits for wind power projects.
<http://www.mercindia.org.in/pdf/Clarificatory%20Order-Wind%20Energy%20%5BCase%20Nos%207,%2015%20&%2016%20of%202004%5D.pdf>
- /22/ Detailed spreadsheet with CDM links of all CDM projects or projects under CDM pipeline to demonstrate common practice analysis dated 31 March 2008.
- /23/ A notice published in the local newspaper, *Sarvmat* on 29 October 2006 inviting stakeholders to comment on the project.
- /24/ Minutes of local stakeholder meeting conducted on 15 November 2006.
- /25/ HSBC Hedging Agreement with project proponent dated 5 July 2007.
- /26/ Roaring 40s Wind Farms (Khandke) Private Limited: Loan Payment sheet dated 28 March 2009.
- /27/ MEDA Clearance for the project activity: PGN-I/IC/Roaring 40s-Ph-IV/6.4 MW/08-09/2544 dated 5 March 2008.
- /28/ Declaration letter from Enercon India Limited for Stakeholder consultation for the project activity dated 8 October 2009.
- /29/ MEDA Infrastructure refund document for refund of revenue spent in building power evacuation facility.
- /30/ CDM consulting agreement signed between project proponent and Enercon India Limited dated 23 February 2007.
- /31/ Decision to implement the 50.4 MW project in three phases in view of the difficulty in getting the nodal agency clearance from MEDA, 15 October 2007.
- /32/ Receipt of the nodal agency clearance from MEDA for Roaring 40s phase II, 5 May 2008.
- /33/ The presentation on project activity of Roaring 40s Phase II to DNA of India, 30 June 2008.
- /34/ Income Tax Act 1961, sourced from Income Tax Department, Ministry of Finance.
<http://law.incometaxindia.gov.in/TaxmannDit/DisplayPage/dpage1.aspx>
- /35/ CDM Executive Board: Tool to calculate the emission factor for an electricity system, version 2.
- /36/ Reserve Bank of India: Weekly Statistical Supplement – Cash Reserve Ratio and Interest Rates, dated 30 March 2007
<http://www.rbi.org.in/scripts/WSSViewDetail.aspx?TYPE=Basic&PARAM1=03/30/2007>
- /37/ The Ministry of Environment and Forests (MoEF), India: Environment Impact Notification S.O. 1533 (<http://envfor.nic.in/legis/eia/so1533.pdf>) dated 14 September 2006
- /38/ Warranty, operations and maintenance agreement with Enercon (India) Limited, dated 23 April 2007
- /39/ Confirmation Letter from HSBC bank that the project due diligence was carried out at a



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project cost of INR 3 000 million and the PLF of 21.07%, dated 26 February 2010.
/40/ Guidelines for the reporting and validation of plant load factors, version 1, EB 48, Annexure 11

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:

- Change in the version of the applied methodology
- Change in start date of crediting period.
- Changes to monitoring plan
- Change in the version of CEA data used to determine CM
- Change in use of CO₂ baseline database for the Indian power sector, version 3 to version 1.1 and the consequent changes in the CER estimation
- Change in investment cost from 882 INR million to INR 1021.85 million.

3.2 Follow-up Interviews with Project Stakeholders

On 23-24 October 2009, DNV conducted the site visit of the project at Ahmednagar, to resolve the validation issues. Representative of the project participant and Enercon India Limited (responsible for operation & maintenance) were interviewed. The main topics of the interviews are summarized in Table 1:

Table 1 Interview topics

Name	Organization	Topic
Mr. Sanjay Pawar	Roaring 40s	➤ Financials of the project activity
Manager-Commercial (Renewables)	Wind Farms (Khandke) Private Limited	➤ Environmental compliance
		➤ Estimated emission reductions
		➤ Project additionality
Mr. Puneet Katyal , Head-CDM, EIL		➤ Stakeholders consultation process
Mr. Himanshu Bhatnagar, CDM-Corporate, EIL	Enercon India Limited (EIL)	➤ Technology applied and operational lifetime
Mr. Chinchole, site incharge, EIL		➤ Monitoring and reporting procedures
Mr. Rohit Joshi CDM-Corporate, EIL		➤ Calibration, internal audit and corrective action procedures
Ms. Sapna Pednekar CDM-Corporate, EIL		➤ Provisions for training, operation and maintenance

3.3 Resolution of Outstanding Issues

The objective of this phase of the validation was to resolve any outstanding issues which needed be clarified prior to DNV's positive conclusion on the project design. In order to



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ensure transparency a validation protocol was customised for the project. The protocol shows in transparent manner 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 three tables. The different columns in these tables are described in the figure below. The completed validation protocol for the “Roaring 40s Wind Farms (Khandke) Private Limited – Phase II” is enclosed in Appendix A to this report.

Findings established during the validation can either be seen as a non-fulfilment of CDM criteria or where a risk to the fulfilment of project objectives is identified. Corrective action requests (CAR) are issued, where:

- mistakes have been made with a direct influence on project results;
- CDM and/or methodology specific requirements have not been met; or
- there is a risk that the project would not be accepted as a CDM project or that emission reductions will not be certified.

A request for clarification (CL) may be used where additional information is needed to fully clarify an issue.

3.4 Internal Quality Control

The final validation report underwent a technical review before requesting registration of the project activity. The technical review was performed by a technical reviewer qualified in accordance with DNV’s qualification scheme for CDM validation and verification.

3.5 Validation Team

The validation team consisted of the following personnel:

<i>Role/Qualification</i>	<i>Last Name</i>	<i>First Name</i>	<i>Country</i>	<i>Type of involvement</i>					
				Desk review	Site Interviews	Reporting	Supervision of work	Technical review	Expert input
CDM validator / technical team leader	Biswas	Soumik	India	√		√	√		
GHG auditor	Prabhu	Ravi Kumar	India	√	√	√			
CDM validator (with relevant working experience)	Tang	Zhiang	China	√		√			√
Technical reviewer (draft)	Kakaraparthi	Venketa Raman	India					√	



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Technical reviewer (final)	Yang	Weidong	USA					√	
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The qualification of each individual validation team member is detailed in Appendix B to this report.

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), a Corrective Action Request (CAR) of risk or non-compliance with stated requirements or a request for Clarification (CL) where further clarifications are needed.</i>

Validation Protocol Table 2: Requirement checklist				
Checklist Question	Reference	Means of verification (MoV)	Comment	Draft and/or Final Conclusion
<i>The various requirements in Table 2 are linked to checklist questions the project should meet. The checklist is organised in different sections, following the logic of the large-scale PDD template, version 03 - in effect as of: 28 July 2006. Each section is then further sub-divided.</i>	<i>Gives reference to documents where the answer to the checklist question or item is found.</i>	<i>Explains how conformance with the checklist question is investigated. Examples of means of verification are document review (DR) or interview (I). N/A means not applicable.</i>	<i>The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached.</i>	<i>This is either acceptable based on evidence provided (OK), or a corrective action request (CAR) due to non-compliance with the checklist question (See below). A request for clarification (CL) is used when the validation team has identified a need for further clarification.</i>

Validation Protocol Table 3: Resolution of Corrective Action and Clarification Requests			
Draft report clarifications and corrective action requests	Ref. to checklist question in table 2	Summary of project owner response	Validation conclusion
<i>If the conclusions from the draft Validation are either a CAR or a CL, these should be listed in this section.</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 during the communications with the validation team should be summarised in this section.</i>	<i>This section should summarise the validation team's responses and final conclusions. The conclusions should also be included in Table 2, under "Final Conclusion".</i>

Figure 1: Validation protocol tables



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4 VALIDATION FINDINGS

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

The validation findings relate to the project design as documented and described in the final project design documentation dated 22 December 2009 /1/.

4.1 Participation Requirements

The project participant is Roaring 40s Wind Farms (Khandke) Private Limited of India. The project is proposed as a unilateral project and no project proponent from any Annex I Party has yet been identified. The host Party India meets all the requirements for participating in a CDM project. It has been cross checked from the CDM India website (<http://cdmindia.nic.in/cdmindia/projectList.jsp?search=search>) that the project has indeed been approved by the DNA of India. The Ministry of Environment and Forests, the DNA of India has approved the project with a letter of approval dated 4 August 2008, which also confirms that the project assists in achieving sustainable development in India /2/.

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 participant had initially designed to construct the project activity “Roaring 40s Wind Farms (Khandke) Private Limited” as a 50.4 MW wind farm in the state of Maharashtra, India. Hence an initial PDD for the project was webhosted for 50.4 MW capacity on UNFCCC website on 7 June 2007. The DNA of India approval is conditional upon the submission of clearances from Maharashtra Energy Development Agency (MEDA: nodal agency for development of renewable energy in the state of Maharashtra), which can only be achieved once the land acquisition for all phases will be completed. The project proponent thus decided to develop all three phases of 16.8 MW, 19.2 MW and 14.4 MW capacities respectively as separate CDM projects, so that the DNA approval can be secured in phases and CDM registration of project activities can be achieved timely.

The 19.2 MW project activity (phase II) consists 24 wind energy generators (WEGs) each of 800 kW rating, in the Agadgaon, Ratadgaon, Ranjani, Balewadi and Pimpalgaon Ghat villages in Khandke Taluk, Ahmednagar District of Maharashtra. All the WEG's in the project activity have been supplied by Enercon India Limited (EIL), who is also responsible for the operation, maintenance and management of the project. The energy generated will be supplied to the western grid of India via the Maharashtra state electricity grid. By the implementation of the project activity, energy generated using renewable energy will displace equivalent energy generation from the fossil fuel dominated western grid. The project is expected to generate 35.43 GWh of energy per annum at a plant load factor of 21.07%, which has been verified from the generation data provided by Enercon India Limited (technology supplier) for the project activity /12/.

The start date of the project activity has been identified as 19 April 2007, which is the date of purchase order placed for the wind turbines of the project activity, and was evidenced from the purchase order document /7/. The lifetime of the project is 20 years which is reasonable



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for a WEG. The project has selected a fixed crediting period of 10 years with the start date of the crediting period to be 31 March 2010 (or on the date of registration of the CDM project activity, whichever is later). The project is expected to result in 33 319 tCO₂e emission reductions per annum over the fixed crediting period.

The project description is to the consideration of DNV complete and accurate.

4.3 Baseline Determination

The project correctly applies the approved baseline methodology ACM0002, version 9 “*Consolidated baseline methodology for grid-connected electricity generation from renewable sources*” /3/. 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 western grid of India /7/.
- The project activity is connected to the western grid of India, and the system boundaries are clearly identified and information on the characteristics of this grid is available /8/.
- The project does not involve an on-site switch from fossil fuels to a renewable source /27/.

The project being a wind energy generation activity, the rest of the applicability conditions as mentioned in the methodology do not apply to this project activity.

