TÜV Industrie Service GmbH
TÜV Rheinland Group

VALIDATION REPORT

HUANENG NEW ENERGY INDUSTRIAL CO. LTD.

VALIDATION OF

GUANGDONG NAN'AO 45.05 MW WIND FARM PROJECT

REPORT NO. 01 997 9105031898
REVISION NO. 03

CDM Validation Report Template
Version 3.0, December 2003

VALIDATION REPORT

Date of first issue: 2005-10-28	Project No.:	*TÜV Rheinland Group* Am Grauen Stein 51105 Köln, Germany
Approved by: Christian Rathje	Organisational unit: System Certification Group, Industrial Engineering Services	
Client: Huaneng New Energy Industrial Co. Ltd.	Client ref.: C/o Ms. Victoria Qi Wang	Certificate Number: 01 997 9105031898

Executive Summary:

TÜV Rheinland Hong Kong Ltd., member of the TÜV Rheinland Group, has carried out the validation of the Guangdong Nan'ao 45.05 MW Wind Farm Project, located on the eastern part of Nan'ao Island near Shantou City, Guangdong Province in Southern China. The CDM project activity will utilize renewable wind energy to provide electricity for local community use.

The validation has been performed following the UNFCCC procedures for validation of CDM projects and the IETA's "Validation and Verification Guidelines V 3.0" with the following steps:

- Desk review of preliminary PDD (version of August 2005)
- On-site visit with stakeholder interviews (August 5-6, 2005, October 10 – 11, 2005)
- Public stakeholder comment process (August 16, 2005 to September 14, 2005)
- Issue of checklist with corrective action requests (CARs) and clarification requests (CLs)
- Desk review of revised PDD (version of April, 2006)
- Review of proposed corrections and clarifications
- Review of corrected PDD (revised in June, 2006) upon review request of UNFCCC of June 16, 2006 prior to registration in connection with the replacement of AM 0005

The approval letter of voluntary participation of both P.R. China and Spain has been received, including confirmation by China's DNA, that the project assists them in achieving sustainable development.

In the opinion of TÜV Rheinland the project meets all relevant UNFCCC requirements of the CDM and all relevant host country criteria, therefore the project activity shall be recommended for registration with the UNFCCC.

Report No.: 01 997 9105031898	Subject Group: Environment & Energy	
Report title: Guangdong Nan'ao Huaneng 45.05 MW Wind Farm Project		
Work carried out by: • Kurt Seidel • Kenneth Lap Kei Wong • Winlon Tsui		
Work verified by: • Dr. Manfred Brinkmann		
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Indexing terms

Climate Change

Kyoto Protocol

Large Scale Project Validation

Clean Development Mechanism

Grid Connected Renewable Energy Project

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VALIDATION REPORT

Abbreviations

Explain any abbreviations that have been used in the report here.

CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
CL	Clarification Request
CO2	Carbon Dioxide
DNA	Designated National Authority
DOE	Designated Operational Entity
DR	Document Review
EB	Executive Board
EIA	Environmental Impact Assessment
ER	Emission Reduction
ERPA	Emission Reduction Purchase Agreement
FAR	Forward Action Request
FSR	Feasibility Study Report
GHG	Greenhouse Gas
GWh	Giga Watt Hours
HNEI	Huaneng New Energy Industrial Co. Ltd.
I	Interview
IM	Interim Measures for Operation and Management of CDM projects
IETA	International Emissions Trading Organisation
IPCC	Intergovernmental Panel on Climate Change
IRR	Internal Rate of Return
kW	Kilo Watt
kWh	Kilo Watt Hours
LoA	Letter of Approval
LoI	Letter of Intent
MoV	Means of Verification
MW	Mega Watt
MWh	Mega Watt Hours
NDRC	National Development and Reform Commission
NGO	Non Government Organisation
OSV	On Site Visit
PDD	Project Design Document
SA	Sensitivity Analysis
SItC	Supplier Information to Client
STHS	Stakeholder Survey
t	Tonne
UNFCCC	United Nations Framework Convention on Climate Change

Conversion Factors and Definitions

Insert and describe any conversion factors used in the report here. In addition, define any specific terminology used in the report.

AM	Approved Methodology

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1 INTRODUCTION

The Huaneng New Energy Industrial Co. Ltd., has commissioned TÜV Industrie Service GmbH - TÜV Rheinland Group to validate their Guangdong Nan'ao 45.05 MW Wind Farm project on Nan'ao Island, Guangdong Province as a CDM based project. The project is expected to avoid 82,428 tCO_2 per annum due to replacing the calculated grid electricity by utilizing the wind energy potential in the area. The Guangdong Nan'ao Huaneng 45.05 MW wind farm project is categorized as a large-scale CDM project, which utilizes the large-scale modalities and procedure. As for the baseline determination, it applied the AM0005 methodology for establishing the baseline procedures, which is coverering sectoral scope 1 and is published under Approved Baseline and Monitoring Methodologies on the UNFCCC website. AM0005 was replaced by ACM0002 on 3rd of March 2006 according to a decision of EB 23 on 24th of February, 2006 with a grace period of 8 weeks, which ended at the 28th of April 2006. The DOE received the submission confirmation on their request for registration on 13th of March 2006, which is within the before defined grace period. Any how, if now 4 eligible parties request on behalf of UNFCCC CDM EB a review because of this issue, the DOE and the project proponent agreed, that the PDD has to be adjusted to ACM0002 and the baseline emission factor has to be revised accordingly as requested.

The validation has been performed with the following steps:

- Desk review of preliminary PDD (version of August 2005)
- On-site visit with stakeholder interviews (August 5-6, 2005, October 10 – 11, 2005)
- Public stakeholder comment process (August 16, 2005 to September 14, 2005)
- Issue of checklist with corrective action requests (CARs)and clarification requests (CLs)
- Desk review of revised PDD (version of April, 2006)
- Review of proposed corrections and clarifications
- Review of corrected PDD (revised in June, 2006) upon review request of UNFCCC of June 16, 2006 prior to registration in connection with the mentioned replacement of ACM 0005

The service of the entire validation was performed by members of the TÜV Rheinland Group. The members of the validation team are as follows:

Team Member	Office	Role
Kurt Seidel	Hong Kong	Team Leader
Kenneth Lap Kei Wong	Hong Kong	GHG Auditor Trainee
Winlon Tsui	Hong Kong	GHG Auditor Trainee

1.1 Objective

This report is representing the findings of the validation exercise along with the methodology applied for validation, compliance of the project with the requirements of

- Kyoto Protocol
- Large-scale modalities and procedures (appendix B of Annex II to decision 21/CP.8)
- Guidelines issued by UNFCCC for validation of the project
- IETA/PCF Validation and Verification Manual v 4.0

It has checked

- Format of the documents as required by UNFCCC
- Additionality of the project
- Criteria for sustainable development by the host country (China)
- Baseline of the project
- GHG Emission accounting practice
- The criteria of the CDM eligibility by the host country (China)
- Project Feasibility Study Report (FSR)
- Stakeholder Survey (STHS)
- Environmental Impact Assessment (EIA)

The audit team of TÜV Rheinland Group has applied the above criteria and the applied approved baseline and monitoring methodology.

1.2 Scope

The scope of the audit is as follows:

- Review of the completeness of the draft CDM PDD
- Publication of the draft CDM PDD without confidential data
- Collection and publication of all comments of global stakeholders
- Significance evaluation of global stakeholders comments received and on site visit
- Validation of the proposed CDM project activity prior to submission of the validation report to the executive board as part of the registration process

The validation report referred to the Validation and Verification Manual in preparation and has been prepared as per CDM report template version, December 03 published by IETA. TUV Rheinland Group employed a risk-based approach to validation, focusing on the identification of significant risks for project implementation and reduction in greenhouse gases, used as a basis for assessing the project baseline scenario and the claimed emission reductions from the project.

Validation was performed based on information made available to TUV Rheinland Group and for arriving at the validation opinion. This information is as reference in the CDM PDD (as of June, 2006) and related annexes.

