



VALIDATION REPORT

25.70 MW BUNDLED WIND POWER PROJECT IN UDUMALPET, TAMILNADU, IN INDIA.

REPORT No. 2006-9031-2

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DET NORSKE VERITAS



VALIDATION REPORT

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Client: NEG Micon (I) Private Limited	Client ref.: Pushkala Lakshmi Ratan

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Summary:

Det Norske Veritas Certification Ltd. (DNV) has performed a validation of the “25.70 MW Bundled Wind Power Project in Udumalpet, Tamilnadu”, 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 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 documents, ii) follow-up interviews with project stakeholders and iii) the resolution of outstanding issues and the issuance of the final validation report and opinion.

In summary, it is DNV's opinion that the project, as described in the project design document, version 2, dated 15 February 2007, meets all relevant UNFCCC requirements for the CDM and is eligible as a CDM project activity and correctly applies the approved consolidated baseline and monitoring methodology ACM0002, version 06 - “Consolidated baseline methodology for grid-connected electricity generation from renewable sources”. Hence, DNV requests the registration of the “25.70 MW Bundled Wind Power Project in Udumalpet, Tamilnadu” as a CDM project activity.

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Report title: 25.70 MW Bundled Wind Power Project in Udumalpet, Tamilnadu”							
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Table of Content	Page
1 INTRODUCTION.....	5-1
1.1 Validation Objective	5-1
1.2 Scope	5-1
1.3 Description of Proposed CDM Project	5-1
2 METHODOLOGY.....	5-2
2.1 Review of Documents	5-4
2.2 Follow-up Interviews	5-4
2.3 Resolution of Clarification and Corrective Action Requests	5-4
2.4 Internal Quality control	4
3 VALIDATION FINDINGS	5-5
3.1 Participation Requirements	5-5
3.2 Project Design	5-5
3.3 Project Baseline	5-5
3.4 Additionality	5-5
3.5 Monitoring Plan	5-8
3.6 Calculation of GHG Emissions	5-8
3.7 Environmental Impacts	5-8
3.8 Comments by Local Stakeholders	5-8
4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS	5-8
5 VALIDATION OPINION	5-11
REFERENCES	16
Appendix A Validation Protocol	
Appendix B Competency certificates	



Abbreviations

BM	Build Margin.
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CEA	Central Electricity Authority, India
CEF	Carbon Emission Factor
CER	Certified Emission Reduction
CERC	Central Electricity Regulatory Commission
CH ₄	Methane
CL	Clarification request
CO ₂	Carbon dioxide
CO ₂ e	Carbon dioxide equivalent
DNA	Designated National Authority
DNV	Det Norske Veritas
EIA	Environment Impact Assessment
FY	Financial year
GHG	Greenhouse gas(es)
GWP	Global Warming Potential
IMS	Integrated management system
INR	Indian Rupees (national currency unit)
IPCC	Intergovernmental Panel on Climate Change
IPP	Independent Power Producers
IRR	Investment rate of return
ISO	International Standardisation Organisation
MIS	Management Information Systems
MNES	Ministry of Non-conventional Energy Sources
MP	Monitoring Plan
MW	Megawatt
N ₂ O	Nitrous oxide
NEG-Micon	NEG Micon (I) Private Ltd
NGO	Non-governmental Organisation
NMIPL	NEG Micon (I) Private Limited
ODA	Official Development Assistance
OM	Operating Margin
PDD	Project Design Document
PLF	Plant Load Factor
PPA	Power Purchase Agreement
QA/QC	Quality assessment/ quality control
TNEB	Tamil Nadu State Electricity Board
TNERC	Tamil Nadu Electricity Regulatory Commission
UNFCCC	United Nations Framework Convention on Climate Change
WEG	Wind Electricity Generator



1 INTRODUCTION

NEG Micon (I) Private Limited has commissioned Det Norske Veritas Certification Ltd. (DNV) to validate the “25.70 MW Bundled Wind Power Project in Udumalpet, Tamilnadu” (hereafter called “the project”) in India. 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 consists of the following personnel:

Ramesh Ramachandran	DNV, India	Team leader, CDM validator
G.Murali	DNV, India	GHG auditor
K.Venkata Raman	DNV, India	CDM validator
C Kumaraswamy	DNV, India	Technical reviewer
Michael Lehmann	DNV, Norway	Energy sector expert

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, including the approved consolidated baseline and monitoring methodology ACM0002 version 06 /5/. The validation team has, based on the recommendations in the Validation and Verification Manual /4/ 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 proposed by NEG Micon (I) Private Limited involves the installation and operation of 28 wind electricity generators (WEG) all located within the same wind zone park, Udumalpet, in the state of Tamilnadu, India. The total installed capacity of the project activity is 25.70 MW and comprises 28 wind electricity turbines (WEG) each of different capacities ranging between 0.75 MW (22 turbines), 950 MW (1 turbine) and 1.65 MW (5 turbines). The wind electricity turbines are owned by 13 different project proponents and the turbines are under contract with the supplier NEG Micon (I) Private Limited for their turn-key operation and maintenance.



By displacing the electricity from fossil fuel based electricity generating systems, the project activity leads to reduced greenhouse gas emissions.

The total estimated GHG reduction from the project activity of the project is expected to be 407 560 t of CO₂e for the fixed ten year crediting period starting from 24 June 2005.

2 METHODOLOGY

The validation of the project started in the month of November 2005 with hosting of the PDD on the UNFCCC website and inviting stakeholders' comments.

