# VALIDATION REPORT

## VALIDATION OF THE
## "15 MW Wind Energy Project in Maharashtra"

BUREAU VERITAS CERTIFICATION

REPORT NO. INDIA-VAL/119.49/2007

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| Date of first issue: 23/01/2008 | Organizational unit: Bureau Veritas Certification Holding SA |
|---|---|
| Client: M/s D. J. Malpani | Client ref.: Mr. Prafulla Khinvasara |

Summary:

Bureau Veritas Certification has made the validation of the "15 MW Wind Energy Project in Maharashtra (hereafter called "the project") located in Nandurbar Taluka, Nandurbar District & Sakri Taluka, Dhulia District, Maharashtra, India" 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 rules and modalities and the subsequent decisions by the CDM Executive Board, as well as the host country criteria.

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The validation scope is defined as an independent and objective review of the project design document, the project's baseline study, monitoring plan and other relevant documents, and consisted of the following three phases: i) desk review of the project design and the baseline and monitoring plan; ii) follow-up interviews with project stakeholders; iii) resolution of outstanding issues and the issuance of the final validation report and opinion. The overall validation, from Contract Review to Validation Report & Opinion, was conducted using Bureau Veritas Certification internal procedures.

The first output of the validation process is a list of Clarification and Corrective Actions Requests (CL and CAR), presented in Appendix A. Taking into account this output, the project proponent revised its project design document.

In summary, it is Bureau Veritas Certification's opinion that the project correctly applies the baseline and monitoring methodology "AMS I.D. Grid connected renewable electricity generation", Version 11, and meets the relevant UNFCCC requirements for the CDM and the relevant host country criteria.

| Report No.: INDIA-val/119.49/2007 | Subject Group: CDM | |
|---|---|---|
| Project title: 15 MW Wind Energy Project in Maharashtra | | |
| Work carried out by: Sameer Pendse – Team Leader<br>R.Reghukumar – Team Member<br>R.Sankaranarayan – Team Member<br>Sushil Budhia – Financial Expert | | |
| Work verified by: Dr. Ashok Mammen | | |
| Date of this revision: 23/01/2008 | Rev. No.: 00 | Number of pages: 59 |

**Indexing terms**

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## Abbreviations

| | |
|---|---|
| CAR | Corrective Action Request |
| CDM | Clean Development Mechanism |
| CER | Certified Emission Reductions |
| CL | Clarification Request |
| $CO_2$ | Carbon Dioxide |
| DOE | Designated Operational Entity |
| GHG | Green House Gas(es) |
| I | Interview |
| IETA | International Emissions Trading Association |
| MoV | Means of Verification |
| NGO | Non Government Organization |
| PCF | Prototype Carbon Fund |
| PDD | Project Design Document |
| SEL | Suzlon Energy Limited |
| UNFCCC | United Nations Framework Convention for Climate Change |
| WTG | Wind Turbine Generator |
| MERC | Maharashtra Electricity Regulatory Commission |
| MESEDCL | Maharashtra State Electricity Distribution Company Limited |

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# 1.0 INTRODUCTION

M/s. D. J. Malpani (hereafter called "the client") has commissioned Bureau Veritas Certification to validate its "15 MW Wind Energy Project in Maharashtra (hereafter called "the project") located in Nandurbar Taluka, Nandurbar District & Sakri Taluka, Dhulia District, Maharashtra, India

This report summarizes the findings of the validation of the project, performed on the basis of UNFCCC criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

## 1.1 OBJECTIVE

The validation serves as project design verification and is a requirement of all projects. The validation is an independent third party assessment of the project design. In particular, the project's baseline, the monitoring plan (MP), and the project's compliance with relevant UNFCCC and host country criteria are validated in order to confirm that the project design, as documented, is sound and reasonable, and meets the stated requirements and identified criteria. Validation is 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).

UNFCCC criteria refer to Article 12 of the Kyoto Protocol, the CDM rules and modalities and the subsequent decisions by the CDM Executive Board, as well as the host country criteria.

## 1.2 SCOPE

The validation scope is defined as an independent and objective review of the project design document, the project's baseline study and monitoring plan and other relevant documents. The information in these documents is reviewed against Kyoto Protocol requirements, UNFCCC rules and associated interpretations.

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

## 1.3 GHG PROJECT DESCRIPTION

The main purpose of the project activity is the implementation and operation of 15 MW wind farms to generate electricity in high wind speed areas of Maharashtra. M/s D. J. Malpani (DJM) is the promoter of these wind farms. The project activity consists of 12 wind electric generators (WEGs) installed in three phases at various locations within Maharashtra. The generated electricity from WEGs is connected to state electric utility namely Maharashtra State Electricity Distribution Company Limited (MSEDCL) and transmitted through state electric grid.

## 1.4 VALIDATION TEAM

The validation team consists of the following personnel:

**Mr. Sameer Pendse**
Bureau Veritas Certification Team Leader, Climate Change Verifier

**Mr. R.Reghukumar**
Bureau Veritas Certification Climate Change Verifier

**Mr. R. Sankaranarayan**
Bureau Veritas Certification Climate Change Verifier

**Mr. Sushil Budhia**
Financial Expert, Sushil Budhia Associates

**Dr. Ashok Mammen**
Bureau Veritas Certification, Internal Technical reviewer

Competence details about the team are given in Appendix B

# 2 METHODOLOGY

The overall validation, from Contract Review to Validation Report & Opinion, was conducted using Bureau Veritas Certification internal procedures.

In order to ensure transparency, a validation protocol was customized for the project, according to the Validation and Verification Manual (IETA/PCF). The protocol shows, in a transparent manner, criteria (requirements), means of verification and the results from validating the identified criteria. The validation protocol serves the following purposes:

- It organizes, 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 Figure 1.

The completed validation protocol is enclosed in Appendix A to this report.

| Validation Protocol Table 1: Mandatory Requirements | | | |
|---|---|---|---|
| **Requirement** | **Reference** | **Conclusion** | **Cross reference** |
| The requirements the project must meet. | Gives reference to the legislation or agreement where the requirement is found. | This is either acceptable based on evidence provided (**OK**), a **Corrective Action Request (CAR)** or a **Clarification Request (CL)** of risk or non-compliance with stated requirements. The CAR's and CL's are numbered and presented to the client in the Validation Report. | Used to refer to the relevant protocol questions in Tables 2, 3 and 4 to show how the specific requirement is validated. This is to ensure a transparent validation process. |

| Validation Protocol Table 2: Requirements checklist | | | | |
|---|---|---|---|---|
| **Checklist Question** | **Reference** | **Means of verification (MoV)** | **Comment** | **Draft and/or Final Conclusion** |
| The various requirements in Table 1 are linked to checklist questions the project should meet. The checklist is organized in several sections. Each section is then further sub-divided. The lowest level constitutes a checklist question. | Gives reference to documents where the answer to the checklist question or item is found. | Explains how conformance with the checklist question is investigated. Examples of means of verification are document review (DR) or interview (I). N/A means not applicable. | The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached. | This is either acceptable based on evidence provided (**OK**), or a **Corrective Action Request (CAR)** due to non-compliance with the checklist question. (See below). **Clarification Request (CL)** is used when the validation team has identified a need for further clarification. |

| Validation Protocol Table 3: Baseline and Monitoring Methodologies | | | | |
|---|---|---|---|---|
| **Checklist Question** | **Reference** | **Means of verification (MoV)** | **Comment** | **Draft and/or Final Conclusion** |
| The various requirements of baseline and monitoring methodologies should be met. The checklist is organised in several sections. Each section is then further sub-divided. The lowest level constitutes a checklist question. | Gives reference to documents where the answer to the checklist question or item is found. | Explains how conformance with the checklist question is investigated. Examples of means of verification are document review (DR) or interview (I). N/A means not applicable. | The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached. | This is either acceptable based on evidence provided (**OK**), or a **Corrective Action Request (CAR)** due to non-compliance with the checklist question. (See below). **Clarification Request (CL)** is used when the validation team has identified a need for further clarification. |

| Validation Protocol Table 4: Legal requirements | | | | |
|---|---|---|---|---|
| **Checklist Question** | **Reference** | **Means of verification (MoV)** | **Comment** | **Draft and/or Final Conclusion** |
| The national legal requirements the project must meet. | Gives reference to documents where the answer to the checklist question or item is found. | Explains how conformance with the checklist question is investigated. Examples of means of verification are document review (DR) or interview (I). N/A means not applicable. | The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached. | This is either acceptable based on evidence provided (**OK**), or a **Corrective Action Request (CAR)** due to non-compliance with the checklist question. (See below). **Clarification Request (CL)** is used when the validation team has identified a need for further clarification. |

| Validation Protocol Table 5 : Resolution of Corrective Action and Clarification Requests | | | |
|---|---|---|---|
| **Report clarifications and corrective action requests** | **Ref. to checklist question in tables 2/3** | **Summary of project owner response** | **Validation conclusion** |
| If the conclusions from the Validation are either a Corrective Action Request or a Clarification Request, these should be listed in this section. | Reference to the checklist question number in Tables 2, 3 and 4 where the Corrective Action Request or Clarification Request is explained. | The responses given by the Client or other project participants during the communications with the validation team should be summarized in this section. | This section should summarize the validation team's responses and final conclusions. The conclusions should also be included in Tables 2, 3 and 4, under "Final Conclusion". |

**Figure 1 Validation protocol tables**

## 2.1 REVIEW OF DOCUMENTS

The Project Design Document (PDD) submitted by M/s. D.J. Malpani and additional background documents related to the project design and baseline, i.e. country Law, Guidelines for Completing the Project Design Document (CDM-PDD), Approved methodology, Kyoto Protocol, Clarifications on Validation Requirements to be Checked by a Designated Operational Entity were reviewed.

To address Bureau Veritas Certification corrective action and clarification requests D.J. Malpani revised the PDD and resubmitted it on January 2008.

The validation findings presented in this report relate to the project as described in the PDD version 02.

## 2.2 FOLLOW-UP INTERVIEWS

On 01/12/2006 and 02/12/2006 Bureau Veritas Certification performed site visit and interviews with project stakeholders to confirm selected information and to resolve issues identified in the document review. Representatives of M/s.D.J.Malpani were interviewed (see References). The main topics of the interviews are summarized in Table 1.

**Table 1 Interview topics**

| Interviewed organization | Interview topics |
|---|---|
| M/s.D.J.Malpani | Project description<br>CDM Consideration<br>Contribution of Project towards Sustainable Development<br>Operational aspects<br>Monitoring Methodologies, plans and Procedures.<br>QA/ QC Procedures<br>Internal review / verification mechanism<br>Competency Management<br>Approach towards understanding the issues pertaining to interested parties<br>Additionality |
| Local Stakeholder | Social and economical benefits due to Project. |
| Consultant | Project Category<br>Additionality<br>Base line – Justification and Application<br>Monitoring plans |

## 2.3 RESOLUTION OF CLARIFICATION AND CORRECTIVE ACTION REQUESTS

The objective of this phase of the validation is to raise the requests for corrective actions and clarification and any other outstanding issues that needed to be clarified for Bureau Veritas Certification positive conclusion on the project design.

To guarantee the transparency of the validation process, the concerns raised are documented in more detail in the validation protocol in Appendix A.

# 3 VALIDATION FINDINGS

In the following sections, the findings of the validation are stated. The validation findings for each validation subject are presented as follows:

1) The findings from the desk review of the original project design documents and the findings from interviews during the follow up visit are summarized. A more detailed record of these findings can be found in the Validation Protocol in Appendix A.