To ensure transparency in arriving at its Clarification and Corrective Action Requests, TÜV Rheinland Group has performed alternate calculations based on the data procurement and/or availability of the accountable and key parameters of validation as referenced in the

CDM PDD. These considerations are the emission factors in the baseline scenario and demonstration of additionality of the proposed CDM project.

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

1.3 GHG Project Description

The proposed project involves the installation of 53 wind turbine generators, each of which has a capacity of 850 kW, providing a total amount of installation capacity of 45.05 MW. It is predicted, that the 53 wind turbine generators of the above project will generate approximately 100.965 GWh in annual output.

Each wind turbine generator has a 0.69 kV-to-35 kV transformer, from which a tri-circuit 35 kV current collection line will be linked into a newly constructed 110 kV switchgear at the substation, then a 45.7 km long 110 kV line will be linked into the 220 kV Sunan Substation.

It is expected that the proposed project will generate annual emission reductions of 82,428 tCO_2 equivalent and 576,996 t CO2 equivalent over the first 7-years of the selected 21-year renewable crediting period.

1.4 Methodology

The validation was executed in the following procedural stages:

I. Review of documents
   A. Review of HNEI's documentation both off site and also on site
   B. Desk review of identified supporting documents

II. Opening of the public stakeholder comment process from August 16 to September 14, 2005

III. On-site visit and follow-up interviews with project stakeholders (August 5-6, 2005, October 10-11, 2005)

IV. Production of the First Validation Report and Validation Protocol with CARs and CLs

The first draft validation report contained a qualified validation opinion and validation protocol, because of clarification and corrective action requests and lacking of a Letter of Approval (LoA) by the Chinese DNA. The validation report is based on the template of the Validation Verification Manual, see www.vvmanual.info.

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

The validation protocol for the Guangdong Nan'ao Huaneng 45.05 MW wind farm 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:

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

The validation team also used the term Clarification (CL), where additional information was needed to fully clarify an issue.

The next steps were

V. Review of proposed corrections and clarifications to the project documentation and the resulting updated PDD

VI. Issuance of the final validation report and validation protocol.

VII. This revised validation report had to be overworked, after UNFCCC had been requested a review in connection with the replacement of the applied approved methodology AM0005 by ACM0002 on 16th of June, 2006

1.5 Review of Documents

The Project Design Document (PDD) from August 16, 2005 submitted by the client and additional background documents related to the project design and baseline calculation as well as monitoring plan were reviewed. Additional supporting documents were reviewed during the on site assessment. Another review of documents was executed based on the overworked Project Design Document (PDD) from April, 2006 and finally based on the PDD of June, 2006, which resulted from the review request from UNFCCC of 16th of June, 2006.

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**), or a **Corrective Action Request (CAR)** of risk or non-compliance with stated requirements. The corrective action requests are numbered and presented to the client in the Validation report.*	*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). **Clarification** is used when the validation team has identified a need for further clarification.*

Validation Protocol Table 3: Resolution of Corrective Action and Clarification Requests			
Draft report clarifications and corrective action requests	***Ref. to checklist question in table 2***	***Summary of project owner response***	***Validation conclusion***
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 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 Table 2, under "Final Conclusion".*

Figure 1 Validation protocol tables

1.6 Follow-up Interviews

During the period of 16 August 2005 to 31 October 2005, TÜV Rheinland Industrie Service performed interviews by phone and on site with project stakeholders to confirm selected information and to resolve issues identified in the document review. A second review of the overworked documentation followed after the CARs and CLs could be closed, which resulted in the PDD, from April, 2006. It was necessary to continue the follow-up interviews with the project proponent, after prior to registration another correction was required by UNFCCC in connection with the replacement of AM0005 throughout ACM0002, which resulted in the overworked PDD from June 2006 and this validation report.

The main topics of the executed interviews are summarized in Table 1 below.

Table 1 Interview topics

Interviewed organisation	Interview topics
HNEI	➢ Project design ➢ Project related legal issues ➢ Technical equipment ➢ Sustainable development issues ➢ Additionality ➢ Crediting period ➢ Monitoring plan ➢ Training history ➢ Management system ➢ Environmental impacts ➢ Stakeholder process ➢ Approval by the host country
Green Capital Consulting Company	➢ Project design ➢ Technical equipment ➢ Sustainable development issues ➢ Baseline determination ➢ Additionality ➢ Crediting period ➢ Monitoring plan ➢ Management system ➢ Environmental impacts ➢ Stakeholder process ➢ Approval by the host country
Nan'ao Municipality	➢ Project design ➢ Project related legal issues ➢ Project status ➢ Sustainable development issues ➢ Environmental impacts ➢ Stakeholder process ➢ Issues affecting the local community ➢ Approval by the local EPB

1.7 Clarification and Corrective Action Requests

Three Corrective Action Requests and two Clarification Requests were identified and presented to the project proponent in this first draft validation report. This has lead to a revision of the first draft PDD. In order to guarantee the transparency of the validation process, the concerns raised by TÜV Rheinland's validation team are documented under section 2 Validation Findings and in Table 3 of the Validation Protocol in Appendix A. The response to the review request of UNFCCC from 16th of June 2006 is summarized in Appendix B.

2 VALIDATION FINDINGS

The project participants has been identified. Finally it is a so-called bilateral project. In the following paragraphs observations of TÜV Rheinland Group's validation team with respect to the review of documents as well as observations and interviews during the on site visit are noted. The project was observed for compliance with requirements of Kyoto Protocol, Decision CP/21.8, host country's criteria for sustainable development and CDM projects (Interim Measures for Operation and Management of Clean Development Mechanism Projects in China).

TÜV Rheinland Group has identified issues that needed further inputs or those that represent a risk to the fulfilment of the project objectives, a Clarification Request (CL) or Corrective Action Request (CAR) respectively, have been raised upon identification of these issues.

The validation of the project resulted in three (3) Corrective Action Requests and two (2) Clarification Requests, which are stated in the following sections and are further documented in the Validation Protocol.

The validation findings are related to the project design, baseline, monitoring plan, calculation of GHG emissions, environmental impacts, comments by local stakeholders and are described in detail in the following sections.

2.1 Project Design

2.1.1 Discussion

The objective of the project is to reduce GHG emissions by erection of the wind farm on Nan'ao Island. The generated electricity of that wind farm which will be supplied to the regional grid will replace fossil fuel based electricity. With the installed capacity of 45.05 MW approximately 82,428 t CO2 Equivalent annually will be reduced according to the baseline calculation and the carbon emission factor.

Project start: 10/2006 Duration 21 years until 09/2027

The Letter of Approval (LoA) of the DNA of P.R. China was not yet in place due to ongoing negotiations with potential buyers during the validation process. The DNA requested from the project developer to find a buyer for the CER's first of all. The negotiation with buyers were ongoing.

The approval letter from the DNA of the P.R. China was finally issued on December 19, 2005. The Letter of Approval of the Spanish DNA followed on January 19, 2006.

Based on the Feasibility Study Report (FSR) and the evaluation of the measured wind resource data for the project site the advanced technology of 850 kW wind turbines with 52-meter rotor diameter and a tower height of 65 metres was selected. The application of a continuous monitoring system for maintenance purpose is also considered as part of the contract. The supplier takes over responsibility for the first 2 years. The training for the local operational and maintenance staff will be part of the contract with the supplier.

It is finally a bilateral project, no ODA was used. The operational lifetime of the project is expected with 21 years.

2.1.2 Findings

Corrective Action Request No. 1:

The project proponent has to obtain a written approval for the project from the DNA of the P.R. China in English language, which contains all elements defined as being mandatory (see Table 3 of the Validation Protocol).

2.2 Baseline and Additionality

2.2.1 Discussion

The baseline methodology has originally applied is the approved methodology AM 0005 “Baseline methodology (barrier analysis, baseline scenario development and baseline emission rate, using combined margin) for small grid-connected zero-emissions renewable electricity generation”. This methodology was applicable, because it applies to electricity capacity additions from wind sources.