The validation consists 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 transparent manner criteria (requirements), means of verification and the results from validating the identified criteria. The validation protocol serves the following purposes:

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

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

The completed validation protocol for the "25.70 MW Bundled Wind Power Project in Udumalpet, Tamilnadu" project is enclosed in appendix A to this report.

Findings established during the validation can either be seen as a non-fulfilment of validation protocol 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) validation protocol 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.



Validation Protocol Table 1: Mandatory Requirements for CDM Project Activities			
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) of risk or non-compliance with stated requirements or a request for Clarification (CL) where further clarifications are needed.	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.

Validation Protocol Table 2: Requirement 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 organised in seven different 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). A request for Clarification (CL) is used when the validation team has identified a need for further clarification.

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
If the conclusions from the draft 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 Table 2 where the Corrective Action Request or Clarification Request is explained.	The responses given by the project participants during the communications with the validation team should be summarised in this section.	This section should summarise the validation team's responses and final conclusions. The conclusions should also be included in Table 2, under "Final Conclusion".

Figure 1 Validation protocol tables



2.1 Review of Documents

The PDD /1/ submitted by NEG Micon (I) Private Limited (Version 02 dated 15 February 2007 and the previous version of September 2005) and additional background documents related to the project design and baseline were assessed during the validation.

2.2 Follow-up Interviews

On 2 December 2005, DNV performed interviews with representatives of NEG Micon to confirm selected information and to resolve issues identified in the document review. The main topics of the interviews are summarised in Table 1.

Table 1 Interview topics

Interviewed organisation	Interview topics
NEG Micon (I) Private Limited	➤ Further clarifications 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, barriers due to prevailing practice or other barriers. ➤ Clarifications on establishment of baseline, monitoring plan and emission reduction calculations. ➤ Resources, training needs and procedures for operation and maintenance. ➤ Benefits from CDM registration.

2.3 Resolution of Clarification and Corrective Action Requests

The objective of this phase of the validation was to resolve any outstanding issues which needed to be clarified for DNV's positive conclusion on the project design. The initial validation identified four corrective action requests and six requests for clarification. These requests were presented to the project participants in DNV's draft validation report and the project participants were invited to provide a response to these requests. The project participants' response, which included the submission of a revised PDD dated 15 February 2007, addressed the corrective action requests and requests for clarification to DNV's satisfaction.

To guarantee the transparency of the validation process, the concerns raised by DNV and the responses given by the project participant are documented in the validation protocol in appendix A to this report.

2.4 Internal Quality Control

The draft validation report including the initial validation findings underwent a technical review before being submitted to the project participants. The final validation report underwent another technical review before requesting registration of the project activity. The technical review was performed by a technical reviewer qualified in accordance with DNV's qualification scheme for CDM validation and verification.



3 VALIDATION FINDINGS

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

The final validation findings relate to the project design as documented and described in the revised and resubmitted project design documentation dated 15 February 2007.

3.1 Participation Requirements

The bundled project activity is being proposed as a unilateral project by NEG-Micon (I) Private Limited, which is the sole project participant. The host Party, India meets all participation requirements, and the DNA of India has approved the project vide its letter of approval dated 23 December 2005 and has provided confirmation that the project assists in achieving sustainable development /3/.

3.2 Project Design

The purpose of the project activity is to harness the renewable resources of wind power in the Udumalpet region, in the state of Tamil Nadu, and thereby enable displacement of non-renewable natural resources. Activities involved are construction, operation and maintenance of wind energy based electric generators supplying electricity to the Tamil Nadu state grid.

The aggregated installed capacity of 25.70 MW comprises 22 wind turbines each of 750 KW, 1 turbine of 950 KW and 5 turbines each of 1500 KW capacity. All the WEG's in the project have been supplied by NEG-Micon and NEG Micon (I) Private Limited (NMIPL) is responsible for the management of the project activity.

The expected operational lifetime of the project activity is stated to be 20 years and a fixed crediting period of 10 years starting from 24 June 2005 has been selected.

The project follows applicability criteria for the chosen methodology (ACM0002 – Baseline and monitoring methodology “*Consolidated baseline methodology for grid-connected electricity generation from renewable source*” Version 06: 19 May 2006) as it provides grid-connected renewable power generation based on wind sources.

3.3 Project Baseline

The project applies the approved methodology of ACM0002 (version 06) – “Consolidated baseline methodology for grid-connected electricity generation from renewable sources”. The baseline methodology of ACM0002 is applicable for grid connected renewable electricity generation projects and includes wind power based projects. The use of this methodology is appropriate as the project activity involves electricity capacity additions through wind sources.

The baseline is the emission reductions occurring due to the electricity generation through renewable sources, derived from the electricity consumed times the relevant emission factor of the selected grid. As the project activity is feeding power to the southern regional grid via the Tamil Nadu electricity board (TNEB) grid, the baseline for this project activity is the function of the generation mix of southern regional grid. The selection of the southern regional grid as the



grid system boundary for the project activity is in line with the recent EB guidance for large countries such as India. Baseline emission factor for the southern regional grid is established *ex-ante* based on the approved methodology ACM0002 using a combined margin approach.

