



VALIDATION REPORT

M/s. KALANI INDUSTRIES LIMITED

**VALIDATION OF THE
2.76 MW Grid Connected Renewable Energy Project in
Rajasthan by Kalani Industries.**

REPORT No.INDIA-VAL/41.49/2007

REVISION No. 01

BUREAU VERITAS CERTIFICATION

VALIDATION REPORT

Date of first issue: 04/05/2007	Organisational unit: Bureau Veritas Certification Holdings
Client: Kalani Industries Limited	Client ref.: Mr. P. S. Kalani

Summary:

Bureau Veritas Certification has made a validation of the “2.76 MW Grid Connected Renewable Energy Project in Rajasthan by Kalani Industries” (hereafter called “the project”) located in village Barabagh Jaisalmer district, Rajasthan on the basis of UNFCCC criteria for the CDM, as well as criteria given to provide for consistent project operations, monitoring and reporting. UNFCCC criteria refer to Article 12 of the Kyoto Protocol, the CDM rules and modalities and the subsequent decisions by the CDM Executive Board, as well as the host country criteria.

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

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

In summary, it is Bureau Veritas Certification’s opinion that the project correctly applies the baseline and monitoring methodology number and meets the relevant UNFCCC requirements for the CDM and the relevant host country criteria.

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Report title: 2.76 MW Grid Connected Renewable Energy Project in Rajasthan by Kalani Industries.	
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Indexing terms

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Abbreviations

BMS	BVQI Management System
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reductions
CH ₄	Methane
CL	Clarification Request
CO ₂	Carbon Dioxide
CPP	Captive Power Plant
DIS	Draft of International Standard
DNA	Designated National Authority
DOE	Designated Operational Entity
DR	Document Review
GHG	Green House Gas(es)
I	Interview
IETA	International Emissions Trading Association
IPCC	Intergovernmental Panel on Climate Change
ISO	International Organisation for Standardization
RVNPL	Rajasthan Rajya Vidyut Prasaran Nigam Limited
MoV	Means of Verification
MP	Monitoring Plan
NGO	Non Government Organisation
PDD	Project Design Document
UNFCCC	United Nations Framework Convention for Climate Change
WEGs	Wind Energy Generators



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1 INTRODUCTION

Kalani Industries Limited (hereafter called “the client”) has commissioned Bureau Veritas Certification to validate its “2.76 MW Grid Connected Renewable Energy Project in Rajasthan by Kalani Industries.” (Hereafter called “the project”) at Barabagh, Jaisalmer District, Rajasthan, India

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

1.1 Objective

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

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

1.2 Scope

The validation scope is defined as an independent and objective review of the project design document, the project's baseline study and monitoring plan and other relevant documents. The information in these documents is reviewed against Kyoto Protocol requirements, UNFCCC rules and associated interpretations. Bureau Veritas Certification has, based on the recommendations in the Validation and Verification Manual (IETA/PCF, v. 3.3, 2004), employed a risk-based approach in the validation, 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 Client. However, stated requests for clarifications and/or corrective actions may provide input for improvement of the project design.

1.3 GHG Project Description

The CDM project is a wind farm located in the Jaisalmer district of the state of Rajasthan, India. The project is essentially renewable electricity generation facility making use of wind power through 2.76 MW of installed capacity. The project has the distinction of being the first Private Sector investment in the area of Wind Power generation in the state.

The wind farm commissioned consists of 12 wind turbines of capacity 0.23 MW of the Enercon – 30 make. The cluster, which is located in the Jaisalmer district of Rajasthan, India, is linked to



the Northern Grid. The wind farm has been developed under the consultation and technological guidance of Enercon India Private Limited.

1.4 Validation team

The validation team consists of the following personnel:

Mr.	Sameer V. Pendse	Bureau Veritas Certification- Team Leader, Climate change verifier
Mr.	K H Sharma	Bureau Veritas Certification, Climate change verifier
Mr.	H.B. Muralidhar	Bureau Veritas Certification, Climate change verifier
Dr.	Ashok Mammen	Bureau Veritas Certification, Climate change -Internal technical reviewer

The competence details of the team are given in Appendix 'B' of this validation report.

2 METHODOLOGY

In order to ensure transparency, a validation protocol was customised for the project, according to the Validation and Verification Manual (IETA/PCF, v. 3.3, 2004). The protocol shows, in a transparent manner, criteria (requirements), means of verification and the results from validating the identified criteria. The validation protocol serves the following purposes:

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

Validation Protocol Table 2: Requirements checklist				
Checklist Question	Reference	Means of	Comment	Draft and/or Final



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

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

Figure 1 Validation protocol tables

2.1 Review of Documents

The Project Design Document (PDD) submitted by Kalani Industries Limited and additional background documents related to the project design and baseline, i.e. Indian Law, Guidelines for Completing the Project Design Document (CDM-PDD), the Proposed New Methodology: Baseline (CDM-NMB) and the Proposed New Methodology: Monitoring (CDM-NMM), Approved methodology number, Kyoto Protocol, Clarifications on Validation Requirements to be Checked by a Designated Operational Entity were reviewed.

To address Bureau Veritas Certification corrective action and clarification requests Kalani Industries Limited revised the PDD and resubmitted it in April 2007.

The validation findings presented in this report relate to the project as described in the PDD in Version 3, 2 April 2007.



2.2 Follow-up Interviews

On 18/03/2006 & 19/03/2006 Bureau Veritas Certification performed interviews with project stakeholders to confirm selected information and to resolve issues identified in the document review. Representatives of Kalani Industries Limited were interviewed (see References). The main topics of the interviews are summarised in Table 1.

Table 1 Interview topics

Interviewed organization	Interview topics
Kalani Industries Limited	<ul style="list-style-type: none"> ➤ Project description ➤ Contribution of Project towards Sustainable Development ➤ Operational aspects ➤ Monitoring Methodologies, plans and Procedures. ➤ Internal review / verification mechanism ➤ Competency Management ➤ Additionality
Enercon India Limited	<ul style="list-style-type: none"> ➤ Operation and Maintenance of Wind turbines ➤ Trouble shooting ➤ Recording of generated units. ➤ Reporting procedures to customers. ➤ QA/ QC Procedures ➤ Competency Management
Consultant	<ul style="list-style-type: none"> ➤ Project Category ➤ Additionality ➤ Base line – Justification and Application ➤ Monitoring plans

2.3 Resolution of Clarification and Corrective Action Requests

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

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

3 VALIDATION FINDINGS

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

- 1) The findings from the desk review of the original project design documents and the findings from interviews during the follow up visit are summarised. A more detailed record of these findings can be found in the Validation Protocol in Appendix A.
- 2) Where Bureau Veritas Certification had identified issues that needed clarification or that represented a risk to the fulfilment of the project objectives, a Clarification or Corrective Action Request, respectively, have been issued. The Clarification and Corrective Action Requests are stated, where applicable, in the following sections and are further documented in the Validation



Protocol in Appendix A. The validation of the Project resulted in 12 (**Twelve**) Corrective Action Requests and 1 (**One**) Clarification Request.

3) The conclusions for validation subject are presented.

3.1 Project Design

The wind farm commissioned consists of 12 wind turbines of capacity 0.23 MW of the Enercon – 30 make. The cluster, which is located in the Jaisalmer district of Rajasthan, India, is linked to the Northern Grid. The wind farm has been developed under the consultation and technological guidance of Enercon India Private Limited.

Enercon wind turbines have three rotor blades, usually made of fiberglass, which rotate around a horizontal hub connected to a generator. They have no gearbox or drive train, making them much quieter than conventional gearbox turbines, because they don't produce the mechanical and tonal noise produced by high-speed drive components.