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, as discussed later (section B.4.4), the implementation of the project activity without CDM benefits faces investment barriers and hence the selected baseline scenario is 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. The selection of the baseline is in line with the EB guidance provided in “*Validation and Verification Manual*”, version 1 /4/, which states that incase the applied methodology prescribes the baseline scenario no further analysis is required.

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 Maharashtra state electricity grid which forms a part of the integrated western grid, the baseline for this project activity is a function of the generation mix of the western grid. The selection of the western grid 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 western grid of India has been calculated at 0.94022 tCO₂e/MWh and is fixed *ex ante* for the entire fixed crediting period. The CM emission factor value has been sourced from data by the Central Electricity Authority (CEA) of the Ministry



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of Power, Government of India. 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 /8/. 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. 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 2002-03, 2003-04 and 2004-05.. BM is calculated *ex ante* based on the 20% most recent capacity additions in the western grid based on net generation for the year 2004-05 /8/. The operating margin has been determined to be 0.99455 tCO₂e/MWh and the build margin to be 0.77722 tCO₂e/MWh. The grid emission factor is sourced from version 1.1 of the CEA database, the latest data available at the start of the validation (7 June 2007) of the project before debundling. The selected sources and gases are justified for the project activity.

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

4.4 Additionality

The additionality of the project activity is demonstrated by applying the “Tool for demonstration and assessment of additionality”, version 5.2 /5/, and primarily through a financial analysis.

4.4.1 Prior CDM consideration and continued action to secure CDM status

The start date of the project activity has been identified as 19 April 2007, which is the date of purchase order placed for the wind turbines of the project activity, and was evidenced from the purchase order document /7/. The project activity was commissioned in phases starting from 18 February 2008 and ending on 28 May 2008 /14/.

Prior CDM consideration: The CDM consideration for the project activity has been demonstrated from the following milestones.

- On 23 February 2007 project proponent signed CDM agreement with Enercon India Limited /30/.
- The Board of Directors of Roaring 40s Wind Farms (Khandke) Private Limited approved the project activity during the meeting dated 19 March 2007 /10/. The decision has been taken based on the Detailed Project Report which indicates that the project activity is financially attractive with CDM revenue. The detailed project report



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for the project activity dated 2 March 2007 /9/ has been verified. The relevance of the input parameters used in the financial analysis of the DPR is found to be appropriate since the DPR has been prepared based on the final budgetary offer received from the WTG supplier /13/ dated 28 December 2006.

- CDM consideration for the project was also verified from the confirmation letter from HSBC bank (lender for the project activity) dated 26 May 2009 which states that Bank had considered the CDM revenue as a part of project cash flows /6/.

Continued action to secure CDM status:

- The PDD for the initial 50.4 MW project was webhosted for global stakeholder consultation process on 7 June 2007, within a period of less than 2 months from the starting date of the project activity, 19 April 2007.
- In view of the difficulty in getting the nodal agency clearance from MEDA, project proponent decided to implement the 50.4 MW project in three phases on 15 October 2007 /31/.
- The project activity received the nodal agency clearance from MEDA on 5 May 2008 /32/.
- The project proponent was invited by DNA of India to give a presentation on project activity of Roaring 40s Phase II on 30 June 2008, /33/.
- On 4 August 2008 project proponent received the Letter of Approval from DNA of India /2/.
- The PDD for the present project activity of 19.2 MW was webhosted for global stakeholder consultation process on 16 October 2008.

The above sequence of events establishes that real actions were taken to secure CDM status for the project in parallel with its implementation.

4.4.2 Identification of alternatives to the project activity

Step 1: 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, 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. However, as discussed below (section 4.4.3), the project without CDM benefits faces barriers in implementation.

4.4.3 Investment analysis: Choice of approach

The project proponent has selected benchmark analysis for demonstrating additionality. 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 neither the simple cost approach nor the investment comparison approach is suitable for the project. Therefore the selected benchmark analysis is considered suitable for demonstrating the additionality of the project.

4.4.4 Investment analysis: Benchmark selection

The benchmark applied by the project proponent at the time of decision making (for the initial 50.4 MW project) was the post tax 16% equity IRR as per the Maharashtra Electricity



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Regulatory Commission (MERC) of India to determine the tariff /16/ and has been verified by DNV from the detailed project report for the project activity /9/. In view of the EB guidelines via EB 40 paragraph 40 that this benchmark is applicable for tariff calculation and hence cannot be used as a benchmark for financial evaluation of project activity, the project participant has assessed the financial additionality of the project against a revised benchmark. Therefore the PP has selected the lending rate of 12.5% applicable for the project activity as the benchmark, which is deemed conservative than the 16% used in the DPR. The applicable lending rate has been verified from the commercial lending rate of 12.5% quoted by HSBC (lender for the project activity), in the hedging agreement and actual loan payment sheet /25/ /26/. Further, the lending rate of HSBC (12.5%) was cross checked with the lending rate of the State Bank of India (12.75%) /36/, the largest public sector bank in India and the rate of HSBC is deemed conservative. Also the investment decision for the project activity was taken based on the DPR of 2 March 2007 /9/, which clearly discusses that the loan for the project activity will be provided by HSBC bank. It has been verified by DNV from confirmation letter provided by HSBC bank dated 26 May 2009 /6/ that the project activity was evaluated against applied benchmark of 12.5%.

The commercial lending rate applicable for the project has been considered as the benchmark for the project in-line with Paragraph 6(b) of the additionality tool /5/, which states that benchmarks can be derived from *“Estimates of the cost of financing and required return on capital (e.g. commercial lending rates and guarantees required for the country and the type of project activity concerned)”*. The applied benchmark is also as per the paragraph 12 of the guidance for investment analysis /15/ - *commercial lending rates are appropriate benchmarks for project IRR*.

This is the first such investment by the project proponent, accordingly there are no previous investment decisions available for cross checking the benchmark. Further, paragraph 13 of the guidance on investment analysis /15/ states that: *in the case of projects which could be developed by an entity other than the project proponent, the benchmark should be based on publicly available data sources*. The prime lending rate published by the reserve Bank of India (India's central bank) at the time of decision making was 12.25 to 12.5% /36/, which is comparable with the benchmark rate of 12.5% /6/ considered for investment analysis.

Further, principles of corporate finance stipulate that projects that generate rate of returns lower than the cost of debt are not considered as financially viable for investment. Therefore, the cost of debt represents the rate of return, below which no investment would take place. Thus, the benchmark selected is in conformity with Paragraph 110 of VVM /4/.

4.4.5 Investment analysis: Input parameters

The input parameters used in the investment analysis has been sourced from the DPR /9/ and have been cross checked with publicly available sources and actual invoices, in line with paragraph 109 of the VVM /4/.

The incentives from the Government of India for the renewable energy projects in the form of 10 year tax holiday is taken into consideration for the financial analysis.

Input parameter	Value applied	Source of input value used by DNV for verification	Source of input value used by DNV for cross checking
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used in the financial analysis			
Project cost	INR 1021.85 million	Detailed Project Report /9/ had estimated a cost of INR 2846 million for 50.4 MW, which included debt service reserve account (DSRA) margin, working capital margin and contingency items totalling INR 163.66 million. Since these costs are not directly linked to the project activity, INR 2682.34 million was used for the investment analysis. The proportional cost for 19.2 MW is INR 1021.85 million.	The value of order placed on Enercon (India) Limited for 50.4 MW project was verified to be INR 2554.7 million /7/. The proportional cost for 19.2 MW works out to INR 973.22 million, which forms 95.24% of the project cost.
O&M costs for second year	1.2% of the capital cost	Detailed Project Report /9/	O&M agreement entered into between the PP and EIL dated 23 April 2007 /38/: second year O&M cost- 1.2% of the capital cost.
Escalation in O&M costs	5% per annum	Detailed Project Report /9/	O&M agreement entered into between the PP and EIL dated 23 April 2007 /38/: escalation – 5% per annum.
Insurance charges	0.18% of the capital cost		MERC wind tariff order /16/, considered a normative 1.5% of the capital cost towards O&M and insurance charges during the first year. In the financial analysis, this amounts to 1.38%.
Tax calculations	Straight line depreciation @ 4.5%, for 20 years and 10% salvage in the last year. Corporate tax @ 33.99% and MAT @ 11.33%	Detailed Project Report /9/	Indian Income Tax Act 1961, Section 32 (Rule 5) Appendix 1 and Section 80-1A, paragraph 2.0, /34/.
PLF	21.07%	Detailed Project Report /9/	The letter from HSBC, Bank /39/, the lender to the project



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			activity confirms that the project due diligence was carried out at the PLF of 21.07%. This is in line with the guidance on PLF, EB 48 Annexure 11 /40/ paragraph 3(a), which states that “ <i>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.</i> ” The PLF was also cross checked against the MERC tariff order /16/, which uses normative PLF of 20% for tariff calculation
Debt: equity ratio	35:65	Detailed Project Report /9/	Loan agreement with HSBC: debt: equity ratio – 35:65 /6/, /25/.
Interest on loan Moratorium Tenure	12.5% 6 months 11 years	Detailed Project Report /9/	Loan agreement with HSBC: interest rate – 12.5%, loan tenure 11 years /6/.
Tariff	INR 3.5/kWh for the first year, escalated by INR 0.15/kWh per year up to the 13 th year and INR 2.34/kWh from 14 th year.	Detailed Project Report /9/	The tariff fixed by MERC wind tariff order /16/ for the projects commissioned after 2003 for 13 years was INR 3.5/kWh for the first year and for years 2 to 13, tariff is escalated by INR 0.15/kWh every year. Since MERC has adopted cost plus tariff policy, PP estimated the tariff for 14 th year onwards at INR 2.34/kWh considering 16% return on investment /17/. DNV verified that MERC tariff order of 2003 was valid at the time of decision making.
MEDA Infrastructure	Equal instalments		MEDA infrastructure refund document for refund of



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refund	for the years 1 to 5.		revenue spent in building power evacuation facility /29/.
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The input parameters were verified to be valid at the time of decision making and hence in line with the para 109 of VVM requirements, and section 6 of the Guideline on Investment Analysis, EB 41 Annexure 45, which states the “*Input values used in all investment analysis should be valid and applicable at the time of the investment decision taken by the project participant*”.

4.4.6 Investment analysis: Calculation and conclusion

The IRR calculations and assumptions provided in a spreadsheet are consistent with the DPR of 2 March 2007 /9/. The calculations were verified and found to be in line with EB’s guidance on investment analysis /15/. The assumptions used in the calculations are appropriate and have been verified by DNV. The project IRR of the project over 20 years is 8.87% without the income from CERs /17/. The project is therefore financially less attractive compared to the benchmark of 12.5% in the absence of CDM benefits. With CDM revenues, the project IRR improves to 12.68%, which is above the benchmark and thus makes the project feasible.