2) Where Bureau Veritas Certification had identified issues that needed clarification or that represented a risk to the fulfillment of the project objectives, a Clarification or Corrective Action Request, respectively, have been issued. The Clarification and Corrective Action Requests are stated, where applicable, in the following sections and are further documented in the Validation Protocol in Appendix A.
The validation of the Project resulted in 8 (Eight) Corrective Action Requests and 07 (Seven) Clarification Requests.

3) The conclusions for validation subject are presented.

## 3.1 PROJECT DESIGN

Project activity is the implementation and operation of 15 MW wind farms to generate electricity in high wind speed areas of Maharashtra. M/s D. J. Malpani (DJM) is the promoter of these wind farms. The project activity consists of 12 wind electric generators (WEGs) installed in three phases at various locations within Maharashtra. The generated electricity from WEGs is connected to state electric utility namely Maharashtra State Electricity Distribution Company Limited (MSEDCL) and transmitted through state electric grid.

All the machines are S70 make and have been developed by Suzlon Energy Ltd. (SUZLON) in association with its collaborators using state of the art technology. The primary driver for the development of the turbines was Suzlon's commitment to make wind energy more accessible - in terms of technology, yield and cost.

In wind energy generation, kinetic energy of wind is converted into mechanical energy and subsequently into electrical energy. Wind has considerable amount of kinetic energy when blowing at high speeds. This kinetic energy when passes through the blades of the WEG is converted into mechanical energy and rotates the wind blades. When the wind blades rotate, the connected generator also rotates, thereby producing electricity. The technology is a clean technology since there are no GHG emissions associated with the electricity generation

In the absence of the project activity, electricity would have been generated using a fossil fuel based thermal power plants. This would have resulted in higher GHG emissions than those emitted in the project activity.

Bureau Veritas Certification recognizes that D.J.Malpani's Project is helping country fulfil its goals of promoting sustainable development. The project is expected to be in line with host-country specific CDM requirements because the project activity's contributions to sustainable development are as follows:

- Project is generating power from renewable sources of energy.
- Project depends on clean resource i.e. wind & no emission related issues are envisaged.
- Project has strengthened the Maharashtra & power deficit western grid by generating power through wind. This has displaced equivalent amount of power which otherwise would have been generated by thermal sources.
- Project has helped development of area of installation by improvement in infrastructure, employment to local population through EPC Contractor.

The project design is sound and the geographical (Nandurbar Taluka, Nandurbar District & Sakri Taluka, Dhulia District, Maharashtra, India) and temporal (20 years) boundaries of the project are clearly defined.

## Confirmation on Debundling

Validation team has confirmed that Project participant has only 15 MW installations (Project Activity) at this site. Project participant has another two such installations in Satara district, Maharashtra (3.15 MW) and Jaisalmer District, Rajasthan (5.0 MW). These two locations are at least 200 km and 800 Km away from location of project activity respectively.

## Confirmation on small-scale limits

The proposed project has installed capacity of 15 MW of electricity from a renewable source (Wind Energy); the installed capacity is equal to the threshold limit of 15 MW for small-scale project activity and the electricity is supplied to the Western Region Electricity Grid.

Project participant has also given declaration in writing dated 30/06/2007; project will remain under small-scale limits throughout the crediting period.

Prominent CARs and CLs and their resolution/conclusion applicable to project design are listed below

**CAR 1 : A 2.2, Table 2**

WEG K-254 is connected to Valve substation whereas it is stated wrongly as Jamde substation in section A 2 of PDD

**Response from Project Participant**

The correction has been made in the PDD, version 2, 09/01/2008

**Conclusion by validation team**

Verified PDD, Version 2 dated 09/01/2008 for correction as Valve Substation. Hence Corrective Action Request CAR-1 is closed.

**CAR 4: section A 3.4 , Table 2**

The project is in line with Ministry of Non-conventional Energy Sources' policy of promoting and achieving a target of 10% renewable energy by 2010. But Host Country (DNA) approval not available as per the project title in web hosted PDD.

**Response from Project Participant**

Revised host country Approval dated 16 November 2007 is now obtained and same is submitted to DOE.

**Conclusion by validation team**
Verified revised Host Country Approval dated 16 November 2007 for same title as PDD and hence Corrective Action Request CAR-4 is closed.

## 3.2 BASELINE AND ADDITIONALITY

Project uses the approved consolidated baseline methodology AMS I.D. Grid connected renewable electricity generation", Version 11, EB33

The adopted monitoring methodology has been chosen based on the following reasons:

- Installed capacity of Project is 15 MW which is equal to threshold limit of 15 MW for small scale Projects.
- Project is ' Generation of electricity from renewable energy i.e. wind Electricity generated is connected to Grid – western grid in this case.

**Starting date and CDM Consideration**

Starting date for project is taken to be 27/10/2005., date on which purchase orders for first phase of 06 nos. of WEGs to supplier M/s. Suzlon Energy Limited was released. This is accepted since it can be considered to be real action related to the project.

There is evidence available to demonstrate that CDM was seriously considered by project proponent to proceed with proposed project activity. This evidence is in the form of

1. Letter from D.J. Malpani dated 24/10/2005 written to Suzlon indicating that risks involved in investments in windpower and possible benefits from CDM, This letter indicates risks associated wind mills installations and order is placed considering possible benefits arising out CDM.

It is to be noted that Project proponent had already invested in two more such wind power projects – One each in Maharashtra (2000) & Rajasthan (2003) states of India. Both these projects have also been proposed as CDM Project.

Validation team considered all the above-mentioned facts and accepted letter written by client to EPC contractor M/s. Suzlon as an evidence of CDM consideration.

The alternatives considered for determination of the baseline scenario in the context of the project activity is continuation of existing situation and no Project activity. In that scenario, the equivalent electricity would have been generated using primarily fossil fuels in the grid-connected plants, to which subject project is connected. This alternative is in line with compliance requirements of host country.

The baseline options considered do not include those options that:
- Do not comply with legal and regulatory requirements; or

- Depend on key resources such as fuels, materials or technology that are not available at the project site.

It has been demonstrated in PDD that proposed project activity cannot exist without backup from CDM revenues. The arguments related to additionality are presented in PDD. Barriers for implementation of the project are –

1. Investment barriers - IRR without CDM revenue is 13.03% and with CDM revenue is to 14.39%.
2. Barriers based on prevailing practices

DOE validated these arguments. These arguments and validation of those is presented below.

**Validation of Additionality claims by DOE**

**A) Investment Analysis –**

Claims –

A. IRR without CDM revenue is 13.03 % and with CDM revenue is 14.39%.

B. Sensitivity Analysis - 10 % increase in generation Results obtained: "IRR without CDM revenue –14.82%". which is just above the benchmark. Project participant has applied a benchmark of Government bond rates, increased by a suitable risk premium to reflect private investment and/or the project type, as substantiated by an independent (financial) expert; Accordingly government bond rate comes to 7.3 for 20 years maturity period which is suitably increased by market risk premium 0f 7.5 which is available from published data. Hence benchmark becomes 14.8%. This benchmark is conservative compared to benchmark of MERC, which is 16%.

Claims of IRR working as well as sensitivity analysis is based on actual data as well as certain assumptions. The data and verifiable evidence / justification available for the same is presented below:

1. Project life has been considered to be 20 years, which is based on available literature on Wind Turbines.
2. Capital cost including cost of WEG, Land, Civil work as well as charges for Installation and commissioning. – Purchase orders dated 27 October 2005 for 6 WTGs, & dated 5 December 2005 for 6 WTGs.
3. Residual value has been considered to be 5 % of capital cost, which is as per industry norms.
4. Project has loan component in financing – Ratio being 35% equity and 65% loan.
5. O&M Expenses and annual escalation – This is as per O&M Contract between Suzlon Windfarm Services Limited and M/s. D.J.Malpani. As per this contract, O&M is free for first three years and then there is annual escalation of 5% upto 17$^{th}$ year and post which it is to be mutually decided. Escalation has been considered further as well up to 20th year
6. Rate of purchase of power is Rs. 3.50 / KWh – This is based on PPA for all the turbines. PPA is valid upto 13 years. There is escalation of 5% in base price of

3.50 upto 13th year, post which price to be mutually agreed. Price from 14th year is kept same as price of 13th year i.e. Rs. 5.30 / Kwh.

7. Generation is considered to be 24 Lacs Unit/ WTG as guaranteed by the supplier

All the claims above have been presented transparently in PDD in section B.5 and validators have validated this information on assumptions with all the supportive evidences.

Similarly sensitivity analysis based on 10 % increase in generation has been carried out. With this IRR is 14.82 % which is just above benchmark chosen by client but still below the benchmark set by state regulatory commission (MERC), which is 16%.

**B) Other Barriers: Prevailing practices**

As presented in PDD, as per the publicly available information, capacity addition in Maharashtra was only 4.39% of all India total where as for states like Tamil Nadu and Karnataka the increase is 60.79 and 18.13 percent respectively. Hence investment in Wind power cannot be considered as a common practice in Maharashtra in years of investments by client.

Client has also put following arguments in PDD for proving the additionality

1. Difficulty in arranging finance for wind power projects
2. Regulatory barrier because of no control of selling price of electricity.

However validators did not accept these claims for additionality since these are not prohibitive in nature. Validation team has considered emission reduction from project activity as additional based on investment analysis and prevailing practices barriers.

Prominent CARs and CLs and their resolution/conclusion applicable to baseline and additionality are listed below -

**CAR 5 : Section B 1.4, Table 2**

Investment barriers, Regulatory barriers, other barriers and common practice analysis discussed. IRR and sensitivity analysis is presented in the PDD. However detailed IRR calculations not provided.

**Response from Project Participant**

Details have been submitted to the DOE.

**Conclusion by validation team**

Validators including financial expert have received detail calculations of IRR and validated those. Hence Corrective Action Request CAR-5 is closed.

## 3.3 MONITORING PLAN

The Project uses the approved consolidated monitoring methodology (Type I Category I.D Renewable electricity generation for a grid) (Version 11), as per Appendix B of the Simplified modalities and procedures for small-scale CDM project activities

The adopted monitoring methodology has been chosen based on the following reasons:

Installed capacity of Project is 15MW, which is within the threshold limit of 15 MW for small scale Projects.

Project is ' Generation of electricity from renewable energy i.e. wind

Electricity generated is connected to Grid – Western grid in this case.

The operation and maintenance is taken care by M/s. Suzlon Wind farm Services Limited. Their site team generates daily generation report and same is available to client through website.

Section B.7.2 of PDD details monitoring practices at the site. According to this each substation is connected to approximately 50 wind turbines. The substation meter collectively displays the generation reading. The exported energy by each turbine is calculated by the method and formula as explained in PDD.

The project revenue is based on the net units displaced as measured by main metering system installed at the interconnection point. Other than main meter, the project proponent has check meter so that the accuracy of main meter can be verified. Accuracy class of meters at substation is 0.2%. The calibration of the meters will be done annually by state utility. Other than periodic calibration of the meters the reading of both meters, will be matched every month.

Prominent CARs and CLs and their resolution/conclusion applicable to baseline and additionality are listed below -

**CL 2, D 4.3,D 5.5, Table 2, & 2.3.1 of Table 3**

Periodic calibration of the energy meters by the state utility is indicated. However the calibration frequency is not defined in the PDD

**Response from Project Participant**

The calibration frequency is annually as mentioned in the Power Purchase Agreement and it rests with the State Utility. Same is included in Section B.7.1 of PDD, version 2 dated 09/01/2008

**Conclusion by validation team**

Verified Section B.7.1 of PDD, version 2, dated 09/01/2008 for calibration frequency of energy meters Clarification Request CL-2, therefore is closed.