NEG Micon has used the OM and BM data published in the CEA* database for calculation of the baseline emission factor. The Central Electricity Authority, Ministry of Power, Government of India has published a database of carbon dioxide emission factors from the power sector in India based on detailed authenticated information obtained from all operating power stations in the country. This database i.e. The CO₂ baseline database provides information about the OM and BM factors of all the regional electricity grids in India. DNV confirms that the database is an official publication of the Government of India for the purpose of CDM baselines and the OM in the CEA database is calculated *ex ante* using the simple OM approach and the BM is calculated *ex ante* based on 20% most recent capacity additions in the grid based on net generation as described in ACM0002. The average of the OM for the three years 2002-03, 2003-04 and 2004-05 has been determined and verified to be 1003.38 tCO₂e/GWh and the BM to be 717.98 tCO₂e/GWh. The weighted average of the “operating margin” and the “build margin” emission coefficient for southern regional grid of India has thus been determined to be 860.68 tCO₂e/GWh (fixed *ex-ante*). In the determination of the combined margin the project proponent has opted for a weighting between the BM and OM of 50:50. This is deemed more conservative than considering the weight age of 75:25 (as recommended in the ACM0002 for wind projects) which would yield a higher combined margin grid emission factor of 932.03 t tCO₂e/GWh.

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

The start date of the project activity is 18 March 2004 which is the date of commissioning of the first WEG in the bundle. This has been verified through the commissioning certificate provided by TNEB. Evidence in the form of correspondences between the supplier and project proponents and Directors board meeting minutes have been provided to establish that CDM was indeed considered prior to the start of the project.

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

Two alternatives were identified for the project activity.

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

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

.Step 2: Investment analysis.

The project activity primarily demonstrates additionality through the existence of investment barriers. The investment analysis presented by NEG Micon, uses the equity IRR as a basis to assess the financial attractiveness of the project activity. It has been demonstrated that the equity

* CO₂ Baseline Database, <http://cea.nic.in/planning/c%20and%20e/Government%20of%20India%20website.htm>



IRR of the project activity without CDM revenues is 13.57%, which is lower than the benchmark IRR of 16% for independent power producers (IPP) as per Government of India guidelines. The IRR improves to 16.25 % with CDM revenues. The project proponent has also determined the project IRR to be 13.3% and 11.7%, with and without CDM revenues respectively.

A sensitivity analysis, based on a 5% reduction in annual export to TNEB, has also been conducted and it demonstrates that the IRR is always less than the benchmark IRR of 16%. The argument by NEG Micon (I) private limited that, since the project employs stall regulated WEG's (output from the WEG's remains constant beyond the rated wind speeds), the variation in the wind speeds above the rated speed does not have a great impact on the power generation achievable, and therefore a variation by 5% is adequate, is deemed acceptable.

The financial analysis and the benchmarks have been verified by DNV and found to be appropriate.

.Step 3: Barrier analysis

Technological barrier: The project activity faces technological barriers as more than 60% of the components of the machines are imported. This necessitates deployment of large operation and maintenance reserves for any eventuality. This is deemed to be more relevant to the project activity as machines of varying capacities are being used.

Tariff order barrier: It has been argued that the tariff set by TNEB is INR.2.70/kWh without allowance for any escalation for 20 years. This is considered to be the lowest tariff among the southern Indian states. Third party sales are also not allowed as per the PPA. The generation from the WEGs is used for captive consumption (about 44%) and sale to the TNEB grid (56%).

Low capacity utilisation: It has been verified that the capacity utilisation factor for the WEG in Tamil Nadu is low at about 25% compared to the thermal power plant that have a higher utilisation factor of 74%, and is a barrier for the project activity.

Step 4: Common practice analysis:

It has been substantiated that though the state of Tamil Nadu was in the forefront in the establishment of wind farms, in terms of grid penetration levels and the percentage contribution to the grid system, the installed capacity of wind was only about 6.5% as compared to the 35% from fossil fuel fired power plants. The low penetration of the wind energy is an indicator that establishment of wind farms was not a common practice.

Step 5: Impact of CDM registration

CDM revenues will enhance the viability of the project and is expected to partially offset the risks associated with the possible changes in policy and project implementation besides improving the cash flows.

Based on the financial data and analysis provided it is demonstrated that financial barriers existed at the time the project activity was decided. In conclusion, it is deemed likely that the CDM revenues would improve the financials of the project activity and make the project activity more viable. The emission reductions from the project can therefore be deemed additional.



3.5 Monitoring Plan

The project applies the approved consolidated monitoring methodology ACM 0002, version 6, “Consolidated baseline methodology for grid-connected electricity generation from renewable sources”. The monitoring will involve metering the electricity generated and supplied to the grid. The CO₂ emission reductions due to the project are directly linked to the electricity generated and supplied by the project to the regional grid. Details of the data collection and frequency of data recording and associated formats are described and confirmed to be adequate. The company has an integrated management system (IMS) which ensures the quality of the data and the management practices. Procedure for calibration, records of calibration, and maintenance of monitoring equipment are clearly stated. The authority and responsibilities for measuring, recording, reporting, monitoring, and controlling of the monitored parameters and review of performance have also been delineated. Tower wise meters have been installed whose readings are recorded daily and compared with the energy meter at the grid which is installed, maintained and calibrated by TNEB. Monthly aggregate energy supplied to the grid is monitored also by TNEB and can be cross verified with the billing. Thus, the monitoring methodology will give adequate opportunity for real measurements of achieved emission reductions.

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 40756 tCO₂ per year, based on an ex-ante grid emission factor of 860.68 tCO₂e/GWh. NEG Micon has used the OM and BM data published in the CEA* database, for calculating the baseline emission factor, as described in section 3.3 of this report.

3.7 Environmental Impacts

The proposed project activity contributes to generation of green power and is expected to benefit the economic development of the region. Thus, the project activity is expected to have only beneficial impacts and no adverse impacts are foreseen. There is no legislative mandate for carrying out an environmental impact assessment study, as wind power projects are exempt from such requirement. The project activity is in compliance with all current, applicable legislations.