The variable speed mechanism on Enercon machines enables the turbine to optimize the energy extraction, increasing the reliability and efficiency of the turbine. Power is controlled automatically as the wind speed varies, with all moving parts on the machines rotating at the same speed of between 18 and 38 rpm depending on the prevailing wind conditions and turbine model. The turbines automatically stop at very high wind speeds to protect them from damage. Wind sensors are used to constantly monitor the wind direction and the tower head turns to line up with the wind.

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

Bureau Veritas Certification recognises that Kalani Industries Limited's Project is helping India fulfill its goals of promoting sustainable development. Specifically, the project is in line with host-country specific CDM requirements because –

- Project is generating power from renewable sources of energy i.e. wind.
- Project depends on clean resource i.e. wind & no emission related issues are envisaged.
- Project involves around investment of INR 147.6 million in the region.
- Project has helped improving the infrastructure in the area of project.
- The project was a pioneer in the State and demonstrated the superior technological edge offered by the Enercon- E-30 WEG & therefore it leads to the promotion of 12 state-of-art Enercon 0.23MW Wind Electric Generators (WEGs) into the region,

The project design is sound and the geographical (Barabagh village, Jaisalmer District, Rajasthan) and temporal (20 years) boundaries of the project are clearly defined.

Validation team has also investigated that whether project satisfies the condition- 'the small-scale project activity is not a de-bundled component of a large scale project activity'. For the same, details were gathered from Indian Wind power directory updated upto 2006. This directory confirms installation of only 2.76 MW by the project proponent in Jaisalmer District. Project proponent has few installations in the state of Madhya Pradesh, which is more than 300 Kms. from the proposed project location.



Prominent Corrective action Requests and Clarifications related to Project Design & their resolution by validation team are summarised below

CAR-1 : Section A.2.1 Table 2

The project site location is indicated in PDD in Village Barabagh, District Jaisalmer in the State of Rajasthan. PDD indicates in A.2 "The project activity has been therefore undertaken to harness the available wind potential at Ittigehalli village vis-a vis development of local economy." The said village is not identified to be nearby during the site visit interactions.

Unique identification in the form of revenue information and Latitude / Longitude not indicated.

Response from Project participant

The village 'Ittigehalli' has correctly been entered as 'Barabagh' in Section A.2 of the revised PDD (version 3).

Individual identification of the WEGs with reference to the Khasra number has been included in Section A.4.1.4 of the revised PDD.

The latitude and longitude has been mentioned in the same section of the revised PDD.

Conclusion by Validation Team

Verified PDD Version 3 dated 02/04/2007 for the details and found correct.

Corrective action request CAR-1 therefore is closed.

CAR-1 : Section A.2.2 Table 2

Refer A.4. of PDD; The project evacuates the power to the Northern Region Grid.

This includes the Technical specifications of Wind Energy Generators (WEG) installations. The Technical descriptions of the small scale project activity addressed in A.4 of PDD does not match with the actual installation details e.g. Rotor Diameter, Hub height, RPM etc. The sketch indicated is actually for E-40 Wind turbine whereas it is indicated to be for E-30 Wind turbine.

Response from Project participant

The technical specifications of E 30 have been correctly entered. Diagrams from the Enercon website have been included in Section A.4.2 of the revised PDD.

Conclusion by Validation Team

Verified the revised details for specifications of WEG in PDD - Version 3 dated 02/04/2007 & found to be in line with actual details of E-30 model of Enercon make WEG.

Corrective action request CAR-2 therefore is closed.

3.2 Baseline

The Project uses the approved baseline methodology Type I, ID, (Renewable Energy Projects, Sub Category: I.D.- Grid connected renewable electricity generation - Version 10, 23/12/2006' with 'Appendix B of the simplified M&P for small-scale CDM project activities-)



In the absence of Project activity 'Electricity' would have been generated using mainly fossil fuels from various power plants.

The project is a Renewable electricity generation for a grid project activity (Category I.D) as per Appendix B of the simplified modalities and procedures for small-scale CDM project activities and falls under Type I – Renewable Energy Projects I D - Renewable electricity generation for a grid.

The project produces renewable energy using wind. The project falls within the small-scale rating as the total generation capacity of the new unit is 2.76 MW, i.e. below the 15MW outlined in section ID of Appendix B of the simplified modalities and procedures for small-scale CDM project activities.

CDM Consideration and starting date

There is evidence of Board resolution dated 8th September 2000 for taking-up this project of installation of 2.76 MW of wind turbines. This meeting also has recorded that the revenue generated from GHG mitigation can mitigate the generation risk.

Starting date of the Project activity in the PDD is mentioned to be 05/01/2001, the date on which purchase order for wind turbines was issued to supplier – M/s. Enercon India Limited. Evidence is available to this effect.

All the turbines were commissioned in phases (Starting from 20th March 2001 to 31st May 2001) and commissioning certificates (total four) issued by regulatory body are available for evidence of the same.

Additionality claims and validation of the same.

In line with attachment A to appendix B of the simplified M&P for small-scale CDM project activities, there is sufficient demonstration of additionality based on the Regulatory barriers, investment barriers as well as policy barriers and the prevailing practice in the state facing the project. The PDD also explains how the project is additional and is not part of the baseline scenario.

The Project Scenario is considered additional in comparison to the baseline scenario, and therefore eligible to receive Certified Emissions Reductions (CERs) under the CDM, based on an analysis, presented by the PDD, of investment, Regulatory and other barriers, and prevailing practice.

Project of 2.76 MW installations by M/s. Kalani Industries Limited is the first private entrepreneur installation in the region. So, decision of investments with no prior & proven information on performance of installations in the region was obviously having inherent risks. There is evidence available through publicly available information. This has been attached as Annex 5 of PDD.

Evidently project has been affected by low PLF compared to guarantee PLF by Supplier. The data available shows that the average annual generation from the total project has been approximately 50.8 lac kWh as against the expected 67.2 lac kWh given from the generation guarantee. This is about 75% of the expected generation. It is also evident from the data since year 2004, there has been a decreasing trend in the overall generation. While investing in the project



Project has evidently faced regulatory barriers due to fluctuating policies on price for purchase of power. At the time of installation, when Power Purchase Agreement was signed, the price per unit was INR 3.03 / kWh, which was escalated to INR 3.32 / kWh and as on date it has come down to INR 2.91/ kWh, which is 13% lower than the preceding year price of INR 3.32 / kWh.

The validation team validated all the above-mentioned claims and validation team is of the opinion that there is sufficient demonstration of additionality based on the technological barriers, investment barriers, other barriers and the prevailing practice in the state facing the project. Therefore emission reductions from project are additional and they are not part of the baseline scenario.

Prominent Corrective action Requests and Clarifications related to Baseline & their resolution by validation team are summarised below

CAR-4 : Section B.2.1 Table 2

Refer B.2 of PDD. The Baseline determination is not addressed in the PDD. Following Claims of additionality indicated in B.3 of PDD need be concluded to justify these to be barrier:

1- The average annual generation of 0.23 MW turbine of the same EPC contractor (Enercon) in the state of Rajasthan (Jaisalmer) is 6.0 million kWh, whereas the annual generation from the machines installed by project proponent are delivering 5.25 to 5.5 million kWh per annum.

-Data for 2002-03 indicates total generation of 6105600 Units,, which is more than 6 Million units

2-The project proponent was apprised by the EPC contractor about the possibility of having higher annual revenue realization per WEG in other locations on the basis of wind data collected by Enercon.

-No reference of wind data is available to justify the same.

Response from Project participant

Baseline determination has been described in Section B.2 of the revised PDD.