## 3.4 CALCULATION OF GHG EMISSIONS

As per Methodology Type I, category D, the baseline emission sources considered are fossil fuel fired power plants connected to the relevant electricity system (grid). The relevant grid considered for the calculation of baseline emissions is the Western region grid and not the state or the National grid.

As required under Type I – Category D, (version 11) the baseline emissions are calculated as per combined margin approach, both in terms of relevant grid definitions and the emission factors. The operating margin in the baseline emissions is calculated using equation described in no of the methodology. For calculating the operating margin, data vintage of 3-year average (based on the most recent publicly available statistics available at the time of PDD submission) has been used. The build margin calculations have been completed with most recent information available on plants already built at the time of PDD submission. The combined margin calculation is based on straight average of operating and build margin. Latest version of the methodology (Version 12, EB 33) also mandates calculation of combined margin as per weightage factor as outlined in ACM 0002, Version 6, dated 19 May 2006. According to this 'For wind and solar projects, the default weights are as follows: $w_{OM}$ = 0.75 and $w_{BM}$ = 0.25 (owing to their intermittent and non-dispatchable nature). The detailed algorithms are described later under sections B.6.1, B.6.2, B.6.3 and Annex 3 of the PDD. Referring to Appendix B of the Simplified Baseline and Monitoring Methodologies (Item No 7(a)), the kWh produced by the renewable generating unit multiplied by the average of the "approximate operating margin" and "build margin" has been selected to arrive at the 'combined margin'.

As described in Type I – Category D (version 11) there are no the project emissions. Similarly project does not lead to any leakage for the type of project activity

The annual estimate of 25848 t eCO2 was found to be reasonable based on generation and emission factor of western grid.

Conservativeness

The Central Electricity Authority of the Government of India has published the CO2 Baseline Database for the Indian power sector, which includes data for all regional grids in India. Version 2.0 of the CO2 Baseline Database was initially adopted for baseline determination in accordance with ACM0002. The resulting emission factor from applying the data provided in version 2.0 of the CEA database was 0.90 tCO2/MWh. However during the course of validation, version 3.0 of the database was published with data added for the year 2006-2007. The emission factor resulting from data in the updated database is 0.8975 tCO2/MWh. Thus, a more conservative baseline for the project activity is established using data from version 3.0. Therefore, the ex-ante values for the operating margin, build margin, and corresponding emission factor were updated as per version 3.0 of the CO2 Baseline Database.

## 3.5 SUSTAINABLE DEVELOPMENT IMPACTS

No significant environmental impacts have been identified from the project activity. Similarly the project activity does not have any adverse impacts on environment during its construction or operational phase.

This CDM initiative would contribute towards:

- Strengthening the Western grid.
- Generation of energy from renewable energy
- Creating employment opportunities in the region of installation.
- Contribution towards meeting the objective of Government of India of achieving 10% of incremental power capacity addition from renewable sources by 2012.
- Conservation of natural resources including land, forests, minerals, water and ecosystems.

In view of above and contribution towards the country's goal of sustainable development and improvement in quality of life of local population, the development and implementation of systems for "15 MW Wind Energy Project in Maharashtra"' were recommended by the M/s. D.J. Malpani's management. During site visit it was noticed that local personnel were involved in the operation and maintenance activities of the wind farms and also as security, thereby giving employment to the local public and contributing to the economic growth of the region. The clearance of this CDM initiative by M/s. D.J.Malpani Limited would facilitate the process of sustainable energy production.

## 3.6 COMMENTS BY LOCAL STAKEHOLDERS

The local population in the vicinity of the project activity comprises mainly of farmers and rural population, who are the major stakeholders in the project activity. The other stakeholders are the regional pollution control board, the party off-taking power from the project activity as well as other parties involved in the construction, operation of the project activity. M/s. D.J. Malpani has transmitted the information to the relevant stakeholders to obtain the necessary clearances.

All the stakeholders were invited for a discussion on the project activity through invitation letter dated 15/04/07 and the date and venue were informed to them through formal invitations. The stakeholder consultation meeting was conducted on 25 April 2007 at Akhtwade & Mandal villages in district Nandurbar and Dhavlivihir,Isharde, Titane villages- district Dhule and was attended by all the stakeholders. The equipments and technology used in the project activity, prospective benefits of GHG reduction and contribution to sustainable development were apprised by M/s. D.J.Malpani to the stakeholders through a presentation in English and in the regional language (Marathi).

Minutes of meeting of stakeholder consultation process is available

The project participant has maintained the list of participants & minutes of meeting of the stakeholders.

The stakeholders have not put forth any negative comments about the project activity, instead they have appreciated the initiative taken up by the project participants for promoting wind power projects in their locality The stakeholders viewed project as contributing to local environmental benefits and socio-economy. Overall, there was agreement that the project activity was a beneficial project from the local sustainable development.

The local stakeholders interviewed during the site visit of the validation activity endorsed these views.

# 4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS

According to the modalities for the Validation of CDM projects, the DOE shall make publicly available the project design document and receive, within 30 days; comments from Parties, stakeholders and UNFCCC accredited non-governmental organizations and make them publicly available.

Bureau Veritas Certification published the project documents on the UNFCCC CDM website (http://cdm.unfccc.int) on 13/07/2007 and invited comments within 11/08/2007 by Parties, stakeholders and non-governmental organizations.

Comments were received from an individual during the commenting period. Responses provided by client on this comments and validators' conclusion on the same are attached as Annex B of this validation report.

# 5 VALIDATION OPINION

Bureau Veritas Certification has performed a validation of the "15 MW Wind Energy Project in Maharashtra" Project in India. The validation was performed on the basis of UNFCCC criteria and host country criteria and also on the criteria given to provide for consistent project operations, monitoring and reporting.

The validation consisted of the following three phases: i) a desk review of the project design and the baseline and monitoring plan; ii) follow-up interviews with project stakeholders; iii) the resolution of outstanding issues and the issuance of the final validation report and opinion.

Project participant/s used the latest tool for demonstration of the additionality. In line with this tool, the PDD provides analysis of investment, and prevailing practice barriers to determine that the project activity itself is not the baseline scenario.

By synthetic description of the project, the project is expected to result in reductions of GHG emissions An analysis of the investment and prevailing practice barriers demonstrates that the proposed project activity 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. Given that the project is implemented and

maintained as designed, the project is likely to achieve the estimated amount of emission reductions.

The review of the project design documentation (Version 2, 09/01/2008) and the subsequent follow-up interviews have provided Bureau Veritas Certification with sufficient evidence to determine the fulfilment of stated criteria. In our opinion, the project correctly applies and meets the relevant UNFCCC requirements for the CDM and the relevant host country criteria.

The validation is based on the information made available to us and the engagement conditions detailed in this report.

# 6 REFERENCES

**Category 1 Documents:**
Documents provided by M/s. D.J.Malpani that relate directly to the GHG components of the project.

/1/ Host country approval dated 16 November 2007

/2/ PDD – Initial version – Version 1 & Final Version – Version 2 dated 09/01/2008

**Starting date and Evidence of CDM Consideration**

/3/ Purchase order dated 27 October 2005 to SEL for supply of 6 nos. of Suzlon make wind turbine Generators –Model S70 – 1250 kW.

/4/ Letter from D.J.Malpani dated 24/10/2005 written to Suzlon indicating that risks involved in investments in windpower and possible benefits from CDM.

/5/ Purchase order dated 5 December 2005 to SEL for supply of 2 nos. of Suzlon make wind turbine Generators –Model S70 – 1250 kW.

/6/ Purchase order dated 5 December 2005 to SEL for supply of 4 nos. of Suzlon make wind turbine Generators –Model S70 – 1250 kW.

**Financial Documents relevant to the Project**

/7/ Loan document – From Indusind Bank dated 11/02/2006

/8/ Loan document – From Bank Of Maharashtra dated 29/08/2006

/9/ Annual reports of the company M/s. D.J.Malpani for Years 2004-05, 2005-06, 2006-07

/10/ Insurance policy no. OG-08-2003-4001-00000015 dated 05/04/07 for 8 turbines

/11/ Insurance policy No. OG-08-2003-4001-00000036 dated 07/04/07 for 4 turbines

**Contracts, agreements & other relevant documents related to Project**

/12/ Wind policy dated 26 February 2004 – Government of Maharashtra

/13/ Power purchase agreement dated 31/12/2005 between MSEDCL & D.J.Malpani for 7.5 MW installations.

/14/ Power purchase agreement dated 27/04/2006 between MSEDCL & D.J.Malpani For 2.5 MW installations.

/15/ Power purchase agreement dated 13/06/2006 between MSEDCL & D.J.Malpani For 5 MW installations

5 MW installations.

/16/ Operation and Maintenance agreement dated 18/08/2006 for services only.

/17/ Various land deeds

**Other relevant documents**

/18/ Commissioning certificate EE/NDBR/Tech/Wind/0008 dated 02/01/2006 indicating commissioning of 3 Nos. of 1250 kW WEGs

/19/ Commissioning certificate EE/NDBR/Tech/Wind/1061 dated 08/03/2006 indicating commissioning of 1 Nos. of 1250 kW WEGs

/20/ Commissioning certificate EE/NDBR/Tech/Wind/647 dated 10/02/2006 indicating commissioning of 1 No. of 1250 kW WEG.

/21/ Commissioning certificate EE/NDBR/Tech/Wind/3037 dated 17/04/2006 indicating commissioning of 1 No. of 1250 kW WEG.

/22/ Commissioning certificate SE/DHL/Tech/Wind/2987 dated 17/04/2006 indicating commissioning of 1 Nos. of 1250 kW WEG.

/23/ Commissioning certificate SE/DHL/Tech/Wind/2998 dated 17/04/2006 indicating commissioning of 1 Nos. of 1250 kW WEG.

/24/ Commissioning certificate SE/DHL/Tech/Wind/6588 dated 22/08/2006 indicating commissioning of 3 Nos. of 1250 kW WEG.

/25/ Commissioning certificate SE/DHL/Tech/Wind/6726 dated 28/08/2006 indicating commissioning of 1 Nos. of 1250 kW WEG.

### Category 2 Documents:

Background documents related to the design and/or methodologies employed in the design or other reference documents.

/1/ Kyoto Protocol to the United Nations Framework Convention on Climate Change, United Nations, 1997

/2/ Guidelines for completing CDM-PDD - Version 04 – 22 December 2006.

/3/ Approved Methodology – I D - Version 11, EB 33

/4/ Attachment A to Appendix B for demonstration and Assessment of Additionality – version 6, dated 30/09/2005

### Persons interviewed:

List persons interviewed during the validation or persons that contributed with other information that are not included in the documents listed above.