4.4.7 Investment analysis: 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 project cost, annual operation & maintenance costs, annual electricity generation and on-grid tariff were checked by calculating the variation necessary to reach the benchmark and then discussing the likelihood for that to happen.

Increase in generation: With an increase in generation by 25.55% (to 26.45% PLF) the project IRR touches the benchmark of 12.5% adopted by the project participant. The PLF of 21.07% considered in the financial analysis is based on the generation data provided by Enercon India Limited /12/. Moreover, the average PLF considered by Maharashtra Electricity Regulatory Commission (MERC) in its tariff order dated 24 November 2003 from group three projects (project commissioned after 2003) for the purposes of tariff working is only 20% /16/. The project activity is located in the district of Ahmednagar in Maharashtra where the observed historical PLF is 19.07% in the year 2004-05 /18/. However, maximum observed PLF in the area of project activity during the years 2002-03 and 2003-04 is 19.62%, based on the generation data of a large scale CDM project located in the same area /19/. Hence an increase of 25.55% in electricity generation to achieve a PLF of 26.45% is highly unlikely. Hence the PLF of 21.07% considered by the project participant for the IRR calculations is deemed reasonable.

Decrease in O & M cost: Even after 100% decrease in the O&M costs the IRR for the project activity is 10.63%, which is lower than the benchmark return. Hence this parameter has not been considered for the sensitivity analysis and this is deemed reasonable.

Increase in electricity tariff: The tariff considered for the project activity was based on Maharashtra Electricity Regulation commission tariff order dated 24 November 2003 /16/. As per MERC tariff order electricity tariff is fixed at INR 3.50/kWh with annual escalation of INR 0.15/kWh and is valid only for 13 years. Thereafter, it is clearly stated in the tariff order



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that the tariff is subject to revision at the end of the period. Therefore, any assumption on the tariff applicable from 14th year onwards is uncertain.

Assessment of accuracy of assumptions taken after year 13

In line with the CDM Executive Board guidance on investment analysis, the IRR analysis has been done for a time horizon of 20 years in the financial calculation sheet. There has been *no change* in the assumptions made for the IRR calculations except the tariff. The PPA is only for 13 years and hence the tariff of INR 2.34/kWh after 13th year has been used.

Electricity tariff after 13th year is estimated based on a "cost-plus" approach, i.e., based on the expected operating costs incurred in year 14 and return on equity. This is the approach followed by MERC /16/, in determining tariff and is justified as:

"The commission notes that in cost plus approach, which the commission has adopted for tariff proposal, rate per unit charged by such projects during initial period of 10 years is bound to be higher as during this period the project has various debt related obligations. However it is essential that the consumer is able to enjoy the benefit of cheaper power once all debt related obligations are paid off and project has virtually no variable costs".(Page no.14)

"The rate payable gets reduced after 10 years (i.e. after repayment of loan) so that the net average cost of energy gets reduced". (Page no.135)

"To ensure that developer does not remove the machine after availing higher purchase rate for 10 years, an agreement may be signed allowing MSEB to have second charge for first 10 years (when the lender institution shall have first charge on the machine) and subsequently MSEB shall have first charge for the balance 10 years". (Page no.141)

The above extracts from the tariff order of MERC /16/ indicate that the tariff will reduce after 13th year and even after considering base year tariff of INR 3.50/kWh without any annual escalation till 20 year the project IRR becomes 9.61% and is still well below the applied benchmark of 12.5% for the project activity. Further, the IRR improves only to 9.81% with the tariff of INR 3.85/kWh from the 14th year, which is a 10% increase over INR 3.5/kWh. There has been no change in any of the assumptions, while making the projections for 20 years except the tariff, the 'cost plus approach' adopted for determining the tariff from 14th year onwards is found reasonable. There has been no deviation from the accepted principles in making projections or computing IRR and that there are no arithmetical inaccuracies in the calculation of the Project IRR.

Decrease in Investment cost: With a decrease in investment cost by 20% the project IRR becomes 12.58% and thus exceeds the benchmark adopted by the project participant. However in DNV's opinion, a decrease of 20% in investment cost is deemed not to be realistic considering the fact that the project has been contracted on a turn key basis to Enercon India Limited by the project proponent Roaring 40s Wind Farms (Khandke) Private Limited and the actual project cost has been cross checked by DNV by reviewing the purchase order /7/. In DNV's opinion, the project cost is not likely to have any increase or decrease. In the worst case scenario, there can only be an escalation in the project cost (which decreases the IRR) and not a decrease. Hence this parameter has not been considered for the sensitivity analysis and this is deemed reasonable.



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The above discussion establishes that the project activity is financially not viable without the benefits from CDM.

4.4.8 Common Practice Analysis

The state of Maharashtra has been considered for assessing the common practice. Since the policies and tariff regime is consistent throughout the state of Maharashtra, DNV considers the selection of the region is appropriate. Wind project capacity additions after March 2003 has been considered for the common practice analysis. In the state of Maharashtra, till the year 2002-03 the installation of wind based power projects were at peak due to sales tax benefits of INR 10 million per MW per year for a period of 5 years from the date of commissioning as per Maharashtra wind power policy 1998 /21/, whereas in order to make investment in wind attractive on a stand alone basis, MERC had withdrawn the sales tax benefits from wind power projects in March 2002. Hence it is deemed reasonable that wind power projects installed prior to March 2002 are not considered for common practice analysis. At the time of investment decision of the proposed project, the total installed wind power capacity in Maharashtra was verified to be 1 001 MW /20/ and at the time of commissioning of the proposed project the installed capacity in Maharashtra was verified at 1 756.38 MW /20/. In the period 2003-2008 a total capacity of 1359.875 MW was added out of which 476 MW capacity was added from wind projects with capacity more than 15 MW size (comparable size), and this entire 476 MW capacity is under CDM pipeline and detailed spreadsheet with CDM links of all these projects has been verified by DNV /22/.

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

4.5 Monitoring

The monitoring plan is in accordance with the monitoring methodology ACM0002, version 9 /3/. The monitoring plan will give opportunity for real measurement of emission reductions achieved. Since the project is a wind energy generation activity, no indicators have been defined regarding project emissions. Leakage accounting has not been considered for the project since the renewable energy technology equipment used is new equipment and not transferred from another activity.

Monitoring of sustainable development indicators is not required by the Indian DNA. There are no environmental impacts due to the project activity.

4.5.1 Parameters determined ex-ante

The combined margin emission coefficient for the western grid of India has been calculated at 0.94022 tCO₂e/MWh and is fixed *ex-ante* for the entire crediting period. The CM emission factor value 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 for the power sector in India based on detailed authenticated information obtained from all operating power stations in the country /8/. This CO₂ baseline database provides information about the OM and BM factors of all the regional electricity grids in India, which has been established as per the *Tool to calculate the emission factor for an electricity system* /35/. 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



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emissions per electricity unit over a three year period of 2002-03, 2003-04 and 2004-05 /8/. BM is calculated *ex-ante* based on the 20% most recent capacity additions in the grid based on net generation for the year 2004-05 /3/. The operating margin has been determined to be 0.99455 tCO₂e/MWh and the build margin to be 0.77722 tCO₂e/MWh /8/.

4.5.2 Parameters monitored ex-post

The net electricity supplied to the grid by the project by the WEGs to the integrated western grid will be monitored continuously. The net electricity exported to the grid will be reported on monthly basis and cross-checked with the electricity sales receipt. All data will be archived for 2 years after the 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.

4.5.3 Management system and quality assurance

The responsibility of overall project management lies with Roaring 40s Wind Farms (Khandke) Private Limited. The project operation and maintenance is outsourced to Enercon India Limited. The main and check meters at the uploading station are two way meters with an accuracy class of 0.5% 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. These meters are periodically 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.

4.6 Estimate of GHG Emissions

The GHG emission calculations are well documented in line with the consolidated baseline and monitoring methodology ACM0002, version 9 /3/. 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 western electricity grid, the baseline emissions have been estimated based on net electricity supplied to the grid by the project activity and the combined margin emission factor of western grid. 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 CM for the western grid of India has been calculated at 0.94022 t CO₂e/MWh in section 4.5.1 and is fixed *ex-ante* for the entire fixed crediting period. The project is expected to result in emission reductions of 33 319 tCO₂ per year during the fixed crediting period.

The baseline emission estimates can be replicated using the data and parameter values provided in the PDD. The data sources mentioned have been verified by DNV. The calculations are transparently documented and verified to be correct.

4.7 Environmental Impacts

As per the Ministry of Environment and Forests (MoEF), India Environment Impact Notification S.O. 1533 dated 14 September 2006 /37/, wind power projects are not covered under any Schedule and thus Environmental Impact Assessment is not required for the project activity. However, Enercon India Limited, the equipment supplier and operation and maintenance contractor for the wind farm has voluntarily conducted a rapid environmental impact assessment study for the wind power project in the project activity area. Enercon India Limited has appointed Care Sustainability to conduct rapid environmental impact assessment study for the wind power project to assess the impact of the project on the local environment



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/11/. The project is not likely to create any adverse environmental effects /11/. The project complies with environmental regulations in India. A detailed description of rapid environmental impact assessment study has been sufficiently discussed in PDD.

4.8 Comments by Local Stakeholders

The local stakeholders were invited through local newspaper advertisement in *Sarvmat* on 29 October 2006 /23/ by Enercon India Limited, the equipment supplier and operation and maintenance contractor for the project activity. Enercon India Limited has also conducted a local stakeholder meeting in Ahmednagar District on 15 November 2006 for the 50.4 MW project of the project proponent /24/. The authorities of the local administration, local communities, farmers, officials of Gram Panchayat and contractors were invited to comment on the project activity. A detailed description of stakeholder consultation has been provided in Appendix 2 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 carried out adequately.

4.9 Comments by Parties, Stakeholders and NGOs

The PDD of 1 September 2008 was made publicly available on UNFCCC website <http://cdm.unfccc.int/Projects/Validation/DB/SFZTYJXR9I6GDZZW4MQ4RPE04UO7D1/vi ew.html> and Parties, stakeholders and NGOs were invited to provide comments through the CDM website during a 30 days period from 16 October 2008 to 14 November 2008. No comments were received during this period.

