VALIDATION REPORT

Liaoning Changtu Quantou Wind Power Project in China

REPORT NO. 2007-1246

REVISION NO. 03

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VALIDATION REPORT

DET NORSKE VERITAS
CERTIFICATION AS

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Approved by: Michael Lehmann, Technical Director	Organisational unit: Climate Change Services
Client: China Fulin Windpower Development Corporation	Client ref.: Mr. Li Gang

Project Name: Liaoning Changtu Quantou Wind Power Project
Country: China
Methodology: ACM0002
Version: 06
GHG reducing Measure/Technology: Wind based renewable energy power project
ER estimate: 110 967tCO2e per year

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Size

☒ Large Scale
☐ Small Scale

Validation Phases:

☒ Desk Review
☒ Follow up interviews
☒ Resolution of outstanding issues

Validation Status

☐ Corrective Actions Requested
☐ Clarifications Requested
☒ Full Approval and submission for registration
☐ Rejected

In summary, it is DNV's opinion that the "Liaoning Changtu Quantou Wind Power Project" in China, as described in the PDD of 30 January 2009 meets all relevant UNFCCC requirements for the CDM and all relevant host Party criteria and correctly applies the baseline and monitoring methodology ACM0002, version 06. DNV thus requests the registration of the project as a CDM project activity

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Report title:
Liaoning Changtu Quantou Wind Power Project

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Key words:
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VALIDATION REPORT

Abbreviations

BM	Build Margin
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CEF	Carbon Emission Factor
CER	Certified Emission Reduction
CH_4	Methane
CL	Clarification request
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent
DNV	Det Norske Veritas
DNA	Designated National Authority
EB	Executive Board
EIA	Environmental Impact Assessment
ERPA	Emission Reduction Purchasing Agreement
FS	Feasibility Study report
GHG	Greenhouse Gas(es)
GWP	Global Warming Potential
IETA	International Emission Trading Association
IPCC	Intergovernmental Panel on Climate Change
LoA	Letter of Approval
MP	Monitoring Plan
MVP	Monitoring and Verification Plan
NGO	Non-Governmental Organisation
NDRC	National Development and Reform Commission
NCPG	Northeast China Power Grid
ODA	Official Development Assistance
OM	Operating Margin
PDD	Project Design Document
PCF	World Bank's Prototype Carbon Fund
SERC	State Electricity Regulatory Commission
SCE	Standard coal equivalent
UNFCCC	United Nation Framework Convention on Climate Change

VALIDATION REPORT

TABLE OF CONTENTS

VALIDATION REPORT

1 EXECUTIVE SUMMARY – VALIDATION OPINION

Det Norske Veritas Certification AS (DNV) has performed a validation of the "Liaoning Changtu Quantou Wind Power Project" in China. The validation was performed on the basis of UNFCCC criteria for the Clean Development Mechanism and host Party criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

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

The project participants are Tieling Longyuan Wind Power Co., Ltd. from the host Party China and Kommunalkredit Public Consulting GmbH from Annex-1 Party Austria. Both the participating Parties meet all the requirements to participate in the CDM. The DNA of China has issued the letter of approval (LoA) /2/ on 26 August 2007, authorizing Tieling Longyuan Wind Power Co., Ltd. as project participant and also confirming that the project assists in achieving sustainable development. The DNA of Austria has also issued a LoA /3/ on 19 December 2007, authorizing Kommunalkredit Public Consulting GmbH as project participant.

The validation did not reveal any information that indicates that the project can be seen as a diversion of official development assistance (ODA) funding towards China.

The project correctly applies ACM0002 version 06: "Consolidated baseline & monitoring methodology for grid-connected electricity generation from renewable sources".

By generating renewable energy the project will partly displace fossil fuel based grid electricity. The project results in reductions of CO_2 emissions that are real, measurable and give long-term benefits to the mitigation of climate change. It is demonstrated that the project 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.

The total emission reductions from the project are estimated to be on the average 110 967 t CO_2e per year over the first 7-year crediting period. The emission reduction forecast has been checked, and it is deemed likely that the stated amount is achieved given that the underlying assumptions do not change.

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The monitoring methodology ACM0002 has been applied correctly. The monitoring plan has been generally identified. The procedures for monitoring, operating and maintenance have been elaborated.

Public stakeholders' inputs have been invited via the UNFCCC web-site. No comments have been received.

In summary, it is DNV's opinion that the "Liaoning Changtu Quantou Wind Power Project" in China as described in the PDD of version 5.0 dated 30 January 2009 meets all relevant UNFCCC requirements for the CDM and all relevant host Party criteria and correctly applies the baseline and monitoring methodology ACM0002 version 06. DNV thus requests the registration of the "Liaoning Changtu Quantou Wind Power Project" as a CDM project activity.