/1/ Mr. Prafulla Khinvsara – Manager – purchase – M/s. D.J.Malpani

/2/ Ms. Pooja Sinha – Sr. Consultant – Mitcon Consultancy Services

/3/ Mr. Smitanshu Karekar, Smitanshu Karekar & Co. Chartered Accountants

/4/ Mr. Vikram N Saha, Executive Marketing, Suzlon Energy Ltd

/5/ Mr. Shiva Prabu, Engineer, Suzlon Energy Ltd

/6/ Mr. Nirav Visana, Shift Incharge, Suzlon Infrastructure Management Services

/7/ Mr. Bharat Sondaharva, Technician, Suzlon Infrastructure Management Services

/8/ Mr. Mayur Makwana, Engineer Incharge, Jamde Substation

/9/ Mr. Ramlal Seva Rathod, Villager, Vasanth Nagar

/10/ Mr. Kailash Waghle, Villager, Mandal

/11/ Mr. Yogesh Pawar, Villager, Vasanth Nagar

/12/ Mr. RJ Makwana, Villager, Bramhanvel

## APPENDIX A : VALIDATION PROTOCOL

**Table 1 Mandatory Requirements for Small Scale Clean Development Mechanism (CDM) Project Activities**

| REQUIREMENT | REFERENCE | CONCLUSION | Cross Reference/ Comment |
|---|---|---|---|
| 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 | See Table 2, Section A.3.3 | Table 2, Section E.4.1 |
| 2. 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, Simplified Modalities and Procedures for Small Scale CDM Project Activities §23a | Project proponent has obtained Host country approval (India). Host country approval dated is attached. | Table 2, Section A.3 |
| 3. The project shall assist non-Annex I Parties in contributing to the ultimate objective of the UNFCCC | Kyoto Protocol Art. 12.2. | See Table 2, Section A.3.3 | Table 2, Section E.4.1 |
| 4. The project shall have written approval of voluntary participation from the designated national authorities of each party involved | Kyoto Protocol Art. 12.5a, Simplified Modalities and Procedures for Small Scale CDM Project Activities §23a | Project proponent has obtained Host country approval (India) | Written approval of voluntary participation from the DNA is obtained. |
| 5. The emission reductions should be real, measurable and give long-term benefits related to the mitigation of climate change | Kyoto Protocol Art. 12.5b | See Table 2, Section E.4.1 | Table 2, Section E.1 to E.4 |
| 6. Reduction in GHG emissions must be additional to any that would occur in absence of the project activity, i.e. a CDM project activity is additional if anthropogenic emissions of greenhouse gases by sources are | Kyoto Protocol Art. 12.5.c, Simplified Modalities and Procedures for Small | Yes. See Table 2, B.2.1 | Table 2, Section B.2.1 |

| REQUIREMENT | REFERENCE | CONCLUSION | Cross Reference/ Comment |
|---|---|---|---|
| reduced below those that would have occurred in the absence of the registered CDM project activity | Scale CDM Project Activities §26 | | |
| 7. Potential public funding for the project from Parties in Annex I shall not be a diversion of official development assistance | Marrakech Accords (Decision 17/CP.7) | The Project will not receive any public funding from parties included in Annex I | Declaration by the Project Proponent in Annex. 2 of PDD. |
| 8. Parties participating in the CDM shall designate a national authority for the CDM | Marrakesh Accords (CDM modalities§ 29) | Ministry of Environment and Forest (MOEF) is the Designated National Authority (DNA) of India | Government of India has designated the National Clean Development Mechanism (CDM) Authority under Ministry of Environment & Forest to act as DNA. Source http://cdm.unfccc.int/DNA |
| 9. The host country shall be a Party to the Kyoto Protocol | Marrakesh Accords (CDM modalities§ 30) | Yes | Date of accession – August 2002 Source http://unfccc.int/parties_and_observers/parties/items/2109.php |
| 10. The proposed project activity shall meet the eligibility criteria for small scale CDM project activities set out in § 6 (c) of the Marrakesh Accords and shall not be a debundled component of a larger project activity | Simplified Modalities and Procedures for Small Scale CDM Project Activities §12a,c | Yes. See Section A.1.1 & A.1.2 | Table 2, Section A.1 |

| REQUIREMENT | REFERENCE | CONCLUSION | Cross Reference/ Comment |
|---|---|---|---|
| 11. The project design document shall conform with the Small Scale CDM Project Design Document format | Simplified Modalities and Procedures for Small Scale CDM Project Activities, Appendix A | Yes. The Project Design Document conforms to current version of Small Scale Project Design Document Format | Gaps were identified during documentation review and the requirements of PDD with the small-scale CDM projects were conformed. |
| 12. The proposed project activity shall confirm to one of the project categories defined for small scale CDM project activities and uses the simplified baseline and monitoring methodology for that project category | Simplified Modalities and Procedures for Small Scale CDM Project Activities §22e | Yes.<br>Type I, Category I D | Table 2, Section A.1.3 and B.1 |
| 13. Comments by local stakeholders are invited, and a summary of these provided | Simplified Modalities and Procedures for Small Scale CDM Project Activities §22b | Yes<br>See Table 2, Section G.1.1 | Table 2, Section G |
| 14. If required by the host country, an analysis of the environmental impacts of the project activity is carried out and documented | Simplified Modalities and Procedures for Small Scale CDM Project Activities §22c | Not required by Host Country<br>See Table 2, Section F.1.1 | Table 2, Section F |
| 15. Parties, stakeholders and UNFCCC accredited NGOs have been invited to comment on the validation requirements and comments have been made publicly available | Simplified Modalities and Procedures for Small Scale CDM Project Activities §23b,c,d | Project Design Document (PDD) was made publicly available on UNFCC Website for the period of 30 days from 15 Nov. 2006 to 14 Dec. 2006 | Source http://cdm.unfccc.int/Projects/Validation |