APPENDIX A

CDM VALIDATION PROTOCOL

Table 1 Mandatory Requirement for Clean Development Mechanism (CDM) Project Activities

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

Requirement	Reference	Conclusion
with Kyoto Protocol Article 5 and 7.		
About additionality		
10. Reduction in GHG emissions shall be additional to any that would occur in the absence of the project activity, i.e. a CDM project activity is additional if anthropogenic emissions of greenhouse gases by sources are reduced below those that would have occurred in the absence of the registered CDM project activity.	Kyoto Protocol Art. 12.5c, CDM Modalities and Procedures §43	CL3 CL4 OK
About forecast emission reductions and environmental impacts		
11. The emission reductions shall be real, measurable and give long-term benefits related to the mitigation of climate change.	Kyoto Protocol Art. 12.5b	OK
For large-scale projects only		
12. Documentation on the analysis of the environmental impacts of the project activity, including transboundary impacts, shall be submitted, and, if those impacts are considered significant by the project participants or the Host Party, an environmental impact assessment in accordance with procedures as required by the Host Party shall be carried out.	CDM Modalities and Procedures §37c	OK
About stakeholder involvement		
13. Comments by local stakeholders shall be invited, a summary of these provided and how due account was taken of any comments received.	CDM Modalities and Procedures §37b	OK
14. Parties, stakeholders and UNFCCC accredited NGOs shall have been invited to comment on the validation requirements for minimum 30 days, and the project design document and comments have been made publicly available.	CDM Modalities and Procedures §40	OK
Other		
15. The baseline and monitoring methodology shall be previously approved	CDM Modalities and Procedures §37e	OK

Requirement	Reference	Conclusion
by the CDM Executive Board.		
16. A baseline shall be established on a project-specific basis, in a transparent manner and taking into account relevant national and/or sectoral policies and circumstances.	CDM Modalities and Procedures §45c,d	OK
17. The baseline methodology shall exclude to earn CERs for decreases in activity levels outside the project activity or due to force majeure.	CDM Modalities and Procedures §47	OK
18. The project design document shall be in conformance with the UNFCCC CDM-PDD format.	CDM Modalities and Procedures Appendix B, EB Decision	OK
19. 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*	COMMENTS	Draft Concl.	Final Concl.
A. General Description of Project Activity <i>The project design is assessed.</i>					
A.1. Project Boundaries <i>Project Boundaries are the limits and borders defining the GHG emission reduction project.</i>					
A.1.1. Are the project's spatial boundaries (geographical) clearly defined?	/1/	DR/I	The project activity sites are located at Agadgaon, Ratadgaon, Ranjani, Balewadi, and Pimpalgaon Ghat villages in Khandke Taluk in the district of Ahmednagar in Maharashtra. The name of the village shall be clearly indicated against the WEG number in the PDD. The PP is also requested to rectify the number of WEGs as mentioned in Annex-4 of the PDD as it does not match with rest of the PDD.	CL4	OK
A.1.2. Are the project's system boundaries (components and facilities used to mitigate GHGs) clearly defined?	/1/	DR	The projects system boundaries include the 19.2 MW wind power project comprising of 24 numbers of Wind Energy Generators (WEG) of Enercon make, each of 800 kW capacity, the metering, switchgear, transformers etc and the western regional electricity grid to which the plant is connected.		OK
A.2. Participation Requirements <i>Referring to Part A, Annex 1 and 2 of the PDD as well as the CDM glossary with respect to the terms Party, Letter of Approval, Authorization and Project</i>					

* MoV = Means of Verification, DR= Document Review, I= Interview
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CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
<i>Participant.</i>					
A.2.1. Which Parties and project participants are participating in the project?	/1/	DR/I	India is the host Party in the project activity and the project participant is Roaring 40s Wind Farms (Khandke) Private Limited. It needs to be clarified as to whether Tata Power (mentioned in the section B.5 of the PDD) and Enercon are project participants in the project activity. No Annex-1 Party project participant has been identified as yet.	CL-2	OK
A.2.2. Have all involved Parties provided a valid and complete letter of approval and have all private/public project participants been authorized by an involved Party?	/1/	DR	Host Country Approval letter needs to be provided for verification.	CAR-1	OK
A.2.3. Do all participating Parties fulfil the participation requirements as follows: - Ratification of the Kyoto Protocol - Voluntary participation - Designated a National Authority	/1/	DR	India fulfils the participation requirements, having ratified the Kyoto Protocol on the 26 August 2002 and has established a DNA - National Clean development Mechanism Authority, Ministry of Environment and Forests (MoEF). The voluntary participation of the project needs to be confirmed against the letter of approval from the DNA	CAR-1	OK
A.2.4. Potential public funding for the project from Parties in Annex I shall not be a diversion of official development assistance.	/1/	DR/I	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*	COMMENTS	Draft Concl.	Final Concl.
A.3. Technology to be employed <i>Validation of project technology focuses on the project engineering, choice of technology and competence/ maintenance needs. The validator should ensure that environmentally safe and sound technology and know-how is used.</i>					
A.3.1. Does the project design engineering reflect current good practices?	/1/	DR/I	The WEGs installed under the project has been designed and commissioned by Enercon India Limited. The salient features of the E-48 models implemented under the project activity include gearless construction, variable speed and pitch functions and independent braking technology. The project design thus reflects current good practice.		OK
A.3.2. Does the project use state of the art technology or would the technology result in a significantly better performance than any commonly used technologies in the host country?	/1/	DR/I	The technology is already available and widely used in the host country.		OK
A.3.3. Does the project make provisions for meeting training and maintenance needs?	/1/	DR/I	Since the project operation and maintenance are contracted to Enercon, the suppliers of the machines, no special training needs are anticipated.		OK
A.4. Contribution to Sustainable Development <i>The project's contribution to sustainable development is assessed.</i>					
A.4.1. Has the host country confirmed that the project assists it in achieving sustainable development?	/1/	DR	The letter of approval from the DNA confirming that the project assists in achieving sustainable development needs to	CAR-1	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			be submitted.		
A.4.2. Will the project create other environmental or social benefits than GHG emission reductions?	/1/	DR	The project will help to decrease the dependence on fossil fuels for power generation. The project activity will create employment opportunities during construction and also operation phases.		OK
B. Project Baseline <i>The validation of the project baseline establishes whether the selected baseline methodology is appropriate and whether the selected baseline represents a likely baseline scenario.</i>					
B.1. Baseline Methodology <i>It is assessed whether the project applies an appropriate baseline methodology.</i>					
B.1.1. Does the project apply an approved methodology and the correct version thereof?	/1/	DR	Yes. The approved methodology – ACM0002 Version 7 - “Consolidated baseline methodology for grid-connected electricity generation from renewable sources” has been applied. The project needs to be submitted for registration by August 2009, with this version of the methodology.		OK
B.1.2. Are the applicability criteria in the baseline methodology all fulfilled?	/1/	DR/I	Yes, the project activity meets the applicability criteria of ACM0002 and is justified as under : <ul style="list-style-type: none"> The project activity involves grid connected electricity generation using renewable source (wind based) and 		OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			<p>provides power to the MSETCL grid.</p> <ul style="list-style-type: none"> The geographic and system boundaries for the relevant electricity grid has been clearly identified to be the western electricity grid of India. <p>The project activity will displace fossil fuel based power generation that would otherwise have been generated in the MSETCL grid by already connected power plants or by new capacity additions in the grid.</p>		
B.2. Baseline Scenario Determination <i>The choice of the baseline scenario will be validated with focus on whether the baseline is a likely scenario, and whether the methodology to define the baseline scenario has been followed in a complete and transparent manner.</i>					
B.2.1. What is the baseline scenario?	/1/	DR	The baseline scenario is that in the absence of the project activity, equivalent amount of energy would have been generated from the existing grid connected plants or newer plants by using fossil fuels in the western grid to which the project activity is connected.		OK
B.2.2. What other alternative scenarios have been considered and why is the selected scenario the most likely one?	/1/	DR/I	No other alternatives have been considered as the methodology states that for renewable power projects the baseline 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	CAR-2	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			reflected in the combined margin (CM) calculations described in the “Tool to calculate the emission factor for an electricity system. It needs to be justified as to why the alternative of fossil fuel based power plant or a hydro is not a feasible alternative and how /why this alternative selected in the additionality step 1a has been eliminated.		
B.2.3. Has the baseline scenario been determined according to the methodology?	/1/	DR	The baseline selection is not as per the methodology. Please refer to B.2.2 As per the methodology, the baseline should be equivalent amount of electricity generation from existing and future grid connected power plants. As the project activity exports power to the western regional grid, the emission factor of the western regional grid has been considered and sourced from the official published CEA website.	CAR-2	OK
B.2.4. Has the baseline scenario been determined using conservative assumptions where possible?	/1/	DR	Yes.		OK
B.2.5. Does the baseline scenario sufficiently take into account relevant national and/or sectoral policies, macro-economic trends and political aspirations?	/1/	DR	Yes, national and sectoral policies have been taken into consideration for selecting the baseline scenario.		OK
B.2.6. Is the baseline scenario determination compatible	/1/	DR	Yes.		OK

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CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
with the available data and are all literature and sources clearly referenced?					
B.2.7. Have the major risks to the baseline been identified?	/1/	DR	There are no major risks perceived to the proposed baseline.		OK
B.3. Additionality Determination <i>The assessment of additionality will be validated with focus on whether the project itself is not a likely baseline scenario.</i>					
B.3.1. Is the project additionality assessed according to the methodology?	/1/	DR/I	<p>Yes, the project's additionality is demonstrated using "Tool for the demonstration and assessment of additionality", version 5.</p> <p>Step 1a: Three alternatives to the project activity have been considered. These are i) project not undertaken as a CDM project activity ii) Setting up of equivalent capacity of fossil fuel or hydro power based plants and supply electricity to the Maharashtra grid and ii) continuation of current scenario without the project activity.</p> <p>While the three alternatives have been given and it is stated that all three are in compliance with the regulation, it needs to be justified as to why the alternative of fossil fuel/hydro has not been considered further and how it has been eliminated.</p> <p>Step 1b: All the alternatives are in</p>	CAR-2	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			<p>compliance with the laws and regulations of India.</p> <p>The alternatives have not been discussed further to arrive at the baseline scenario. The baseline scenario needs to be clearly brought out with proper justification.</p> <p>Step 2: Investment analysis:</p> <p>To demonstrate the additionality of the project, PP has chosen Option III – benchmark analysis. The benchmark chosen is the 12.5% post tax project IRR, since the interest rate applicable to the project activity is 12.5%. The project IRR of the project activity without CDM revenues is 10.69% which is lower than the benchmark selected. The IRR improves to 13.31 % with CDM revenues.</p> <p>A sensitivity analysis has been conducted for 10% variations in PLF, which shows that IRR is not crossed.</p>	CAR-2	OK
			<p>However, PP is requested to justify the reasonableness of the benchmark selected and provide proof for the interest rate applicable to the project.</p>	CL-3	OK
			<p>The spread sheets for IRR and sensitivity analysis need to be provided for verification. Proof for project cost, O&M costs and</p>	CL-4	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			<p>interest rate on loans needs to be provided. Further, sensitivity analysis needs to be done for investment and O&M costs also. It also needs to be demonstrated at what point of variation the project IRR crosses the benchmark and why this is not plausible.</p> <p>While PP has taken the PLF of 20%, as per MERC order, it needs to be justified why it cannot be higher. The PP is requested to provide the PLF guaranteed by Enercon and the micrositing details for the project.</p> <p>To conclude on the additionality, the following details are also requested:</p> <ul style="list-style-type: none"> • Whether any incentives are offered by the Government of Maharashtra for wind power generation? Have these been considered in the financial analysis? • Copy of PPA to be furnished. • All statutory clearances need to be provided for verification. • Salvage value of the machines at the end of life to be considered in financials. <p>The PP is further requested to note that since the decision to implement the project was based on information available before the start of the project activity, purchase orders, O&M, PPA was not available at the time of decision making. Thus these documents</p>		