Due to a replacement of AM 0005 by ACM 0002 was suddenly a new assessment and evaluation requested by UNFCCC, which resulted in a overworking of the PDD according to the requirements of ACM 0002. In this context it was of advantage, that the project proponent had already applied the additionality tool, which is linked to ACM 0002, but was not requested for AM 0005, which had an incorporated simplified additionality component as part of the methodology. The additionality was demonstrated with alternative cases, investment / benchmark analysis, barrier analysis and baseline analysis. The results were presented in the PDD with the following outcome:

2.2.1.1 Alternative Cases Scenario

Although there are laws and regulations apparent to be supportive to renewable energy, they are very general and do not make the project commercial viable. Also the only practical and credible alternative of 4 proposed alternatives is the supply of equivalent amount of annual power output by the grid where proposed project is connected into (excluding those low cost / must run plants).

Thus, wind farm development is not a favourable choice in terms of financial wise, and technology wise.

2.2.1.2 Investment Analysis

An investment analysis was performed, as the criteria in ACM0002, by utilizing the Benchmark Analysis Method. The pre-CDM scenario provides a project IRR of 7.54%, whereas compare to 9.28% of the project investment after the implementation of CDM. This result has proven that CDM does increase the investment attractiveness of the project, and CDM has provided a subsidy, which upstages the project IRR and improves the chance for obtaining project investment. The financial benchmark rate of return (after tax) of the power industries in China of 8 % for the IRR of total investment respectively 10 % for the IRR of equity is based on the Interim Rules on Economic Assessment of Electrical Engineering Retrofit Projects in the PR China.

Thus, the analysis has proven the project case that CDM does provide a better investment environment for the project activity.

2.2.1.3 Barrier Analysis

Technology Barrier

Currently, the wind turbine technology is mainly imported from overseas and the implemented wind farm is utilizing wind turbines, which are less advance to the current wind power technology. The proposed project utilizes 850kW turbines are considered as an advanced model for wind energy industry in China and will require technology transfer from the more developed industry from overseas.

Also, the operation and maintenance, the lack of after-sales service and low electricity price for wind power poses difficulty for wind farm developers.

The implementation of this project, along with CDM option, provides the opportunity for the project to overcome these barriers and implement more advanced wind energy technology in China.

Common Practise Analysis

Until now, there are only a few small scale pilot projects for research purpose installed on Nan'ao Island, which was supported by policy lending and financial incentives, but could not demonstrate, that wind power projects are commercially and financially viable**.** It is therefore proofing this project activity is not a common practice case.

Impact of CDM Registration

CDM revenue provides a foreign currency on purchasing foreign equipment and maintenance reserve, repayment of project loan.

The absence of the CER sales revenue may lead to failure of the project, registration of the project at CDM EB is important.

In summary, all of the above described steps were convincingly followed and demonstrated within the documentation and the interviews, and therefore proven the project has illustrated its necessity for CDM in order to proceed further.

2.2.1.4 Baseline Analysis

Operational Margin

For the operational margin the Simple OM method, described in the ACM 0002 was used. The method of simple OM has been applied, and proven to be best fit and correct for the project activity. Data was obtained from the China Electricty Power Year Book and was shown to the auditor for data transparency purpose.

The Simple OM was seen as most appropriate, because:

- The Simple Adjusted OM needs the annual load duration curve provided by the grid, which is not public available and difficult to acquire because of ongoing reforms within the electricity sector in the P.R. China
- The Dispatch Data Analysis OM needs the hourly dispatch data of power plants in the grid, which are also not public available because of above mentioned reasons
- The Average OM method is only applicable for grids with more than 50 % electricity generation from low-cost / must run resources, which is not the case for the above project

Build margin

In terms of the build margin, the project developer has adopted the alternative method from another registered wind farm project case in China, which is considered acceptable and correct.

- The five power plants that have been built most recently
- Most recent capacity additions comprising 20% of grid generation in MWh

The followed case was the Huitengxile Wind Farm, which was registered by UNFCCC (Project 0064: Huitengxile Wind Farm Project).

This approach is appropriate in the P.R. China, because it is very difficult to obtain the data of the five most recently built power plants, which are considered as confidential business matter by the plant owners. It has to be noted, that the approved methodology ACM0002 allows an ex-post calculation of the Build Margin for the first crediting period.

Anyhow, the option 2 was selected by the project proponents, which used the most recently (2004) capacity additions (near to 20 %) compared to the basis year of 2002. The weights of 75 % and 25 % were used for operational margin and the build margin for the combined margin calculation, recommended recently by ACM0002, version 6 for wind power projects.

Finally, all data and calculation has been shown to the auditors, along with original copy of the data provided by different organization and Chinese official documents. It ensured the whole process was performed under transparent manner.

As a result, the baseline was constructed with a correct method and both of the operating and build margins were developed under a conservative and transparent manner.

2.2.2 Findings

Corrective Action Request No. 2

The ex ante calculation for the combined margin has to be reviewed to demonstrate the transparency of the calculation within the procedural steps.(see Table 3 of the Validation Protocol).

The project proponent has to obtain a written approval for the project from the DNA of the P.R. China in English language, which contains all elements defined as being mandatory.

Clarification Request No. 1

It has to be documented how the collection of the data of the real power plants capacity additions into the electricity ex post according to the applied methodology ACM 0002 can be secured as prerequisite for the first verification and the subsequent periodic verifications (see Table 3 of the Validation Protocol).

Boundaries and spatial extent

The project includes the project site itself and all power plants, which are physically connected to the same electricity system (called: “project electricity system”) of the Guangdong Power Grid.

Another electricity system (within the same country) that is connected by transmission lines to the above system is called “connected electricity system”: This was applied as requested by the methodology (see Table A1, A2, A3 of the PDD).

Corrective Action Request No. 2

There were minor deviations, that were explained as round offs and as conversion effects of Chinese units into international units The ex ante calculation for the combined margin has to be reviewed to demonstrate the transparency of the calculation within the procedural steps (see Table 3 of the Validation Protocol). The corrected data and relevant worksheets have to be submitted to the audit team.

Clarification Request No. 1

It has to be documented how the collection of the data of the real power plants capacity additions into the electricity ex post according to the applied methodology AM005 respectively ACM 0002 can be secured as prerequisite for the first verification and the subsequent periodic verifications (see Table 3 of the Validation Protocol).

2.3 Monitoring Plan

2.3.1 Discussion

The project has applied the approved consolidated monitoring methodology AM0005 respectively ACM0002 "Monitoring methodology for small grid-connected zero-emissions renewable electricity generation". This is part of the related baseline methodology ACM0002 that was explained step by step under section 3.2.

HNEI will be responsible for the implementation of the details of the monitoring plan according to the CDM manual, which is under development and could not yet been assessed by the audit team during the on site visit.

2.3.2 Findings

Corrective Action Request No.3

The CDM manual with all elements requested in the monitoring plan has to be completed in order to secure the exact monitoring and reporting of the data (see Table 3 of the Validation Protocol).

2.4 Calculation of GHG Emissions

2.4.1 Discussion

The boundaries and the location of the project are clearly described and are part of the PDD. The used technology is also specified in detail.

The project emissions are zero, the baseline emissions are based on the combined margin approach with using of the "simple operating margin" option of AM0005 respectively ACM0002, which is described within section 3.2 in more detail. With the conservative assumptions used for capacity factor and emission factor the results for the predicted electricity generation and replaced emissions in the grid are reasonable.

There are minor rounding errors. During the transfer from the Chinese original calculation sheet to the final English version were some errors that have not affected the final results. These deviations will request the resolving of Corrective Action Request No. 2. The resolving of the below stated Clarification Request No. 1 will be a prerequisite of a successful first verification.

2.4.2 Findings

The same findings as stated under Section 3.3 apply also to section 3.4.

Corrective Action Request No. 2

The ex ante calculation for the combined margin has to be reviewed to demonstrate the transparency of the calculation within the procedural steps (see Table 3 of the Validation Protocol).

Clarification Request No. 1

It has to be documented how the collection of the data of the real power plants capacity additions into the electricity ex post according to the applied methodology AM0005 respectively ACM0002 can be secured as prerequisite for the first verification and the subsequent periodic verifications (see Table 3 of the Validation Protocol).

2.5 Environmental Impacts

2.5.1 Discussion

The environmental impacts of the project were sufficiently addressed and described in Exhibit A to the PDD. The EIA has been approved by the local Environmental Protection Bureau. No significant environmental impacts are expected and could be identified during the on site assessment.