**Table 2 Requirements Checklist**

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl. | Final Concl. |
|---|---|---|---|---|---|
| **A. Project Description**<br>The project design is assessed. | | | | | |
| A.1. **Small scale project activity**<br>It is assess whether the project qualifies as small scale CDM project activity. | | | | | |
| A.1.1. Does the project qualify as a small scale CDM project activity as defined in paragraph 6 (c) of decision 17/CP.7 on the modalities and procedures for the CDM? | 1,3 | DR | The project qualifies as a renewable energy project with a maximum output capacity equivalent up to 15 MW. The project activity involves the implementation of a total of 15 MW capacity wind turbines.<br>The title of approved baseline methodology applied to the project activity is small scale activity<br>AMS I.D – Type I Renewable energy projects, ID *Grid connected renewable electricity generation, Version 11.* | OK | OK |
| A.1.2. The small-scale project activity is not a debundled component of a larger project activity? | 1 | DR | The project activity is not a debundled component of a large scale one as there is no project activity:<br>➢ By the same project participants;<br>➢ In the same project category and<br>➢ Technology /measure; and<br>➢ Registered within the previous 2 years; and<br>➢ Whose project boundary is within 1 km of the project boundary of the proposed small-scale activity at the closest point. | OK | OK |
| A.1.3. Does proposed project activity confirm to one of the project categories defined for small scale CDM project activities? | 2,3 | DR | The project activity is small-scale activity generating energy from wind.<br>AMS I.D – Type I Renewable energy projects, ID | OK | OK |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl. | Final Concl. |
|---|---|---|---|---|---|
| | | | *Grid connected renewable electricity generation, Version 11.* | | |
| A.2. **Project Design**<br>Validation of project design focuses on the choice of technology and the design documentation of the project. | | | | | |
| A.2.1. Are the project's spatial (geographical) boundaries clearly defined? | 1 | DR<br>I | The projects spatial / geographical boundaries are clearly defined in PDD | OK | OK |
| A.2.2. Are the project's system (components and facilities used to mitigate GHG's) boundaries clearly defined? | 1 | DR | WEG K-254 is connected to Valve substation whereas it is stated wrongly as Jamde substation in section A 2 of PDD | CAR 1 | OK |
| A.2.3. Does the project design engineering reflect current good practices. | - | | Yes. | OK | OK |
| **1.** A 2.4 Will the project result in technology transfer to the host country? | - | DR | No major technology transfer. | OK | OK |
| **2.** A 2.5 Does the PDD provide information allowing unique identification of the project activity? | | | Unique identification of the project activity such as Latitude / Longitude and survey numbers provided in PDD. But the length of field is more than one page as against the guideline restriction of one page. | CAR 2 | OK |
| **3.** A 2.6. Does the project require extensive initial training and maintenance efforts in order to work as presumed during the project period? Does the project make provisions for meeting training and maintenance needs? | - | DR<br>I | Yes. O & M is vested with the supplier of the WEG itself. However, provision for training is not clear in PDD. | CL1 | OK |
| **4.** A 2.7 If the view of the project participant on contribution of project activity to | 1 | DR | Yes. View of the PP on contribution of project activity to sustainable development is described in | OK | OK |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl. | Final Concl. |
|---|---|---|---|---|---|
| sustainable development is included? | | | PDD | | |
| **5.** A 2.8 Is an estimate of the emission reductions for the chosen crediting period furnished in the PDD? | 1 | DR | Estimate of the emission reductions for the chosen crediting period furnished in the PDD in tabular format. However the estimate indicated in section A 4.3, B 6.3, B 6.4, B 7.1, table in page 34 and 35 of PDD is not complete and incorrect for the chosen crediting period of 10 years | CAR 3 | OK |
| A.3. **Contribution to Sustainable Development** The project's contribution to sustainable development is assessed | | | | | |
| A.3.1. Will the project create other environmental or social benefits than GHG emission reductions? | 1 | DR I | The social benefit derived from this project other than GHG emission reductions is employment generation and rural development. | OK | OK |
| A.3.2. Will the project create any adverse environmental or social effects | | DR | No adverse environmental or social effects are envisaged. | OK | OK |
| A.3.3. Is the project in line with sustainable development policies of the host country? | 1 | DR | Yes. | OK | OK |
| A.3.4. Is the project in line with relevant legislation and plans in the host country? | - | DR I | Yes. The project is in line with Ministry of Non-conventional Energy Sources' policy of promoting and achieving a target of 10% renewable energy by 2010. But Host Country (DNA) approval not available as per the project title in web hosted PDD. | CAR 4 | OK |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl. | Final Concl. |
|---|---|---|---|---|---|
| **B. Project Baseline**<br>The validation of the project baseline establishes whether the selected baseline methodology is appropriate and whether the selected baseline represents a likely baseline scenario. | | | | | |
| B.1. **Baseline Methodology**<br>It is assessed whether the project applies an appropriate baseline methodology. | | | | | |
| B.1.1. Is the selected baseline methodology in line with the baseline methodologies provided for the relevant project category? | 1,2 | DR | The project is in line with the baseline methodologies specified in AMS I.D – Type I Renewable energy projects, ID-*Grid connected renewable electricity generation.*<br>The current version 11 is referred in PDD. | OK | OK |
| B.1.2. Is the baseline methodology applicable to the project being considered? | 1,2 | DR | The project involves electricity capacity additions through wind sources and hence the baseline methodology is applicable for this project. | OK | OK |
| B.1.3. Is the justification to the choice of project category transparent? | 1,2 | DR | Yes. The project is of 15 MW capacity which is the maximum limit allowed under small scale project activities | OK | OK |
| B.1.4. Does the PDD demonstrate that the project activity is additional as per options provided under attachment A to Appendix B of simplified modalities and procedures for small scale CDM project activities? | 1,2 | DR | Investment barriers, Regulatory barriers, other barriers and common practice analysis discussed. IRR and sensitivity analysis is presented in the PDD. However detailed IRR calculations not provided. | CAR 5 | OK |
| B.1.5. Is the date of completion of application of methodology provided in the date format as per dd/mm/yyyy format? | | | Date of completion of application of methodology not provided in dd/mm/yyyy format as per guidelines in section B 8 of PDD | CAR 6 | OK |
| B.1.6. Is the contact information of the person/entity responsible for application of | | | Contact information of the person/entity responsible for application of the baseline and monitoring | CAR 7 | OK |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl. | Final Concl. |
|---|---|---|---|---|---|
| the baseline and monitoring methodology to the project activity provided in the PDD? | | | methodology to the project activity not provided in section B 8 of the PDD | | |
| B.2. **Baseline Determination**<br>It is assessed whether the project activity itself is not a likely baseline scenario and whether the selected baseline represents a likely baseline scenario. | | | | | |
| B.2.1. Is it demonstrated that the project activity itself is not a likely baseline scenario due to the existence of one or more of the following barriers: investment barriers, technology barriers, barriers due to prevailing practice or other barriers? | 1 | DR | Refer to comments for B 1.4 | - | OK |
| B.2.2. Is the application of the baseline methodology and the discussion and determination of the chosen baseline transparent and conservative? | 1 | DR I | The determination of baseline is transparent and conservative. CEA baseline factors applicable to Western region as well as wind energy projects used for calculation of baseline. | OK | OK |
| B.2.3. Are relevant national and/or sectoral policies and circumstances taken into account? | - | DR | National as well as sectoral policies favour power generation through renewable sources. | OK | OK |
| B.2.4. Is the baseline selection compatible with the available data? | 1 | DR | Yes | OK | OK |
| B.2.5. Does the selected baseline represent the most likely scenario describing what would have occurred in absence of the project activity? | 1,2 | DR | Yes | OK | OK |
| B.2.6. Are the variables, parameters and data sources made available in the PDD in tabular form? | 1,2 | DR | Section B 6.2 of PDD indicates the variables. Parameters and data sources in tabular format. | OK | OK |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl. | Final Concl. |
|---|---|---|---|---|---|
| **C. Duration of the Project / Crediting Period**<br>It is assessed whether the temporary boundaries of the project are clearly defined. | | | | | |
| C.1.1. Are the project's starting date and operational lifetime clearly defined? | 1 | DR | Different starting dates are indicted for each phase. However all the phases are within the project activity. Hence the P.O date for the first phase is the starting date of the project activity and to be mentioned in dd/mm/yyyy format as required.<br>Operational lifetime is 20 years. | CAR 8 | OK |
| C.1.2. Is the crediting period clearly defined (seven years with two possible renewals or 10 years with no renewal)? | 1 | DR | Fixed crediting period of 10 years is chosen with no renewal. | OK | OK |
| **D. Monitoring Plan**<br>The monitoring plan review aims to establish whether all relevant project aspects deemed necessary to monitor and report reliable emission reductions are properly addressed. | | | | | |
| D.1. **Monitoring Methodology**<br>It is assessed whether the project applies an appropriate monitoring methodology. | | | | | |
| D.1.1. Is the selected monitoring methodology in line with the monitoring methodologies provided for the relevant project category? | 1,2 | DR | Yes, The monitoring methodology is as per "Metering the electricity generated" as indicated in Appendix B of simplified modalities and procedures for small-scale CDM projects. | OK | OK |
| D.1.2. Is the monitoring methodology applicable to the project being considered? | 1,2 | DR | Yes. The monitoring methodology is applicable to the project being considered | OK | OK |
| D.1.3. Is the application of the monitoring | 1,2 | DR | The monitoring methodology is transparent. Data | OK | OK |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl. | Final Concl. |
|---|---|---|---|---|---|
| methodology transparent? | | | is being monitored and recorded by plant personnel and joint measurements are taken along with officials of state power utility and signed by both parties.( B. 7.2 & Annex 4 of PDD) | | |
| D.1.4. Will the monitoring methodology give opportunity for real measurements of achieved emission reductions? | 1 | DR | This methodology is reliable as long the energy meter provided is in un-interrupted operation. | OK | OK |
| D.2. **Monitoring of Project Emissions** It is established whether the monitoring plan provides for reliable and complete project emission data over time. | | | | | |
| D.2.1. Are the choices of project emission indicators reasonable? | 1 | DR | Since the project is wind energy based, project emissions are not likely to occur. | OK | OK |
| D.2.2. Will it be possible to monitor / measure the specified project emission indicators? | 1 | DR | Refer D 2.1 above | OK | OK |
| D.2.3. Do the measuring technique and frequency comply with good monitoring practices? | 1 | DR | Refer D 2.1 above | OK | OK |
| D.2.4. Are the provisions made for archiving project emission data sufficient to enable later verification? | 1 | DR | Refer D 2.1 above | OK | OK |
| D.3. **Monitoring of Leakage** It is assessed whether the monitoring plan provides for reliable and complete leakage data over time. | | | | | |
| D.3.1. If applicable, are the choices of leakage indicators reasonable? | 1 | DR | No leakages are envisaged. | OK | OK |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl. | Final Concl. |
|---|---|---|---|---|---|
| D.3.2. If applicable, will it be possible to monitor / measure the specified leakage indicators? | 1 | DR | Not applicable | OK | OK |
| D.3.3. If applicable, do the measuring technique and frequency comply with good monitoring practices? | 1 | DR | Not applicable | OK | OK |
| D.3.4. If applicable, are the provisions made for archiving leakage data sufficient to enable later verification? | 1 | DR | Not applicable | OK | OK |
| D.4. **Monitoring of Baseline Emissions**<br>It is established whether the monitoring plan provides for reliable and complete project emission data over time. | | | | | |
| D.4.1. Is the choice of baseline indicators, in particular for baseline emissions, reasonable? | 1 | DR | Yes, the baseline indicators have been chosen in line with AMS-I.D, Version 11 | OK | OK |
| D.4.2. Will it be possible to monitor / measure the specified baseline emission indicators? | 1 | DR | Yes. Possible. | OK | OK |
| D.4.3. Do the measuring technique and frequency comply with good monitoring practices? | 1 | DR I | Periodic calibration of the energy meters by the state utility is indicated. However the calibration frequency is not defined in the PDD. | CL 2 | OK |
| D.4.4. Are the provisions made for archiving baseline emission data sufficient to enable later verification? | 1 | DR | Electronic archiving of data is for a two year period further to the end of crediting period and is defined in the PDD | OK | OK |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl. | Final Concl. |
|---|---|---|---|---|---|
| D.5. **Project Management Planning**<br>It is checked that project implementation is properly prepared for and that critical arrangements are addressed. | | | | | |
| D.5.1. Is the authority and responsibility of project management clearly described? | 1 | DR | Section B 7.2 of PDD indicates the responsibilities. O&M contract is vested with the WEG supplier itself. | OK | OK |
| D.5.2. Is the authority and responsibility for monitoring measurement and reporting clearly described? | 1 | DR I | Yes. Described in section B 7.2 of PDD. | OK | OK |
| D.5.3. Are procedures identified for training of monitoring personnel? | 1 | DR I | Refer A 2.6 | CL 1 | OK |
| D.5.4. Are procedures identified for emergency preparedness for cases where emergencies can cause unintended emissions? | 1 | DR I | There is no likely hood of any emergency situations related to emissions. | OK | OK |
| D.5.5. Are procedures identified for calibration of monitoring equipment? | 1 | DR I | Refer D 4.3 | CL 2 | OK |
| D.5.6. Are procedures identified for maintenance of monitoring equipment and installations? | 1 | DR I | O&M is vested with the supplier of the WEG itself and is indicated in the PDD | OK | OK |
| D.5.7. Are procedures identified for monitoring, measurements and reporting? | 1 | DR I | Procedures for monitoring, measurements and reporting not indicated in PDD | CL 3 | OK |
| D.5.8. Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation) | 1 | DR I | Monitoring is by SCADA system. Procedures for handling of day-to-day records, storage, retrieval etc not addressed in PDD. | CL 4 | OK |
| D.5.9. Are procedures identified for dealing | 1 | DR | Procedures for dealing with possible monitoring | CL 5 | OK |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl. | Final Concl. |
|---|---|---|---|---|---|
| with possible monitoring data adjustments and uncertainties? | | I | data adjustments and uncertainties not clear in PDD | | |
| D.5.10. Are procedures identified for internal audits of GHG project compliance with operational requirements as applicable? | 1 | DR I | PDD is silent about Internal audit procedures, reviews and corrective action procedures. | CL 6 | OK |
| D.5.11. Are procedures identified for project performance reviews? | 1 | DR I | Refer D.5.10 | | OK |
| D.5.12. Are procedures identified for corrective actions? | 1 | DR I | Refer D 5.10 | CL 6 | OK |
| **E. Calculation of GHG emission**<br>It is assessed whether all material GHG emission sources are addressed and how sensitivities and data uncertainties have been addressed to arrive at conservative estimates of projected emission reductions. | | | | | |
| E.1. **Project GHG Emissions**<br>The validation of predicted project GHG emissions focuses on transparency and completeness of calculations. | | | | | |
| E.1.1. Are all aspects related to direct and indirect project emissions captured in the project design? | 1 | DR | Not applicable since it is a windmill project. | OK | OK |
| E.1.2. Have all relevant greenhouse gases and sources been evaluated? | 1 | DR | Not applicable | OK | OK |
| E.1.3. Do the methodologies for calculating project emissions comply with existing good practice? | 1 | DR | Not applicable | OK | OK |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl. | Final Concl. |
|---|---|---|---|---|---|
| E.1.4. Are the calculations documented in a complete and transparent manner? | 1 | DR | Not applicable | OK | OK |
| E.1.5. Have conservative assumptions been used? | 1 | DR | Not applicable | OK | OK |
| E.1.6. Are uncertainties in the project emissions estimates properly addressed? | 1 | DR | Not applicable | OK | OK |
| E.2. **Leakage**<br>It is assessed whether there leakage effects, i.e. change of emissions which occurs outside the project boundary and which are measurable and attributable to the project, have been properly assessed. | | | | | |
| E.2.1. Are leakage calculation required for the selected project category and if yes, are the relevant leakage effects assessed? | 1 | DR | Not applicable since it is a windmill and there is no transfer of equipment. | OK | OK |
| E.2.2. Are potential leakage effects properly accounted for in the calculations (if applicable)? | 1 | DR | Not applicable | OK | OK |
| E.2.3. Do the methodologies for calculating leakage comply with existing good practice (if applicable)? | 1 | DR | Not applicable | OK | OK |
| E.2.4. Are the calculations documented in a complete and transparent manner and (if applicable)? | 1 | DR | Not applicable | OK | OK |
| E.2.5. Have conservative assumptions been used (if applicable)? | 1 | DR | Not applicable | OK | OK |
| E.2.6. Are uncertainties in the leakage | 1 | DR | Not applicable | OK | OK |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl. | Final Concl. |
|---|---|---|---|---|---|
| estimates properly addressed (if applicable)? | | | | | |
| E.3. **Baseline GHG Emissions**<br>The validation of predicted baseline GHG emissions focuses on transparency and completeness of calculations. | | | | | |
| E.3.1. Are the baseline emission boundaries clearly defined and do they sufficiently cover sources for baseline emissions? | 1 | DR | All sources are covered. | OK | OK |
| E.3.2. Are all aspects related to direct and indirect baseline emissions captured in the project design? | 1 | DR | Yes | OK | OK |
| E.3.3. Have all relevant greenhouse gases and sources been evaluated? | 1 | DR | Yes | OK | OK |
| E.3.4. Do the methodologies for calculating baseline emissions comply with existing good practice? | 1 | DR | Yes<br>$BE_y(tCO_2/yr) = EG_y \times EF_y =$ as per appendix B | OK | OK |
| E.3.5. Are the calculations documented in a complete and transparent manner? | 1 | DR | Yes | OK | OK |
| E.3.6. Have conservative assumptions been used? | 1 | DR | Yes. Latest CEA values used. | OK | OK |
| E.4. **Emission Reductions**<br>Validation of baseline GHG emissions will focus on methodology transparency and completeness in emission estimations. | | | | | |
| E.4.1. Will the project result in fewer GHG emissions than the baseline case? | 1 | DR | Yes. The project replaces fossil fuel based electricity generation. | OK | OK |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl. | Final Concl. |
|---|---|---|---|---|---|
| E.4.2. Is the table showing the aggregate emission reductions included in the PDD as per the format in guidance document? | 1,2 | DR | Yes, table showing the aggregate emission reductions included in the PDD. (Refer A 2.8) | OK | OK |
| **F. Environmental Impacts**<br>It is assessed whether environmental impacts of the project are sufficiently addressed. | | | | | |
| F.1.1. Does host country legislation require an analysis of the environmental impacts of the project activity? | 1 | DR I | Environmental Impact Analysis is not required since it is a windmill project. | OK | OK |
| F.1.2. Does the project comply with environmental legislation in the host country? | 1 | DR I | Environmental clearance is not required for windmill projects as per EIA notification in the host country (India) and is indicated in the PDD | OK | OK |
| F.1.3. Will the project create any adverse environmental effects? | 1 | DR | Being a wind energy project no adverse environmental effects are envisaged | OK | OK |
| F.1.4. Have environmental impacts been identified and addressed in the PDD? | 1 | DR | Refer F.1.3 | OK | OK |
| **G. Comments by Local Stakeholder**<br>Validation of the local stakeholder consultation process. | | | | | |
| G.1.1. Have relevant stakeholders been consulted? | 1 | DR I | Section E 1 of PDD addresses the local stakeholders consultation process. | OK | OK |
| G.1.2. Have appropriate media been used to invite comments by local stakeholders? | 1 | DR | Local stakeholders were evidently invited through an invitation letter dated 15/04/2007 | OK | OK |
| G.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 legislation. | OK | OK |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl. | Final Concl. |
|---|---|---|---|---|---|
| G.1.4. Is a summary of the comments received provided? | 1 | DR | As said in E 2 of PDD, no adverse comments were received during stake holder consultation | OK | OK |
| G.1.5. Has due account been taken of any comments received? | 1 | DR | No adverse comments as reported in PDD. | OK | OK |

