



VALIDATION REPORT

125 MW WIND POWER PROJECT IN KARNATAKA, INDIA

REPORT NO. 2005-9083

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DET NORSKE VERITAS



VALIDATION REPORT

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Summary:

Det Norske Veritas Certification Ltd. (DNV) has performed a validation of the “125 MW Wind Power Project in Karnataka, India” project (hereafter called “the project”) in 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 modalities and procedures and the subsequent decisions by the CDM Executive Board.

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 and iii) the resolution of outstanding issues and the issuance of the final validation report and opinion.

The project activity involves the installation and operation of wind based power generation facilities to be connected to the state grid, having an aggregate installed capacity of 125 MW and located in Sogi, Jogimatti and Jajikalgudda wind zone areas in Bellary, Chitradurga and Davangere districts respectively in the state of Karnataka, India.

In summary, it is DNV's opinion that the “125 MW Wind Power Project in Karnataka, India” project, as described in the revised PDD of March 2006, meets all relevant UNFCCC requirements for the CDM and all relevant host country criteria and correctly applies the approved baseline and monitoring methodology, ACM0002. DNV Certification thus requests the registration of the project as a CDM project.

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<i>Table of Content</i>	<i>Page</i>
1 INTRODUCTION.....	1-1
1.1 Validation Objective	1-1
1.2 Scope	1-1
1.3 Description of Proposed CDM Project	1-1
2 METHODOLOGY.....	2-2
2.1 Review of Documents	2-4
2.2 Follow-up Interviews	2-4
2.3 Resolution of Clarification and Corrective Action Requests	2-4
3 VALIDATION FINDINGS	3-5
3.1 Participation Requirements	3-5
3.2 Project Design	3-5
3.3 Project Baseline	3-5
3.4 Additionality	3-6
3.5 Monitoring Plan	3-7
3.6 Calculation of GHG Emissions	3-7
3.7 Environmental Impacts	3-7
3.8 Comments by Local Stakeholders	3-7
4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS	4-9
4.1.1 Validation opinion	5-14
REFERENCES.....	5-15
Appendix A Validation Protocol	

***Abbreviations***

CAR	Corrective Action Request
CDM	Clean Development Mechanism
CEF	Carbon Emission Factor
CER	Certified Emission Reduction
CH ₄	Methane
CL	Clarification request
CO ₂	Carbon dioxide
CO _{2e}	Carbon dioxide equivalent
DNV	Det Norske Veritas
DNA	Designated National Authority
GHG	Greenhouse gas(es)
GWP	Global Warming Potential
IPCC	Intergovernmental Panel on Climate Change
KPTCL	Karnataka Power Transmission Corporation Ltd
KREDL	Karnataka Renewable Energy Development Limited
MP	Monitoring Plan
MVP	Monitoring and Verification Plan
NGO	Non-governmental Organisation
ODA	Official Development Assistance
PDD	Project Design Document
UNFCCC	United Nations Framework Convention on Climate Change
WEG	Wind Energy Generator
WACC	Weighted Average Cost of Capital



1 INTRODUCTION

MSPL Limited has commissioned DNV Certification to validate the *125 MW Wind Power Project in Karnataka, India* project. This report summarises the findings of the validation of the project, performed on the basis of UNFCCC criteria for CDM projects, as well as criteria given to provide for consistent project operations, monitoring and reporting.

The validation team consisted of the following personnel:

Mr Kumaraswamy Chandrashekara	DNV Bangalore	Team Leader
Mr. Einar Telnes	DNV Oslo	Energy Sector Expert
Mr Susanne Haefeli-Hestvik	DNV Oslo	Internal Verifier

1.1 Validation Objective

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

1.2 Scope

The validation scope is defined as an independent and objective review of the project design document (PDD). The PDD is reviewed against the criteria stated in Article 12 of the Kyoto Protocol, the CDM modalities and procedures as agreed in the Marrakech Accords and the relevant decisions by the CDM Executive Board. The validation team has, based on the recommendations in the Validation and Verification Manual /4/, and employed a risk-based approach, focusing on the identification of significant risks for project implementation and the generation of CERs.

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

1.3 Description of Proposed CDM Project

The project activity involves the installation, operation, maintenance and aggregation of three grid connected wind power projects, to be owned by:

- MSPL Limited - 78.9 MW
- RMMP Limited - 38.75 MW
- PVS & Brothers - 7.5 MW

While each project has varying capacities, the aggregate installed capacity, to be managed by MSPL Limited, works out to 125.15 MW. The wind farms are located in Sogi, Jogimatti and Jajikalgudda wind zone areas in Bellary, Chitradurga and Davangere districts respectively in the state of Karnataka, India. By displacing the electricity from fossil fuel based electricity generating systems, the project activity leads to reduced greenhouse gas emissions.



The power generated is being supplied to Karnataka Power Transmission Corporation Ltd. (KPTCL) under a Power Purchase Agreement (PPA) for 10 years.

The total estimated GHG reduction from the project activity of MSPL is expected to be 2 532 408 t of CO₂e over the crediting period of 10 years.

2 METHODOLOGY

The validation consisted of the following three phases:

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

In order to ensure transparency, a validation protocol was customised for the project, according to the Validation and Verification Manual /4/. The protocol shows in a transparent manner criterion (requirements), means of verification and the results from validating the identified criteria. The validation protocol serves the following purposes:

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

The validation protocol consists of three tables. The different columns in these tables are described in Figure 1.

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



Validation Protocol Table 1: Mandatory Requirements for CDM Project Activities			
Requirement	Reference	Conclusion	Cross reference
<i>The requirements the project must meet.</i>	<i>Gives reference to the legislation or agreement where the requirement is found.</i>	<i>This is either acceptable based on evidence provided (OK), a Corrective Action Request (CAR) of risk or non-compliance with stated requirements or a request for Clarification (CL) where further clarifications are needed.</i>	<i>Used to refer to the relevant checklist questions in Table 2 to show how the specific requirement is validated. This is to ensure a transparent Validation process.</i>

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

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

Figure 1 Validation protocol tables



2.1 Review of Documents

The Project Design Document, including the baseline study and monitoring plan, in its previous versions and the final version (PDD) /1/ version 03, dated March 2006, submitted by MSPL were assessed as part of the validation.

2.2 Follow-up Interviews

On 2005-10-20, 21 & 2005-11-09, DNV Certification performed interviews with project stakeholders to confirm selected information and to resolve issues identified in the document review. Representatives of MSPL were interviewed. The main topics of the interviews are summarised in Table 1.

Table 1 Interview topics

Interviewed organisation	Interview topics
MSPL Limited Mr Manoj Agrawal Mr Subramanyam	<ul style="list-style-type: none"> ➤ Environmental permits ➤ Resources, training, procedures ➤ financial analysis ➤ monitoring methodology

2.3 Resolution of Clarification and Corrective Action Requests

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

- i) mistakes have been made with a direct influence on project results;
- ii) CDM or host Party requirements have not been met; or
- iii) there is a risk that the project would not be accepted as a CDM project or that emission reductions will not be certified.