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			<p>cannot be considered as the basis for the financial analysis. The project proponent is requested to provide the basis documents for the financial analysis that were available at the time of the investment decision.</p> <p>Step 3: This step has not been selected</p> <p>Step 4: Common practice analysis:</p> <p>It has been demonstrated that as per the data the energy generation by wind power plants in 2004-05 was 495.36 GWh as against the total generation of 82075.33 GWh. This works out to be around 0.6% and cannot be considered as a common practice scenario in the region. Apart from this, it has been demonstrated that as on 31 March 2005 of the total capacity of 13368.59 MW, only 411.2 MW is wind power projects in Maharashtra.</p> <p>The common practice analysis provided at present is generic. It should include all the projects of similar capacity in Ahmednagar area, number of projects registered under CDM or in the process of validation and a justification as to how the project activity is different from the other non CDM projects that are operating in the region. Further, step 4b of additionality tool needs be described in the PDD.</p>	CL-5	OK
B.3.2. Are all assumptions stated in a transparent and conservative manner?	/1/	DR	Please refer to B.3.1	CL-3 CL-4	OK

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B.3.3. Is sufficient evidence provided to support the relevance of the arguments made?	/1/	DR	Please refer to B.3.1	CL5 CL3 CL4 CL5	OK
B.3.4. If the starting date of the project activity is before the date of validation, has sufficient evidence been provided that the incentive from the CDM was seriously considered in the decision to proceed with the project activity?	/1/	DR	The starting date of the project activity is stated as 19 April 2007, date of placement of purchase order for WEGs. The project proponent is requested to provide evidence for the starting date. Since the start date is before the date of validation, serious consideration of incentives from CDM is to be demonstrated by the board note etc. Chronological order of events from the conceptualization of the project activity till approaching the DOE for validation along with reasons for delay need to be provided with supporting evidence. The chronological order also needs to be described under section B.5 of PDD.	CL6	OK
B.4. Calculation of GHG Emission Reductions – Project emissions <i>It is assessed whether the project emissions are stated according to the methodology and whether the argumentation for the choice of default factors and values – where applicable – is justified.</i>					
B.4.1. Are the calculations documented according to the approved methodology and in a complete and transparent manner?	/1/	DR	No project emissions are likely as this is a wind energy power project.		OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
B.5. Calculation of GHG Emission Reductions – Baseline emissions <i>It is assessed whether the baseline emissions are stated according to the methodology and whether the argumentation for the choice of default factors and values – where applicable – is justified.</i>					
B.5.1. Are the calculations documented according to the approved methodology and in a complete and transparent manner?	/1/	DR/I	Baseline emissions have been estimated as the product of electricity generated in the project activity per year and grid emission factor of the western regional grid, which has been obtained from the official website of the Central Electricity Authority (CEA) The installed capacity of project plant is 19.2 MW and the plant is expected to export an average of 35.43 GWh electricity to the grid per year at a PLF of 21.07%.		OK
B.5.2. Have conservative assumptions been used when calculating the baseline emissions?	/1/	DR	<p>Yes. The selected baseline is in accordance with the baseline methodology ACM0002. The baseline is transparent and the choice of emission factor of the current generation mix used for estimation of emission coefficient is conservative.</p> <p>It is clearly mentioned in the PDD that, the baseline estimation will consider an <i>ex-ante</i> emission factor throughout the crediting period. Hence, monitoring of OM and BM is not required.</p>		OK
B.5.3. Are uncertainties in the baseline emission estimates properly addressed?	/1/	DR	Since the emission factors have been selected from authentic sources, there are no		OK

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CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			uncertainties in the baseline emission estimates.		
B.6. Calculation of GHG Emission Reductions – Leakage <i>It is assessed whether leakage emissions are stated according to the methodology and whether the argumentation for the choice of default factors and values – where applicable – is justified.</i>					
B.6.1. Are the leakage calculations documented according to the approved methodology and in a complete and transparent manner?	/1/	DR	No leakages are to be considered as this is a wind energy power project.		OK
B.7. Emission Reductions <i>The emission reductions shall be real, measurable and give long-term benefits related to the mitigation of climate change.</i>					
B.7.1. Are the emission reductions real, measurable and give long-term benefits related to the mitigation of climate change.	/1/	DR	The project activity, on implementation as stated, is expected to result in emission reduction of 30 310 tCO ₂ e annually through out the 10 year fixed crediting period.		OK
B.8. Monitoring Methodology <i>It is assessed whether the project applies an appropriate monitoring methodology.</i>					
B.8.1. Is the monitoring plan documented according to the approved methodology and in a complete and transparent manner?	/1/	DR	Yes, the monitoring plan is in accordance with the approved baseline methodology.		OK
B.8.2. Will all monitored data required for verification and issuance be kept for two years after the end of	/1/	DR	PDD does not mention about the period for which the monitored data will be archived.	CAR-3	OK

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the crediting period or the last issuance of CERs, for this project activity, whichever occurs later?			The same may be added in the monitoring plan.		
B.9. Monitoring of Project Emissions <i>It is established whether the monitoring plan provides for reliable and complete project emission data over time.</i>					
B.9.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for estimation or measuring the greenhouse gas emissions within the project boundary during the crediting period?	/1/	DR	No project emissions are likely as this is a wind energy power project.		OK
B.10. Monitoring of Baseline Emissions <i>It is established whether the monitoring plan provides for reliable and complete baseline emission data over time.</i>					
B.10.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining baseline emissions during the crediting period?	/1/	DR	For baseline calculations, net electricity supplied to the western regional grid by the project activity will be monitored by dedicated electricity meters. The power generated is recorded by meters and same will be documented. As the baseline emission factor is fixed <i>ex-ante</i> , monitoring of the baseline emission factor is not necessary.		OK
B.10.2. Are the choices of baseline GHG indicators reasonable and conservative?	/1/	DR	Yes, the choice of baseline GHG indicator of CO ₂ is reasonable.		OK
B.10.3. Is the measurement method clearly stated for each baseline indicator to be monitored and also	/1/	DR	As per section B.7.1 the project proponent will use one main meter and one check meter	CL-7	OK

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deemed appropriate?			to monitor the net electricity exported to the grid. However Annex-4 of the PDD mentions that the project will be connected to two evacuation bays and each bay will have one main meter and one check meter. The PP is thus requested to clarify the actual number of meters that will be used for monitoring the electricity exported from the project.		
B.10.4. Is the measurement <i>equipment</i> described and deemed appropriate?	/1/	DR	Yes, trivector electronic meters will be used for monitoring the electricity exported by the project.		OK
B.10.5. Is the measurement <i>accuracy</i> addressed and deemed appropriate? Are procedures in place on how to deal with erroneous measurements?	/1/	DR	Yes, all main and check meters will have 0.5% accuracy.		OK
B.10.6. Is the measurement <i>interval</i> for baseline data identified and deemed appropriate?	/1/	DR	Yes, The measurement interval is mentioned as once in a month, kWh reading will be recorded and document will be maintained.		OK
B.10.7. Is the registration, <i>monitoring, measurement and reporting</i> procedure defined?	/1/	DR	Yes		OK
B.10.8. Are procedures identified for <i>maintenance</i> of monitoring equipment and installations? Are the calibration intervals being observed?	/1/	DR/I	Maintenance procedures for the monitoring equipments and the installation have been addressed in the PDD. Yes, the meters will be calibrated periodically, if there is any difference between the main and check meter readings.		OK
B.10.9. Are procedures identified for day-to-day records handling (including what records to keep, storage	/1/	DR/I	Procedures for day-to-day record handling including type of records to be stored, the	CAR-3	OK

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CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
area of records and how to process performance documentation)			storage area, etc need to be established.		
B.11. Monitoring of Leakage <i>It is assessed whether the monitoring plan provides for reliable and complete leakage data over time.</i>					
B.11.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining leakage?	/1/	DR	No leakages are to be considered as this is a wind energy power project.		OK
B.12. Monitoring of Sustainable Development Indicators/ Environmental Impacts <i>It is assessed whether choices of indicators are reasonable and complete to monitor sustainable performance over time.</i>					
B.12.1. Is the monitoring of sustainable development indicators/ environmental impacts warranted by legislation in the host country?	/1/	DR	The monitoring of sustainable development indicators is not warranted by the legislation of India.		OK
B.12.2. Does the monitoring plan provide for the collection and archiving of relevant data concerning environmental, social and economic impacts?	/1/	DR	This is not required as per the legislation and hence not applicable.		OK
B.12.3. Are the sustainable development indicators in line with stated national priorities in the Host Country?	/1/	DR	This is not required as per the legislation and hence not applicable.		OK
B.13. Project Management Planning <i>It is checked that project implementation is properly</i>					

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CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
<i>prepared for and that critical arrangements are addressed.</i>					
B.13.1. Is the authority and responsibility of overall project management clearly described?	/1/	DR/I	As per PDD, the authority and responsibility of the project management is entirely with Enercon. There is no role for the project proponent, which does not appear to be a logical. The project proponent is requested to clarify the project management and the PP's role in the same.	CL-8	OK
B.13.2. Are procedures identified for training of monitoring personnel?	/1/	DR/I	The operation and maintenance of the project activity is contracted to Enercon, who are the suppliers of the machines, by the project proponent. Hence training needs are not anticipated. Copy of the contract between PP and Enercon need to be provided.	CL-8	OK
B.13.3. Are procedures identified for emergency preparedness for cases where emergencies can cause unintended emissions?	/1/	DR/I	No emergencies related to unintended emissions are expected from a wind mills. Therefore procedures for emergency preparedness are not required.		OK
B.13.4. Are procedures identified for review of reported results/data?	/1/	DR	Yes.		OK
B.13.5. Are procedures identified for corrective actions in order to provide for more accurate future monitoring and reporting?	/1/	DR	Please refer to B.13.1		OK
C. Duration of the Project/ Crediting Period					