3.8 Comments by Local Stakeholders

The Governmental organisations which are stakeholders in the project activity have accorded their permission for establishment and operation of the project facility. Stakeholder survey was conducted by NEG Micon (I) Private Limited between 2002 and 2003. A questionnaire was prepared and comments were also invited through group discussions in the region. The local stakeholders support the project and no modifications to the project design were necessary.

4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS

The PDD (version 02) was made publicly available on DNV’s climate change website (www.dnv.com/certification/climatechange) and Parties, stakeholders and NGOs were through

* CO₂ Baseline Database, <http://cea.nic.in/planning/c%20and%20e/Government%20of%20India%20website.htm>



the CDM website invited to provide comments during a 30 days period from 8 November 2005 to 7 December 2005.

One comment was received on 7 December 2005. The comment received (in unedited form) is given in the below text box.

Comment by: Perumal, CMC Pvt Ltd, Kolkata

Inserted on: 7 December 2005.

Subject: 25.7 MW bundled windpower project in Udumalpet.

Comment:

Additionality argument is debatable

Common practice:

The proposed project activity has started only by 2005 whereas the PDD explains the status in 1996 which would not be valiant under the present condition. The state of tamilnadu has registered most capacity addition i.e. more than 60% during the FY 2004-05. More over tamilnadu has the most installed capacity as on date and the technical potential is almost being tapped.

Impact of CDM registration:

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

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, it is not wholly accurate to conclude that the project activity is non viable without the CER revenues.

NEG Micon (I) Private Limited's response:

Relevant changes have been made in the PDD to explain the situation pertaining to 2004 and 2005 alone. It is mentioned about the year 1995 - 1996 as post 1996 tax benefits were lowered and MAT was introduced.

During the year 2004 - 2005 the installed capacity of wind mills in Tamilnadu was 315.9 MW against 371.2 MW during 2003 – 2004, one must note that there is a decline in the WTG installations by 55.3 MW.

Source: MNES Annual Report 2005 under “Wind”–table 6.3.



Tax breaks have been considered while computing the project IRR. Refer annex for “The Project Cash Flow”.

The benchmarking value of Return on Equity for Indian power projects is 16% (Source: CERC Annual report 2003-2004). The equity IRR taking into account the tax depreciation is only 13.57%, by including the revenue from sale of carbon credits the Equity IRR increases to 16.25%. Thus the project activity definitely needs the CDM benefits to make it a viable project.

How DNV has considered the comments received in its validation:

NEG Micon (I) Private Limited’s response is considered acceptable in the light of revised PDD and detailed additionality arguments.

The additionality arguments are more clearly addressed in the revised PDD. This has also been the outcome of DNV’s CAR No.3. These are based on two levels:

- As addressed in section 3.4 of this report, it has been justified that against a benchmark of 16% post tax return on equity in the Indian power sector, the post tax equity IRR without considering CDM revenues and considering 20 years cash flows has been established as 13.57%, and the post tax equity IRR with CDM revenues at 16.25% for the project activity.
- It has also been clearly demonstrated that all the incentives and subsidies provided for the wind farm developers in the state of Tamil Nadu during that period have been taken into consideration.

The arguments presented on the consideration of taxes in the financial calculations, the detailed arguments and evidence provided for IRR and sensitivity analysis by NEG Micon is considered acceptable..The third party certified IRR calculations have been verified for completeness and the assumptions are deemed justified.



5 VALIDATION OPINION

Det Norske Veritas Certification Ltd. (DNV) has performed a validation of the “25.70 MW Bundled Wind Power Project in Udumalpet, Tamilnadu” on the basis of UNFCCC criteria for the Clean Development Mechanism and host country criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

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

The project participant is NEG Micon (I) Private Limited. The host Party India meets all participation requirements and the DNA of India approved the project.

The validation has confirmed that the project is eligible as a large-scale CDM project activity and correctly applies the approved baseline and monitoring methodology ACM0002, version 06 – “Consolidated baseline methodology for grid-connected electricity generation from renewable sources”. The determination of the baseline is well elaborated, transparent and sufficiently supported with facts. The selected baseline scenario is reasonable and an analysis of the barriers facing the project demonstrates that project is not a likely baseline scenario.

The project will contribute to sustainable development by generating renewable energy, providing benefits such as employment generation during construction and operation of the project, ensuring environmental well being and aid in bridging the gap between demand and supply of power. The DNA of India has confirmed that the project assists in achieving sustainable development.

The validation did not reveal any information indicating that the project can be seen as a diversion of ODA funding towards India.

The project results in the reduction of GHG emissions those are real, measurable and give long-term benefits and that are additional to what would have occurred in the absence of the project.

The total emission reductions from the project are estimated to be on the average 40 756 tCO₂e per year during the fixed ten year crediting period. The emission reduction forecast has been checked and is deemed likely that the stated amount is achieved given that the underlying assumptions do not change.

The monitoring plan makes sufficient provision for monitoring relevant project and baseline emission indicators. Responsibilities and authorities for project management, monitoring and reporting and QA/QC procedures have been addressed as per the integrated management system of the project participant.

A local stakeholder consultation process has been carried out by the project participant. DNV published the PDD on the DNV climate change web site and comments by Parties, stakeholders and UNFCCC accredited NGOs were invited through the CDM web site. One comments were received and DNV has taken due account of the comment in its validation of the project.