The term *Clarification* may be used where additional information is needed to fully clarify an issue.

The initial validation identified one Corrective Action Request (CAR) and six requests for Clarification (CL). These requests were presented to the project participant in a draft validation report on 25 November 2005. The additional information provided by the project participant to address these requests resolved the *Corrective Action Requests* and the requests for *Clarification* to DNV's satisfaction. To guarantee the transparency of the validation process, the concerns raised by DNV and the response provided by the project participant are documented in Table 3 of the Validation Protocol in Appendix A



3 VALIDATION FINDINGS

3.1 Participation Requirements

The project activity is being proposed as a unilateral project with MSPL Limited as the only project participant. The DNA of India has approved the project on 28 October 2005 /2/. The host Party, India meets all participation requirements.

The project contributes to the sustainable development of the region by providing benefits such as employment during construction and operation of the project, reducing local pollution from fossil-fuelled power plants and by closing the gap between demand and supply of power. The DNA of India has provided confirmation that the project assists in achieving sustainable development /2/.

It has been confirmed that no diverted official development aid is involved in the project.

3.2 Project Design

The purpose of the project activity is to harness renewable resources in the Chitradurga, Bellary and Davangere regions, in the State of Karnataka, and thereby enable displacement of non-renewable natural resources. Activities involved are construction, operation and maintenance of the wind park.

The aggregated installed capacity of 125.15 MW. The project activity has been planned and executed in two phases; with capacities of 27.65 MW and 97.50 MW in Phase 1 & Phase 2 respectively. The planned annual output of the wind farm is 303.3 GWh.

The expected operational lifetime of the project activity is 20 years and a fixed crediting period of ten years has been chosen, with the starting date of the crediting period to be 22nd March 2004.

3.3 Project Baseline

The approved baseline methodology ACM0002 - "Consolidated baseline methodology for grid-connected electricity generation from renewable sources", has been adopted for the proposed project activity. The baseline methodology is applicable and justified for the proposed project as the project involves electricity capacity additions through wind sources. The geographic boundaries i.e. the wind farms, and the system boundaries i.e. the Southern Region electricity grid have been clearly identified. The expansion of the Karnataka state grid and the Karnataka state power sector is not dominated by generating sources with zero or low operating costs such as hydro and nuclear, and their contribution is less than 50% of the total grid generation.

The operating margin emission factor has been estimated based on the simple OM approach and based on the generation-weighted average emissions per electricity unit of all fossil-fuelled generating sources serving the system over a three year period from 2002 - 2005.

The build margin emission factor has been estimated based on the 20% of the most recently installed power plants.

The baseline emission factor for the southern grid has been estimated to be 907,1 t CO₂/GWh, and is fixed *ex-ante*.



3.4 Additionality

As required by ACM0002, the project applies the “Tool for demonstration and assessment of additionality”;

Step 0: Preliminary screening based on the starting date of the project activity

While Phase -1 of the project activity commenced in December 2003, the following have been provided as evidence to demonstrate that CDM incentive was considered at the start of the project activity:

- Extract of the minutes of the meeting of the board of directors of MSPL held on 14th April 2003, sanctioning INR 1500 million for the project activity for the financial year 2003-2004 based on revenue expectations from CDM as an additional source of revenue.
- Extract of the minutes of the meeting of the board of directors of MSPL held on 10th April 2004, sanctioning INR 4000 million for the project activity for the financial year 2004-2005 based on revenue expectations from CDM as an additional source of revenue.
- Interactions with NEG-MICON (email correspondences) enquiring about CDM and carbon credits for the project activity – June 2003.
- Email proposal dated January 2, 2004, from TERI, for developing the project activity under CDM.
- Other correspondences with consultants such as PwC and Renco Technologies regarding CDM benefits – in 2002.

Step 1: Identification of alternatives to the project activity consistent with current laws and regulations

Two alternatives to the project activity have been identified:

- The proposed project activity not undertaken as a CDM project activity and
- The proposed project activity is not implemented resulting in the continued current grid mix of KPTCL.

Both the alternatives comply with all applicable laws and are thus possible baseline scenarios.

Step 2: Investment analysis

DNV was able to confirm the investment analysis and particularly benchmark analysis presented by MSPL, wherein the weighted average cost of capital (WACC) of the project activity has been used as benchmark to assess the financial attractiveness of the project activity has been chosen to demonstrate additionality. It has been presented that the IRR of the project activity without CDM revenues is estimated at 7.36% which is much lower than WACC (estimated at 10.75%) for the project. The IRR only improves to 8.38% with CDM revenues. A sensitivity analysis (variation by 10%) has also been conducted for factors such as annual exports to KPTCL and OM expense and demonstrated that the IRR is always less than the WACC.

Step 3: Barrier analysis

Not opted by MSPL.

Step 4: Common practise analysis

Common practice analysis has indicated that private investment for generation of power is more towards fossil fuel based technologies or mini hydro power plants. Based on the MNES study, it has been argued that out of a wind power potential of 6620 MW in Karnataka, a realization of



only 3% had been achieved by 2004. It has also been confirmed that only two other private wind farm promoters were envisaging projects more than 15MW, as on March 2004 and they are also in the process of seeking CDM benefits.

Step 5: Impact of CDM registration

CDM revenues are expected to enhance access to new technologies and increase institutional capacity building apart from improving the cash flows.

In conclusion, it is deemed likely that the project activity would not have been implemented in the absence of the CDM.

3.5 Monitoring Plan

The project applies the approved monitoring methodology ACM0002 “Consolidated monitoring methodology for zero-emissions grid-connected electricity generation from renewable sources”.

The monitoring methodology adopted involves the monitoring of the power generation from the project activity.

The authority and responsibility for project management, monitoring, measurement, review and reporting has now been clearly established in the PDD. Calibration and maintenance of process instrumentation are also as per approved monitoring methodology and are governed by the company’s established procedures contained in its quality management systems. Documentation have been reviewed and revised accordingly to cover issues such as internal audit, performance reviews and corrective actions pertaining to the wind power project as also the procedures for performance reviews, internal auditing and corrective actions

3.6 Calculation of GHG Emissions

The project will partly displace fossil fuel-based electricity generation. While the project emissions are zero, baseline emissions are equal to the emission reductions due to the project activity and have been estimated to be 253 240 tCO₂ per year, based on an ex-ante fixed baseline emission factor of 0.907t CO₂/MWh. The baseline emission co-efficient has been derived from the data, as published by the Central Electricity Authority (The Ministry of Power, Government of India), on gross annual energy generation and fuel input from all coal, gas and diesel power generation systems in the southern grid. IPCC default values have also been used, where applicable. Project emissions are zero and no leakage needs be considered for the project activity as stipulated in ACM0002.