The actual generation records based on the joint meter readings (JMR) taken by the state electricity utility and the representative of Kalani Industries Limited (the basis of billing) are reproduced below:

June 2001 to December 2001	28, 99,950 kWh (Generation of 7 complete months)
January 2002 to December 2002	61, 29,765 kWh
January 2003 to December 2003	45, 98,730 kWh
January 2004 to December 2004	55, 85,040 kWh
January 2005 to December 2005	46, 65,275 kWh
January 2006 to May 2006	17, 80,706 kWh (Generation of 5 complete months)

The project activity has completed 4 complete calendar years and except one year the generation is critically below the expected generation (a reduction of 25% in 2003, 8.3% in 2004 and 23% in 2005)

Conclusion by Validation Team

Verified details of generation. It is correct that for year 2002, generation was more than 6 million. However for the remaining years it was found to be less.

The overall explanation is found to be satisfactory and corrective action request – CAR-4 is therefore closed.

**CAR-12 : Section E.3.6 Table 2**

Use of conservative assumptions have not been indicated or referred in PDD.

Response from Project participant

Section B.2 of the revised PDD describes the conservatism of the baseline.

Conclusion by Validation Team

Verified section B.2 of PDD – Version 3, dated 02/04/2007. It now describes conservativeness. Corrective action request CAR-12 therefore is closed.

3.3 Monitoring Plan

The Project uses the approved consolidated monitoring methodology. The Project uses the approved consolidated monitoring methodology (Type I Category I.D Renewable electricity generation for a grid) as per Appendix B of the Simplified modalities and procedures for small-scale CDM project activities (version 10 dated 23/12/2006).

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

- Installed capacity of Project is 2.76 MW, which is below threshold limit of 15 MW for small scale Projects.
- Project is 'Generation of electricity from renewable energy i.e. wind
- Electricity generated is connected to Grid – Northern grid in this case.

Explanation on metering systems and fail-safe measures has been adequately explained in PDD and during site visit these practices were verified and found to be appropriately maintained.

The operation and maintenance department of Enercon India Limited generates daily generation report and send the same on monthly basis to project proponent.

The procedures for accuracy tests for both check and main meters are also detailed out in PDD. According to this All the main and check meters shall be tested for accuracy every calendar quarter with reference to a portable standard meter. Calibration certificate of February 2006 has been verified in line with the same.

Prominent Corrective action Requests and Clarifications related to Monitoring plan & their resolution by validation team are summarised below

CAR-7 : Section D.1.2 Table 2

The reasons for choosing this monitoring methodology are not appropriately justified in the item D.2 of the PDD.

Response from Project participant



The reasons for choosing the monitoring methodology have been justified in Section B.6, version 3 of the PDD.

Conclusion by Validation Team

Verified section D.2 of PDD – Version 3, dated 02/04/2007. Reasons are appropriately justified in the section. Corrective action request CAR-7 therefore is closed.

CAR-8 : Section D.5.1 Table 2

The management structure and the responsibility of project management is not defined in the PDD. Refer D.5 of PDD.

Response from Project participant

The responsibilities of project proponent and O & M team of Enercon has been defined in the PDD. In addition, the management structure of Kalani industries for overall monitoring of the project has been included in the revised PDD.

Conclusion by Validation Team

Verified Section D.5 of PDD – Version 3, dated 02/04/2007. Management structure of both Kalani Industries and M/s. Enercon India Limited is adequately addressed in PDD. Corrective Action Request CAR-8 is therefore closed.

CAR-10 : Section D.5.7 Table 2

Net electricity output is being monitored by the RVPNL. Daily energy readings are taken, and records maintained. D.5 of PDD mentions wrongly “These meters are connected to the Central Monitoring Station (CMS) of the entire wind farm through a wireless Radio Frequency (RF) network. The generation data of individual machine can be monitored as a real-time entity at CMS. The snapshot of generation on the last day of every calendar month will be kept as a record both in electronic as well as printed (paper) form.”

Response from Project participant

The secondary monitoring system at the wind farm provides a backup (fail-safe measure) in case the primary monitoring is not carried out/ not functioning adequately, and is done at the individual WEG level. Each WEG is equipped with an integrated electronic meter. These meters are connected to the Central Monitoring Station (CMS) of the wind farm through a fibre optic cable network, and not through wireless radio frequency as mentioned in the earlier version of the PDD. The generation data of individual machine can be monitored as a real-time entity at CMS. The snapshot of generation on the last day of every calendar month is kept as a record both in electronic as well as printed (paper) form.

Conclusion by Validation Team

Verified PDD – Version 3, dated 02/04/2007 for corrected information as meters connected through fibre optic cable network, and not through wireless radio frequency as mentioned in the earlier version of the PDD.

Corrective action request CAR-10 therefore is closed.



3.4 Calculation of GHG Emissions

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

As required under Type I – Category D, (version 10 dated 23 December 2006) methodology, the baseline emissions are calculated as per combined margin approach, both in terms of relevant grid definitions and the emission factors. The operating margin in the baseline emissions is calculated using equation (1) described in no of the methodology. For calculating the operating margin, data vintage of 3-year average (based on the most recent publicly available statistics available at the time of PDD submission) has been used. The build margin calculations have been completed with most recent information available on plants already built at the time of PDD submission. The combined margin calculation is based on straight average of operating and build margin. Latest version of the methodology (Version 10, dated 23 December 2006) also mandates calculation of combined margin as per weightage factor as outlined in ACM 0002, Version 6, dated 19 May 2006. According to this 'For wind and solar projects, the default weights are as follows: wOM = 0.75 and wBM = 0.25 (owing to their intermittent and non-dispatchable nature). The detailed algorithms are described later under sections D.2.1.3 and D.2.1.4 of the PDD. Referring to Appendix B of the Simplified Baseline and Monitoring Methodologies (Item No 7(a)), the kWh produced by the renewable generating unit multiplied by the average of the "approximate operating margin" and "build margin" has been selected to arrive at the 'combined margin'.

As described in Type I – Category D (version 10 dated 23 December 2006) methodology, there are no the project emissions. Similarly project does not lead to any leakage.

The annual estimate of 4782 tCO₂ was found to be reasonable based on generation and emission factor of northern grid.

3.5 Sustainable Development Impacts

No significant environmental impacts have been identified from the project activity. As the project involves installation of wind turbines on Gochar Bhumi – Common Land. There is no human occupancy within 2 km of the occupied land. This was verified and confirmed by the validation team during the site visit.

The revenue department of the state government of Rajasthan is responsible for providing land on lease for implementation of project.

The revenue department of the state government was approached and all necessary clearance / permissions have been obtained. The lease agreement has been executed between the project proponent and the state government for implementation of the project. According to this project participant has to ensure environmentally safe practices while commissioning, operation and maintenance of the wind turbines.

The project activity does not have any adverse impacts on environment during its construction or operational phase.



This CDM initiative would contribute towards:

- Strengthening the Northern grid.
- Generation of energy from renewable energy
- Creating employment opportunities in the region of installation.

In view of above and contribution towards the country's goal of sustainable development and improvement in quality of life of local population, the development and implementation of systems for "2.76 MW Grid Connected Renewable Energy Project in Rajasthan by Kalani Industries." were recommended by the M/s. Kalani Industries Limited's management. The clearance of this CDM initiative by Kalani Industries Limited would facilitate the process of sustainable energy production.

3.6 Comments by Local Stakeholders

As mentioned above and also in PDD, the project site of "2.76 MW Grid Connected Renewable Energy Project in Rajasthan by Kalani Industries." is The site is around 2 km away from human habitat. Considering this, no specific meeting of local stakeholders' was carried out by the project participant.