In summary, it is DNV’s opinion that the project, as described in the project design document of 15 February 2007, meets all relevant UNFCCC requirements for the CDM, is eligible to apply the approved baseline and monitoring methodology ACM0002, version 06 – “ Consolidated baseline methodology for grid-connected electricity generation from renewable sources”.



Hence, DNV requests the registration of the “25.7 MW Bundled Wind Power Project in Udumalpet, Tamilnadu” in India as a CDM project activity.



REFERENCES

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

- /1/ NEG Micon (I) Private Limited.:CDM PDD for “25.7 MW Bundled Wind Power Project in Udumalpet, Tamilnadu ” version 2 of 15 February 2007 and its previous version.
- /2/ NEG: financial analysis spreadsheet for the project
- /3/ Ministry of Environment and Forest (DNA of India): Letter of Approval F.No 4/12/2005-CCC dated 23 December 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/ UNFCCC – Approved ACM0002 – Baseline and monitoring methodology “Consolidated baseline methodology for grid-connected electricity generation from renewable source “ Version 06: 19 May 2006.
- /6/ CO₂ Baseline Database, <http://cea.nic.in/planning/c%20and%20e/Government%20of%20India%20website.htm>

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

- /7/ Ms. Pushkala Lakshmi Ratan, NEG-Micon.
- /8/ Mr. Badri Narayanan V, NEG-Micon.
- /9/ Mr. Balaji S, NEG-Micon.

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 The project is being developed as a unilateral project.
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	CAR-1	Table 2, Section A.3 The Host country approval is obtained on 23 December 2006.
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	CAR-1	The letter of approval has been received.
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.1 to E.4
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		Table 2, Section B.2.1
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	The project is being proposed as a unilateral project.
8. Parties participating in the CDM shall designate a national authority for the CDM.	CDM Modalities and Procedures §29	OK	DNA of India: National Clean Development Mechanism Authority, Ministry of Environment and Forests.
9. The host Party and the participating Annex I Party shall be a	CDM Modalities	OK	India ratified Kyoto Protocol on

Requirement	Reference	Conclusion	Cross Reference / Comment
Party to the Kyoto Protocol.	§30/31a		26 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 is being developed 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 is being developed 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 A.1
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 G
14. Baseline and monitoring methodology shall be previously approved by the CDM Executive Board.	CDM Modalities and Procedures §37e	OK	Table 2, Section A.1.3, B and D
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	
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		The PDD was be made publicly available on www.dnv.com/certification/climateexchange and Parties, stakeholders and NGOs will through the CDM website be invited to provide comments during the 30 day period from 8 November 2005 to 7 December 2005. One comment was

Requirement	Reference	Conclusion	Cross Reference / Comment
			received.
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	
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	
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 PDD has been updated to the Version 03.1 format.

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, I	The Project activity (with an aggregate capacity of 25.7 MW) is located in and around the town of Udumalpet in Tamil Nadu. The boundaries and the geographical locations comprising all the project owners and turbines have not been suitably described in the PDD.	CAR2	OK
A.1.2. Are the project's system (components and facilities used to mitigate GHGs) boundaries clearly defined?	/1/	DR, I	The aggregated installed capacity of 25.7 MW comprises 22 wind turbines each of 750 KW, 1 turbine of 950 KW and 5 turbines each of 1650 KW capacity. The plant is grid connected (TNEB grid) and houses the metering, switchgear and other protection equipment. The electricity generated is partial consumed captively and partly exported to the grid. The PDD does not include relevant details of the turbines like service connection no. for easy identification and traceability	CAR2	OK

* MoV = Means of Verification, DR= Document Review, I= Interview

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	The details of the wind turbine technology are restricted to capacity and cut in & cut out speeds. Other technical details have not been adequately described.	CL-1	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	The turbines uses the technical know how - supplied by NEG Micon A/S Denmark. No comparative analysis has been provided.	CL-1	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, I	This is responsibility of the technology supplier – NEG Micon.		OK
A.2.5. Does the project make provisions for meeting training and maintenance needs?	/1/	DR, I	The company is certified to ISO 9001:2000 systems and training and maintenance needs are built in.		OK

* MoV = Means of Verification, DR= Document Review, I= Interview

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
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. Project is in line with the Ministry of Non-conventional Energy's policy of promoting and achieving target of 10% renewable energy by 2010.		OK
A.3.2. Is the project in line with host-country specific CDM requirements?	/1/	DR	No, host country approval has not been obtained.	CAR-1	OK
A.3.3. Is the project in line with sustainable development policies of the host country?	/1/	DR	As in A.3.2	CAR-1	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 rural & infrastructure development around the area.		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. Approved methodology - ACM0002 titled "Consolidated baseline methodology for grid connected electricity generation from renewable sources" has been applied.		OK

* MoV = Means of Verification, DR= Document Review, I= Interview

Page A-5-6

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
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 and has been appropriately justified.		OK
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	The methodology uses the approach - "existing actual or historical emissions". The baselines have been determined using the combined margin (operating & build margin) options as per approved methodology ACM0002.		OK
B.2.2. Has the baseline been determined using conservative assumptions where possible?	/1/	DR	The baseline scenario considered is the Tamilnadu electricity grid power generation. The conservativeness of the baseline has not been clearly demonstrated as the baseline does not consider other options such as southern regional grid. The baseline emission factors have not been updated with data at the time of validation. (year 2005).	GL-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
B.2.4. Does the baseline scenario sufficiently take into account relevant national and/or sectoral policies, macro-economic trends and political	/1/	DR	Policies appear to favour power generation through renewable sources.		OK