**Table 3 Baseline and Monitoring Methodologies: AMS – ID version 11**

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl | Final Concl |
|---|---|---|---|---|---|
| 1. Baseline Methodology | | | | | |
| 1. 1. Applicability | | | | | |
| 1.1.1. Does the project activity generate electricity from a renewable source like such as photovoltaics, hydro, tidal/wave, wind, geothermal and renewable biomass | 3 | DR I | Yes. The project activity generates electricity from renewable source- wind. | OK | OK |
| 1.1.2. Is the power connected to the grid or displace electricity from electricity distribution system? | 3 | DR I | The generated power is connected to the Western grid | OK | OK |
| 1.1.3 Does the project activity have two components both renewable and non-renewable? | 3 | DR I | Not applicable since only wind energy is used. | OK | OK |
| 1.1.4 If answer to question 1.1.3 above is yes, then is renewable portion within small scale limits? | 3 | DR I | Not applicable. | OK | OK |
| 1.1.5 Does the project activity involve the addition of renewable energy generation units at an existing renewable power generation facility, | 3 | DR I | No | OK | OK |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl | Final Concl |
|---|---|---|---|---|---|
| 1.1.6 Is the project of type retrofit or modification of an existing facility ? | 3 | DR I | No | OK | OK |
| 1.1.3 What is the sub-type of the project activity? | 3 | DR I | AMS I D, Grid connected renewable electricity generation. | OK | OK |
| 1.1.4 Is the baseline methodology used in conjunction with the approved monitoring methodology ACM0002 | 3 | DR I | Yes. Approved indicative simplified baseline & monitoring methodology for selected small scale projects AMS I D is used and is in conjunction with ACM0002 | OK | OK |
| 1. 2. Project boundary | | | | | |
| 1.2.1. Does the project boundary encompass the physical, geographical site of the renewable generation source ? | 3 | DR | Yes the project boundary encompasses the physical, geographical site of the renewable generation source and is defined in B 3 of PDD | OK | OK |
| 1.2.2. Does the spatial extent of the project boundary include the project site and all power plants connected physically to the electricity system that the CDM project power plant is connected to? | 3 | DR | Refer 1.2.1 above | - | OK |
| 1.2.4. Is the regional project electricity system identified by the spatial extent of the power plants that can be dispatched without significant transmission constraints? | 3 | DR | Refer 1.2.1 | - | OK |
| 1.2.5. Are the assumptions made in determining the project electricity system defined and justified? | 3 | DR | There are no assumptions made in defining the project electricity system, | OK | OK |
| 1.2.6. Does the application of this methodology result in a clear grid boundary? | 3 | DR | Yes | OK | OK |
| 1.2.7. If answer to question is no whether DNA guidance is available for defining the boundary. | 3 | DR | No. CEA guidelines available for all the grids. | OK | OK |
| 1.2.8. If answer to question is no and if the host country has a layered dispatch system (e.g. state/provincial/regional/national), which is the | 3 | DR | Western Grid is considered | OK | OK |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl | Final Concl |
|---|---|---|---|---|---|
| regional grid used? | | | | | |
| 1.2.9. If the regional grid is not used whether the national grid is used. | 3 | DR | Not applicable | OK | OK |
| 1.2.10. Have the electricity transfers from connected electricity systems to the project electricity system been defined as electricity imports? | 3 | DR | Yes. | OK | OK |
| 1.2.11. Have the electricity transfers to connected electricity systems to the project electricity system been defined as electricity exports? | 3 | DR | Yes. | OK | OK |
| 1.2.12. For the purpose of build margin, Is the spatial extent to the project boundary limited to project electricity system? | 3 | DR | Yes. CEA guidelines available. | OK | OK |
| 1.2.13. Are recent or likely future additions to transmission capacity likely to significantly increase imported electricity? | 3 | DR I | CEA guidelines available. | OK | OK |
| 1.2.14. If answer to question is yes whether transmission capacity is considered a build margin source with the emission factor determined as for the OM imports. | 3 | DR | Emission factors are defined for all the regional Grids taking in to consideration the OM and BM. | OK | OK |
| 1.2.15. Is the emission factor determined as one of the four options for the OM imports? | 3 | DR | CEA values publicly available | OK | OK |
| 1.2.16. For determining the operating margin, is one of the four options chosen to determine the $CO_2$ emission factors for net electricity imports within the same host country? | 3 | DR | CEA values publicly available | OK | OK |
| 1.2.17. If the import of electricity is from another country, is the $CO_2$ emission factors for net | 3 | DR | Not applicable | OK | OK |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl | Final Concl |
|---|---|---|---|---|---|
| electricity imports considered as 0 t $CO_2$ per MWh. | | | | | |
| 1.3. Identification of alternative baseline scenarios | | | | | |
| 1.3.1. Does the project involve recovered methane for power generation? | 3 | DR | Not applicable | OK | OK |
| 1.3.2 Does the system involve all generators using exclusively fuel oil and/or diesel fuel? | 3 | DR I | Not applicable | OK | OK |
| 1.3.3 If answer to all the above questions are no, then is the baseline, kWh produced by the renewable generating unit multiplied by an emission coefficient (measured in kg CO2e/kWh) calculated in a transparent and conservative manner as described in methodology ( as per latest version of approved methodology ACM 0002 )? | 3 | DR I | Yes. The energy produced in KWh is multiplied with the emission factor as published by CEA to arrive at the baseline in a conservative manner. | OK | OK |
| 1.3.4. Whether a minimum of three years data is referred and used in case the project is non-hydro? | 3 | DR | Yes | OK | OK |
| 1.3.5 Whether the typical average technical lifetime of the type equipment is determined and documented taking into account common practices in the sector and country e.g. based on industry surveys, statistics, and technical literature? | 3 | DR | Operational life time is taken as 20 years. However the basis on which the same is arrived is not evident in PDD. | CL 7 | OK |
| 1.3.6 Whether the baseline emission factor is calculated as a combined margin consisting of the combination of operating margin (OM) and build margin factors according to three steps indicated in the methodology ACM0002? | 3 | DR | Yes. CEA emission factors are in line with the methodology ACM0002. | OK | OK |
| 1.3.7. Whether the weighted average applied by project participant is fixed for a crediting period. | 3 | DR | Yes | OK | OK |
| 1.3.8. If the project is generation of electricity from wind or solar, whether weighted average takes in to account the default weights as wOM = 0.75 and wBM = 0.25 as required by Version 6 of ACM 0002? | 3 | DR | Weighted average is calculated giving weightage of 75% for OM and 25% for BM as per Version 6 of ACM 0002 | OK | OK |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl | Final Concl |
|---|---|---|---|---|---|
| 1.3.9. Whether operating margin emission factors calculations are based on one of the four methods described in the methodology ACM 0002? | 3 | DR | Yes. The simple operating margin method is used for calculating the operating margin emission factor. The simple OM is considered to be calculated using the ex-ante approach and fixed for the crediting period. | OK | OK |
| 1.3.10. Is the most likely baseline scenario 'electricity production from other sources feeding into the grid ? | 3 | DR | Most likely baseline scenario is the electricity production using fossil fuels and feeding in to the grid. | OK | OK |
| 1.3.11. Did the project participant provide evidence and supporting documents to exclude baseline options that do not comply with legal and regulatory requirements; or depend on key resources such as fuels, materials or technology that are not available at the project site? | 3 | I | Project participant has considered the options that are permitted by law and therefore this is not applicable. | OK | OK |
| 1.4. Additionality | | | | | |
| 1.4.1. Was the additionality of the project activity demonstrated and assessed using - Attachment A to Appendix B for demonstration and Assessment of Additionality – version 6, dated 30/09/2005 | 3 | DR | Yes | OK | OK |
| 1.5 Project Emissions | | | | | |
| 1.5.1. Are the project emissions considered as zero [0]? | 3 | DR | Yes. There is no project emission as it is a wind mill. | OK | OK |
| 1.6. Baseline Emissions | 3 | | | | |
| 1.6.1. Are the baseline emissions determined according to the formula $BE_y = EG_y \times EF_y$? in case of project activities using renewable sources but without retrofit / modification ? | 3 | DR | Yes. | OK | OK |
| 1.6.2. Were the Emissions Factor for displaced electricity calculated as in ACM0002? | 3 | DR | Simple OM approach is selected and justification for the same is given in PDD. | OK | OK |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl | Final Concl |
|---|---|---|---|---|---|
| 1.7. Leakage | | | | | |
| 1.7.1. Is the leakage considered if any equipment transfer is evident ? | 3 | DR | No leakages as there is no equipment transfer. | OK | OK |
| 1.8. Emission Reduction | | | | | |
| 1.8.1. Were the emission reductions determined according to the formula $ER_y = BE_y$? | 3 | DR | Emissions reductions are determined according to the formula $ER_y = BE_y$ | OK | OK |
| 1.8.2. Were all values chosen in a conservative manner and was the choice justified? | 3 | DR I | All values were chosen in a conservative manner and the choice was justified | OK | OK |
| 1.8.3. Whether an estimate of likely project emission reductions for the proposed crediting period is prepared as part of the PDD? | 3 | DR | No project emissions since it is a wind mill. | OK | OK |
| 1.8.4. Whether the emission factor is determined ex-post during monitoring? | 3 | DR | No | OK | OK |
| 2. Monitoring Methodology | | | | | |
| 2.1. Applicability | | | | | |
| 2.1.1. Does the project activity generate electricity from a renewable source? | 3 | DR I | Yes. Renewable source-Wind | OK | OK |
| 2.1.2. Is the power connected to the grid? | 3 | DR I | Yes, the power is connected to a western grid. | OK | OK |
| 2.1.3. Does the project activity relate to electricity capacity additions from renewable sources? | 3 | DR I | Yes, the project relates to capacity additions from wind energy source. | OK | OK |
| 2.1.4 Can the geographic and system boundaries for the relevant electricity grid be clearly identified ? | 3 | DR I | Yes, the geographic and system boundaries for the relevant electricity grid can be clearly identified. | OK | OK |
| 2.1.5. Is the information on the characteristics of the grid available? | 3 | DR I | The information on the characteristics of the grid is available | OK | OK |
| 2.2. Monitoring Methodology | | | | | |
| 2.2.1. Does the monitoring plan include monitoring of electricity generation from the proposed project activity? | 3 | DR | Yes. Monitoring plan includes monitoring of electricity generation. | OK | OK |
| 2.2.2 Does monitoring plan include monitoring of | 3 | DR | Not applicable. | OK | OK |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl | Final Concl |
|---|---|---|---|---|---|
| biomass or biomass and fossil fuel where only biomass or biomass and fossil fuel co-firing done ? | | I | | | |
| 2.2.3 Does the methodology require monitoring of Data needed to recalculate the operating margin emission factor, if needed, based on the choice of the method to determine the operating margin (OM), consistent with ACM0002? | 3 | DR | Not applicable as the option of 3-year average, based on the most recent statistics available is chosen | OK | OK |
| 2.2.4. Does the monitoring plan require monitoring of Data needed to recalculate the build margin emission factor, if needed, consistent with ACM0002 ? | 3 | DR | Not applicable as the option of ex ante is chosen. | OK | OK |
| 2.2.5 Does the monitoring plan require monitoring of data needed to calculate fugitive carbon dioxide and methane emissions and carbon dioxide emissions from combustion of fossil fuels required to operate the geothermal power plant ? | 3 | DR | Not applicable. | OK | OK |
| 2.3. Quality Control (QC) and Quality Assurance (QA) Procedures | | | | | |
| 2.3.1. Do all measurements use calibrated measurement equipment that is regularly checked for its functioning? | 3 | I | Periodic calibration of the energy meters by the state utility is indicated. However the calibration frequency is not defined in the PDD. | CL 2 | OK |
| 2.3.2. Are the data double-checked against commercial data? | 3 | DR<br>I | Refer 2.3.1 | OK | OK |