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CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
<i>It is assessed whether the temporary boundaries of the project are clearly defined.</i>					
C.1.1. Are the project's starting date and operational lifetime clearly defined and evidenced?	/1/	DR	The start date of the project activity has been defined as 19 April 2007 and operational lifetime cycle is 20 years. Documentary evidence for the project starting date needs to be provided.	CL-6	OK
C.1.2. Is the start of the crediting period clearly defined and reasonable?	/1/	DR	The project has selected a fixed crediting period of 10 years with the start date of the crediting period being 1 December 2008. As the crediting period cannot start before the registration of the project activity, the start date of the crediting period needs to be revised.	CAR-4	OK
D. Environmental Impacts <i>Documentation on the analysis of the environmental impacts will be assessed, and if deemed significant, an EIA should be provided to the validator.</i>					
D.1.1. Has an analysis of the environmental impacts of the project activity been sufficiently described?	/1/	DR	While Indian legislation does not warrant an EIA to be done for this type of project activity, the PDD sufficiently describes the possible impacts during construction & operation.		OK
D.1.2. Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, is an EIA approved?	/1/	DR	No, EIA is not needed for this project.		OK
D.1.3. Will the project create any adverse environmental effects?	/1/	DR	As, it is a wind farm project, the impacts are expected to be minimal.		OK

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CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
D.1.4. Are transboundary environmental impacts considered in the analysis?	/1/	DR	No trans-boundary environmental impacts are expected from this project activity.		OK
D.1.5. Have identified environmental impacts been addressed in the project design?	/1/	DR	No negative environmental impacts have been identified.		OK
D.1.6. Does the project comply with environmental legislation in the host country?	/1/	DR	No specific environmental clearances are required for wind farm projects in India.		OK
E. Stakeholder Comments <i>The validator should ensure that stakeholder comments have been invited with appropriate media and that due account has been taken of any comments received.</i>					
E.1.1. Have relevant stakeholders been consulted?	/1/	DR/I	All relevant stakeholders were invited for the meeting conducted on 15 November 2006.		OK
E.1.2. Have appropriate media been used to invite comments by local stakeholders?	/1/	DR/I	An advertisement was placed in a local news paper <i>Sarvmat</i> inviting the stakeholders and a meeting of the local representatives was conducted on 15 November 2006. Copy of the advertisement needs to be provided.	CL-9	OK
E.1.3. If a stakeholder consultation process is required by regulations/laws in the host country, has the stakeholder consultation process been carried out in accordance with such regulations/laws?	/1/	DR	Not specifically required for wind farm projects under host country legislation.		OK
E.1.4. Is a summary of the stakeholder comments received provided?	/1/	DR	Yes. Minutes of the meeting is included in the PDD.		OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
E.1.5. Has due account been taken of any stakeholder comments received?	/1/	DR	No adverse comments were received from local stakeholders.		OK

Table 2b: Additional requirements checklist for VVM version 1 (EB 44)

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
A.6. Letter of approval					
A.6.1. Is the LoA received directly from the DNA or through the project participant.	/1/	DR/I	The LOA has been provided by the project participant. However, it has been validated from the CDM India website (http://cdmindia.nic.in/cdmindia/projectList.jsp?search=search) that the project has indeed been approved by the DNA of India.		OK
A.7. Project design					
A.7.1. Does the PDD describe the CDM project activity with all relevant elements in a transparent and accurate way?	/1/	DR/I	Yes, the project description in the PDD is transparent.		OK
A.7.2. Has the CDM project activity at the start of the validation been constructed or does the CDM project activity use existing facilities or equipment?	/1/ /	DR/I	The project activity was under construction at the time of the start of the validation.		OK
A.7.3. Is the project a large scale project, a small scale project with average annual emission reductions above 15 000 tonnes or a bundled small scale project? Has on-site visit been carried out?	/1/	DR/I	The project is a large scale project with average annual emission reductions above 15000 tonnes CO ₂ e. Site visit has been carried out at the actual project location.		OK
A.7.4. Does the project activity involved alteration of existing installations? If so, have the differences between pre-project and post-project activity been clearly described in the PDD?	/1/	DR/I	The project activity is new installation and does not involve any alteration to any existing facility.		OK
A.8. Project emissions not addressed by the methodology					
A.8.1. Does the methodology describe all project emission source for the project activity that contributes all 1% of the emission reductions? Sources that the	/1/	DR/I	The project being a wind energy generation activity, there are no emissions from the project activity.		OK

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methodology considers not to take into account are not relevant (e.g. cement and iron consumption for building hydropower plants).					
A.9. Documentation of baseline emissions					
A.9.1 Documentation of the baseline determination: <ol 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/I	<p>All assumptions used in the PDD are correctly quoted and the supporting documents have been properly interpreted.</p> <p>The assumptions regarding the PLF, project cost, O&M cost and electricity tariff are deemed reasonable</p> <p>The methodology has been correctly applied in the context of the project activity.</p> <p>National policies regarding benefits allowable to renewable energy projects have been considered and listed in the PDD.</p>		OK
A.10. Documentation of the calculations					
A.10.1 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 	/1/	DR/I	All formulae and data used in calculating the emission reductions have been correctly referred and the emission reductions have been calculated in accordance with the methodology.		OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
<ul style="list-style-type: none"> The methodology has been correctly applied to calculate the emission reductions and this can be replicated by the data provided in the PDD and supporting files to be submitted for registration. 					
A.11. Implementation of the monitoring plan					
A.11.1.How were the plans for implementation of the monitoring plan, data management, QA/QC procedures assessed? To what extent can the emission reductions achieved by the project be monitored ex-post and verified later by a DOE?	/1/	DR/I	The monitoring plan described in the PDD is sufficient for accurate reporting and verification of the emission reductions from the project. The electricity generation will be cross-checked from the electricity bills as per the QA/QC procedures. The suitability of the monitoring plan has been assessed through physical verification of the monitoring system on-site.		OK
A.12. CDM consideration prior to starting date					
A.12.1.The prior consideration of CDM for the project activity complies with EB41 annex 46	/1/	DR/I	Yes. It has been demonstrated that the project proponent had prior knowledge of CDM and real and continuous actions were taken for ensuring CDM benefits		OK

Table 3 Resolution of Corrective Action and Clarification Requests

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
CAR 1: The Host country approval from the DNA confirming that the project assists in achieving sustainable development needs to be submitted.	A.2.2 A.2.3 A.4.1	Host Country Approval has been provided to the validator.	OK. The Letter of Approval from DNA of India dated 4 August 2008 /2/, has been verified by DNV. CAR 1 is closed.
CAR 2: While the three alternatives have been given and it is stated that all three are in compliance with the regulation, it needs to be justified as to why the alternative of fossil fuel based power plant or a hydro is not a feasible alternative and how / why this alternative selected in the additionality step 1a has been eliminated.	B.2.2 B.3.1	The additionality tool version 5.2, step 2, “determine whether the proposed project activity is not the most economically and financially attractive”. As per sub-step 2b of the additionality tools, the appropriate analysis method can be either investment comparison analysis (wherein IRRs of all the alternatives are compared) or benchmark analysis wherein the IRR is compared to an appropriate benchmark financial indicator. Sub-step 2c states that, if the CDM project activity has a less favorable indicator (e.g. lower IRR) than the benchmark, then the CDM project activity cannot be considered as financially attractive. Further in accordance with VVM, the baseline as per applied methodology ACM0002 is fixed and there is no need to discuss the alternatives. Therefore we	OK. The PP has justified the alternatives considered to determine the baseline as per methodology and VVM and necessary changes have been incorporated in revised PDD version 02. Revised PDD version 02 dated 22 December 2009 /1/ has been reviewed by DNV. CAR 2 is closed.

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
		<p>have limited the realistic and credible alternatives to the project activity to the following two options:</p> <ul style="list-style-type: none"> (a) The Project is not undertaken as a CDM project activity. (b) Equivalent amount of electricity being generated through operation of grid-connected power plants and addition of new generation sources <p>The PDD has been revised accordingly.</p>	
<p>CAR 3:</p> <p>PDD does not mention about the period for which the monitored data will be archived. The same may be added in the monitoring plan.</p> <p>Procedures for day-to-day record handling need to be established, address the type of records to be stored, the storage area, etc.</p>	<p>B.8.2 B.10.9</p>	<p>The data will be stored in hard format. Joint meter report is taken in the presence of the persons representing Enercon [Operation and Maintenance Contractor] and MSETCL. The copies of the joint meter report will be presented to the validator during the verification exercise. The archive will be kept for the period up to two years after the completion of the crediting period. The same is incorporated in section B.7.1 of the PDD.</p> <p>Training procedure has been detailed under section B.7.2 of the PDD. Enercon is an ISO certified company and the service department, which is responsible for activities related to monitoring of the data. The Operations and service</p>	<p>OK. The day to day monitoring and record handling has been entrusted to the O&M contractor Enercon India Limited. The procedure for the same is described in the version 2 of the PDD. The records will be kept for the period up to two years after the completion of the crediting period.</p> <p>CAR 3 is closed.</p>

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
		procedures of Enercon are ISO certified. The procedure for day to day handling of records would be as per its ISO manual.	
CAR 4 The start of the crediting period stated in the PDD (1 December 2008) needs to be revised.	C.1.2	Start date of the crediting period is revised to 31 March 2010 in the revised PDD.	OK. The Start date of the crediting period is revised to 31 March 2010 in the revised PDD /1/. CAR 4 is closed.
CAR 5 The version 7 of ACM0002 used in the webhosted PDD has expired in August 2008. The PP is requested to revise the PDD with valid version of the methodology	B.1.1	The PDD has been revised with ACM 0002 version 9.	OK. The PP has updated the PDD /1/, by applying the methodology ACM0002 version 9 /3/. CAR 5 is closed.
CAR 6 The PP has used version 3 of the CEA data for the emission reduction calculations. PP is requested to use version 4 for the calculations, which is the latest version available at the time of webhosting of the PDD. <u>Continuation of the CAR 6</u> Since the PDD for the original 50.4 MW project was web hosted for global stakeholder comments on 7 June 2007, the PP is requested to use the latest CEA data available at that point of time for the CER calculation.	B.5.1	The PDD has been revised using the data applicable for integrated western grid as per version 4 of the CEA data. The western grid of India used in the earlier version of PDD has been brought under in the integrated western grid in the latest version of CEA data. <u>Continuation of the CAR 6</u> The latest version of the CEA CO ₂ baseline data as on 7 June 2007 was the version 1.1. The calculation of grid emission factor is revised using the OM and BM data for the western grid accordingly.	OK. It has been verified that version 1.1 of the CEA data /8/, has been used in the calculation of grid emission factor in the latest version of the PDD /1/. CAR 6 is closed.