2.5.2 Findings

Clarification Request No.2.

The translation of the approval letter of the local government for the Guandong Nan'ao Wind Farm Project contains wrong numbers for the installed capacity (10.8 MW, that is for the first phase instead of 45.05 MW for the proposed project). The correct approval letter for the proposed project has to be shown together with the original Chinese approval letter to the audit team.

2.6 Comments by Local Stakeholders

2.6.1 Discussion

Even there is no request for a formal stakeholder process within the national legislation of the host country in place, such as stakeholder consultation process has taken place with a survey, which could be reviewed by the audit team. Furthermore the local community could be interviewed during the on site visit on Nan'ao Island. The response was overall positive. No major negative impacts of the project could be identified.

2.6.2 Findings

None

2.7 Comments by Parties, Stakeholders and NGOs

The PDD was directly published by the DOE TÜV Rheinland Group on the UNFCCC website on August 16, 2005 for public comments from parties, stakeholders and UNFCCC accredited NGOs during a period of 30 days until September 14, 2005. No comments were

received concerning the project design of the project. There were only general enquiries with regard to the download of the PDDs respectively to the address and identification of the DOE TÜV Rheinland Group, which could not be seen in the used direct publication at the UNFCCC website without link to the DOEs website.

3 VALIDATION OPINION

TÜV Rheinland Hong Kong Ltd., member of TÜV Rheinland Group, validated the Guangdong Nan'ao 45.05 MW Wind Farm Project in the P.R. China. The validation was performed on the basis of UNFCCC criteria, host country criteria, the selected baseline and monitoring methodology as well as criteria given to provide for consistent project operations, monitoring and reporting.

The review of the project design, documentation and additional information material as well as the results of interviews performed during the on-site visit and the subsequent follow-up interviews have provided TÜV Rheinland with sufficient evidence to determine the fulfilment of stated criteria, including the approval letters of the DNAs of P.R. China respectively Spain.

In our opinion, the project meets all relevant UNFCCC requirements for the CDM and all relevant host country criteria. The project activity will hence be recommended by TÜV Rheinland for registration with the UNFCCC.

By displacing fossil fuel-based electricity with electricity generated from a renewable source, the project results in reduction of CO_2 emissions that are real, measurable and give long-term benefits to the mitigation of climate change. 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 as designed, the project is likely to achieve the estimated amount of emission reductions.

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

4 REFERENCES

Category 1 Documents:

Documents provided by the Client that relate directly to the GHG components of the project

1 Project Design Document (PDD)

2 Feasibility Study Report (FSR)

3 Environmental Impact Assessment (EIA)

4 GHG calculation worksheet

5 Review request by UNFCCC of June 16, 2006

Category 2 Documents:

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

List	Book Title
1	2001 Electric Power Year Book
2	2002 Electric Power Year Book
3	2003 Electric Power Year Book
4	2004 Electric Power Year Book
5	China Energy Statistic Year Book – 2004
6	China Energy Statistic Year Book 2000-2002
7	Interim measure of Economic Assessment on Electrical Engineering Project
8	CDM Manual
9	Making use of the flexibility of coal – Strategy for Clean Energy Production
11	Standard for irrigation water puality (GB5084-92)
12	Standard for city region noise ordinance (GB3096-93)
13	Standard for ambient air purity (GB3095-82)
14	Standard for noise limits for construction site (GB12523-90)
15	Standard for environmental protection issue on construction project
16	Policy on environmental impact assessment
17	Policy on land protection
18	The 7th CDM working group meeting
19	Note on CDM project development seminar
20	The 14th CDM working group meeting
21	The 23th CDM working group meeting
22	Huaneng Group Company Organizational Chart
23	Project financial calculation table
24	Carbon emission calculation table (Guangdong Province)
25	Nan'ao wind farm employee training – data collection

Persons interviewed:

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

1	Mr. Zheng Zhaoning, Green Capital Consulting Company, Beijing
2	Ms. Pan Tao, Green Capital Capital Consulting Company, Beijing
3	□□□□□, □□□□□
4	□□□, □□□□□
5	□□□, Nan'ao Economic Bureau, Director
6	□□□, Nan'ao Environmental Protection Bureau, Director
7	□□□, Nan'ao Power Company, Director
8	□□□, Huaneng Shantou Nan'ao Wind Energy Ltd. Company, Senior Engineer
9	□□□, Huaneng Shantou Nan'ao Wind Energy Ltd. Company, Manager
10	□□□, Huaneng Shantou Nan'ao Wind Energy Ltd. Company, Manager
11	□□□, Huaneng Shantou Nan'ao Wind Energy Ltd. Company, Assistant Manager
12	□□□, Huaneng Shantou Nan'ao Wind Energy Ltd. Company, Team Leader
13	□□□, Huaneng Shantou Nan'ao Wind Energy Ltd. Company
14	□□, Huaneng Shantou Nan'ao Wind Energy Ltd. Company

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APPENDIX A

CDM VALIDATION PROTOCOL

Introduction

This document contains a generic Validation Protocol for CDM projects, which must be seen in conjunction with the *Validation and Verification Guidelines* and the *Validation Report Template*.

This validation protocol serves the following purposes:

- It organises, details and clarifies the requirements a CDM project is expected to meet; and
- It ensures a transparent validation process by inducing the validator to document how a particular requirement has been validated and which conclusions have been reached;

This protocol contains two tables with generic requirements for validation projects. Table 1 shows the requirements that the GHG emission reduction project will be validated against. Table 2 consists of a checklist with validation questions related to one or more of the requirements in Table 1. The checklist questions may not be applicable for all investors, and should not be viewed as mandatory for all projects. Where a finding is issued, a corrective action request or clarification request are stated. The resolution and final conclusions of these requests should be described in Table 3 of this protocol.

Before this generic validation protocol can be applied to validate a specific project, the validator must review and adjust/amend the protocol to make it applicable to individual project characteristics and circumstances as well as individual investor criteria. The application of the validator's professional judgement and technical expertise should ensure that checklist amendments cover all necessary specific project requirements that have impact on project performance and acceptance of the project. Given the above, the checklist part of the protocol is neither exhaustive nor prescriptive.

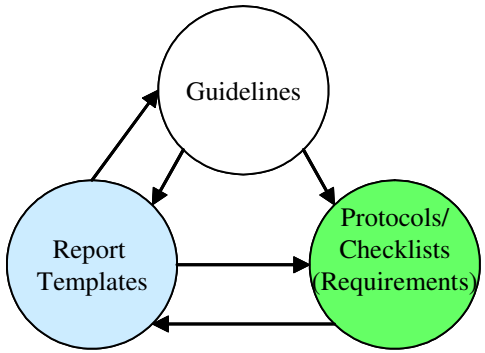

Table 1 Mandatory Requirements for Clean Development Mechanism (CDM) Project Activities

REQUIREMENT	Reference	CONCLUSION	Cross Reference / Comment
1. 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. Bilateral project: The project assists the Kingdom of Spain in achieving compliance with part of its emission reduction commitment.
2. Assist non-Annex I Parties in achieving sustainable development and the project has obtained confirmation by the host country that the project assists in achieving sustainable development	Kyoto Protocol Art. 12.2, Marrakesh Accords, CDM Modalities §40a	**OK, CAR 1 is closed**	Table 2, Section A.3, Table 3, . is part of **Corrective Action Request No. 1.**
3. 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. The project assists the P.R. China in contributing to the ultimative objective of the UNFCCC.
4. The project has the written approval of voluntary participation from the designated national authorities of each party involved	Kyoto Protocol Art. 12.5a, Marrakesh Accords, CDM Modalities §40a	**OK, CAR 1 is closed**	Table 2, Section A.3. Table 3. **Corrective Action Request** **No. 1 is closed:** A letter of approval from the DNA of China in English language and from the DNA of Spain in Spanish language have been submitted to the audit team.
5. The emission reductions shall be real, measurable and give long-term benefits related to the mitigation of climate change	Kyoto Protocol Art. 12.5b	OK	Table 2, Section E
6. Reduction in GHG emissions shall be additional to any that would occur in absence of the project activity, i.e. a CDM project	Kyoto Protocol Art. 12.5c,	OK	Table 2, Section B.2.