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Page A-5-7

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
aspirations?					
B.2.5. Is the baseline determination compatible with the available data?	/1/	DR	Refer to comments under B2.2.	CL-2	OK
B.2.6. Does the selected baseline represent the most likely scenario among other possible and/or discussed scenarios?	/1/	DR	Refer to comments under B2.2.	CL-2	OK
B.2.7. Is it demonstrated/justified that the project activity itself is not a likely baseline scenario?	/1/	DR	As required by the methodology, the project proponents have used the additionality tool. The justification for additionality is based primarily on barrier and common practice analysis. Since the project activity consists of a number of subprojects, taken up at different times, it is not clear whether all the arguments are applicable to all the sub projects.	CAR-3	OK
B.2.8. Have the major risks to the baseline been identified?	/1/	DR	Refer to comments under B2.2 .	CAR-3	OK
B.2.9. Is 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	18 March 2004 was the commissioning date for the first of the windmills. The last windmill was commissioned on 24 June 2005. Expected operational lifetime is 20 years.	CL-3	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 ten years has been chosen. The starting date of the crediting period is 24 June 2005.		OK

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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 – ACM0002, 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	Though project monitoring activities and responsibility have been adequately addressed, Table D.2.1.3 in the PDD is incomplete and so does not cover all the project monitoring requirements such as type of data to be monitored, for how long the data will be kept etc.	CAR-4	OK
D.1.4. Is the discussion and selection of the monitoring methodology transparent?	/1/	DR	Yes.		OK

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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 leakages need 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	The monitoring plan does not include provision for monitoring the individual electricity generation from each of the turbines comprising the various sub projects.	CL-4	OK
D.4.2. Is the choice of baseline indicators, in particular for baseline emissions, reasonable?	/1/	DR	Yes.		OK
D.4.3. Will it be possible to monitor the specified	/1/	DR	Yes.		OK

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Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
baseline indicators?					
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, I	The PDD addresses a CDM Manual. But the same was not available during the visit.	CL-5	OK
D.6.2. Is the authority and responsibility for registration, monitoring, measurement and reporting clearly described?	/1/	DR	Refer to comments above.	CL-5	OK
D.6.3. Are procedures identified for training of monitoring personnel?	/1/	DR	Training procedures have been identified as part of existing ISO 9000 system but linkage to CDM Manual is not evident.	CL-5	OK
D.6.4. Are procedures identified for emergency preparedness for cases where emergencies can cause unintended emissions?	/1/	DR	No GHG emission related emergency situations are expected to occur. However safety procedures have been addressed as part of the existing ISO 9000 system procedures.		OK
D.6.5. Are procedures identified for calibration of monitoring equipment?	/1/	DR	Procedures are available as part of the existing ISO 9000 system procedures but not linked to CDM Manual.	CL-5	OK

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Page A-5-11

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
D.6.6. Are procedures identified for maintenance of monitoring equipment and installations?	/1/	DR	Procedures are available as part of the existing ISO 9000 system procedures, but not linked to CDM Manual.	CL5	OK
D.6.7. Are procedures identified for monitoring, measurements and reporting?	/1/	DR	Procedures are available as part of the existing ISO 9000 system procedures but not linked to CDM Manual.	CL5	OK
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 but not linked to CDM Manual.	CL5	OK
D.6.9. Are procedures identified for dealing with possible monitoring data adjustments and uncertainties?	/1/	DR	Procedures are available as part of the existing ISO 9000 system procedures but not linked to CDM Manual.	CL5	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 but not linked to CDM Manual.	CL5	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, the same do not specifically include GHG project compliance.	CL5	OK
D.6.12. Are procedures identified for project performance reviews before data is submitted for verification, internally or externally?	/1/	DR	Refer to above comments in D6.11.	CL5	OK
D.6.13. Are procedures identified for corrective actions in order to provide for more accurate future monitoring and reporting?	/1/	DR	Refer to above comments. In D6.11.	CL5	OK

* MoV = Means of Verification, DR= Document Review, I= Interview

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 are no leakages 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 characteristics and baseline indicators been chosen as reference for baseline emissions?	/1/	DR	Refer comments under B.2.2.	CL-2	OK

* MoV = Means of Verification, DR= Document Review, I= Interview

Page A-5-13

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
E.3.2. Are the baseline boundaries clearly defined and do they sufficiently cover sources and sinks for baseline emissions?	/1/	DR	Refer comments under B2.2	CL-2	OK
E.3.3. Are the GHG calculations documented in a complete and transparent manner?	/1/	DR	Yes		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 use of southern grid. Refer B2.2.	CL-2	OK
E.3.5. Are uncertainties in the GHG emission estimates properly addressed in the documentation?	/1/	DR	Refer comments above.	CL-2	OK
E.3.6. Have the project baseline(s) and the project emissions been determined using the same appropriate methodology and conservative assumptions?	/1/	DR	Refer comments above.	CL-2	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	Yes, the project will result in fewer emission reductions than in the baseline scenario. The project is estimated to result in reduction of 40 756 t CO ₂ /year.		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	/1/	DR/I	Yes.		OK

* MoV = Means of Verification, DR= Document Review, I= Interview

Page A-5-14

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
the project activity been sufficiently described?					
F.1.2. Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, is an EIA approved?	/1/	DR/I	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/I	As, it is a wind farm project, the impacts are expected to be minimal.		OK
F.1.4. Are transboundary environmental impacts considered in the analysis?	/1/	DR	Refer to comments above.		OK
F.1.5. Have identified environmental impacts been addressed in the project design?	/1/	DR/I	No negative environmental impacts have been identified.		
F.1.6. Does the project comply with environmental legislation in the host country?	/1/	DR/I	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/I	PDD indicates that a stakeholder consultation with local population and regulatory authorities has been carried out at the time of obtaining project clearance. Records of the same were not available during the site visit.	CL6	OK
G.1.2. Have appropriate media been used to invite comments by local stakeholders?	/1/	DR/I	Through interactions and meetings.		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/I	Refer comments under G1.1.	CL6	OK