4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS

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

Bureau Veritas Certification published the project documents on the UNFCCC CDM website (<http://cdm.unfccc.int>) on 05/02/2006 and invited comments within 06/03/2006 by Parties, stakeholders and non-governmental organisations.

No comments received during the commenting period.

5 VALIDATION OPINION

Bureau Veritas Certification has performed a validation of the "2.76 MW Grid Connected Renewable Energy Project in Rajasthan by Kalani Industries." The validation was performed on the basis of UNFCCC criteria and host country criteria and also on the criteria given to provide for consistent project operations, monitoring and reporting.

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

By generating electricity from wind, the project is likely to result in reductions of GHG emissions partially displacing electricity that would have otherwise been purchased from the grid. An analysis of the investment and technological barriers demonstrates that the proposed project activity is not a likely baseline scenario. Emission reductions attributable to the project are hence additional to any that would occur in the absence of the project activity. Given that the



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

The review of the project design documentation (Final Version – Version 3, 02/04/2007) and the subsequent follow-up interviews have provided Bureau Veritas Certification with sufficient evidence to determine the fulfillment of stated criteria. In our opinion, the project correctly applies and meets the relevant UNFCCC requirements for the CDM and the relevant host country criteria.

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

6 REFERENCES

Category 1 Documents:

Documents provided by Kalani Industries Limited that relate directly to the GHG components of the project.

- /1/ Host country Approval dated 10 July 2007
- /2/ PDD – Version 1, dated 22/12/2005
- /3/ PDD – Version 2, dated 12/09/2006
- /4/ PDD – Version 3, dated 02/04/2007

Relevant National / Sectoral legal requirements as applicable to the Project

- /5/ Letter from District collector, district Jaisalmer indicating land given on lease 299150 sq. meter to Kalani Industries Limited (undated and in Hindi Language)

Evidence of CDM consideration and starting date

- /6/ Board resolution dated 8th September 2000.
- /7/ Purchase order (KIL/MK/3/2001/4230) dated 05/01/2001 by M/s. Kalani Industries Limited issued to Enercon India Limited for supplying 12 nos. Enercon make 230 kW type WEGs at Barabagh village, Jaisalmer district in the state of Rajasthan.
- /8/ Purchase order (KIL/MK/3/2001/4243) dated 10/01/2001 by M/s. Kalani Industries Limited issued to Enercon India Limited erection and commissioning of 12 nos. Enercon make 230 kW type WEGs at Barabagh village, Jaisalmer district in the state of Rajasthan.
- /9/ Comprehensive operation and maintenance agreement for operating wind farm of 12 Nos. of WEGs between Enercon India Limited and Kalani Industries Limited Constructions dated 25/06/2002 valid for 10 years.
- /10/ Power Purchase Agreement between Kalani Industries Limited and Rajasthan Rajya Vidyut Prasaran Nigam Limited dated 14/03/2001
- /11/ Commissioning certificate issued by Executive Engineer (M&P) Rajasthan Vidyut Prasaran Nigam Limited, Jaisalmer for 4 nos. of WEGs of 230 KW each mentioning successful commissioning of 20 March 2001
- /12/ Commissioning certificate issued by Executive Engineer (O&M) Rajasthan Vidyut Vitaran Limited, Jaisalmer for 2 nos. of WEGs of 230 KW each mentioning successful commissioning of 31 March 2001
- /13/ Commissioning certificate issued by Executive Engineer (O&M) Rajasthan Vidyut Vitaran Limited, Jaisalmer for 3 nos. of WEGs of 230 KW each mentioning successful commissioning of 17 May 2001
- /14/ Commissioning certificate issued by Executive Engineer (O&M) Rajasthan Vidyut



Vitaran Limited, Jaisalmer for 3 nos. of WEGs of 230 KW each mentioning successful commissioning of 31 May 2001

- /15/ Lease deed dated 9 April 2001 between Kalani Industries Limited and Governor of the state of Rajasthan for 30 acres of land given on lease situated at Barabagh, Tehsil Jaisalmer.

Other documents relevant to Project

- /16/ Monthly record of generation for the month of March & April 2001 signed by Assistant Engineer RRVNPL, Jaisalmer, Assistant Engineer (Rural) JVVNL, Jaisalmer and Site In-charge (wind farm) Kalani Industries Limited., as a sample.
- /17/ Joint meter reading statement for the month of August & September 2005.- as an example of joint meter reading
- /18/ Indian Wind power Directory published by Consolidated energy Consultants Ltd. – Bhopal, India – updated with information for wind power installations in India – data updated upto 2006.

Category 2 Documents:

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

- /1/ Kyoto Protocol to the United Nations Framework Convention on Climate Change, United Nations, 1997
- /2/ Guidelines for completing CDM-PDD - Version 04, dated 08/07/2005
- /3/ Approved Methodology – I D - Version 7– 28/11/2005
- /4/ Approved Methodology – I D - Version 8– 03/03/2006
- /5/ Approved Methodology – I D - Version 9 – 28/07/2006
- /6/ Approved Methodology – I D - Version 10 – 23/12/2006
- /7/ Attachment A to Appendix B for demonstration and Assessment of Additionality – version 6, dated 30/09/2005

Persons interviewed:

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

- /1/ Mr. Ritesh Rao – Area Representative – Kalani Industries Limited
- /2/ Mr. N.K.Srivastav – Assistant Manager – Wind farm - Kalani Industries Limited
- /3/ Mr. N.S.Chauhan – Dy. Manager – Services – Enercon India Limited
- /4/ Mr. Navin Paphai – Wind technician – Enercon India Limited
- /5/ Dr. Indrajeet Singh – Synergy Global (I) Pvt. Ltd.
- /6/ Mr. Manpreet Singh - Synergy Global (I) Pvt. Ltd.
- /7/ Ms. Debapriya Roy – Synergy Global (I) Pvt. Ltd.

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APPENDIX A : VALIDATION PROTOCOL

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

REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference/ Comment
1. The project shall assist Parties included in Annex I in achieving compliance with part of their emission reduction commitment under Art. 3	Kyoto Protocol Art. 12.2	See Table 2, Section A.3.3	Table 2, Section E.4.1
2. The project shall assist non-Annex I Parties in achieving sustainable development and shall have obtained confirmation by the host country thereof	Kyoto Protocol Art. 12.2, Simplified Modalities and Procedures for Small Scale CDM Project Activities §23a	Project proponent has obtained Host country approval (India). Host country approval dated 10 July 2007 is attached.	Table 2, Section A.3
3. The project shall assist non-Annex I Parties in contributing to the ultimate objective of the UNFCCC	Kyoto Protocol Art. 12.2.	See Table 2, Section A.3.3	Table 2, Section E.4.1
4. The project shall have written approval of voluntary participation from the designated national authorities of each party involved	Kyoto Protocol Art. 12.5a, Simplified Modalities and Procedures for Small Scale CDM Project Activities §23a	Project proponent has obtained Host country approval (India)	Written approval of voluntary participation from the DNA is obtained.
5. The emission reductions should be real, measurable and give long-term benefits related to the mitigation of climate change	Kyoto Protocol Art. 12.5b	See Table 2, Section E.4.1	Table 2, Section E.1 to E.4
6. Reduction in GHG emissions must be additional to any that would occur in absence of the project activity, i.e. a CDM project activity is additional if anthropogenic emissions of greenhouse gases by sources are reduced below those that would have occurred in the absence of the registered CDM project activity	Kyoto Protocol Art. 12.5.c, Simplified Modalities and Procedures for Small Scale CDM Project Activities §26	Yes. See Table 2, B.2.1	Table 2, Section B.2.1