3.7 Environmental Impacts

While EIA studies are not required for wind farm projects under Indian legislation, the environmental impacts of the project have been sufficiently assessed. The project is located in the hilly regions of the wind zone area of Chitradurga and is devoid of any wildlife, migratory birds or human habitat. No significant environmental impacts are expected to occur during the life span of the project.

3.8 Comments by Local Stakeholders

MSPL has identified the Village Panchayat, KREDL, KSPCB, consultants and equipment suppliers as the key stakeholders. Though not specifically warranted under The Indian



Legislation, the stakeholder consultation process consisted of a meeting with the identified stakeholders. All stakeholders support the project and no modifications to the project design were necessary. As the project is not expected to have considerable social and environmental impacts, the local stakeholder consultation process carried out for the project is deemed sufficient.



4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS

The PDD of July 2005 was made publicly available on www.dnv.com/certification/climatechange and Parties, stakeholders and NGOs were through the CDM website invited to provide comments during the period 30 August 2005 to 29 September 2005.

Two comments have been received. The comments received (in unedited form) are given in the below text box.

Comment by: Axel Michaelowa, Hamburg Institute of International Economics (HWWA)

Inserted on: 2005-08-31

Subject: Unconvincing additionality test

Comment:

1. Step 0.b of the additionality test is unconvincing. If the meeting of the board did take place on March 31, 2004 and the first windmills were already operating at this time (stated several times and confirmed by the start of the crediting period on March 22, 2004), there is a clear indication that the board meeting was convened after the fact, as a wind project of this size has at least two years gestation period.
2. Compared to most other Indian projects, the calculation of the baseline emissions factor is conservative and very well documented. However, the regional grid would be preferable to the state grid as basis for calculation.
3. It is unclear whether local stakeholders were consulted on the characteristics of the project as CDM project beyond the standard consent procedures under the Indian legal system

Clients Response to the comments:

Comment 1

- The MSPL Limited board meeting had taken place on April 14th 2003, where the board was informed about the proposed investment in the “project activity”. As the project generates green power, it was also informed about the necessary financial assistance that the project would receive through the benefits accrued under the Clean Development Mechanism (CDM) of the Kyoto Protocol (This is as per the document “Extract of the Minutes of the Meeting of the Board of Directors of MSPL Limited held on April 14th 2003”, which has been submitted to the validator).
- Since the balance sheet for the financial year April 2003 - March 2004 was finalized on 31st March 2004; this issue was reiterated in the balance sheet board meeting document, the copy of which is available with the validator.
- We would also inform here that MSPL was closely monitoring the developments under the CDM of the Kyoto Protocol from September 2002 through their communication & interaction with several consultants and through participation in several related seminars and forums (Copies of all the relevant documents have been submitted to the validator).
- In view of the magnitude of investment required for the project activity, MSPL Limited with the prior knowledge of CDM, had planned and initiated the project activity taking into account the benefits accrued through the CDM process.

Comment 2



The Southern Regional grid has now been considered for the baseline emission factor

Comment 3

- Although the standard consent procedures of the country do not warrant a local stakeholder consultation for this project activity, MSPL Limited had consulted the local stakeholders of the project activity and had taken their feedbacks (The same has been verified by the validator)

How DNV has considered the comment received in its validation:

MSPL's response is considered acceptable in the light of revised PDD and detailed additionality arguments. All evidences such as the Minutes of the Meeting pertaining to the Board of Directors meeting, internal correspondences etc. have been verified.

Comment by: Deepak Mawandia, Carbonwatch

Inserted on: 2005-09-06

Subject: 125 MW Wind Power Project in Karnataka, India

Comment:

Background:

1. Income tax depreciation rates for the year 2003-04 to 2005-06 for 'Wind mills and any specially designed devices which run on wind mills AND wrt. Any special devices including electric generators and pumps running on wind energy' is 80% of the value/cost of the asset.

Implying that entities with tax liabilities can use the depreciation to off set the same.

2. The Debt / Equity ratio for most power projects would be ~ 70/30 i.e. equity component in the region of 30% and the balance debt.

Let us assume that:

- a. Cost of the Wind farm is INR 100.
- b. The project developer has a tax liability in excess of INR 27

Broadly speaking, the project developer would be eligible for a tax depreciation of INR 80 in the first year. At a ~ 33%, this works out to a clear (cash) tax break of INR 26.4.

Effectively, from a cash flow prospective, INR 26.4 is funded entirely out of tax breaks. In effect, almost the entire equity component of INR 30 for the project is funded by tax breaks.

Comments:

- a. Wind power technology is an established technology and India is one of the fastest growing markets as far as wind power is concerned.



b. In my opinion, as wind farms are nothing but a single site installation of a number of independent wind power generation units, one should not give too much importance to the size of the farm. It may also be pointed out that most technology suppliers of wind power in India are now offering similar solutions.

c. The claims that the proposed project will displace fossil fuel based electricity that would otherwise be provided by the operation and expansion of the KPTCL grid is debatable, as the KPTCL grid is part of the South Indian Grid with faces a demand suppressed scenario.

Comments on the financial computation

- To the best of my knowledge and experience, the computation of project IRR considers all the benefits accruing from the project. This should, in this case also include the value of the tax breaks available to the project developer. The computations in the PDD do not include the value of the tax breaks, which in this case is very significant. This, in my opinion is not correct.

- In addition, the project IRR should be computed for the entire life of the assets, which in this case is 30 years (Ref. A.4.3 – which states that the “Power Purchase Agreements have been signed with KPTCL for a term of 20 years, extendable by another term of 10 years.”

Questions:

a. Rationale for not considering the value of the tax breaks while computing the project IRRs.

b. Why has the IRR computation been limited for a period of 10 years when quite clearly the life of the project is 30 years?

Conclusion:

In order to better understand the financials, it may also be desirable to include the financial model used to compute the IRR (including the underlying assumptions – esp. tax breaks, terminal value of the assets etc.) in the PDD.

I am of the opinion that without considering the benefit of accelerated tax depreciation + re-computing the IRR considering the entire economic life of the assets, it is not wholly accurate to conclude that the MSPL project activity is non viable without the CER revenues.

In view of the same, I am not convinced by the additionality arguments presented in the document and as such this needs to be looked at again.

***Clients Response to the comments:*****Comment a:**

- Although there is a considerable growth in the wind power sector in the country, there is only a fractional contribution of power through wind energy (renewable sources) as against the total power generation and demand.
- For instance, in the State of Karnataka (the location of the “project activity”), though there was a wind power generation potential of 6620 MW, only 209.2 MW had been installed at the time of commencement of this “Project Activity”. This is a potential realization of just 3% and the grid penetration in Karnataka of as low as 2.4% (The same is indicated in the PDD).

Comment b:

- Post liberalization (1991), till the commencement of the MSPL project activity (13 years), despite the state welcoming private investments for generation of power, there were only two private wind farm project promoters with a total wind farm capacity of 15 MW or above in the State of Karnataka.