**Table 4 Legal requirements**

| CHECKLIST QUESTION | Ref. | MoV | COMMENTS | Draft Concl | Final Concl |
|---|---|---|---|---|---|
| 1. Legal requirements | | | | | |
| 1.1. Is the project activity environmentally licensed by the competent authority? | 4 | DR | No environmental clearance required for windmill project activity. | OK | OK |
| 1.2. Are the conditions of the environmental license being met? | 4 | DR | Refer 1.1 | OK | OK |
| 1.3 Are the conditions of the Designated National Authority being met? | 4 | DR | Refer 1.1 | OK | OK |

## TABLE 5 RESOLUTIONS OF CORRECTIVE ACTION AND CLARIFICATION REQUESTS

| Draft report clarifications and corrective action requests by validation team | Ref. To checklist question in table 2,3 | Summary of project owner response | Validation team conclusion |
|---|---|---|---|
| **CAR 1**<br>WEG K-254 is connected to Valve substation whereas it is stated wrongly as Jamde substation in section A 2 of PDD | A 2.2<br>Table 2 | The correction has been made in the PDD, version 2, 09/01/2008 | Verified PDD, Version 2 dated 09/01/2008 for correction as Valve Substation. Hence Corrective Action Request CAR-1 is closed. |
| **CAR 2**<br>Unique identification of the project activity such as Latitude / Longitude and survey numbers provided in PDD. But the length of field is more than one page as against the | A 2.5<br>Table 2 | The length has been reduced to 1 page. Kindly refer to page no 6 in the PDD, version 2, dated 09/01/2008 for further reference. | Verified PDD, version 2 dated 09/01/2008 for restricting information in one page. Hence Corrective Action Request CAR-2 is closed. |

| Draft report clarifications and corrective action requests by validation team | Ref. To checklist question in table 2,3 | Summary of project owner response | Validation team conclusion |
|---|---|---|---|
| guideline restriction of one page.. | | | |
| **CAR 3**<br>Estimate of the emission reductions for the chosen crediting period furnished in the PDD in tabular format. However the estimate indicated in section A 4.3, B 6.3, B 6.4, B 7.1, table in page 34 and 35 of PDD is not complete and incorrect for the chosen crediting period of 10 years | A 2.8<br>Table 2 | The issue has been addressed in the PDD, version 2, dated 09/01/2008 and corrections done. | Verified PDD, version 2, dated 09/01/2008 for completeness of Tabular expression and consistency in CER Estimates. Hence Corrective Action Request CAR-3 is closed. |
| **CAR 4**<br>The project is in line with Ministry of Non-conventional Energy Sources' policy of promoting and achieving a target of 10% renewable energy by 2010. But Host Country (DNA) approval not available as per the project title in web hosted PDD. | A 3.4<br>Table 2 | Revised host country Approval dated 16 November 2007 is now obtained and same is submitted to DOE. | Verified revised Host Country Approval dated 16 November 2007 for same title as PDD and hence Corrective Action Request CAR-4 is closed. |
| **CAR 5**<br>Investment barriers, Regulatory barriers, other barriers and common practice analysis discussed. IRR and sensitivity analysis is presented in the PDD. However detailed IRR calculations not provided. | B 1.4<br>Table 2 | Details have been submitted to the DOE. | Validators including financial expert have received detail calculations of IRR and validated those. Hence Corrective Action Request CAR-5 is closed. |
| **CAR 6**<br>Date of completion of application of methodology not provided in dd/mm/yyyy format as per guidelines in section B 8 of PDD | B 1.5<br>Table 2 | Corrected in PDD, version 2, dated 09/01/2008 | Verified PDD, version 2, dated 09/01/2008 for correct expression of date for completion of baseline study. Hence Corrective Action Request CAR-6 is closed. |

| Draft report clarifications and corrective action requests by validation team | Ref. To checklist question in table 2,3 | Summary of project owner response | Validation team conclusion |
|---|---|---|---|
| **CAR 7**<br>Contact information of the person/entity responsible for application of the baseline and monitoring methodology to the project activity not provided in section B 8 of the PDD | B 1.6<br>Table 2 | Contact details have been provided in Annex 1 and its reference mentioned in Section B8. – PDD, version 2, dated 09/01/2008 | Verified PDD, version 2, dated 09/01/2008 for contact information. Hence Corrective Action Request CAR-7 is closed. |
| **CAR 8**<br>Different starting dates are indicated for each phase. However all the phases are within the project activity. Hence the P.O date for the first phase is the starting date of the project activity and to be mentioned in dd/mm/yyyy format as required.. | C 1.1<br>Table 2 | Corrected in PDD, version 2, dated 09/01/2008 The starting date has been considered according to first P.O. released. | Verified PDD, version 2, dated 09/01/2008 for Correct date as starting date Corrective Action Request CAR-8, therefore is closed. |
| **CL 1**<br>O & M is vested with the supplier of the WEG itself. However, provision for training is not clear in PDD. | A.2.6<br>D 5.3<br>Table 2 | Training is carried out by WTG supplier itself. They have well equipped training centre at Pune where the training programme is carried out | Explanation on training plan is found to be satisfactory. Clarification request CL-1 is therefore closed. |
| **CL 2**<br>Periodic calibration of the energy meters by the state utility is indicated. However the calibration frequency is not defined in the PDD | D 4.3,D 5.5<br>Table 2<br>& 2.3.1 of Table 3 | The calibration frequency is annually as mentioned in the Power Purchase Agreement and it rests with the State Utility. Same is included in Section B.7.1 of PDD, version 2 dated 09/01/2008 | Verified Section B.7.1 of PDD, version 2, dated 09/01/2008 for calibration frequency of energy meters Clarification Request CL-2, therefore is closed. |
| **CL 3**<br>Procedures for monitoring, measurements and reporting not indicated in PDD | D 5.7<br>Table 2 | The issue has been addressed in Sections B.6, B.7 and Annex 4 of PDD, version 2, dated 09/01/2008 | Verified Sections B.6, B.7 and Annex 4 of PDD, version 2, dated 09/01/2008 for procedures for monitoring, measurements and reporting. Clarification Request CL-3 is |

| Draft report clarifications and corrective action requests by validation team | Ref. To checklist question in table 2,3 | Summary of project owner response | Validation team conclusion |
|---|---|---|---|
| | | | therefore closed. |
| **CL 4**<br>Monitoring is by SCADA system. Procedures for handling of day-to-day records, storage, retrieval etc not addressed in PDD. | D 5.8<br>Table 2 | The procedures for handling of day-to-day records, storage, retrieval have been addressed in Annex 4 of PDD, version 2, dated 09/01/2008 | Verified Annex 4 of PDD, version 2, dated 09/01/2008 for Procedures for handling of day-to-day records, storage, retrieval. Clarification request CL-4 is therefore closed. |
| **CL 5**<br>Procedures for dealing with possible monitoring data adjustments and uncertainties not clear in PDD | D 5.9<br>Table 2 | Procedures for dealing with possible monitoring data adjustments and uncertainties have been addressed in Annex 4 of PDD, version 2, dated 09/01/2008 | Verified Annex 4 of PDD, version 2, dated 09/01/2008 for inclusion of Procedures for dealing with possible monitoring data adjustments and uncertainties. Clarification request CL-5 is therefore closed. |
| **CL 6**<br>PDD is silent about Internal audit procedures, reviews and corrective action procedures | D 5.10<br>D 5.12<br>Table 2 | Procedures for Internal audit procedures, reviews and corrective action have been addressed in Annex 4 of PDD, version 2, dated 09/01/2008 | Verified Annex 4 of PDD, version 2, dated 09/01/2008 for inclusion of Procedures for Internal audit procedures, reviews and corrective action. Clarification request CL-6 is therefore closed. |
| **CL 7**<br>Operational life time is taken as 20 years. However the basis on which the same is arrived is not evident in PDD | 1.3.5<br>Table 3 | Letter from manufacturers of the WTGs state this as the operational life time. Document has been submitted to the DOE. | Verified document Germinscher Lloyd dated 08/12/2006 for Suzlon make S-70 model of 1250 Kw indicating assumed life for the model to be 20 years. Clarification Request CL-7 is therefore closed. |

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Ref .1: Guidelines for completing CDM-SSC-PDD Version: 4, Dated 22/12/2006

Ref. 2: Appendix B of the simplified modalities and procedures for small scale CDM project activities Version 06-02-03

Ref. 3: Indicative simplified baseline and monitoring methodologies for selected small scale CDM project activity categories I.D, version 11

Ref. 4: Indian Environmental Legislation

## COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS

According to the modalities for the Validation of CDM projects, the DOE shall make publicly available the project design document and receive, within 30 days, comments from Parties, stakeholders and UNFCCC accredited non-governmental organizations and make them publicly available.