VALIDATION REPORT

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



VALIDATION REPORT

REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference/ Comment
11. The project design document shall conform with the Small Scale CDM Project Design Document format	Simplified Modalities and Procedures for Small Scale CDM Project Activities, Appendix A	Yes. The Project Design Document conforms to current version of Small Scale Project Design Document Format (Version 3, 02/04/2007)	Gaps were identified during documentation review and the requirements of PDD with the small-scale CDM projects were conformed.
12. The proposed project activity shall confirm to one of the project categories defined for small scale CDM project activities and uses the simplified baseline and monitoring methodology for that project category	Simplified Modalities and Procedures for Small Scale CDM Project Activities §22e	Yes. Type I, Category I D	Table 2, Section A.1.3 and B.1
13. Comments by local stakeholders are invited, and a summary of these provided	Simplified Modalities and Procedures for Small Scale CDM Project Activities §22b	Yes See Table 2, Section G.1.1	Table 2, Section G
14. If required by the host country, an analysis of the environmental impacts of the project activity is carried out and documented	Simplified Modalities and Procedures for Small Scale CDM Project Activities §22c	Not required by Host Country See Table 2, Section F.1.1	Table 2, Section F
15. Parties, stakeholders and UNFCCC accredited NGOs have been invited to comment on the validation requirements and comments have been made publicly available	Simplified Modalities and Procedures for Small Scale CDM Project Activities §23b,c,d	Project Design Document (PDD) was made publicly available on UNFCCC Website for the period of 30 days from 5 February 2006 to 6 March 2006.	Source http://cdm.unfccc.int/P-projects/Validation