* MoV = Means of Verification, DR= Document Review, I= Interview

Page A-5-15

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
G.1.5. Has due account been taken of any stakeholder comments received?	/1/	DR/I	Refer comments under G1.1.	CL6	OK

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Table 3 Resolution of Corrective Action and Clarification Requests

Draft report corrective action requests and requests for clarifications	Ref. to Table 1 &2	Summary of project participants' response	Final conclusion
CAR 1: Evidence of the host country approval shall be forwarded to DNV.	Table1	Letter of approval from Indian DNA has been obtained.	The DNA approval letter has been verified and accepted. CAR 1 is closed.
CAR 2 : The Project activity is located in and around Udumalpet in Tamil Nadu (with an aggregate capacity of 25.7 MW) The boundaries & the geographical locations comprising all the project owners and turbines are not suitably described in the PDD. The PDD does not include relevant details of the turbines like TNEB service connection no for easy identification and traceability.	A.1.1, 1.2	The Project owners, capacity, commissioning date, location along with the service connection numbers have been provided to the DoE and have also been included in the revised PDD.	The revised PDD addresses the location details, boundary and the point of connectivity to the TNEB. CAR 2 is closed.
CAR3: As required by the ACM002 methodology, the project proponents have used the additionality tool. The justification for additionality is based on primarily on barrier and common practice analysis. Since the project activity consists of a number of subprojects, taken up at different times, it is not clear whether all the arguments are applicable to all the sub-projects.	B.2.7	The justification of the additionality is now based on the investment analysis.	The additionality of the project has been now been established on the financial and investment barrier analysis, which has been verified. CAR 3 is closed.
CAR 4: Though project monitoring activities and responsibility have been adequately addressed, Table D.2.1.3 in the PDD is incomplete and so does not cover all the project monitoring requirements such as type	D.1.3	This has been addressed in the revised PDD.	The revised PDD addresses the monitoring details as elaborated in B.7.1 and B.7.2. CAR 4 is closed.

* MoV = Means of Verification, DR= Document Review, I= Interview

Page A-1

Draft report corrective action requests and requests for clarifications	Ref. to Table 1 &2	Summary of project participants' response	Final conclusion
of data to be monitored, for how long the data will be kept etc.			
CL 1: The details of the wind electricity generators (WEG) technology with respect to capacity and cut in & cut out speeds have been only described. Other technical details have not been adequately described. The turbines use the technical know how supplied by NEG Micon A/S Denmark. A comparative analysis has not been provided.	A.1.1	Other technical details of NM 48/750, NM 54/950 and NM82/1650 have been provided in the revised PDD. However, comparative study is not possible as there are no turbines of similar ratings available in the Indian market.	Accepted, as the PDD incorporates the necessary changes. CL1 is closed.
CL-1 : The baseline scenario considered is the Tamilnadu electricity grid power generation. The conservativeness of the baseline has not been clearly demonstrated as the baseline does not consider other options such as southern regional grid. The baseline emission factors have not been updated with data at the time of validation.	B.2.2	The Baseline study is as per the CEA's (Central Electricity Authority) CO ₂ Database, the information pertaining to the Southern Region Electricity Board Grid (As per CEA baseline CO ₂ emission database Version 1.0 also Refer link: http://www.cea.nic.in/planning/c%20and%20e/Government%20of%20India%20website.htm) has been used for this Project Activity.	The emission factors have been taken from the CEA authenticated information, and CEA emission factors are conservative and accepted. CL 2 is closed.
CL 3: In the PDD the start date is mentioned to be 18 March 2004 which is the commissioning date for the first turbine. Since it is a bundled wind farm project it is not clear as to what the starting & operational dates refer to as the individual start & operational dates of sub projects and corresponding wind turbines has not been described.	C.1.1	The project start date refers to the commissioning date of first WEG in that bundle. The project crediting period refers to the last date of the commissioning of the WEG in the bundle.	Accepted, as the PDD incorporates the necessary changes. CL 3 is closed.
CL 4: The monitoring plan does not include provision for monitoring the individual electricity generation from each of the turbines comprising the various sub projects.	D.4.1	The monitoring plan as mentioned in section B.7.1 and B.7.2.would measure the electricity generated from the each of the WEG's in the bundle.	Accepted, as the PDD incorporates the necessary changes.

* MoV = Means of Verification, DR= Document Review, I= Interview

Page A-2

Draft report corrective action requests and requests for clarifications	Ref. to Table 1 &2	Summary of project participants' response	Final conclusion
			CL 4 is closed.
CL 5: The PDD mentions about a CDM Manual. But the same was not available during the visit. Procedures established for project management covering authority & responsibility, measurement, monitoring, reporting, calibration, maintenance & are available as part of ISO 9001 procedures but not linked to CDM Manual.	D.6.1 - 6.12	A CDM Manual has been prepared and the same has been submitted to the DOE.	The CDM manual has been verified. CL 5 is closed.
CL 6: PDD mentions that stakeholder consultation with local population and regulatory authorities has been carried at the time of obtaining project clearance. Records of the same were not available during the site visit.	G1.1	Stakeholder consultation had been taken up as a series of individual questionnaire survey and recording the feedback of the local population. Records of the same were available at the NEG Micon office and have been provided to the DoE.	The consultation reports have been verified. CL6 is closed.