Comment c:

- The entire boundary of the Project activity is constrained to the state of Karnataka
- The entire power generated and exported by the project activity is consumed solely within the State of Karnataka. There is a demand supply gap in the State of Karnataka and in the absence of the project activity generating green power, the state would have taken the power from other sources / states to meet its demand (fossil fuel based, pl. refer to the project baseline as given in the PDD).

Question a:

- MSPL Limited has taken a decision to invest in the “Project Activity” to develop a separate business of wind power generation and this was not done with a view of solely getting the tax benefits.
- We agree that the tax benefits could be considered in computing the project IRR, provided we accrue profits in other business during the tenure of the project. In general, the tax benefits are not available for the entire situation.
- While the tax benefits are available, the tax has to be paid when the income accrues after the setoff of the depreciation in other business. The return will slightly improve only by the deferring the tax payable by us and not due to tax benefit as a whole.
- To save tax, the investment could be made in this kind of business and claim the depreciation loss in the other business. However, at a later stage, when the business earns profits, tax has to be paid, otherwise one may have to go for this kind of tax planning. If at any time this circle breaks, huge tax has to be paid. This was one of the reasons for not considering the benefits which accrues through tax breaks and decision was not taken just because of tax benefits.

Question b:

- The entire boundary of the Project activity is constrained to the state of Karnataka



- The entire power generated and exported by the project activity is consumed solely within the State of Karnataka. MSPL Limited has signed a Power Purchase Agreement with KPTCL (Karnataka Power Transmission Company Limited), which is valid for only ten years. As per the agreement, the Power purchase rates mentioned in PPA are valid for only ten years and from 11th year onwards, the rates would be renegotiated to reimburse only the variable cost to the customer. It implies that from 11th year onwards, the project would not generate any profit.
- In India the manufacturers confirm the life of the equipment as only 20 years and not 30 years. Moreover, not even a single wind mill has even completed that period as yet. Most of the windmills, which were set up during 1990-1995 are either have been shut down or are producing well below the rated capacities.
- Further, as per the Annual Maintenance Contract of the “Project Activity” the manufacturer has agreed to provide AMC service for 10 years (with escalation of 5%) only. This indicates, longer life of the equipment, higher the spares consumption and the maintenance cost. Thereby, the Annual Maintenance Cost from the 11th year onwards would be renegotiated

The initial comment on "**Entire equity is funded by tax breaks**" is an incorrect statement since whatever tax benefit is taken today is to be paid when the profits accrues in the wind power business as mentioned above. In addition to equity funding of 30%, we have considered the tax saved on the depreciation loss as inflow in the project. This tax saving is not the actual saving since when the profits accrues wind power business has to service the taxes. This in effect, taking the benefit of timing difference.

We believe, MSPL Limited has addressed all the queries raised by the stakeholders in a transparent and effective manner.

How DNV has considered the comment received in its validation:

DNV accepts the argument by MSPL that against a wind power generation potential of 6620 MW, actual realization has been only to the extent of about 3% in the state of Karnataka. Moreover, it has also been verified that at the time of the project activity there have been only two other promoters with a capacity higher than 15 MW. This indicates that large projects such as the 125 MW project activity are neither prevailing practice nor common in the state of Karnataka.

It is also confirmed that there is a demand supply gap in the state of Karnataka. The response to the comment and further discussion in the PDD with respect to the selection of the grid is accepted and is also in line with ACM0002,

The arguments presented on the consideration of taxes in the financial calculations, the detailed arguments and evidence provided for IRR, WACC and sensitivity analysis by MSPL is considered acceptable. The additional arguments are more clearly addressed in the PDD and is also the outcome of DNV's Clarification Request No.4



5 VALIDATION OPINION

Det Norske Veritas Certification (DNV Certification) has validated the “125 MW Wind Power Project in Karnataka, India.”. The validation was performed on the basis of UNFCCC criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting. UNFCCC criteria refer to the Kyoto Protocol criteria for the CDM, the CDM rules and modalities as agreed in the Marrakech Accords and relevant decisions by the CDM Executive Board.

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

The proposed project is being proposed as a unilateral project by MSPL Limited of Karnataka, India. India has provided approval of voluntary participation and meets all requirements to participate in the CDM.

The project will contribute to India’s sustainable development by providing benefits such as employment generation during construction and operation of the project, ensuring environmental wellbeing and aid in bridging the gap between demand and supply of power.

The project activity involves the installation and operation of wind turbines to be connected to the state grid, having an aggregate installed capacity of 125.15 MW. The wind parks are located in Sogi, Jogimatti and Jajikalgudda wind zone areas in Bellary, Chitradurga and Davangere districts respectively in the state of Karnataka, India. Thus, by displacing fossil fuel-based grid power, the project is forecast to result in 253 240 tCO₂ of annual emission reductions, which are real, measurable and give long-term benefits to the mitigation of climate change. An analysis of relevant barriers demonstrates that the proposed project is not a likely baseline scenario and emission reductions are hence additional to any that would occur in its absence.

The project correctly applies the approved baseline and monitoring methodology ACM0002 - Consolidated baseline methodology for grid-connected electricity generation from renewable sources. The baseline methodology is applicable and justified for the proposed project as the project involves electricity capacity additions through wind sources.

In summary, it is DNV’s opinion that the project as described in the PDD of March 2006 meets all relevant UNFCCC requirements for the CDM and correctly applies the approved baseline and monitoring methodology ACM0002. Hence, DNV requests the registration of the “125 MW Wind Power Project in Karnataka, India” as a CDM project activity.



REFERENCES

Documents provided by the project proponent that relate directly to the project:

- /1/ MSPL:125 MW Wind Power Project in Karnataka, India, Clean Development Mechanism Project Design Document, version 02 of July 2005 and version 03 of March 2006
- /2/ Indian DNA: Host country approval letter, dated October 28, 2005

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

- /4/ International Emission Trading Association (IETA) & the World Bank's Prototype Carbon Fund (PCF): *Validation and Verification Manual*. <http://www.vvmanual.info>
- /5/ CDM Executive Board: ACM0002 - Consolidated baseline methodology for grid-connected electricity generation from renewable sources, Version 04
- /6/ IPCC: *Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories*, 2000

Persons interviewed during the validation, or persons contributed with other information that are not included in the documents listed above:

- /3/ MSPL Limited:
Mr Manoj Agrawal
Mr Subramanyam

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APPENDIX A

CDM VALIDATION PROTOCOL

Table 1 Mandatory Requirements for 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	OK	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, CDM Modalities and Procedures §40a	OK	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.	OK	Table 2, Section E.4.1
4. The project shall have the written approval of voluntary participation from the designated national authority of each party involved	Kyoto Protocol Art. 12.5a, CDM Modalities and Procedures §40a	OK	DNA of India has accorded approval, letter dated 28 October 2005.
5. The emission reductions shall be real, measurable and give long-term benefits related to the mitigation of climate change	Kyoto Protocol Art. 12.5b	OK	Table 2, Section E
6. Reduction in GHG emissions shall 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 reduced below those that would have occurred in the absence of the registered CDM project activity	Kyoto Protocol Art. 12.5c, CDM Modalities and Procedures §43	OK	Table 2, Section B.2
7. Potential public funding for the project from Parties in Annex I shall not be a diversion of official development assistance	Decision 17/CP.7	OK	
8. Parties participating in the CDM shall designate a national authority for the CDM	CDM Modalities and Procedures §29	OK	The Indian DNA for the CDM is the National Clean Development Mechanism Authority under the Ministry of Environment & Forests.