Table 2 Requirements Checklist

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
A. Project Description The project design is assessed.					
A.1. Small scale project activity It is assess whether the project qualifies as small scale CDM project activity.					
A.1.1. Does the project qualify as a small scale CDM project activity as defined in paragraph 6 (c) of decision 17/CP.7 on the modalities and procedures for the CDM?	1	DR	Yes, as per 17/CP.7 (ii). The capacity of project is 2.76 MW distributed at Jaisalmer, Rajasthan. There are 12 numbers of WEG each of 0.23 MW The project qualify as a small-scale CDM project activity since total capacity is less than 15 MW.	OK	OK
A.1.2. The small-scale project activity is not a debundled component of a larger project activity?	1	DR I	The small scale is not a de-bundled project. A.4.5 of PDD indicates that Entrepreneur has no other project in similar category whose project boundary is within one Km of the project boundary of the proposed small-scale activity. This confirms that small-scale project activity is not a de-bundled component of a larger project activity. Confirmation by project proponent is indicated in A.4.5 of PDD.	OK	OK
A.1.3. Does proposed project activity confirm to one of the project categories defined for small-scale CDM project activities?	2	DR	Yes, Project Type I – Renewable energy project Category ID: Renewable electricity generation for a grid.	OK	OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
A.2. Project Design Validation of project design focuses on the choice of technology and the design documentation of the project.					
A.2.1. Are the project's spatial (geographical) boundaries clearly defined?	1	DR I	The project site location is indicated in PDD in Village Barabagh, District Jaisalmer in the State of Rajasthan. PDD indicates in A.2 "The project activity has been therefore undertaken to harness the available wind potential at Ittigehalli village vis-a vis development of local economy." The said village is not identified to be nearby during the site visit interactions. Unique identification in the form of revenue information and Latitude / Longitude not indicated.	CAR-1	OK
A.2.2. Are the project's system (components and facilities used to mitigate GHG's) boundaries clearly defined?	1	DR	Refer A.4. of PDD; The project evacuates the power to the Northern Region Grid. This includes the Technical specifications of Wind Energy Generators (WEG) installations. The Technical descriptions of the small scale project activity addressed in A.4 of PDD does not match with the actual installation details e.g. Rotor Diameter, Hub height, RPM etc. The sketch indicated is actually for E-40 Wind turbine whereas it is indicated to be for E-30 Wind turbine.	CAR-2	OK
A.2.3. Will the project result in technology transfer to the host country?	-	DR	There is no information provided in PDD that the project will not result in technology transfer to the host country.	CAR-3	OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
A.2.4. Does the project require extensive initial training and maintenance efforts in order to work as presumed during the project period? Does the project make provisions for meeting training and maintenance needs?	-	DR I	Refer D.5. Project proponent has entered into a contract with M/s. Enercon India Limited for operation and maintenance. It is verified that the required extensive initial trainings were provided to the concerned employees. There is 6 months training at the manufacturing site at Daman for all new employees.	OK	OK
A.3. Contribution to Sustainable Development The project's contribution to sustainable development is assessed					
A.3.1. Will the project create other environmental or social benefits than GHG emission reductions?	1	DR I	Yes. Direct / Indirect employment benefits accruing out of installation of these WEG is indicated in section A.2 of PDD. Detailed justification for the same is verified during site visit.	OK	OK
A.3.2. Is the project in line with sustainable development policies of the host country?	1	DR	Yes. Project is generating the electricity from wind through the wind energy generators installed in Barabagh of Jaisalmer district.	OK	OK
A.3.3. Is the project in line with relevant legislation and plans in the host country?	-	DR I	Indian legislation allows windmill operations. The Indian and Rajasthan state government promotes wind power generation. The Rajasthan State Government has also released wind power generation policy in the year 2000 and 2003. Referred to Policy No. F 20 (3) Energy/98/04/02/2000 and F 20 (3) Energy/98/Pt.III	OK	OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			dated 30/04/2003. .		
B. Project Baseline The validation of the project baseline establishes whether the selected baseline methodology is appropriate and whether the selected baseline represents a likely baseline scenario.					
B.1. Baseline Methodology It is assessed whether the project applies an appropriate baseline methodology.					
B.1.1. Is the selected baseline methodology in line with the baseline methodologies provided for the relevant project category?	1,2	DR	The approved methodology is Type I i.e. (Renewable energy project) and Category D (Renewable Electricity generation for a grid). The same has been considered in accordance with simplified baseline and monitoring methodologies for selected CDM projects (UNFCCC, 2003b) - Appendix B.	OK	OK
B.1.2. Is the baseline methodology applicable to the project being considered?	1,2	DR	This methodology is applicable to Windmill, a renewable energy source.	OK	OK
B.2. Baseline Determination It is assessed whether the project activity itself is not a likely baseline scenario and whether the selected baseline represents a likely baseline scenario.					
B.2.1. Is it demonstrated that the project activity itself is not a likely baseline scenario due to the existence of one or	1	DR	Refer B.2 of PDD. The Baseline determination is not addressed in the PDD. Following Claims of additionality indicated in B.3 of PDD need be	CAR-4	OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
more of the following barriers: investment barriers, technology barriers, barriers due to prevailing practice or other barriers?			concluded to justify these to be barrier: 1- The average annual generation of 0.23 MW turbine of the same EPC contractor (Enercon) in the state of Rajasthan (Jaisalmer) is 6.0 million kWh, whereas the annual generation from the machines installed by project proponent are delivering 5.25 to 5.5 million kWh per annum. -Data for 2002-03 indicates total generation of 6105600 Units,, which is more than 6 Million units		
B.2.2. Is the application of the baseline methodology and the discussion and determination of the chosen baseline transparent and conservative?	1	DR I	Refer B .5 of PDD. Average OM and Average BM has been calculated. The justification of determination of the chosen baseline being transparent and conservative needs to be verified during site visit interactions. Refer. E.3.6	OK	OK
B.2.3. Are relevant national and/or sectoral policies and circumstances taken into account?	-	DR	Yes as given A.3.3	OK	OK
B.2.4. Is the baseline selection compatible with the available data?	1	DR	Basis for base line selection is indicated correctly.	OK	OK
B.2.5. Does the selected baseline represent the most likely scenario describing what would have occurred in absence of the project activity?	1,2	DR	B.5 indicating Details of Baseline and its development is left blank and hence the same needs to be developed and described.	CAR-5	OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
C. Duration of the Project / Crediting Period It is assessed whether the temporary boundaries of the project are clearly defined.					
C.1.1. Are the project's starting date and operational lifetime clearly defined?	1	DR	Starting date is indicated as per format as 05/01/2001. Operational lifetime is indicated as 20 years. Justification for the same is to be established	CL-1	OK
C.1.2. Is the crediting period clearly defined (seven years with two possible renewals or 10 years with no renewal)?	1	DR	Yes. It is indicated 10 years. It is not indicated in Years and Months.	CAR-6	OK
D. Monitoring Plan The monitoring plan review aims to establish whether all relevant project aspects deemed necessary to monitor and report reliable emission reductions are properly addressed.					
D.1. Monitoring Methodology It is assessed whether the project applies an appropriate monitoring methodology.					
D.1.1. Is the selected monitoring methodology in line with the monitoring methodologies provided for the relevant project category?	1,2	DR	The monitoring methodology is as per "Metering the electricity generated" as indicated in Appendix B of simplified modalities and procedures for small-scale CDM projects.	OK	OK
D.1.2. Is the monitoring methodology applicable to the project being considered?	1,2	DR	The reasons for choosing this monitoring methodology are not appropriately justified in the item D.2 of the PDD.	CAR-7	OK
D.1.3. Is the application of the monitoring	1,2	DR	The data is being monitored by Rajasthan Vidyut	OK	OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
methodology transparent?			Prasaran Nigam Limited (State Electricity Utility), which is transmitting the generated electricity. The electricity is metered at the grid inter-connection point against which the payment is to make on monthly basis on the basis of joint meter reading.		
D.1.4. Will the monitoring methodology give opportunity for real measurements of achieved emission reductions?	1	DR	This methodology is reliable as the energy meter provided by the state electricity utility is in un-interrupted operation. The monitoring includes three-step metering and has appropriate back-up provision.	OK	OK
D.2. Monitoring of Project Emissions It is established whether the monitoring plan provides for reliable and complete project emission data over time.					
D.2.1. Are the choices of project emission indicators reasonable?	1	DR	Not applicable – No project emission in case of Wind mill project.	OK	OK
D.2.2. Will it be possible to monitor / measure the specified project emission indicators?	1	DR	Not applicable.	OK	OK
D.2.3. Do the measuring technique and frequency comply with good monitoring practices?	1	DR	Not applicable.	OK	OK
D.2.4. Are the provisions made for archiving project emission data sufficient to enable later verification?	1	DR	Not applicable.	OK	OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
D.3. Monitoring of Leakage It is assessed whether the monitoring plan provides for reliable and complete leakage data over time.					
D.3.1. If applicable, are the choices of leakage indicators reasonable?	1	DR	Not applicable.	OK	OK
D.3.2. If applicable, will it be possible to monitor / measure the specified leakage indicators?	1	DR	Not applicable.	OK	OK
D.3.3. If applicable, do the measuring technique and frequency comply with good monitoring practices?	1	DR	Not applicable.	OK	OK
D.3.4. If applicable, are the provisions made for archiving leakage data sufficient to enable later verification?	1	DR	Not applicable.	OK	OK
D.4. Monitoring of Baseline Emissions It is established whether the monitoring plan provides for reliable and complete project emission data over time.					
D.4.1. Is the choice of baseline indicators, in particular for baseline emissions, reasonable?	1	DR	Reasonable and as per approved monitoring plan in Appendix B.	OK	OK
D.4.2. Will it be possible to monitor / measure the specified baseline emission indicators?	1	DR	Yes. NRLDC and CEA data has been used to determine the base line and the same can be measured on the basis of annual performance report of the plants operating in Northern grid and are contributing towards total grid generation in	OK	OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			particular year.		
D.4.3. Do the measuring technique and frequency comply with good monitoring practices?	1	DR I	Refer D. 1.4 Readings of individual generators are taken on daily basis and is mailed to Daman for entering in the ERP system SAP. Organisation has plans to start entry of these readings from Jaisalmer itself in a month's time. The SEB meter was checked and the same was found being maintained appropriately. The measuring technique and frequency comply with good manufacturing practices. Refer D.5.9.	OK	OK
D.4.4. Are the provisions made for archiving baseline emission data sufficient to enable later verification?	1	DR	Yes Data is being collected in electronic. Archiving provision is put in place and the data will be preserved for period of minimum two years beyond end of crediting period. Refer D.3 Monitoring table.	OK	OK
D.5. Project Management Planning It is checked that project implementation is properly prepared for and that critical arrangements are addressed.					
D.5.1. Is the authority and responsibility of project management clearly described?	1	DR	The management structure and the responsibility of project management is not defined in the PDD.	CAR-8	OK
D.5.2. Is the authority and responsibility for monitoring measurement and reporting clearly described?	1	DR I	The authority and responsibility for monitoring measurement and reporting is referred in the PDD. Refer D.4. of PDD.	OK	OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
D.5.3. Are procedures identified for training of monitoring personnel?	1	DR 	Procedures for training of monitoring personnel of EPC contractor e.g. Enercon India Limited are identified in PDD e.g. Procedure HRD-P-01.	OK	OK
D.5.4. Are procedures identified for emergency preparedness for cases where emergencies can cause unintended emissions?	1	DR 	The procedures for emergency preparedness for cases have not been identified.	CAR-9	OK
D.5.5. Are procedures identified for calibration of monitoring equipment?	1	DR 	State Electricity Utility is doing the calibration of monitoring equipment and there is evidence of this being done at regular basis. Procedure SYS-P-06 and the format SYS-F-05 were verified.	OK	OK
D.5.6. Are procedures identified for maintenance of monitoring equipment and installations?	1	DR 	Procedures for maintenance of monitoring equipment and installations is identified in QMS documentation EIL-PRO-62 and the relevant format are SER-F-01.	OK	OK
D.5.7. Are procedures identified for monitoring, measurements and reporting?	1	DR 	Net electricity output is being monitored by the RVPNL. Daily energy readings are taken, and records maintained. D.5 of PDD mentions wrongly "These meters are connected to the Central Monitoring Station (CMS) of the entire wind farm through a wireless Radio Frequency (RF) network. The generation data of individual machine can be monitored as a real-time entity at CMS. The snapshot of generation on the last day of every calendar month will be kept as a record both in electronic as well as printed (paper) form."	CAR-10	OK
D.5.8. Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how	1	DR 	Data is found logged in the manual register. The daily meter readings are entered in the SAP system from Daman office and Kalani Industries can also	OK	OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
to process performance documentation)			assess these.		
D.5.9. Are procedures identified for dealing with possible monitoring data adjustments and uncertainties?	1	DR I	The payment of electricity is made against the electricity meter at Grid Interconnection point. RVPNL makes payment against lowest meter reading among the two check meters. In case if the Grid Interconnection Meter records higher generation against the check meter, the Grid Interconnection Meter is replaced by RVPNL. There are no cases for possible monitoring data adjustments and uncertainties.	OK	OK
D.5.10. Are procedures identified for internal audits of GHG project compliance with operational requirements as applicable?	1	DR I	The procedures for internal audits of GHG project compliance are not identified.	CAR-11	OK
D.5.11. Are procedures identified for project performance reviews?	1	DR I	Daily and Monthly performance reporting is indicated to be done. Records in SAP and manual logbooks were found maintained.	OK	OK
D.5.12. Are procedures identified for corrective actions?	1	DR I	Procedures for corrective actions are identified as per Procedure SYS-P-05.	OK	OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
E. Calculation of GHG emission It is assessed whether all material GHG emission sources are addressed and how sensitivities and data uncertainties have been addressed to arrive at conservative estimates of projected emission reductions.					
E.1. Project GHG Emissions The validation of predicted project GHG emissions focuses on transparency and completeness of calculations.					
E.1.1. Are all aspects related to direct and indirect project emissions captured in the project design?	1	DR	Not applicable	OK	OK
E.1.2. Have all relevant greenhouse gases and sources been evaluated?	1	DR	Not applicable	OK	OK
E.1.3. Do the methodologies for calculating project emissions comply with existing good practice?	1	DR	Not applicable	OK	OK
E.1.4. Are the calculations documented in a complete and transparent manner?	1	DR	Not applicable	OK	OK
E.1.5. Have conservative assumptions been used?	1	DR	Not applicable	OK	OK
E.1.6. Are uncertainties in the project emissions estimates properly addressed?	1	DR	Not applicable	OK	OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
E.2. Leakage It is assessed whether there leakage effects, i.e. change of emissions which occurs outside the project boundary and which are measurable and attributable to the project, have been properly assessed.					
E.2.1. Are leakage calculation required for the selected project category and if yes, are the relevant leakage effects assessed?	1	DR	Not applicable	OK	OK
E.2.2. Are potential leakage effects properly accounted for in the calculations (if applicable)?	1	DR	Not applicable	OK	OK
E.2.3. Do the methodologies for calculating leakage comply with existing good practice (if applicable)?	1	DR	Not applicable	OK	OK
E.2.4. Are the calculations documented in a complete and transparent manner and (if applicable)?	1	DR	Not applicable	OK	OK
E.2.5. Have conservative assumptions been used (if applicable)?	1	DR	Not applicable	OK	OK
E.2.6. Are uncertainties in the leakage estimates properly addressed (if applicable)?	1	DR	Not applicable	OK	OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
E.3. Baseline GHG Emissions The validation of predicted baseline GHG emissions focuses on transparency and completeness of calculations.					
E.3.1. Are the baseline emission boundaries clearly defined and do they sufficiently cover sources for baseline emissions?	1	DR	Yes refer B.4 of PDD	OK	OK
E.3.2. Are all aspects related to direct and indirect baseline emissions captured in the project design?	1	DR	Yes	OK	OK
E.3.3. Have all relevant greenhouse gases and sources been evaluated?	1	DR	Yes.	OK	OK
E.3.4. Do the methodologies for calculating baseline emissions comply with existing good practice?	1	DR	Yes. $BE_y (tCO_2/yr) = EG_y \times E_{fy}$. $BE_y (tCO_2/yr) = \text{Baseline emissions in year } y$ $EG_y \times E_{fy} = \text{Electricity Generated by project in Year } Y \times \text{Emission factor for year } Y$.	OK	OK
E.3.5. Are the calculations documented in a complete and transparent manner?	1	DR	The calculations are documented in a complete and transparent manner.	OK	OK
E.3.6. Have conservative assumptions been used?	1	DR	Use of conservative assumptions have not been indicated or referred in PDD.	CAR-12	OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
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 case?	1	DR	Yes	OK	OK
F. Environmental Impacts It is assessed whether environmental impacts of the project are sufficiently addressed.					
F.1.1. Does host country legislation require an analysis of the environmental impacts of the project activity?	1	DR I	Not required. Refer F.1.	OK	OK
F.1.2. Does the project comply with environmental legislation in the host country?	1	DR I	Yes No specific environmental legislations are applicable to the project activity.	OK	OK
F.1.3. Will the project create any adverse environmental effects?	1	DR	No.	OK	OK
F.1.4. Have environmental impacts been identified and addressed in the PDD?	1	DR	Not required. Refer F.1.	OK	OK
G. Comments by Local Stakeholder Validation of the local stakeholder consultation process.					
G.1.1. Have relevant stakeholders been consulted?	1	DR I	Refer E.1. and E.2. of PDD. It is explained The site selected for implementation of the project activity has been categorized as Gochar Bhumi – Common Land. Thus, there is no human occupancy within 2 km of the occupied land. Being barren and devoid	OK	OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			of any inhabitation, no stakeholder survey could be carried out in the immediate surroundings of the wind farm		
G.1.2. Have appropriate media been used to invite comments by local stakeholders?	1	DR	Refer G.1.1 above	OK	OK
G.1.3. If a stakeholder consultation process is required by regulations/laws in the host country, has the stakeholder consultation process been carried out in accordance with such regulations/laws?	1	DR	Stakeholder consultation process is not required by regulations/laws in the host country	OK	OK
G.1.4. Is a summary of the comments received provided?	1	DR	Refer G.1.1	OK	OK
G.1.5. Has due account been taken of any comments received?	1	DR	Refer G.1.1	OK	OK