REQUIREMENT	Reference	CONCLUSION	Cross Reference / Comment
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	Marrakesh Accords, CDM Modalities §43		
7. Potential public funding for the project from Parties in Annex I is not a diversion of official development assistance	Marrakech Accords	OK	The review of documents and the interviews during the on-site assesssment showed, that no ODA is used for the project financing of the wind farm..
8. Parties participating in the CDM shall designate a national authority for the CDM	Marrakech Accords, CDM Modalities §29	OK	The host country, the P.R. China has a DNA, namely the National Development and Reform Commission of the People's Republic of China, the Government of Spain has designated the Oficina Española de Cambio Climático, Ministerio de Medio Ambiente to act as DNA.
9. The host country is a Party to the Kyoto Protocol	Marrakech Accords, CDM Modalities §30	OK	The host country of the project P.R. China has ratified the Kyoto Protocol on August 30, 2002. The Kingdom of Spain has ratified the Kyoto Protocol on May 31, 2002.
10. Comments by local stakeholders are invited, a summary of these provided and how due account was taken of any comments received	Marrakech Accords, CDM Modalities §37b	OK	Table 2, Section G
11. Documentation on the analysis of the environmental impacts of the project activity, including transboundary impacts, has been	Marrakech Accords, CDM Modalities §37c	OK	Table 2, Section F

REQUIREMENT	Reference	CONCLUSION	Cross Reference / Comment
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 has been carried out.			
12. Baseline and monitoring methodology is previously approved by the CDM Methodology Panel	Marrakech Accords, CDM Modalities §37e	OK	Table 2, Section B.1.1. and D. 1.1.
13. Provisions for monitoring, verification and reporting are in accordance with the modalities described in the Marrakech Accords and relevant decisions of the COP/MOP	Marrakech Accords, CDM Modalities §37f	OK	Table 2, Section D
14. Parties, stakeholders and UNFCCC accredited NGOs 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	Marrakech Accords, CDM Modalities, §40	OK	The PDD has been published directly on the UNFCCC website for a period of 30 days, from August 16 to September 14, 2005. Comments were received and has been tak4en into account..
15. 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	Marrakech Accords, CDM Modalities, §45c,d	OK	Table 2, Section B.2.
16. The baseline methodology shall exclude to earn CERs for decreases in activity levels outside the project activity or due to force majeure	Marrakech Accords, CDM Modalities, §47	OK	Table 2, Section B.2.
17. The project design document is in conformance with the UNFCCC CDM-PDD format	Marrakech Accords, CDM Modalities, Appendix B, EB Decisions	OK	The PDD is in conformance with version 02 of the CDM PDD (in affect as of: 1 July 2004, revised on 13 May 2005).

Table 2 Requirements Checklist

CHECKLIST QUESTION	Ref.	MoV *	COMMENTS	Draft Concl.	Final Concl.
A. General Description of Project Activity *The project design is assessed.*					
A.1. Project Boundaries *Project Boundaries are the limits and borders defining the GHG emission reduction project.*					
A.1.1. Are the project's spatial (geographical) boundaries clearly defined?	PDD	DR	The project spatial boundaries have been defined and are clearly described in chapter A.2, A.4. and B.4. of the PDD.	OK	OK
A.1.2. Are the project's system (components and facilities used to mitigate GHGs) boundaries clearly defined?	PDD, SItC	DR I	The project boundaries are defined. The project equipment is exactly described. For the bidding process the following specification is used: WTG 850 B, rotor diameter 52 metres, tower hight 65 metres. The project boundary is defined as the Guangdong Power Grid under chapter B.4.	OK	OK
A.1.3. Is the project category suitably defined?	PDD	DR	The project belongs to sectoral scope 1 – energy generation	OK	OK
A.2. Technology to be employed *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.*					
A.2.1. Does the project design engineering reflect current good	PDD	DR	The project design engineering of the Nan'ao	OK	OK

CHECKLIST QUESTION	Ref.	MoV *	COMMENTS	Draft Concl.	Final Concl.
practices?	FSR	I	Wind Project reflects current good practices. The project developer has done a project feasibility study for the location as basis for the selected technology. The project involves the installation of 53 wind turbines , each with a capacity of 850 kW, in total a capacity of 45.05 MW		
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?	PDD SItC	DR I	53 wind turbines WTG 850 B with a tower hight of 65 m.were selected for the bidding process of the proposed project. This advanced state of the art technology should be be complemented with a predictive maintenance system for the early detection of wear and faults in the the wind turbine's components. Using a 850 kW wind turbine is not been utilized in China at the moment. The most common wind turbines currently used are less than or equal to 660 kW.	OK	OK
A.2.3. Is the project technology likely to be substituted by other or more efficient technologies within the project period?	PDD FSR	DR I	No, the wind turbines are the most updated technology used in China of this power capacity. Therefore it is not expected that they will be replaced by more efficient technologies, which for this project would mean turbines with higher rated power.	OK	OK
A.2.4. Does the project require extensive initial training and maintenance efforts in order to work as presumed during the project period?	PDD	DR I	Yes, the project requires initial training for operation and maintenance, especially also for the integrated condition monitoring system.	OK	OK

CHECKLIST QUESTION	Ref.	MoV *	COMMENTS	Draft Concl.	Final Concl.
A.2.5. Does the project make provisions for meeting training and maintenance needs?	PDD SItC	DR I	It was reported during the on site visit, that an initial training course for the operation and maintenance staff will be part of the contract with the the supplier of the equipment.	OK	OK
A.3. Contribution to Sustainable Development *The project's contribution to sustainable development is assessed.*					
A.3.1. Is the project in line with relevant legislation and plans in the host country?	PDD FSR	DR I	The project has received the local approval for the construction. An interview was made with the local authority, the environmental protection bureau and approval has been received	OK	OK
A.3.2. Is the project in line with host-country specific CDM requirements?	PDD IM	DR	The project is using renewable energy, which has been listed from the Chinese Government as one of the priority areas for CDM development, published as the Interim Measures for Operation and Management of CDM projects (NDRC, June 2004). Therefore the project can be seen to be in line with the host country specific requirements for CDM.	OK	OK
A.3.3. Is the project in line with sustainable development policies of the host country?	PDD IM	DR	Idem, utilization of renewable energy is part of the Chinese policy for sustainable development	OK	OK
A.3.4. Will the project create other environmental or social benefits than GHG emission reductions?	PDD	DR I	After interview with the local stakeholders and the project developers, the project is expected of bringing in tourism, as a consequence more local tax can benefit the local community. Also, the project has brought the local government to further develop the local road system. The project reduces GHG emissions and other pollutions from fossil fuel fired power plants.	OK	OK

CHECKLIST QUESTION	Ref.	MoV *	COMMENTS	Draft Concl.	Final Concl.
			Additional employment during construction and later for operation and maintenance of the the wind farm is the result of the project.		
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.*					
B1.1. Is the baseline methodology previously approved by the CDM Methodology Panel?	PDD	DR	Yes. The project has originally applied the approved baseline methodology AM 0005 ”Baseline methodology for small grid-connected zero emissions renewable electricity generation”, Version 01 (14 April 2004) and has made adjustments to ACM0002, version 05 and 06, which has replaced AM0005 in March 2006.	OK	OK
B1.2. Is the baseline methodology the one deemed most applicable for this project and is the appropriateness justified? .	PDD	DR	Yes. The use of the approved baseline methodology is considered to be, out of the existing approved baseline methodologies, most applicable for this project, that will add electricity capacity from wind energy resources to the power grid.	OK	OK
B.2. Baseline Determination *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.*					