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
<p>CAR 7</p> <p>The PP is requested to justify the change in the project cost from INR 882 million in the web hosted PDD to INR 1 021.85 million in the version 2 of the PDD.</p>		<p>The capital cost of Rs.1021.85 million considered for Investment analysis is in accordance with Paragraph 111 (c) of the VVM.</p> <p>The initial offer received from the WEG supplier was for INR 2,589.30 million for 50.4 MW capacity was provided to DoE for verification. Additionally, expenses pertaining to lawyer's fees; technical due diligence cost; insurance; statutory; Initial funding of DSRA; margin money for working capital; provision for unbudgeted expenses and consultant costs; were estimated to be INR 410.7 million. These estimates were submitted to the Bank for obtaining loans for the project and were approved by the Bank. The total project cost approved by the lending Bank HSBC is INR 3,000.00 million.</p> <p>Subsequently, through negotiations, the offer cost from the WEG supplier was brought down to INR 2554.65 million. The total project cost was revised to INR 2845.57 million. The project's feasibility was evaluated on this revised project cost.</p>	<p>OK.</p> <p>The decision to go ahead with the project was made on the basis of DPR. The investment cost of INR 2846 million for 50.4 MW before debundling was verified from the DPR /9/.</p> <p>In the financial analysis, INR 2682.34 was used by excluding some of the funding related expenses amounting to INR 163.66 million. The proportional cost for the 19.2 MW capacity Roaring 40s Phase II is verified to be INR 1021.85 million. The project cost considered for the financial analysis is in line with para 111(c) of the VVM /4/.</p> <p>Furthermore the loan amount sanctioned for the project activity was verified from the HSBC hedging agreement /25/ to be INR 3000 million for the initial 50.4 MW capacity.</p> <p>The explanation of PP that the cost of land acquisition, regulatory fee etc. totaling INR 139.85 million was inadvertently excluded from the project cost stated in the version 1 of</p>

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
		<p>The Detailed Project Report submitted to the Board of Directors of the Company for investment decision making and confirmed that the investment decision for the project was based on this revised estimate of INR 2845.57. However these included advance funding items like DSRA (Debt Service Reserve Account) margin, Working Capital margin and contingency items like provision for unbudgeted expenses. In order to be conservative, the DOE mandated these costs to be excluded from investment analysis. Therefore the appropriate cost for Investment Analysis, applicable at the time of investment decision making, is INR 2682.34 million.</p> <p>The capital cost mentioned in the web-hosted PDD pertained to the WEG cost only. The project cost also includes land costs and regulatory agency fees of INR 91.20 million and other project development costs of INR 48.65 million. Thus the project cost for the Phase II work out to Rs. 1021.85 Million.</p>	<p>the PDD is deemed reasonable. CAR 7 is closed.</p>

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
		<p>Accordingly, the project cost of INR 1021.85 Million is considered appropriate.</p> <p>The documents for the payments made to Enercon (EPC contractor and suppliers) and other services providers for the project were provided to DoE for verification.</p>	
<p>CL 1: The name of the village shall be clearly indicated against the WEG number in the PDD.</p>	A.1.1	The village name, location number, unique identification number and longitude and latitude details are provided in section A.4.1.4.	<p>OK. The location details of each of the WEGs have been detailed in the updated PDD /1/.</p> <p>CL 1 is closed.</p>
<p>CL 2: Whether Tata Power (mentioned in the section B.5 of the PDD) and Enercon are project participants in the project activity needs to be clarified.</p>	A.2.1	Roaring 40s wind farms (Khandke) Pvt. Limited is the only project proponent. Typological errors are corrected in the revised PDD.	<p>OK. The correction has been made in the revised PDD, deleting the name of Tata Power /1/.</p> <p>CL 2 is closed.</p>
<p>CL 3: PP is requested to justify the reasonableness of the benchmark selected and provide proof for the interest rate applicable to the project.</p>	B.3.1 B.3.2 B.3.3	Commercial lending rate is considered as a reasonable benchmark in accordance with the additionality tool version 5.2, para 6(b) sub step 2(b) of the Additionality tool. The additionality of the project has therefore been evaluated against a benchmark of 12.5%.	<p>OK. The interest rate of 12.5% has been verified from HSBC letter /6/.</p> <p>The use of lending rate as the benchmark is in accordance with the Additionality Tool version 5.2 /5/.</p> <p>CL 3 is closed.</p>

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
<p>CL 4:</p> <p>The spread sheets for IRR and sensitivity analysis need to be provided for verification. Proof for project cost, O&M costs and interest rate on loans needs to be provided. Further, sensitivity analysis needs to be done for investment and O&M costs also. It also needs to be demonstrated at what point of variation the IRR is crossed and why it is not unlikely to happen.</p> <p>While PP has taken the PLF of 20%, it needs to be justified. Please provide the PLF guaranteed by Enercon and the micro-siting details for the project.</p> <p>To conclude on the additionality, the following details are also requested:</p> <ul style="list-style-type: none"> • Whether any incentives are offered by the Government of Maharashtra for wind power generation? Have these been considered in the financial analysis? • Copy of PPA to be furnished. • All statutory clearances need to be provided for verification. • Salvage value of the machines at the end of life to be considered in financials. 	<p>B.3.1 B.3.2 B.3.3</p>	<p>The spreadsheet for IRR and Sensitivity has been provided to validator for verification. The proof for the project cost and operation & Maintenance cost in the form of DPR, Negotiated Enercon offer, Purchase orders and O&M contract has been provided to the validator. The letter from HSBC confirming interest on loan, debt equity ratio and tenure has been provided to validator for verification. The HSBC letter also confirms that the project has been evaluated considering CDM revenues.</p> <p>The sensitivity analysis has been carried out considering reasonable variation over the base case.</p> <p>Sensitivity Analysis</p> <p>The investment in wind power project shall be tested based on three parameters:</p> <ul style="list-style-type: none"> • Capital Cost • Tariff • Plant Load Factor • O&M cost <p>Capital Cost</p>	<p>OK. The PP has provided spreadsheet for IRR calculations and copies of DPR, purchase order for WEGs, O&M contract, PPA, interest rate for the loan availed from HSBC, the generation estimate of the project by Enercon, clearance from MEDA and the MERC tariff orders. The documents have been verified for the calculations and the input parameters used.</p> <p>Reasonable variations of the project cost, annual O&M costs, annual output and on-grid tariff were checked by calculating the variation necessary to reach the benchmark and then discussing the likelihood for that to happen.</p> <p>None of the parameters in the sensitivity analysis are considered to have any significant positive correlation.</p> <p>CL 4 is closed.</p>

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
		<p>In accordance with the investment guidance, the additionality for the project activity is demonstrated at the time of decision making. The price is taken from the detailed project report that is based on the final negotiated offer from Enercon. The price bid was final price given by Enercon. The price given in the detailed project note can be crosschecked from the purchase order for verification. Therefore, it is considered appropriate not to conduct sensitivity on the project cost.</p> <p>Tariff Maharashtra state electricity commission has fixed the tariff for the period of 13 years. The tariff is subject to change at the end of the term of PPA. The tariff order states that the consumer will be eligible for the lower tariff after the debt obligation of the project is fulfilled. The excerpts from the tariff order are as follows:</p> <p><i>“The Commission notes that in Cost Plus Approach, which the Commission has adopted for tariff proposal, rate per unit charged by such projects during initial period of 10 years is bound to be higher</i></p>	

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
		<p><i>as during this period the project has various debt related obligations. However, it is essential that the consumer is able to enjoy the benefit of cheaper power once all debt related obligations are paid off and project has virtually no variable costs”</i></p> <p>The sale income needed and sale income approved by the commission have a differential amount of INR 6.317 Million which is required to be adjusted in the latter year to keep it consistent with the fixed return provided by the commission. Therefore to arrive at the tariff that may be applied by the commission at the end of the 13th year will be computed after adjusting the surplus provided by the commission. The tariff from the 13th year onwards therefore shall be adjusted for the surplus provided by the regulator in the initial years.</p> <p>On computation the average tariff after 13th year onwards based on MERC assumptions works out to be INR 1.80 per unit. On the upside if MERC does not consider adjustment of the surplus gained which is extremely unrealistic, the average tariff will be INR 2.34 per Unit.</p>	

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
		<p>For the purpose of substantiating additionality, the project proponent has conducted sensitivity assuming the tariff of INR 2.34 per unit of electricity generated.</p> <p>Plant Load Factor Plant Load Factor is the key variable encompassing variation in wind profile, variation in off-take (including grid availability) including machine downtime. The project activity is located in the district of Ahmednagar in Maharashtra. The observed historical PLF of the project activities that are operating in the district of Ahmednagar is 19.07% in 2004-05.</p> <p>Maharashtra State Electricity Commission has set the 20% PLF for the state of Maharashtra. Historically, maximum observed PLF for region of Ahmednagar is 19.62%. Plant load factor for the project activity provided by Enercon India Limited is 20.07%%. Sensitivity analysis of the Project IRR is therefore carried out at 23.50% (P-25 level) which is very unlikely to be achieved considering maximum of the highest observed PLF in</p>	

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
		<p>the district of Ahmednagar, 10% increase over the PLF given by MERC in tariff order dated 23-Nov-2003 and generation estimate given by Enercon India Limited at P-25 level [Max (19.62%, 22%, 23.5%)]. The return that the project is expected to generate at PLF of 23.50 % is 10.53%, which is less than the benchmark.</p> <p>The project proponent has taken PLF from MERC order dated 23 November 2003. The PLF is revised as per generation estimate provided by Enercon India Limited. The copy of the generation estimate by Enercon has been provided to the validator. The micrositing details have been incorporated in section A.4.1.4.</p> <p>There are no financial incentives offered by Maharashtra government for wind power projects.</p> <p>Copy of PPA and statutory clearances (Meda Clearance for infrastructure and commissioning) has been provided to the validator for review.</p> <p>Salvage value at the rate of 10% has been considered in the financial analysis.</p>	

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
<p>CL 5:</p> <p>The common practice analysis provided at present is generic. It should include all the projects of similar capacity in Ahmednagar area, number of projects registered under CDM or in the process of validation and a justification as to how the project activity is different from the other non CDM projects that are operating in the region. Further, step 4b of additionality tool needs be described in the PDD.</p>	B.3.1	<p>The investment decision for the project was taken in March 2007 and purchase order was placed in April 2007. At the time of investment decision the total installed wind power capacity in Maharashtra was 1,001 MW and at the time of commissioning the installed capacity in Maharashtra was 1756.38 MW. We want to submit that even at the time of commissioning our project was not part of the common practice.</p> <p>Paragraph 4(a) of additionality tool version 5.2 states that projects are considered similar they take place in a comparable environment. Till the year 2002-03, wind power developers in Maharashtra enjoyed sales tax benefits (Source: MERC order dated 23 November 2003; page-5 (2.3.1)), making investment in wind attractive on a stand alone basis. The sales tax benefits were withdrawn in March-2002. Therefore wind capacity additions before March 2002 have not been considered.</p> <p>Paragraph 4(a) also states that projects can be considered similar if they rely on a broadly similar technology and are of a</p>	<p>OK. Since generation of wind energy depends on local or region specific wind patterns, the state of Maharashtra has been considered for assessing the common practice. At the time of start date of the project activity the total installed wind power capacity in Maharashtra was 1,001 MW and at the time of commissioning, it was 1756.38 MW.</p> <p>As detailed in the PDD, till the year 2002-03, the installation of wind based power projects were at peak due to sales tax benefit of Rs. 10 million per MW per year for a period of 5 years from the date of commissioning. MERC had withdrawn the sales tax benefits from wind power projects in March-2002. Hence wind power projects installed prior to March 2003 can not be considered for common practice analysis. During 2002-2008 only 476 MW was added from wind projects with more than 15 MW size and this entire 476 MW capacity is under CDM. A detailed spreadsheet /22/,</p>