APPENDIX B

CERTIFICATES OF COMPETENCE



CERTIFICATE OF COMPETENCE

Michael Lehmann

Qualification in accordance with DNV's Qualification scheme for CDM/JI (ICP-9-8-i1-CDMJi-i1)

GHG Auditor:	Yes		
CDM Validator:	Yes	JI Validator:	Yes
CDM Verifier:	Yes	JI Verifier:	Yes
Industry Sector Expert for Sectoral Scope(s):	Sectoral scope 1,2,3 & 9		
Technical Reviewer for (group of) methodologies:			
ACM0001, AM0002, AM0003, AM0010, AM0011, AM0012, AMS-III.G	Yes	AM0021	Yes
ACM0002, AMS-I.A-D, AM0019, AM0026, AM0029	Yes	AM0023	Yes
ACM0003, ACM0005, AM0033, AM0040	Yes	AM0024	Yes
ACM0004	Yes	AM0027	Yes
ACM0006, AM0007, AM0015, AM0036, AM0042	Yes	AM0028, AM0034	Yes
ACM0007	Yes	AM0030	Yes
ACM0008	Yes	AM0031	Yes
ACM0009, AM0008, AMS-III.B	Yes	AM0032	Yes
AM0006, AM0016, AMS-III.D	Yes	AM0035	Yes
AM0009, AM0037	Yes	AM0038	Yes
AM0013, AM0022, AM0025, AM00379, AMS-III.H, AMS-III.I	Yes	AM0041	Yes
AM0014	Yes	AM0034	Yes
AM0017	Yes	AMS-II.A-F	Yes
AM0018	Yes	AMS-III.A	Yes
AM0020	Yes	AMS-III.E, AMS-III.F	Yes

Høvik, 6 November 2006

Einar Telnes
Director, International Climate Change Services

Michael Lehmann
Technical Director



CERTIFICATE OF COMPETENCE

Kumaraswamy Chandrashekara

Qualification in accordance with DNV's Qualification scheme for CDM/JI (ICP-9-8-i1-CDMJi-i1)

GHG Auditor:	Yes		
CDM Validator:	Yes	JI Validator:	--
CDM Verifier:	Yes	JI Verifier:	--
Industry Sector Expert for Sectoral Scope(s):	Sectoral scope 4 & 5		
Technical Reviewer for (group of) methodologies:			
ACM0001, AM0002, AM0003, AM0010, AM0011, AM0012, AMS-III.G	Yes	AM0021	Yes
ACM002, AMS-I.A-D, AM0019, AM0026, AM0029	Yes	AM0023	Yes
ACM003, ACM0005, AM0033, AM0040	Yes	AM0024	Yes
ACM0004	Yes	AM0027	Yes
ACM0006, AM0007, AM0015, AM0036, AM0042	Yes	AM0028, AM0034	Yes
ACM0007	Yes	AM0030	Yes
ACM0008	Yes	AM0031	Yes
ACM0009, AM0008, AMS-III.B	Yes	AM0032	Yes
AM0006, AM0016, AMS-III.D	Yes	AM0035	Yes
AM0009, AM0037	Yes	AM0038	Yes
AM0013, AM0022, AM0025, AM00379, AMS-III.H, AMS-III.I	Yes	AM0041	Yes
AM0014	Yes	AM0034	Yes
AM0017	Yes	AMS-II.A-F	Yes
AM0018	Yes	AMS-III.A	Yes
AM0020	Yes	AMS-III.E, AMS-III.F	Yes

Høvik, 6 November 2006

Einar Telnes
Director, International Climate Change Services

Michael Lehmann
Technical Director



CERTIFICATE OF COMPETENCE

Ramesh Ramachandran

Qualification in accordance with DNV's Qualification scheme for CDM/JI (ICP-9-8-i1-CDMJi-i1)

GHG Auditor:	Yes		
CDM Validator:	Yes	JI Validator:	--
CDM Verifier:	Yes	JI Verifier:	--
Industry Sector Expert for Sectoral Scope(s):	Sectoral scope 13 (wastewater)		

Høvik, 6 November 2006

Einar Telnes
Director, International Climate Change Services

Michael Lehmann
Technical Director

Murali Govindarajulu

Qualification in accordance with DNV's Qualification scheme for CDM/JI (ICP-9-8-i1-CDMJi-i1)

GHG Auditor:	Yes		
CDM Validator:	--	JI Validator:	--
CDM Verifier:	--	JI Verifier:	--
Industry Sector Expert for Sectoral Scope(s):	--		

Høvik, 6 November 2006

Einar Telnes
Director, International Climate Change Services

Michael Lehmann
Technical Director



CERTIFICATE OF COMPETENCE

Raman Venkata Kakaraparthi

Qualification in accordance with DNV's Qualification scheme for CDM/JI (ICP-9-8-i1-CDMJ1-i1

GHG Auditor:	Yes		
CDM Validator:	Yes	JI Validator:	--
CDM Verifier:	--	JI Verifier:	--
Industry Sector Expert for Sectoral Scope(s):	Sectoral scope 5		
Technical Reviewer for (group of) methodologies:			
ACM002, AMS-I.A-D, AM0019, AM0026, AM0029, AM0045	Yes		

Høvik, 22 December 2006

Einar Telnes
Director, International Climate Change Services

Michael Lehmann
Technical Director

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