CHECKLIST QUESTION	Ref.	MoV *	COMMENTS	Draft Concl.	Final Concl.
B.2.1. Is the application of the methodology and the discussion and determination of the chosen baseline transparent?	PDD FSR	DR I	Yes. The application of the chosen baseline methodology could be demonstrated in a transparent manner for the renewable energy project from wind resources. The predicted electricity energy production is based on the results of the feasibility study report. For the calculation of the replaced carbon emissions in the connected grid were used the procedures of the AM0005 and subsequently of the ACM0002 with a combined margin approach. For the operational margin was used the method (a) of Simple OM. For the build margin was used the alternatve method for the prognosis of the power plant capacity additions ex-ante. The methodology allows the update of the build margin and subsequently also the combined margin annually ex post as basis for the periodic verification. For the ex post calculation it is requested to follow strictly the procedures laid down in the AM0005 respectively ACM0002. The used prognosis made assumptions, round offs and converted Chinese units into international units, that are not transparent besides of use of 'installed power capacity' data instead of 'electricity generation figures' which might result in a incorrect prediction of the build margin.and combined margin.	**CAR 2** **CL 1**	OK, see table 3

CHECKLIST QUESTION	Ref.	MoV *	COMMENTS	Draft Concl.	Final Concl.
			Therefore the following activities were requested: **Corrective Action Request No. 2** The ex ante calculation for the combined margin has to be reviewed to demonstrate the transparency of the calculation within the procedural steps **Clarification Request No. 1** It has to be documented how the collection of the data of the real power plants capacity additions into the electricity system ex post according to the methodology AM0005 respectively ACM0002 can be secured as prerequisite for the first verification and the subsequent periodic verifications.		
B.2.2. Has the baseline been determined using conservative assumptions where possible?	PDD FSR	DR I	Yes. The baseline is using a conservative approach, both for the prediction of the electricity generation according to the feasibility study report and for the baseline emission factor.	OK	OK
B.2.3. Has the baseline been established on a project-specific basis?	PDD	DR	Yes, it could be used also for other upcoming projects in the Guangdong Power Grid.	OK	OK
B.2.4. Does the baseline scenario sufficiently take into account relevant national and/or sectoral policies, macro-economic trends and political aspirations?	PDD	DR	The relevant policies in China are in favour for renewable energy development, but there are no financial incentives like higher electricity tariffs in place. Throughout the annually requested ex post re-calculation of the build margin and combined margin future trends will be considered in the baseline scenario.	OK	OK

CHECKLIST QUESTION	Ref.	MoV *	COMMENTS	Draft Concl.	Final Concl.
B.2.5. Is the baseline determination compatible with the available data?	PDD	DR I	Final assessment after CAR2 has been executed.	CAR 2	OK, see table 3
B.2.6. Does the selected baseline represent the most likely scenario among other possible and/or discussed scenarios?	PDD	DR I	Yes	OK	OK
B.2.7. Is it demonstrated/justified that the project activity itself is not a likely baseline scenario (e.g. through demonstrating investment barriers, technology barriers, barriers to prevailing practices, and/or other barriers or through quantitative evidence that the project would otherwise not be implemented)?	PDD SA	DR I	The tool for the demonstration and assessment of additionality as an essential part of ACM 0002 has been applied with all procedural steps.	OK	OK
B.2.8. Have the major risks to the baseline been identified?	PDD	DR I I	The baseline is based on statistical data, which are transparent. No major baseline risks are foreseen.	OK	OK
B.2.9. Is all literature and sources clearly referenced?	PDD	DR I	Yes	OK	OK
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 and reasonable?	PDD	DR I	Yes. The starting date is expected in October 2006. The operational lifetime is 21 years.	OK	OK
C.1.2. Is the assumed crediting time clearly defined and reasonable (renewable crediting period of max. two x 7 years or	PDD	DR	Yes. The crediting period is 7 years, which is 2	OK	OK

CHECKLIST QUESTION	Ref.	MoV *	COMMENTS	Draft Concl.	Final Concl.
fixed crediting period of max. 10 years)?			times renewable.		
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 ((Blue text contains requirements to be assessed for optional review of monitoring methodology prior to submission and approval by CDM EB).*					
D.1. Monitoring Methodology *It is assessed whether the project applies an appropriate baseline methodology.*					
D.1.1. Is the monitoring methodology previously approved by the CDM Methodology Panel?	PDD	DR I	Yes, approved monitoring methodology AM 0005 and subsequently ACM0002, which is an integral part of the applied baseline methodology AM0005 respectively ACM0002, that has been used in the project.	OK	OK
D.1.2. Is the monitoring methodology applicable for this project and is the appropriateness justified?	PDD	DR I	The monitoring methodology is the most applicable for this project, see PDD.	OK	OK
D.1.3. Does the monitoring methodology reflect good monitoring and reporting practices?	PDD	DR I	Yes, see also B 2.1. and D 4.1., Detailed monitoring arrangements and procedures according to the used monitoring plan will be CDM manual. **Corrective Action Request No. 3:** The CDM manual should be submitted to the audit team.	**CAR 3**	OK, see table 3
D.1.4. Is the discussion and selection of the monitoring	PDD	DR	Yes	OK	OK

CHECKLIST QUESTION	Ref.	MoV *	COMMENTS	Draft Concl.	Final Concl.
methodology transparent?		I			
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. 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?	PDD	DR	The renewable energy project do not cause any project emissions.	OK	OK
D.2.2. Are the choices of project GHG indicators reasonable?	PDD	DR	Idem	OK	OK
D.2.3. Will it be possible to monitor / measure the specified project GHG indicators?	PDD	DR	Idem	OK	OK
D.2.4. Will the indicators give opportunity for real measurements of achieved emission reductions?	PDD	DR	Idem	OK	OK
D.2.5. Will the indicators enable comparison of project data and performance over time?	PDD	DR	Idem	OK	OK
D.3. Monitoring of Leakage *It is assessed whether the monitoring plan provides for reliable and complete leakage data over time.*					
D.3.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining leakage?	PDD	DR	No leakage, caused by the the project could be identified	OK	OK
D.3.2. Have relevant indicators for GHG leakage been included?	PDD	DR	Idem	OK	OK
D.3.3. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining leakage?	PDD	DR	Idem	OK	OK

CHECKLIST QUESTION	Ref.	MoV *	COMMENTS	Draft Concl.	Final Concl.
D.3.4. Will it be possible to monitor the specified GHG leakage indicators?	PDD	DR	Idem	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. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining baseline emissions during the crediting period?	PDD	DR I	The monitoring plan contains all data to be monitored, see also D 1.3. The CDM manual will be the basis and guideline for the practical procedures of the collection and archiving of the requested data.	OK	OK
D.4.2. Is the choice of baseline indicators, in particular for baseline emissions, reasonable?	PDD	DR	Yes	OK	OK
D.4.3. Will it be possible to monitor the specified baseline indicators?	PDD	DR	Yes, on a regular basis according to the monitoring plan and the procedures defined in the CDM manual.	OK	OK
D.5. Monitoring of Sustainable Development Indicators/ Environmental Impacts *It is checked that choices of indicators are reasonable and complete to monitor sustainable performance over time.*					
D.5.1. Does the monitoring plan provide the collection and archiving of relevant data concerning environmental, social and economic impacts?	PDD	DR	No, as a monitoring of such data is not requested by the applied monitoring methodology of AM 0005 respectively ACM0002. Also the the DNA has no additional requirements for this project type in this regard.	OK	OK
D.5.2. Is the choice of indicators for sustainability development (social, environmental, economic) reasonable?	PDD	DR	Idem	OK	OK

CHECKLIST QUESTION	Ref.	MoV *	COMMENTS	Draft Concl.	Final Concl.
D.5.3. Will it be possible to monitor the specified sustainable development indicators?	PDD	DR	Idem	OK	OK
D.5.4. Are the sustainable development indicators in line with stated national priorities in the Host Country?	PDD	DR	Idem	OK	OK
D.6. Project Management Planning *It is checked that project implementation is properly prepared for and that critical arrangements are addressed.*					
D.6.1. Is the authority and responsibility of project management clearly described?	PDD	DR	The project proponent HNEI (Huaneng New Energy Industrial Co., Ltd.) is responsible for the project operation, monitoring and reporting.	OK	OK
D.6.2. Is the authority and responsibility for registration, monitoring, measurement and reporting clearly described?	PDD	DR	HNEI has also the responsibility for the tasks related to monitoring.	OK	OK
D.6.3. Are procedures identified for training of monitoring personnel?	PDD	DR I	The procedures for training of the personnel in charge for the monitoring tasks will be further determined and described in the mentioned CDM manual , see also D.1.3.	OK	OK
D.6.4. Are procedures identified for emergency preparedness for cases where emergencies can cause unintended emissions?	PDD	DR	According to the project design such emissions are not expected to occur.	OK	OK
D.6.5. Are procedures identified for calibration of monitoring equipment?	PDD	DR	Yes, such procedures are in place already within other wind projects, which HNEI is already running, and will be adopted to the planned project and will be also an integral part of the CDM manual	OK	OK
D.6.6. Are procedures identified for maintenance of monitoring equipment and installations?	PDD	DR	Idem. The specific training for predictive maintenance will be also adopted to the planned project.	OK	OK