Requirement	Reference	Conclusion	Cross Reference / Comment
9. The host Party and the participating Annex I Party shall be a Party to the Kyoto Protocol	CDM Modalities §30/31a	OK	India ratified the protocol on 26 th August 2002.
10. The participating Annex I Party's assigned amount shall have been calculated and recorded	CDM Modalities and Procedures §31b	OK	The project has been proposed as a unilateral project
11. The participating Annex I Party shall have in place a national system for estimating GHG emissions and a national registry in accordance with Kyoto Protocol Article 5 and 7	CDM Modalities and Procedures §31b	OK	The project has been proposed as a unilateral project
12. Comments by local stakeholders shall be invited, a summary of these provided and how due account was taken of any comments received	CDM Modalities and Procedures §37b	OK	Table 2, Section G
13. Documentation on the analysis of the environmental impacts of the project activity, including transboundary impacts, shall be submitted, and, if those impacts are considered significant by the project participants or the Host Party, an environmental impact assessment in accordance with procedures as required by the Host Party shall be carried out.	CDM Modalities and Procedures §37c	OK	Table 2, Section F
14. Baseline and monitoring methodology shall be previously approved by the CDM Executive Board	CDM Modalities and Procedures §37e	OK	Table 2, Section B.1.1 and D.1.1
15. Provisions for monitoring, verification and reporting shall be in accordance with the modalities described in the Marrakech Accords and relevant decisions of the COP/MOP	CDM Modalities and Procedures §37f	OK	Table 2, Section D
16. Parties, stakeholders and UNFCCC accredited NGOs shall have been invited to comment on the validation requirements for minimum 30 days, and the project design document and comments have been made publicly available	CDM Modalities and Procedures §40	OK	The PDD was published on 30 August 2005 on http://www.dnv.com/certification/climate change. Parties, stakeholders and NGO's were through the web site invited to provide

Requirement	Reference	Conclusion	Cross Reference / Comment
			comments until September 29 th 2005. Two comments were received during this period.
17. A baseline shall be established on a project-specific basis, in a transparent manner and taking into account relevant national and/or sectoral policies and circumstances	CDM Modalities and Procedures §45c,d	OK	Table 2, Section B.2
18. The baseline methodology shall exclude to earn CERs for decreases in activity levels outside the project activity or due to force majeure	CDM Modalities and Procedures §47	OK	Table 2, Section B.2
19. The project design document shall be in conformance with the UNFCCC CDM-PDD format	CDM Modalities and Procedures Appendix B, EB Decision	OK	The revised PDD has made minor changes to the format of tables, included clarifications on the project participant in B.5 and D.5 and "Not applicable" where needed throughout part D.

Table 2 Requirements Checklist

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
A. General Description of Project Activity <i>The project design is assessed.</i>					
A.1. Project Boundaries <i>Project Boundaries are the limits and borders defining the GHG emission reduction project.</i>					
A.1.1. Are the project's spatial (geographical) boundaries clearly defined?	/1/	DR	The project is located in the Sogi, Jogimatti and Jajikalgudda reas in Bellary, Chitradurga and Davangere districts respectively in the state of Karnataka, India. The projects are implemented in two phases with an aggregate installed capacity of 125.15 MW. The Project includes 83, 17 and 7 numbers of wind turbines, with a capacity of 1250 KW, 950 KW and 750 KW respectively, sub-stations and associated transmission facilities.		OK
A.1.2. Are the project's system (components and facilities used to mitigate GHGs) boundaries clearly defined?	/1/	DR	The system boundary is defined as the Souther Regional electricity grid.		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
A.2. Technology to be employed <i>Validation of project technology focuses on the project engineering, choice of technology and competence/ maintenance needs. The validator should ensure that environmentally safe and sound technology and know-how is used.</i>					
A.2.1. Does the project design engineering reflect current good practices?	/1/	DR	Yes, the wind turbines have been supplied by NEG Micon and Suzlon and the project design reflects current good practice.		OK
A.2.2. Does the project use state of the art technology or would the technology result in a significantly better performance than any commonly used technologies in the host country?	/1/	DR	Yes, all the turbines are three bladed stall regulated wind turbine generators, equipped with microprocessor based DANCONTROL systems.		OK
A.2.3. Is the project technology likely to be substituted by other or more efficient technologies within the project period?	/1/	DR	The project activity employs state of the art technology and it is unlikely that other more efficient technologies would come up, at least within the crediting period.		OK
A.2.4. Does the project require extensive initial training and maintenance efforts in order to work as presumed during the project period?	/1/	DR	Requirement for training and maintenance efforts has not been clearly addressed in the PDD.	CL-1	OK
A.2.5. Does the project make provisions for meeting training and maintenance needs?	/1/	DR	As in A.2.4	CL-1	OK
A.3. Contribution to Sustainable Development <i>The project's contribution to sustainable development is assessed.</i>					
A.3.1. Is the project in line with relevant legislation and plans in the host country?	/1/	DR	There are no statutory requirements for Environmental Clearances from the Ministry of Environment. The project is in line with		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
			the Ministry of Non-conventional Energy's policy of promoting and achieving a target of 10% renewable energy by 2010.		
A.3.2. Is the project in line with host-country specific CDM requirements?	/1/	DR	Yes. The host country approval, dated 28 October 2005 has been received.		OK
A.3.3. Is the project in line with sustainable development policies of the host country?	/1/	DR	Yes.		OK
A.3.4. Will the project create other environmental or social benefits than GHG emission reductions?	/1/	DR	Yes, providing employment opportunities and contributing to strengthening India's rural electrification.		OK
B. Project Baseline					
<i>The validation of the project baseline establishes whether the selected baseline methodology is appropriate and whether the selected baseline represents a likely baseline scenario.</i>					
B.1. Baseline Methodology					
<i>It is assessed whether the project applies an appropriate baseline methodology.</i>					
B.1.1. Is the baseline methodology previously approved by the CDM Executive Board?	/1/	DR	Yes. The approved methodology - ACM0002 titled "Consolidated baseline methodology for grid connected electricity generation from renewable sources" has been applied.		OK
B.1.2. Is the baseline methodology the one deemed most applicable for this project and is the appropriateness justified?	/1/	DR	The project involves electricity capacity additions through wind sources and hence the baseline methodology is applicable for the proposed project.		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
B.2. Baseline Determination <i>The choice of baseline will be validated with focus on whether the baseline is a likely scenario, whether the project itself is not a likely baseline scenario, and whether the baseline is complete and transparent.</i>					
B.2.1. Is the application of the methodology and the discussion and determination of the chosen baseline transparent?	/1/	DR	<p>The baselines have been determined using the combined margin (operating & build margin) options as per approved methodology ACM0002.</p> <p>For the operating margin the simple OM approach has been applied, which is justified because there is not enough data available to apply the dispatch analysis and because low-cost/must-run power generation has constituted on average less than 50% of the grid total during the past five years.</p> <p>For the build margin, the 20% of most recently installed plants have been considered.</p> <p>The combined margin is fixed ex-ante for the entire crediting period.</p>		OK
B.2.2. Has the baseline been determined using conservative assumptions where possible?	/1/	DR	The baseline scenario considered is the KPTCL grid of the state of Karnataka. The recent Meth Panel clarification stipulates the use of regional grid emission factors for countries such as India and China.	CL-2	OK
B.2.3. Has the baseline been established on a project-specific basis?	/1/	DR	Yes, the baseline has been developed on a project specific basis.		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
B.2.4. Does the baseline scenario sufficiently take into account relevant national and/or sectoral policies, macro-economic trends and political aspirations?	/1/	DR	Yes. Policies favour power generation through renewable sources.		OK
B.2.5. Is the baseline determination compatible with the available data?	/1/	DR	The methodology adopted addresses BM emission factor as calculated based on <i>ex ante</i> (option 1 as per ACM002). It is not clear whether the option of 5 most recently built plants would give a higher generation than the chosen option of the 20% of most recently built plants.	CL-3	OK
B.2.6. Does the selected baseline represent the most likely scenario among other possible and/or discussed scenarios?	/1/	DR	As in B.2.2	CL-2	OK
B.2.7. Is it demonstrated/justified that the project activity itself is not a likely baseline scenario?	/1/	DR	<p>Yes, it is demonstrated that the project activity itself is not a likely baseline scenario by following the additionality tool.</p> <p>Step 0: While Phase -1 of the project activity commenced in December 2003, the following have been provided as evidence to demonstrate that CDM incentive was considered at the start of the project activity:</p> <ul style="list-style-type: none"> • Extract of the minutes of the meeting of the board of directors of MSPL held on 14th April 2003, sanctioning INR 1500 million for the project activity for the financial year 2003-2004 based on revenue expectations from CDM as an additional source of revenue. • Extract of the minutes of the meeting 	CL-4	OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
			<p>of the board of directors of MSPL held on 10th April 2004, sanctioning INR 4000 million for the project activity for the financial year 2004-2005 based on revenue expectations from CDM as an additional source of revenue.</p> <ul style="list-style-type: none"> • Interactions with NEG-MICON (email correspondences) enquiring about CDM and carbon credits for the project activity – June 2003 • Email proposal dated January 2, 2004, from TERI, for developing the project activity under CDM • Other correspondences with consultants such as PwC and Renco Technologies regarding CDM benefits – in 2002 <p>Step 1: Two alternatives have been identified:</p> <ul style="list-style-type: none"> - The proposed project activity not undertaken as a CDM project activity - Continuation of the current situation <p>Step 2:</p> <p>Investment analysis and particularly benchmark analysis, wherein the weighted average cost of capital (WACC) of the project activity has been used as benchmark to assess the financial attractiveness of the project activity has been chosen to demonstrate additionality.</p>		