Bureau Veritas Certification published the project documents on the UNFCCC CDM website (http://cdm.unfccc.int) on 13/07/2007 and invited comments within 11/08/2007 by Parties, stakeholders and non-governmental organizations. The comments received for the CDM project “15 MW Wind Energy Project in Maharashtra ” are compiled below in tabular format

| Sr. No. | Details of the commenter | Date of the comment | Comment | Response by the project participants | Explanation on how account is taken by the DOE |
|---|---|---|---|---|---|
| 1 | Naveen Sharma<br><br>snaveen511@yahoo.com | 10/08/2007 | The Project proponent has mentioned that the minimum return from the project is between 13.5% to 14% (Rate of interest @9% plus inflation of 5%). The project start date is given as October 2005. The yield on rated company debentures in 2005 was between 6.7 to 7.2% and the inflation (in August 2005) was 4.3%. This translates into a minimum rate of return of less than 13%. (Source: RBI Economic Indicators for 2005)<br><br>I also find that in the last three years preceding the project, the inflation has never crossed 5%, thus it is surprising that an inflation rate of 5% was considered. The details of inflation are available in IMF World Economic Outlook (http://www.imf.org/external/pubs/ft/weo/2005/01/index.htm). The values from the year 2000 are (Annual Inflation) are given below:<br><br>2000 – 4.00<br>2001 – 3.80<br>2002 – 4.30<br>2003 – 3.80 | The approach taken is<br>Rate of interest @9% plus inflation of 5%<br>Which resulted in the benchmark being 14% does not conform to "Tool for demonstration and assessment of additionality" and hence has been discarded. Instead the benchmark has now been calculated as per option (a) of Sub-step 2b paragraph 4 of the above-mentioned tool, Version 4.<br><br>As per the revised financial workings the IRR without CDM benefits works out to 13.03 % and with CDM benefits works out to 14.39%<br><br>In the revised working the additionality is considered as per the Tool for additionality on the basis of Sub-Step 2b. The Benchmark considered is Project IRR and it is compared with 4(a) Government Bond Rats increased by a suitable risk premium. The DOE may please refer the Tool for demonstration and assessment of additionality (Version 4) issued by the CDM EB.<br><br>Inflation was estimated by the Union | Response can be accepted in the light of publicly available information on inflation rate.<br><br>However corrected IRR of the project activity is 13.03 % without CDM revenue, which is below benchmark IRR in the sector for IPPs and hence response can be accepted. |

| | | | | | |
|---|---|---|---|---|---|
| | | | 2004 – 3.80<br>2005 – 4.00 | Budget at 5% and so the project Promoter has considered an inflation rate of 5%. (http://indiabudget.nic.in/es2005-06/chapt2006/chap54.pdf, http://indiabudget.nic.in/es2005-06/chapt2006/chap33.pdf)<br><br>CERC in their justification dated 20.09.2005 has also considered the rate of inflation in 2005-2006 at 5%. (http://cercind.gov.in /08022007/ Justification_dated_20.9.2005.pdf) | |
| | | | **DSCR**<br><br>The Project proponent has mentioned that the term loan of the project was sanctioned at 8.98% and was revised upward later on due to the change in RBI policy. It is clear, that the investment decision was taken on the basis of the approved interest rate (8.98%), the change in interest rate is post facto and could not have been known to the project participant. We don't understand how the project proponent could have foreseen a revision in the RBI policy. | The DSCR of the project is low even at said rate of interest because the repayment term given by the bank as compared to the project life is less. The project life is 20 years whereas the term for loan repayment is only 7 years. In view of the greater repayment in installments, the DSCR is low. M/s D.J. Malpani is a partnership firm the project promoters have tested the feasibility of the project on the basis of Project IRR only. Please refer to the certificate given by Statutory Auditor of the Company. | Explanation on DSCR is found to be adequate. Project has been implemented in two phases. For the first phase interest rate was 9.45 %, which was obtained from Bank of Maharashtra & for the second phase loan was obtained from Indusind Bank at the interest of 8.5%. DOE has verified these loan sanction |

| | | | | | |
|---|---|---|---|---|---|
| | | | Further, we can't understand how the project could have obtained loans at 8.98% in the first place, given such a low DSCR. Especially when the project proponent has mentioned that there are several risks associated with insurance of wind projects. Has the DOE cross checked the loan application filed with the bank/financial institution for the project.<br><br>It is also seen that the PP has calculated project IRR and not ROE which would be the suitable indicator for this case. | | letters & found them in order. |
| | | | **Sensitivity**<br><br>The spirit of sensitivity analysis is to demonstrate the robustness of the financial indicator for the project. The project proponent has conveniently carried out a sensitivity analysis showing a reduction in electricity generation, whereas as a conservative measure, the sensitivity analysis should be carried out considering a higher PLF than the base case.<br><br>Clearly, any increase in PLF | The manufacturer has guaranteed annual generation of 24 Lacs net billable units/ machine. In Wind Power Projects, it is very rare that the generation is greater than the guarantee given by the manufacturer and so the sensitivity analysis is worked out on the basis of reduction in units.<br><br>(Revised sensitivity analysis with negative as well as positive factors (i.e. increase / decrease in electricity generation), the DOE may please refer section B.5 of the PDD) | It is correct that in webhsoted PDD, sensitivity analysis was not presented in the manner it would be expected to be. Now in revised analysis is presented in PDD, Version 2, dated 09/01/2008. |

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| | | | would take the IRR beyond 14%. Further, considering that even in the base case the PP has obtained an IRR of 12.19% and also that the PP has calculated the project IRR and not ROE (as project IRR is always a lesser value), it is clear that even a small increase in the PLF would make the ROE shoot up higher than 14% and hence demonstrate that the financial analysis is not robust taking in variations in important parameters. In such a case the financial analysis will not clearly prove the project as additional. | M/s D.J. Malpani is in the business of manufacture and sale of Tobacco for more than 50 years. The brand name of M/s D.J. Malpani is created in the market. There are many competitors in this business. The comparison is being made between their core business of manufacture and sale of tobacco and Wind Project, which they have recently diversified into.<br>(M/s D.J. Malpani is diverting the funds for this wind power project from their existing business so it is obvious that they will compare the returns of their new venture with their existing business) | |
| | | | **Tobacco profit**<br><br>The prudence of investment is to see the investment in its totality, i.e. both risk and return. Even though the project proponent is engaged in a highly profitable business, one has to evaluate the risks associated with such businesses. Tobacco being a health sensitive sector would obviously have numerous other risks and issues as compared to wind generation. Therefore to compare the returns from a Tobacco business with that of wind projects is not only irrational | | The comparison indicated in PDD is only indicative and not used as benchmark for investment decision in wind sector. Benchmark is used as Government Bond Rats increased by a suitable risk premium, which can be acceptable benchmark. |

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| | | | but also absurd.<br><br>The DOE may please clarify? | The cost comparison was included to put the point across that wind power projects involve higher capital investment, which is difficult to arrange. Considering the comment this point has been restructured to put this message across more clearly. | |
| | | | **Investment Barrier**<br><br>As per Attachment A to Appendix B to the simplified modalities and procedures for small scale CDM projects, the project is considered to be facing investment barrier when a financially more viable alternative to the project activity would have led to higher emissions;<br><br>Can the DOE please clarify how a biomass or a hydro project would have led to higher emissions? | Wind projects need to be insured ~~against both conventional and non-~~ conventional risks. Standard risks during construction and operation are available, but there are certain areas where insurance cover is only developing or is extremely high cost. Many insurers<br>are not willing to cover mechanical or material failure given what they call the "new" technology being employed."<br>– Excerpt from<br>Wind Energy Finance:<br>Mobilizing European Investment in the Indian Wind Sector- prepared for EU- | Revised PDD, Version 2, dated 09/01/08 has clarified that this comparison is for arranging finance. As such DOE has not considered this argument for accepting additionality of project. |
| | | | **Insurance cover**<br><br>The project proponent has beautifully elaborated about the higher risks involved in wind power projects. Thus can it be stated that all wind projects in India would now be additional? | | During site visit, this additionality argument was also questioned by DOE and DOE has not accepted this argument for proving additionality of project, since there is no credible evidence to demonstrate that |

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| | | | | India Wind Energy Network<br><br>Since the DOE is not convinced with this argument, the project promoter has decided to delete it from the PDD.<br><br>Indeed the tariff for all types of power projects is determined by Regulatory Commission and this can be considered as a barrier for all cases. However in case of wind, this barrier is magnified owing to the greater risk involved. | insurance cover is prohibitive barrier for wind projects. |
| | | | **Regulatory Barrier**<br>The project proponent has mentioned that tariff is determined by MERC and project promoter has no say in the matter. We understand that for any and all power projects (thermal, hydro, biomass, wind etc.) the tariff is always determined by the regulatory commission. We would request the DOE to throw some light on the type of projects where the Project promoter has a say in determining the tariff. | Since the DOE is not convinced with this argument, the project promoter has decided to delete it from the PDD.<br><br>The sentence has been misconstrued. By lack of experience, it was meant that the proponents have been in the business of manufacture and sale of tobacco. Knowledge in the field of power generation is limited in this case. Since the DOE is not convinced with this argument, the project promoter has decided to delete it from the PDD. | DOE is of the opinion that regulatory set-up including policies, pricing structure are not truly barriers since it is quite known to any investor across the country. Hence DOE has not accepted this barrier for proving additionality of the project. |
| | | | **Lack of experience**<br><br>In case of wind, development, construction, operation and maintenance, collection and administration are taken up by the EPC contractors with vast amount of experience in the sector. In such a case how does lack of experience create a substantial | | DOE discussed this argument during site visit. From the available information it is noted that Project proponent has two earlier investments in |

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| | | | risk to project proponent? Additionally the scenario of lack of experience would have been worst for alternate options envisaged in the PDD because none of the equipment suppliers in hydro & biomass sectors are taking care of operations (at least for such small investments) | | Maharashtra & Rajsathan States of India, which are also being proposed as CDM projects and are under different stages of validation. So lack of experience in this sector can not be accepted similarly all such investments are backed-up by Operation and maintenance support from EPC Contractor which is responsible for all technical issues at site and any investor would not require to have detail knowledge & experience in the sector.<br>Hence overall DOE also did not accept this argument for demonstrating additionality. |

# APPENDIX C : CVs of Verifiers

**Dr. Ashok Mammen:** Ph.D (Oils & Lubricants) and M.Sc.(Analytical chemistry with over 20 years of experience in petrochemical sector. He is a Lead auditor with Bureau Veritas Certification for Environment Management System, Quality Management System and Occupational Health and Safety Management System. He has undergone intensive training on Clean Development Mechanism and has been involved in the validation and verification processes of more than 30 CDM projects

**Mr. S. V. Pendse:** He is the Lead auditor in Bureau Veritas Certification for Environment Management System, Quality Management System and Occupational Health and Safety Management System. He has done post graduation in the field of Environmental Science and has several years of Industrial work experience in the field of environmental management systems. He has undergone intensive training on Clean Development Mechanism. He so far has carried out Validation/verification for more than 30 CDM projects.

**Mr. R. Sankarnarayanan:** He is the Lead auditor in Bureau Veritas Certification for Environment Management System, Quality Management System and Social Accountability SA 8000:2001. He is Chemical Engineer and has more than several years of Industrial work experience in the field of environmental management systems. He has undergone intensive training on Clean Development Mechanism. He is so far has carried out Validation/verification for more than 20 CDM projects.

**Mr. R. Reghukumar** He is Lead auditor in Bureau Veritas Certification for Environment Management System, Occupational Health and Safety Management System and Quality Management System. Post graduate in Environmental Engineering, Management and certified Project Management Professional from PMI, Pennsylvania, USA, with 20 years of work experience, which include teaching, Environmental Management & Monitoring as part of the environmental regulatory authority and Management system auditing with exposure to variety industrial processes. He has undergone intensive training on Clean Development Mechanism and involved in validation / verification of CDM projects

**Mr. Sushil Budhia:** He is a financial analyst and a Chartered Accountant and has extensive experience for conducting statutory and tax audits. He has experience in internal audits and taxation matters. He has done validation of IRR for more than 10 CDM Projects.

End of Report : INDIA-Val/119 .49/2007/Rev.00