CHECKLIST QUESTION	Ref.	MoV *	COMMENTS	Draft Concl.	Final Concl.
D.6.7. Are procedures identified for monitoring, measurements and reporting?	PDD	DR	Yes. Procedures are identified. The implementation of the measures will be part of the CDM manual.	OK	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)	PDD	DR	Idem, according to applied monitoring methodology and CDM manual.	OK	OK
D.6.9. Are procedures identified for dealing with possible monitoring data adjustments and uncertainties?	PDD	DR	This issue was identified as well as counter measures to be implemented as part of the CDM manual.	OK	OK
D.6.10. Are procedures identified for review of reported results/data?	PDD	DR	This issue and measures to be taken according to the applied methodology will be part of the CDM manual. This could be confirmed during the on site visit.	OK	OK
D.6.11. Are procedures identified for internal audits of GHG project compliance with operational requirements where applicable?	PDD	DR	Idem	OK	OK
D.6.12. Are procedures identified for project performance reviews before data is submitted for verification, internally or externally?	PDD	DR	Idem	OK	OK
D.6.13. Are procedures identified for corrective actions in order to provide for more accurate future monitoring and reporting?	PDD	DR	Idem	OK	OK
E. Calculation of GHG Emissions by Source *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.*					

CHECKLIST QUESTION	Ref.	MoV *	COMMENTS	Draft Concl.	Final Concl.
E.1. Predicted 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 GHG emissions captured in the project design?	PDD	DR	The project itself does not generate any emissions. Therefore this issue is not applicable to the project	OK	OK
E.1.2. Are the GHG calculations documented in a complete and transparent manner?	PDD	DR	Idem	OK	OK
E.1.3. Have conservative assumptions been used to calculate project GHG emissions?	PDD	DR	Idem	OK	OK
E.1.4. Are uncertainties in the GHG emissions estimates properly addressed in the documentation?	PDD	DR	Idem	OK	OK
E.1.5. Have all relevant greenhouse gases and source categories listed in Kyoto Protocol Annex A been evaluated?	PDD	DR	Idem	OK	OK
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 potential leakage effects beyond the chosen project boundaries properly identified?	PDD	DR	There are no sources of leakage occuring with regard to the current project design. Therefore this is not applicable for this project.	OK	OK
E.2.2. Have these leakage effects been properly accounted for in calculations?	PDD	DR	Idem	OK	OK
E.2.3. Does the methodology for calculating leakage comply with existing good practice?	PDD	DR	Idem	OK	OK

CHECKLIST QUESTION	Ref.	MoV *	COMMENTS	Draft Concl.	Final Concl.
E.2.4. Are the calculations documented in a complete and transparent manner?	PDD	DR	Idem	OK	OK
E.2.5. Have conservative assumptions been used when calculating leakage?	PDD	DR	Idem	OK	OK
E.2.6. Are uncertainties in the leakage estimates properly addressed?	PDD	DR	Idem	OK	OK
E.3. Baseline Emissions *The validation of predicted baseline GHG emissions focuses on transparency and completeness of calculations.*					
E.3.1. Have the most relevant and likely operational characteristics and baseline indicators been chosen as reference for baseline emissions?	PDD	DR I	Yes.the baseline indicators selected are relevant and transparent. Only CO2 emissions are considered for the project.	OK	OK
E.3.2. Are the baseline boundaries clearly defined and do they sufficiently cover sources and sinks for baseline emissions?	PDD	DR I	Yes, the baseline boundaries are with the Guangdong Power Grid defined, see A 1.1.	OK	OK
E.3.3. Are the GHG calculations documented in a complete and transparent manner?	PDD	DR I	Yes. The calculations are transparently documented in general, but have to be reviewed according to B 2.1.	OK	OK
E.3.4. Have conservative assumptions been used when calculating baseline emissions?	PDD	DR I	Yes. The calculations assumptions have been done in a conservative manner.	OK	OK
E.3.5. Are uncertainties in the GHG emission estimates properly addressed in the documentation?	PDD	DR I	Yes	OK	OK
E.3.6. Have the project baseline(s) and the project emissions been determined using the same appropriate methodology and conservative assumptions?	PDD	DR I	Yes.The baseline emissions were calculated according to AM 0005 respectively ACM0002, no project emissions are foreseeen to occur.	OK	OK

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 scenario?	PDD	DR I	Yes. The calculation results in 82,428 t CO2 emission reductions per annum.	OK	OK
F. Environmental Impacts *Documentation on the analysis of the environmental impacts will be assessed, and if deemed significant, an EIA should be provided to the validator.*					
F.1.1. Has an analysis of the environmental impacts of the project activity been sufficiently described?	PDD EIA	DR I	Yes. The environmental impacts have been assessed in the PDD. Annex A. An EIA has been provided for reference.	OK	OK
F.1.2. Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, is an EIA approved?	PDD EIA	DR I	Yes. The EIA has been approved by the local Environmental Protection Bureau. **Clarification Request No. 2** The installed capacity mentioned in the translated approval letter is 10.8 MW instead of the planned 45.05 MW to be installed in the proposed Nan'ao project. This has to be clarified.	**CL 2**	OK, see table 3
F.1.3. Will the project create any adverse environmental effects?	PDD EIA	DR I	There are no significant environmental impacts created from the project, as the project is located in a damaged grassland and birds rarely visit the area.	OK	OK

CHECKLIST QUESTION	Ref.	MoV *	COMMENTS	Draft Concl.	Final Concl.
F.1.4. Are transboundary environmental impacts considered in the analysis?	PDD EIA	DR I	No transboundary environmental impacts have been identified.	OK	OK
F.1.5. Have identified environmental impacts been addressed in the project design?	PDD EIA	DR I	Environmental impacts have been identified in the PDD	OK	OK
F.1.6. Does the project comply with environmental legislation in the host country?	PDD EIA	DR I	The project has received the official approval for construction from the government, which requires meeting all environmental legislation, see F.1.2.	OK	OK
G. Stakeholder Comments *The validator should ensure that a stakeholder comments have been invited and that due account has been taken of any comments received.*					
G.1.1. Have relevant stakeholders been consulted?	PDD STHS	DR I	HNEI has performed a formal consultation process with local stakeholders in a survey, which was submitted to the audit team. During the on site assessment interviews have been performed with the local community.	OK	OK
G.1.2. Have appropriate media been used to invite comments by local stakeholders?	PDD STHS	DR I	Idem	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?	PDD STHS	DR I	No	OK	OK
G.1.4. Is a summary of the stakeholder comments received provided?	PDD STH	DR I	Yes	OK	OK

CHECKLIST QUESTION	Ref.	MoV *	COMMENTS	Draft Concl.	Final Concl.
	S				
G.1.5. Has due account been taken of any stakeholder comments received?	PDD STH S	DR I	No negative comments were expressed. Hence no corrective actions have been taken.	OK	OK

Table 3 Resolution of Corrective Action and Clarification Requests

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in	Summary of project owner response	Validation team conclusion
CAR.1 The project proponent has to obtain a written approval for the project from the DNA of the P.R. China in English language, which contains all elements defined as being mandatory.	Table 1	The audit team was informed, that during the Chinese DNA approval process the previous unilateral CDM-project was modified into a bilateral CDM-project, which requests additional approval of the DNA of the involved Annex I – party, in this case from the DNA of Spain.	OK. A Letter of Approval (LOA) from the Chinese and Spanish DNA are received. This CAR is therefore closed.
CAR.2 The ex ante calculation for the combined margin has to be reviewed to demonstrate the transparency of the calculation within the procedural steps.	Table 2 B.2.1.	There were minor deviations, that were explained as round offs and as conversion effects of Chinese units into international units	OK. The corrected data and relevant worksheets have been submitted to the audit team. The PDD was changed accordingly. The CAR is closed.