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
			<p>It has been argued that the IRR of the project activity without CDM revenues is estimated at 7.36% which is much lower than WACC (estimated at 10.75%) for the project. The IRR only improves to 8.38% with CDM revenues. A sensitivity analysis (variation by 10%) has also been conducted for factors such as annual exports to KPTCL and OM expense and demonstrated that that the IRR is always less than the WACC.</p> <p>Step 4: Common practice analysis has indicated that private investment for generation of power is more towards fossil fuel based technologies or mini hydro power plants. Based on the MNES study, it has been argued that out of a wind power potential of 6620 MW in Karnataka, a realization of only 3% had been achieved by 2004. It has also been confirmed that only two other private wind farm promoters were envisaging projects more than 15MW, as on March 2004 and they are also in the process of seeking CDM benefits.</p> <p>Step 5: The revenues from sale of the Certified Emission Reductions would enhance the financial viability of the project</p> <p>However, to conclude on the additionality, the following is requested:</p>		

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
			<ul style="list-style-type: none"> • IRR and sensitivity analysis details • Justification for demonstrating WACC to be 10.75% 		
B.2.8. Have the major risks to the baseline been identified?	/1/	DR	There are no major risks perceived to the proposed baseline.		OK
B.2.9. Are all literature and sources clearly referenced?	/1/	DR	Yes.		OK
C. Duration of the Project/ Crediting Period <i>It is assessed whether the temporary boundaries of the project are clearly defined.</i>					
C.1.1. Are the project's starting date and operational lifetime clearly defined and reasonable?	/1/	DR	Phase I was commissioned in March – July 2004 and Phase II in March – June 2005 The expected operational lifetime is 20 years.		OK
C.1.2. Is the assumed crediting time clearly defined (renewable crediting period of seven years with two possible renewals or fixed crediting period of 10 years with no renewal)?	/1/	DR	A fixed crediting period of 10 years has been chosen, with the starting date of 22 March 2004.		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
D. Monitoring Plan <i>The monitoring plan review aims to establish whether all relevant project aspects deemed necessary to monitor and report reliable emission reductions are properly addressed ((Blue text contains requirements to be assessed for optional review of monitoring methodology prior to submission and approval by CDM EB).</i>					
D.1. Monitoring Methodology <i>It is assessed whether the project applies an appropriate baseline methodology.</i>					
D.1.1. Is the monitoring methodology previously approved by the CDM Executive Board?	/1/	DR	The project applies the approved monitoring methodology – ACM002, titled “Consolidated monitoring methodology for grid connected electricity generation from renewable sources”.		OK
D.1.2. Is the monitoring methodology applicable for this project and is the appropriateness justified?	/1/	DR	Yes, the application of the monitoring methodology is appropriately justified.		OK
D.1.3. Does the monitoring methodology reflect good monitoring and reporting practices?	/1/	DR	Yes, hourly measurement and monthly recording of the power supplied to the grid will be done. The system can hold data for 35 days and on a monthly basis is being reviewed and recorded by a representative of the project proponent and KPTCL.		OK
D.1.4. Is the discussion and selection of the monitoring methodology transparent?	/1/	DR	Yes		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
D.2. Monitoring of Project Emissions <i>It is established whether the monitoring plan provides for reliable and complete project emission data over time.</i>					
D.2.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for estimation or measuring the greenhouse gas emissions within the project boundary during the crediting period?	/1/	DR	Since the project is wind energy based, there will be no project GHG emissions.		OK
D.3. Monitoring of Leakage <i>It is assessed whether the monitoring plan provides for reliable and complete leakage data over time.</i>					
D.3.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining leakage?	/1/	DR	No leakage needs to be considered as per Approved Monitoring Methodology ACM0002.		OK
D.4. Monitoring of Baseline Emissions <i>It is established whether the monitoring plan provides for reliable and complete project emission data over time.</i>					
D.4.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining baseline emissions during the crediting period?	/1/	DR	Yes, these are as per ACM0002		OK
D.4.2. Is the choice of baseline indicators, in particular for baseline emissions, reasonable?	/1/	DR	Yes		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
D.4.3. Will it be possible to monitor the specified baseline indicators?	/1/	DR	Yes		OK
D.5. Monitoring of Sustainable Development Indicators/ Environmental Impacts <i>It is checked that choices of indicators are reasonable and complete to monitor sustainable performance over time.</i>					
D.5.1. Does the monitoring plan provide the collection and archiving of relevant data concerning environmental, social and economic impacts?	/1/	DR	The DNA of India does not warrant monitoring of sustainable development indicators.		OK
D.6. Project Management Planning <i>It is checked that project implementation is properly prepared for and that critical arrangements are addressed.</i>					
D.6.1. Is the authority and responsibility of project management clearly described?	/1/	DR	The authority and responsibility of project management have not been clearly described	CAR 1	OK
D.6.2. Is the authority and responsibility for registration, monitoring, measurement and reporting clearly described?	/1/	DR	The authority and responsibility for registration, monitoring, measurement and reporting have not been described.	CAR 1	OK
D.6.3. Are procedures identified for training of monitoring personnel?	/1/	DR	As in A.2.4.	CL1	OK
D.6.4. Are procedures identified for emergency preparedness for cases where emergencies can cause unintended emissions?	/1/	DR	No emergency situations are expected to occur that cause unintended emissions. However safety procedures have been addressed as part of the existing ISO 9000 system procedures.		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
D.6.5. Are procedures identified for calibration of monitoring equipment?	/1/	DR	Yes, meters and all associated instruments installed are within 0.2% accuracy. Procedures are available as part of the existing ISO 9000 system procedures.		OK