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
		<p>similar scale. The roaring 40s wind farms (Khandke) private limited has a total capacity of 50.4 MW and is designed to be installed in three phases and hence the project is categorized as large scale project activity (>15MW). The proposed Roaring 40s Wind Farms (Khandke) Private Limited – Phase II wind power project involves the installation of 24 wind turbines, each of which has rated output of 800 kW, providing a total capacity of 19.2 MW. Therefore in accordance with Paragraph 4(a), we have analysed wind projects of more than 15 MW capacities. During the period 2002-2008 a total of 476 MW was added from wind projects with more than 15 MW size. We would like to submit that the entire 476 MW is under CDM. We have provided the spreadsheet with CDM links of all these projects to the DoE.</p> <p>As can be seen, all comparable projects have come up only with the benefit of CDM. Hence our project is without CDM benefits is not a common practice.</p>	<p>with CDM links of all these projects has been verified by DNV.</p> <p>CL 5 is closed.</p>
CL 6: Proof needs to be provided for the starting	B.3.4 C.1.1	The start date of the project is the placement of work order to Enercon.	OK. The start date has been verified from the purchase order for WEGs

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
<p>date of the project. Since the start date is before the date of validation, serious consideration of incentives from CDM has to be demonstrated by the board note etc. Chronological order of events from the conceptualization of the project activity till approaching the DOE for validation along with reasons for delay need to be provided with supporting evidence. The chronological order also needs to be described under section B.5 of PDD.</p>		<p>Copy of the purchase order is provided to DOE for verification.</p> <p>The project activity was initially web-hosted on 7-June-2007 for entire 50.4 MW capacity of the project activity. The project activity was scheduled to be implemented in three phases and was expected to be completed in June-2007, November-2007 and December-2007 respectively. The nodal agency clearance for the first phase of the project activity was secured in October-2007.</p> <p>The DNA approval for the project activity is contingent upon submission of the nodal agency clearance and land documents. The second and third phase of the project is scheduled to be implemented in May-2008 and June-2009 respectively. Therefore Roaring 40s management decided to split the PDDs in three parts on 19-March-2008 so that the CDM process is not delayed for the first phase for which the required statutory clearance are in place for requesting DNA approval. The management also decided to prepare the PDD and file the second and third phase of the project activity for</p>	<p>placed on Enercon India Limited /7/. The CDM consideration, continued real action, and chronology of events have been adequately stated in the revised PDD /1/.</p> <p>CL 6 is closed.</p>

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
		<p>DNA approval once the statutory clearance for the respective phases of the project activity are in place.</p> <p>The nodal agency clearance for the second phase of the project activity was received in May-2008. The PDD for the second phase was prepared in May-2008. The DNA meeting for the project activity was scheduled on 30-June-2008 and DNA approval was finally received on 04-August-2008. PDD was submitted to DOE on 14-October-2008 and was finally web-hosted by DOE on 16-October-2008.</p>	
<p>CL 7:</p> <p>As per PDD, the authority and responsibility of the project management is entirely with Enercon. There is no role for the project proponent, which does not appear to be logical.</p>	B.13.1	Enercon is Operation and Maintenance contractor for the project activity and provides the daily generation report to the Project proponent. The project proponent also maintains the records of daily generation report and joint meter report.	<p>OK. The O&M activities of the project have been outsourced to Enercon India Limited. It has been verified during the site visit that the daily reports and joint meter reports are made available to the PP for monitoring.</p> <p>CL 7 is closed.</p>
<p>CL 8:</p> <p>Copy of the contract between PP and Enercon needs to be provided for review.</p>	B.13.1 B.13.2	The copy of the O&M contract between Enercon and PP has been provided to the validator for review.	<p>OK. The O&M contract between Roaring 40s and Enercon has been provided for review.</p> <p>CL 8 is closed.</p>
<p>CL 9:</p> <p>Copy of the newspaper advertisement for</p>	E.1.2	The copy of news paper advertisement and stakeholder consultation has been	Copy of the advertisement on the local newspaper <i>Sarvmat</i> /23/ and the

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
stakeholder consultation needs to be provided.		provided to the validator for review.	minutes of the stakeholder consultation meeting /24/ have been verified. CL 9 is closed.

APPENDIX B

CERTIFICATES OF COMPETENCE



CERTIFICATE OF COMPETENCE

Ravi Kumar Prabhu

Qualification in accordance with DNV's Qualification Scheme CDM/JI (ICP-8-1-CDMJ1-i1)

GHG Auditor:	Yes				
Technical Area	CDM Validator	CDM Verifier	Sector Expert	Methodology Expert	Technical Reviewer
Landfill gas					
Hydro power					
Renewables Wind power					
Other renewable					
Biomass					
Grid connection of isolated system					
Cement					
Waste-heat / waste-gas recovery					
Efficiency of thermal power plants					
Coal mine methane					
Fuel switch					
Manure management					
Waste / wastewater treatment					
Energy efficiency					
N ₂ O					
HFCs					
Flare reduction					
PFCs					
Charcoal					
CO ₂ recovery					
Transport					
Non-renewable biomass					
Biofuel					
Pipeline leakage reduction					
SF ₆					

Høvik, 1 December 2008

Michael Lehmann

Michael Lehmann
Technical Director, Climate Change Services



CERTIFICATE OF COMPETENCE

Soumik Biswas

Qualification in accordance with DNV's Qualification Scheme CDM/JI (ICP-8-1-CDMJ1-i1)

GHG Auditor:	Yes				
Technical Area	CDM Validator	CDM Verifier	Sector Expert	Methodology Expert	Technical Reviewer
Landfill gas	Jan 2009				
Hydro power	Jan 2009				
Renewables	Jan 2009	Jan 2009			
Wind power					
Other renewable					
Biomass	Jan 2009	Jan 2009			
Grid connection of isolated system					
Cement	Jan 2009	Jan 2009			Aug 2009
Waste-heat / waste-gas recovery	Jan 2009	Jan 2009			Aug 2009
Efficiency of thermal power plants					
Coal mine methane					
Fuel switch			Jan 2009		
Manure management					
Waste / wastewater treatment					
Energy efficiency	Jan 2009	Jan 2009			
N ₂ O					
HFCs					
Flare reduction					
PFCs					
Charcoal					
CO ₂ recovery					
Transport					
Non-renewable biomass					
Biofuel					
Pipeline leakage reduction					
SF ₆					

Høvik, 24 August 2009

Michael Lehmann

Michael Lehmann
Technical Director, Climate Change Services



CERTIFICATE OF COMPETENCE

Raman Venkata Kakaraparthi

Qualification in accordance with DNV's Qualification Scheme CDM/JI (ICP-8-1-CDMJ1-i1)

GHG Auditor:	Yes				
Technical Area	CDM Validator	CDM Verifier	Sector Expert	Methodology Expert	Technical Reviewer
Landfill gas	Jan 2009				
Hydro power	Jan 2009				
Renewables	Jan 2009	Jan 2009		Jan 2009	Jan 2009
Wind power					
Other renewable					
Biomass	Jan 2009				Aug 2009
Grid connection of isolated system					
Cement					Aug 2009
Waste-heat / waste-gas recovery	Jan 2009	Jan 2009	Jan 2009		
Efficiency of thermal power plants			Jan 2009		Aug 2009
Coal mine methane					
Fuel switch			Jan 2009		Aug 2009
Manure management					
Waste / wastewater treatment	Jan 2009				
Energy efficiency	Jan 2009	Jan 2009	Jan 2009		Aug 2009
N ₂ O					
HFCs	Jan 2009	Jan 2009			Aug 2009
Flare reduction					
PFCs					
Charcoal					
CO ₂ recovery			Jan 2009		Aug 2009
Transport					
Non-renewable biomass					
Biofuel					
Pipeline leakage reduction					
SF ₆					

Høvik, 24 August 2009

Michael Lehmann

Michael Lehmann

Technical Director, Climate Change Services



CERTIFICATE OF COMPETENCE

Weidong Yang

Qualification in accordance with DNV's Qualification Scheme CDM/JI (ICP-8-1-CDMJi-i1)

GHG Auditor:	Yes				
Technical Area	CDM Validator	CDM Verifier	Sector Expert	Methodology Expert	Technical Reviewer
Landfill gas					
Hydro power					
Renewables Wind power				Jan 2009	Jan 2009
Other renewable					
Biomass					
Grid connection of isolated system					
Cement					
Waste-heat / waste-gas recovery					
Efficiency of thermal power plants					
Coal mine methane					
Fuel switch					
Manure management					
Waste / wastewater treatment					
Energy efficiency					
N ₂ O					
HFCs					
Flare reduction					
PFCs					
Charcoal					
CO ₂ recovery					
Transport					
Non-renewable biomass					
Biofuel					
Pipeline leakage reduction					
SF ₆					

Høvik, 9 January 2009

Michael Lehmann

Michael Lehmann
Technical Director, Climate Change Services



CERTIFICATE OF COMPETENCE

zhi Ang (Walter) Tang

Qualification in accordance with DNV's Qualification Scheme CDM/JI (ICP-8-1-CDMJ1-i1)

GHG Auditor:	Yes				
Technical Area	CDM Validator	CDM Verifier	Sector Expert	Methodology Expert	Technical Reviewer
Landfill gas					
Hydro power	Jan 2009				
Renewables	Jan 2009			Apr 2009	Apr 2009
Wind power					
Other renewable					
Biomass					
Grid connection of isolated system					
Cement					
Waste-heat / waste-gas recovery					
Efficiency of thermal power plants	July 2009	July 2009			
Coal mine methane					
Fuel switch					
Manure management					
Waste / wastewater treatment					
Energy efficiency					
N ₂ O					
HFCs					
Flare reduction					
PFCs					
Charcoal					
CO ₂ recovery					
Transport					
Non-renewable biomass					
Biofuel					
Pipeline leakage reduction					
SF ₆					

Høvik, 9 July 2009

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