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in	Summary of project owner response	Validation team conclusion
CAR.3 The CDM manual with all elements requested in the monitoring plan has to be completed in order to secure the exact monitoring and reporting of the data.	Table 2 D	The CDM manual is under final preparation, but could not be finished prior to the on-site assessment by the DOE	The CDM manual with all relevant data with regard to the monitoring plan has been submitted to the audit team The CAR is closed.
CL 1. It has to be documented how the collection of the data of the real power plants capacity additions into the electricity ex post according to the applied methodology AM 0005 can be secured as prerequisite for the first verification and the subsequent periodic verifications.	Table 2 B.2.1.	There are difficulties to obtain the requested power plant specific data because of confidentiality.	The procedure how to obtain the data necessary was explained to the audit team and can be accepted. The CL is closed.
CL 2. The translation of the approval letter of the local government for the Guandong Nan'ao Wind Farm Project contains wrong numbers for the installed capacity (10.8 MW, that is for the first phase instead of 45.05 MW for the proposed project).	Table 2 F.1.2.	The clarification of the matter was requested, but could not be clarified immediately.	The correct approval letter for the proposed project has been submitted to the audit team. The CL is closed.

APPENDIX B

DOE'S RESPONSE TO UNFCCC'S REVIEW REQUEST OF 16TH OF JUNE, 2006

Request for Review for Project 0299 (Guangdong Nan'ao Huaneng 45.05 MW Wind Power Project)

Issue 1:

The baseline methodology used in the project is inappropriate and the baseline emission factor calculated in the PDD is incorrect. The project used AM0005 as baseline and monitoring methodology, which was replaced by consolidated baseline and monitoring methodology ACM0002. Therefore the PDD has to be adjusted to ACM0002 and the baseline emission factor has to be revised accordingly.

Response of TÜV Rheinland:

The DOE has not replaced the applied approved methodology AM0005 by CM0002 because of the following decision of UNFCCC CDM EB during its 23rd meeting:

18. The Board further agreed to revise the procedures for revision of approved methodologies in order to extend the grace periods for a revision of approved methodologies as follows:

*"16. The revision shall not affect (a) registered CDM project activities during their crediting period; and (b) project activities that use the previously approved methodology for which requests for registration are submitted before or within **eight (8)** weeks after the methodology was revised."*

And

"17. In case the revision results in the withdrawal of existing approved methodologies the withdrawal shall not affect (a) registered CDM project activities using the withdrawn
*methodologies during their crediting period; and (b) project activities that use the previously approved methodology for which requests for registration are submitted before or within **eight (8)** weeks after the methodology was revised."*

"Add footnote to paragraphs 16,17 and 19 containing the following: The request registration referred to in paragraphs 16, 17 and 19 is considered to be submitted within the deadline if the following conditions are fulfilled: (a) The DOE has uploaded the request for registration using the dedicated interface of the UNFCCC CDM website before 24:00 GMT on the day of the deadline. (b) Either the proof of payment is uploaded within 20 calendar days after the deadline or the payment is received within 40 calendar days after the deadline. It is noted that these conditions are checked by automated checks."
(Source: EXECUTIVE BOARD OF THE CLEAN DEVELOPMENT MECHANISM, TWENTY-THIRD MEETING Report, page 4)

The DOE received the submission confirmation on their request for registration on 13th of March 2006, which is within the before defined grace period.

Anyhow, if now 4 eligible parties request on behalf of UNFCCC CDM EB a review because of this issue, the PDD has to be adjusted to ACM0002 and the baseline emission factor has to be revised accordingly as requested.

Issue 2:

The project proponents used an alternative method to calculate BM emission factor and the DOE has validated it. If DOEs and/ or project participants want to use e a new baseline methodology, they need to propose the new methodology to CDM EB and get it approved.

Response of TÜV Rheinland:

This approach was before approved in a similar wind project in China, which has applied also AM0005.

In the previous PDD of April 2006 and validation report (revision no. 03) both project proponent and validator took into account the Huitengxile Wind Farm, which has apßplied AM0005 and was successfully registered with UNFCCC (Project 0064: Huitengxile Wind Farm Project).

The above approach seems to be appropriate for the P.R. China, because it is very difficult to obtain the data of the five most recently built power plants, which are considered as confidential business matter by the plant owners.

This approach was later declared valid in a decision to a request of a DOE on clarification for such an approach in China with the following specifications: Use the efficiency level of the best technology commercially available in the provincial/regional or national grid of China, as a conservative proxy, for each fuel type in estimating the fuel consumption to estimate the build margin (BM). For the estimation of the operating margin (OM) the average emission factor for the grid for each fuel type can be used.

Meanwhile AM0005 was replaced by ACM0002. The overworked PDD have been adjusted to ACM0002. It has to be noted, that the approved methodology ACM0002 allows an ex-post calculation of the Build Margin for the first crediting period.

ACM0002 was changed meanwhile also as follows:

Option 1.

Calculate the Build Margin emission factor *EFBM,y ex-ante* based on the most recent information available on plants already built for sample group *m* at the time of PDD submission. The sample group *m* consists of either the five power plants that have been built most recently, or the power plants capacity additions in the electricity system that comprise 20% of the system generation (in MWh) and that have been built most recently. Project participants should use from these two options that sample group that comprises the larger annual generation.

Option 2.

For the first crediting period, the Build Margin emission factor *EFBM,y* must be updated annually *ex-post* for the year in which actual project generation and associated emissions reductions occur. For subsequent crediting periods, *EFBM,y* should be calculated *ex-ante*, as described in option 1 above. The sample group *m* consists of either the five power plants that have been built most recently, or the power plant capacity additions in the electricity system that comprise 20% of the system generation (in MWh) and that have been built most recently.

Project participants should use from these two options that sample group that comprises the larger annual generation.

This approach is appropriate in the P.R. China, because it is very difficult to obtain the data of the five most recently built power plants, which are considered as confidential business matter by the plant owners. Therefore, the option 2 was selected by the project proponents, which used the most recently (2004) capacity additions (near to 20 %) compared to the basis year of 2002. The weights of 75 % and 25 % were used for operational margin and the build margin for the combined margin calculation, recommended recently by ACM0002, version 6 for wind power projects.

Issue 3:

The DOE appears not to have evaluated the PDD carefully. There are typo errors in the values which change them completely. The DOE is expected to check and double check to screen out such errors.

Response of TÜV Rheinland:

The DOE has requested on 19th of June from the project proponent together with the revised PDD also again the work sheets of the baseline calculation and has checked and double checked the plausibility and correctness of the calculation and the original sources of data. This has meanwhile be executed. The calculation is transparent, no errors or deviations could be identified.

Issue 4:

One of the identified barriers to the implementation of the project is the small IRR of the project when compared to "China's project IRR benchmark". No references have been provided for those numbers. It is not clear on what basis the DOE validated the benchmark IRRs.

Response of TÜV Rheinland:

The DOE has requested on 19th of June from the project proponent together with the revised PDD also again the work sheets of the financial analysis of the IRR calculation and will check and double check the plausibility and correctness of the calculation and the original sources of data respectively benchmarks.

As part of the investment analysis was option III (benchmark analysis) be performed.

The pre-CDM scenario provides a project IRR of 7.54%, whereas compared to 9.28% of the project investment after the implementation of CDM. This result has proven that CDM does increase the investment attractiveness of the project, and CDM has provided a subsidy, which upstages the project IRR and improves the chance for obtaining project investment. The financial benchmark rate of return (after tax) of the power industries in China of 8 % for the IRR of total investment respectively 10 % for the IRR of equity is based on the "Interim Rules on Economic Assessment of Electrical Engineering Retrofit Projects in the PR China", which was shown to the audit team during the on-site assessment. The investment analysis was based on the section of the Financial and Economical Analysis from the project feasibility study report. A hard copy of the section was made available to the audit team.