D.6.6. Are procedures identified for maintenance of monitoring equipment and installations?	/1/	DR	Monitoring equipments are being maintained as per standards.		OK
D.6.7. Are procedures identified for monitoring, measurements and reporting?	/1/	DR	Yes, monitoring of the electricity generation will be done half hourly.		
D.6.8. 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	Procedures are available as part of the existing ISO 9000 system procedures.		OK
D.6.9. Are procedures identified for dealing with possible monitoring data adjustments and uncertainties?	/1/	DR	Uncertainties are expected to be minimal.		OK
D.6.10. Are procedures identified for review of reported results/data?	/1/	DR	Procedures are available as part of the existing ISO 9000 system procedures.		OK
D.6.11. Are procedures identified for internal audits of GHG project compliance with operational requirements where applicable?	/1/	DR	Though internal audits as part of ISO 9000 system are conducted, these do not specifically include GHG project compliance.	CL-5	OK
D.6.12. Are procedures identified for project performance reviews before data is submitted for verification, internally or externally?	/1/	DR	As in D6.11	CL-5	OK
D.6.13. Are procedures identified for corrective actions in order to provide for more accurate future monitoring and reporting?	/1/	DR	As in D6.11	CL-5	OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
E. Calculation of GHG Emissions by Source <i>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.</i>					
E.1.Predicted Project GHG Emissions <i>The validation of predicted project GHG emissions focuses on transparency and completeness of calculations.</i>					
E.1.1. Are all aspects related to direct and indirect GHG emissions captured in the project design?	/1/	DR	No project emissions are likely as this is a wind energy power project.		OK
E.2.Leakage <i>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.</i>					
E.2.1. Are potential leakage effects beyond the chosen project boundaries properly identified?	/1/	DR	According to ACM0002, there is no leakage to be considered.		OK
E.3.Baseline Emissions <i>The validation of predicted baseline GHG emissions focuses on transparency and completeness of calculations.</i>					
E.3.1. Have the most relevant and likely operational	/1/	DR	As in B.2.2.	CL-3	OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
characteristics and baseline indicators been chosen as reference for baseline emissions?					
E.3.2. Are the baseline boundaries clearly defined and do they sufficiently cover sources and sinks for baseline emissions?	/1/	DR	As in B.2.2.	CL-3	OK
E.3.3. Are the GHG calculations documented in a complete and transparent manner?	/1/	DR	<p>Data sources / references for the various data used in the calculations are not clear. IPCC default values appear to have been used for emission factors, while ACM0002 advocates calculation based on fuel type as a priority.</p> <p>It appears that fuel quantities such as diesel, naphtha and lignite that are estimated. ACM0002 calls for calculations based on estimates as the third option only. When data on fuel input etc. are available then this should be adopted?</p> <p>Evaluation on gas (naphtha) is based on naphtha only, while, under this heading, data for gas, naphtha, diesel oil etc. need to be considered.</p>	CL-6	OK
E.3.4. Have conservative assumptions been used when calculating baseline emissions?	/1/	DR	The conservativeness of the baseline has not been clearly demonstrated as the baseline does not consider other options such as the calculation based on data from the Southern grid. Refer B.2.2	CL-3	OK
E.3.5. Are uncertainties in the GHG emission estimates properly addressed in the	/1/	DR	As in B.2.2	CL-3	OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
documentation?					
E.3.6. Have the project baseline(s) and the project emissions been determined using the same appropriate methodology and conservative assumptions?	/1/	DR	As in B.2.2	CL-3	OK
E.4.Emission Reductions 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 scenario?	/1/	DR	The project is expected to result in 2 532 408 tCO ₂ emission reductions over the period of ten years		OK
F. Environmental Impacts <i>Documentation on the analysis of the environmental impacts will be assessed, and if deemed significant, an EIA should be provided to the validator.</i>					
F.1.1. Has an analysis of the environmental impacts of the project activity been sufficiently described?	/1/	DR	While Indian legislation does not warrant an EIA to be done for this type of project activity, the PDD sufficiently describes the possible impacts during construction & operation.		OK
F.1.2. Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, is an EIA approved?	/1/	DR	No, EIA studies are not required for wind farm projects under Indian legislation.		OK
F.1.3. Will the project create any adverse environmental effects?	/1/	DR	As it is a wind farm project, the impacts are expected to be minimal.		OK
F.1.4. Are transboundary environmental impacts	/1/	DR	There should not be any transboundary		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
considered in the analysis?			environmental impacts associated with this kind of project activity.		
F.1.5. Have identified environmental impacts been addressed in the project design?	/1/	DR	No negative environmental impacts have been identified. The project is located in the hilly regions of the wind zone area of Chitradurga and is devoid of any wildlife, migratory birds or human habitat.		OK
F.1.6. Does the project comply with environmental legislation in the host country?	/1/	DR	No specific environmental clearances are required for wind farm projects in India.		OK
G. Stakeholder Comments <i>The validator should ensure that a stakeholder comments have been invited and that due account has been taken of any comments received.</i>					
G.1.1. Have relevant stakeholders been consulted?	/1/	DR	MSPL has identified the village panchayat, KREDL, KSPCB, consultants and equipment suppliers as the key stakeholders		OK
G.1.2. Have appropriate media been used to invite comments by local stakeholders?	/1/	DR	The actual process adopted for consultation has not been clearly described in the PDD	CL-7	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 Indian legislation.		OK
G.1.4. Is a summary of the stakeholder comments received provided?	/1/	DR	No, this has not been provided.	CL-7	OK
G.1.5. Has due account been taken of any stakeholder comments received?	/1/	DR	No	CL-7	OK