Table 3 Resolutions of Corrective Action and Clarification Requests

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
<p>The project site location is indicated in PDD in Village Barabagh, District Jaisalmer in the State of Rajasthan. PDD indicates in A.2 “The project activity has been therefore undertaken to harness the available wind potential at Ittigehalli village vis-a vis development of local economy.” The said village is not identified to be nearby during the site visit interactions.</p> <p>Unique identification in the form of revenue information and Latitude / Longitude not indicated.</p>	<p>A.2.1</p> <p>(CAR-1)</p>	<p>The village ‘Ittigehalli’ has correctly been entered as ‘Barabagh’ in Section A.2 of the revised PDD (version 3).</p> <p>Individual identification of the WEGs with reference to the Khasra number has been included in Section A.4.1.4 of the revised PDD.</p> <p>The latitude and longitude has been mentioned in the same section of the revised PDD.</p>	<p>Verified PDD Version 3 dated 02/04/2007 for the details and found correct.</p> <p>Corrective action request CAR-1 therefore is closed.</p>
<p>Refer A.4. of PDD; The project evacuates the power to the Northern Region Grid.</p> <p>This includes the Technical specifications of Wind Energy Generators (WEG) installations. The Technical descriptions of the small scale project activity addressed in A.4 of PDD does not match with the actual installation details e.g. Rotor Diameter, Hub height, RPM etc. The sketch indicated is actually for E-40 Wind turbine whereas it is indicated to be for E-30 Wind turbine.</p>	<p>A.2.2</p> <p>(CAR-2)</p>	<p>The technical specifications of E 30 have been correctly entered. Diagrams from the Enercon website have been included in Section A.4.2 of the revised PDD.</p>	<p>Verified the revised details for specifications of WEG in PDD - Version 3 dated 02/04/2007 & found to be in line with actual details of E-30 model of Enercon make WEG.</p> <p>Corrective action request CAR-2 therefore is closed.</p>



VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
There is no information provided in PDD that the project will not result in technology transfer to the host country.	A.2.3 (CAR-3)	Section A.4.2 of the revised PDD mentions that the project will not result in any technology transfer to the host country.	Verified section A.4.2 of PDD - version 3 dated 02/04/2007 & details provided are found to be adequate. Corrective action request CAR-3 therefore is closed.
<p>Refer B.2 of PDD. The Baseline determination is not addressed in the PDD. Following Claims of additionality indicated in B.3 of PDD need be concluded to justify these to be barrier:</p> <p>1- The average annual generation of 0.23 MW turbine of the same EPC contractor (Enercon) in the state of Rajasthan (Jaisalmer) is 6.0 million kWh, whereas the annual generation from the machines installed by project proponent are delivering 5.25 to 5.5 million kWh per annum.</p> <p>-Data for 2002-03 indicates total generation of 6105600 Units,, which is more than 6 Million units</p> <p>2-The project proponent was apprised by the EPC contractor about the possibility of having higher annual revenue realization per WEG in other locations on the basis of wind data collected by Enercon.</p> <p>-No reference of wind data is available to justify the same.</p>	B.2.1 (CAR-4)	<p>Baseline determination has been described in Section B.2 of the revised PDD.</p> <p>The actual generation records based on the joint meter readings (JMR) taken by the state electricity utility and the representative of Kalani Industries Limited (the basis of billing) are reproduced below:</p> <p>June 2001 to December 2001 28, 99,950 kWh (Generation of 7 complete months)</p> <p>January 2002 to December 2002 61, 29,765 kWh</p> <p>January 2003 to December 2003 45, 98,730 kWh</p> <p>January 2004 to December 2004 55, 85,040 kWh</p> <p>January 2005 to December 2005 10, 05,075 kWh</p>	<p>Verified details of generation. It is correct that for year 2002, generation was more than 6 million. However for the remaining years it was found to be less.</p> <p>The overall explanation is found to be satisfactory and corrective action request – CAR-4 is therefore closed.</p>



VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
		<p>46, 65,275 kWh January 2006 to May 2006 17, 80,706 kWh (Generation of 5 complete months)</p> <p>The project activity has completed 4 complete calendar years and except one year the generation is critically below the expected generation (a reduction of 25% in 2003, 8.3% in 2004 and 23% in 2005)</p>	
B.5 indicating Details of Baseline and its development is left blank and hence the same needs to be developed and described	B.2.5 (CAR-5)	The details of Baseline and its development have been included in Section B.4 of the revised PDD.	<p>Verified the details of baseline and development in revised PDD.</p> <p>Corrective action request CAR-5 therefore is closed.</p>
Yes. It is indicated 10 years. It is not indicated in Years and Months.	C.1.2 (CAR-6)	The requisite information has been included in Section C.1.2 of the revised PDD.	<p>Verified section C.1.2 of PDD – Version 3, dated 02/04/2007 and found the information expressed in years and months.</p> <p>Corrective action request CAR-6 therefore is closed.</p>



VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
The reasons for choosing this monitoring methodology are not appropriately justified in the item D.2 of the PDD.	D.1.2 (CAR-7)	The reasons for choosing the monitoring methodology have been justified in Section B.6, version 3 of the PDD.	Verified section D.2 of PDD – Version 3, dated 02/04/2007. Reasons are appropriately justified in the section. Corrective action request CAR-7 therefore is closed.
The management structure and the responsibility of project management is not defined in the PDD. Refer D.5 of PDD.	D.5.1 (CAR-8)	The responsibilities of project proponent and O & M team of Enercon has been defined in the PDD. In addition, the management structure of Kalani industries for overall monitoring of the project has been included in the revised PDD.	Verified Section D.5 of PDD – Version 3, dated 02/04/2007. Management structure of both Kalani Industries and M/s. Enercon India Limited is adequately addressed in PDD. Corrective Action Request CAR-8 is therefore closed.
The procedures for emergency preparedness for cases have not been identified.	D.5.4 (CAR-9)	There are no associated leakages occurring due to the project, therefore, under extreme circumstances, there will be no GHG emissions occurring within the project boundaries. Hence, no processes for emergency preparedness are required to be in place for the project activity.	Explanation given is found to be acceptable. Corrective action request CAR- 9 therefore is closed



VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
<p>Net electricity output is being monitored by the RVPNL. Daily energy readings are taken, and records maintained. D.5 of PDD mentions wrongly "These meters are connected to the Central Monitoring Station (CMS) of the entire wind farm through a wireless Radio Frequency (RF) network. The generation data of individual machine can be monitored as a real-time entity at CMS. The snapshot of generation on the last day of every calendar month will be kept as a record both in electronic as well as printed (paper) form."</p>	<p>D.5.7 (CAR-10)</p>	<p>The secondary monitoring system at the wind farm provides a backup (fail-safe measure) in case the primary monitoring is not carried out/ not functioning adequately, and is done at the individual WEG level. Each WEG is equipped with an integrated electronic meter. These meters are connected to the Central Monitoring Station (CMS) of the wind farm through a fibre optic cable network, and not through wireless radio frequency as mentioned in the earlier version of the PDD. The generation data of individual machine can be monitored as a real-time entity at CMS. The snapshot of generation on the last day of every calendar month is kept as a record both in electronic as well as printed (paper) form.</p>	<p>Verified PDD – Version 3, dated 02/04/2007 for corrected information as meters connected through fibre optic cable network, and not through wireless radio frequency as mentioned in the earlier version of the PDD.</p> <p>Corrective action request CAR-10 therefore is closed.</p>
<p>The procedures for internal audits of GHG project compliance are not identified.</p>	<p>D.5.10 (CAR-11)</p>	<p>The company has a defined O & M structure, training programmes and maintenance processes. Other procedures that are in place to audit the project activity are as follows:</p> <ul style="list-style-type: none"> Regular Board meetings for performance appraisal. 	<p>Explanation on procedures is found to be acceptable.</p> <p>Corrective action request CAR-11 therefore is closed.</p>



VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
		<ul style="list-style-type: none">• Communication between the GM and CMD of the company in every quarter concerning appraisals of machine performance and financial audits. <p>The agenda of the meetings is broadly along the following lines:</p> <ul style="list-style-type: none">○ Performance assessment of the windmills, record keeping & revenue stream from the project○ Details on the planned & unplanned maintenance○ Grid & machine availability along with auxiliary power consumption. <p>Other specific aspects may also be discussed as per the requirement.</p>	



VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
Use of conservative assumptions have not been indicated or referred in PDD.	E.3.6 (CAR-12)	Section B.2 of the revised PDD describes the conservatism of the baseline.	Verified section B.2 of PDD – Version 3, dated 02/04/2007. It now describes conservativeness. Corrective action request CAR-12 therefore is closed.
Starting date is indicated as per format as 05/01/2001. Operational lifetime is indicated as 20 years. Justification for the same is to be established	C.1.1 (CL-1)	The WEG model E 30 has been granted the Type Approval Certificate by C-WET, the certifying authority of Government of India. Furthermore, the technical specifications of the turbines, issued by the EPC contractor indicate a 20 year lifetime. This establishes the operational lifetime claim of 20 years. Reference: http://www.cwet.tn.nic.in/html/departments_cs.html	Explanation is found to be satisfactory w.r.t operational life time. Clarification request CL- 1 therefore is closed.



APPENDIX B : CVs of Verifiers

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

Mr. S. V. Pendse: He is the Lead auditor in Bureau Veritas Certification for Environment Management System, Quality Management System and Occupational Health and Safety Management System. He has done post graduation in the field of Environmental Science and has more than 15 years several years of Industrial work experience in the field of environmental management systems. He has undergone intensive training on Clean Development Mechanism. He is so far has carried out Validation/verification for more than 20 CDM projects.

Mr. K. H. Sharma: He is the Lead auditor in Bureau Veritas Certification for Environment Management System, Quality Management System and Occupational Health and Safety Management System. He is a Chemical Engineer and has several more than 25 years of Industrial work experience in the field of environmental management systems. He has undergone intensive training on Clean Development Mechanism. He is so far has carried out Validation/verification for more than 25 CDM projects.

Mr. H.B. Muralidhar: He is the Lead auditor for Environmental Management System, Quality Management system and Occupational Health and Safety Management System.. He has several years of Industrial work experience in the field of environmental management systems He has undergone intensive training on Clean Development Mechanism. He is the technical expert & conducted Validation / Verification for more than 30 CDM Projects

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