Table 3 Resolution of Corrective Action and Clarification Requests

Draft report corrective action requests and requests for clarifications	Ref. to Table 2	Summary of project participants' response	Final conclusion
<p>CAR 1:</p> <p>The authority and responsibility for project management, registration, monitoring, measurement and reporting have not been described.</p>	D.6.1, 6.2	<p>The procedures for project management have been reviewed and would be included in the MSPL CDM Project Manual.</p> <p>A brief description of the same has been incorporated in the PDD in Section D.4.</p>	<p>Accepted. Complimentary information provided along with the Organigram provided in the revised PDD, sufficiently addresses issues for project management.</p> <p>This CAR is therefore closed.</p>
<p>CL 1:</p> <p>As operation and maintenance of wind farms is not a core activity of MSPL, requirement for training and maintenance efforts has not been clearly addressed in the PDD.</p>	A.2.4, 2.5, D.6.3	<p>The operations and maintenance is one of the most critical aspects of the project activity. Since the operation of the plant is not limited to the operation and maintenance aspects alone, It needs constant follow up with other agencies like State Electricity Board, Electrical Licensing Board etc., to recoup the production and to meet the specified standards respectively.</p> <p>The wind farm developer, under the O&M contract with MSPL would be responsible for the operation and maintenance of the project activity for the entire crediting period.</p> <p>The wind farm developer has its operation team at site, which has the requisite skills & has been imparted with the necessary training for</p>	<p>Contracts with the wind farm developers (NEG Micon and Suzlon) have been evidenced. Complimentary information provided is accepted.</p> <p>This CL is therefore closed.</p>

Draft report corrective action requests and requests for clarifications	Ref. to Table 2	Summary of project participants' response	Final conclusion
		operation & maintenance of the project activity. This would be addressed in detail in the MSPL CDM project manual. A brief description of the same has been incorporated in the PDD in Section D.4.	
CL 2: The baseline scenario considered is the KPTCL grid of the state of Karnataka. The recent Meth Panel clarification stipulates use of regional grid emission factors for countries such as India and China.	B.2.2, E.3.1, E.3.2, 3.4, 3.5, 3.6	As set out by the recent Meth Panel clarification, in order to incorporate conservativeness of the baseline, the Southern Regional Grid has now been taken as the project baseline scenario for calculating the emission reductions as against the KPTCL grid of the state of Karnataka. The PDD has been appropriately updated taking into account the above regional emission factor.	The PDD has been revised so that data from the Southern grid has been used for baseline emission factor calculations. The combined margin is now 0.907 tCO ₂ /MWh. This CL is therefore closed.
CL 3: The methodology adopted addresses BM emission factor as calculated based on <i>ex ante</i> (option 1 as per ACM002). It is not clear whether the option of 5 most recently built plants would give a higher generation than the chosen option of the 20% of most recently built plants.	B.2.5	Data from 20% of gross generation (which comprises of twenty plants) includes data from five recent plants and the selected methodology gives the option of choosing the greatest of generation. The same has been described in detail in the revised PDD in Section B.2.	OK. Complimentary information provided is accepted. This CL is therefore closed.
CL 4: To conclude on the additionality, the following	B.2.7	The complete working of the IRR, sensitivity analysis and the details with	Accepted. The IRR and sensitivity analysis have been reviewed.

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<p>is requested:</p> <ul style="list-style-type: none"> • IRR and sensitivity analysis details <p>Justification for WACC to be 10.75%.</p>		<p>respect to the justification of 10.75% WACC has been provided.</p>	<p>The investment and operating and maintenance costs have been evidenced as well as the wind study. The resulting IRR is confirmed to be around 8% without the contribution from selling the CERs. It has further been justified that the WACC is higher than the IRR without considering the CDM. Finally, in India, the close to risk-free interest rate on a 10 year government bond has been between 5 and 7%, which justifies the higher WACC claimed by the project proponents, taking into account the risks inherent to such projects.</p> <p>This CL is therefore closed.</p>
<p>CL 5:</p> <p>Though internal audits as part of ISO 9000 system are conducted, these do not specifically include GHG project compliance, project performance reviews before data is submitted for verification, internally or externally and corrective actions.</p>	<p>D.6.11, 6.12, 6.13</p>	<p>GHG compliance of the project activity is being appended to the ISO 9000 system and project performance reviews will be conducted and verified on a regular basis..</p> <p>A brief description of the same has been incorporated in the PDD in Section D.4.</p>	<p>Complimentary information provided is accepted.</p> <p>This CL is therefore closed.</p>
<p>CL 6:</p> <p>Data sources / references for the various data used in the calculations are not clear. IPCC default values appear to have been</p>	<p>E.3.3</p>	<p>The data sources used are the KPTCL booklet & CEA's general report and performance review of thermal power stations, the copies of which have been</p>	<p>Complimentary information provided is accepted.</p> <p>This CL is therefore closed.</p>

Draft report corrective action requests and requests for clarifications	Ref. to Table 2	Summary of project participants' response	Final conclusion
<p>used for emission factors, while ACM0002 advocates calculation based on fuel type as a priority.</p> <p>It appears that fuel quantities such as diesel, naphtha and lignite that are estimated. ACM0002 calls for calculations based on estimates as the third option only. When data on fuel input etc. are available then this should be adopted?</p> <p>Evaluation on gas (naphtha) is based on naphtha only, while, under this heading, data for gas, naphtha, diesel oil etc. need to be considered.</p>		<p>provided as references.</p> <p>As all data with respect to 2004 is not available, fuel input data for all applicable fuels used in 2001, 2002 and 2003 have been considered and baseline emission factor revised.</p>	
<p>CL-7:</p> <p>The actual process adopted for consultation has not been clearly described in the PDD, nor a summary of the comments received and corrective actions taken thereof, have been described.</p>	<p>G.1.2, 1.4, 1.5</p>	<p>MSPL's representatives met the stakeholders in person and held discussions about the MSPL CDM project activity and obtained their views on the same.</p> <p>The stakeholders have provided their support and the documentary evidence (responses from stakeholders) of the same is available with us.</p> <p>As there were no negative comments from the stakeholders regarding the project activity, no corrective action was required to be made.</p> <p>A description of the process adopted for</p>	<p>Complimentary information provided is accepted. Evidences have been reviewed and there have been no adverse comments.</p> <p>This CL is therefore closed.</p>

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		consultation and the summary of comments received has been mentioned in the PDD in Section G.3.	