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VALIDATION REPORT

2 INTRODUCTION

China Fulin Windpower Development Corporation has commissioned Det Norske Veritas Certification AS (DNV) to perform a validation of the "Liaoning Changtu Quantou Wind Power Project" in China (hereafter called "the project"). This report summarizes the findings of the validation of the project, performed on the basis of UNFCCC criteria for CDM projects, as well as criteria given to provide for consistent project operations, monitoring and reporting. UNFCCC criteria refer to Article 12 of the Kyoto Protocol, the CDM modalities and procedures and the subsequent decisions by the CDM Executive Board.

2.1 Objective

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

2.2 Scope

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

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

VALIDATION REPORT

3 METHODOLOGY

The validation consisted of the following three phases:

I a desk review of the project design documents

II follow-up interviews with project stakeholders

III the resolution of outstanding issues and the issuance of the final validation report and opinion

The following sections outline each step in more detail.

3.1 Desk Review of the Project Design Documentation

The following table outlines the documentation reviewed during the validation:

/1/ China Fulin Windpower Development Corporation, Project Design Document for the "Liaoning Changtu Quantou Wind Power Project", Version 2.0 of 15 March 2007, version 4.0 of 9 August 2008.

/2/ Letter of Approval issued by DNA of China dated 26 August 2007

/3/ Letter of Approval issued by DNA of Austria dated 19 December 2007

/4/ The feasibility study report of Liaoning Changtu Quantou Wind Power Project in July 2006 and the approval letter by Development and Reform Commission of Liaoning Province on 05 September 2006.

/5/ The EIA of the Liaoning Changtu Quantou Wind Power Project in May 2006 and the approval letter by Environmental Protection Bureau of Liaoning Province on 26 June 2006.

/6/ Copies of stakeholders consultation questionnaires (30) & Stakeholder Meeting Minute.

/7/ International Emission Trading Association (IETA) & the World Bank's Prototype Carbon Fund (PCF): Validation and Verification Manual. http://www.vvmanual.info

/8/ ACM0002 "Consolidated methodology for grid-connected electricity generation from renewable sources" version 06 of 19 May 2006.

/9/ CDM Executive Board: Tool for the demonstration and assessment of additionality, version 04 , EB 36 meeting.

/10/ China Electric Power Yearbooks 1998-2005

/11/ China Energy Statistics Yearbooks 2003, 2004, 2005

/12/ CDM EB, Answer to DNV's request for deviation of Chinese project activities from AM0005, received on 1 December 2005. To be found on http://cdm.unfccc.int/Projects/Deviations

/13/ Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories

/14/ Notice on Strictly Prohibiting the Installation of Fuel-fired Generators with the Capacity of 135MW or below issued by the General Office of the State Council, decree

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No. 2002-6.

/15/ State Power Corporation of China. Interim Rules on Economic Assessment of Electrical Engineering Retrofit Projects. Beijing: China Electric Power Press, 2003

/16/ Chinese DNA's guidance for the determination of grid boundaries and emission factors (December2006)

/17/ China's Regional Grid Baseline Emission Factor Calculation (OM) issued by Chinese DNA (December, 2006)

/18/ China's Regional Grid Baseline Emission Factor Calculation (BM) issued by Chinese DNA (December, 2006)

/19/ Report Tables of Personnel Training for Tieling Longyuan Wind Power Co., Ltd. (8)

/20/ The letter of review opinion of the Feasibility Study report for Quantou Wind Farm on-grid access engineering by Liaoning Power Co., Ltd. dated on 29 August 2006 [Doc. No.: LDJF(2006)409#]

/21/ The letter to agree with occupying land for Quantou Wind Farm issued by Changtu County Government dated 15 May 2006 [Doc. No: CZH(2006)4#]

/22/ Propositional letter of on-grid electricity tariff for Liaoning Changtu Quantou Wind Power Project issued by Development and Reform Bureau of Changtu County dated 08 January 2007

/23/ Loan application supporting letter issued by China Development Bank dated 14 January 2007

/24/ Tieling Longyuan wind power Co.Ltd, Directorate decision of Tieling Longyuan Wind Power Co., Ltd. For CDM project development dated 15 January 2007

/25/ The project construction permission for Liaoning Changtu Quantou Wind Power Project issued by the Pengyu construction supervision Co. Ltd.,of Heilongjiang province dated 08 February 2007

/26/ IRR calculation spreadsheet

/27/ Hydropower projects distribution of Liaoning province: http://www.kftour.com/map/18-27973-2/

/28/ Relevant information regarding solar PV, biomass and geothermal generation technology with high cost for power generation *http://www.chinaenergy.gov.cn/news.php?id=15688*

/29/ The relevant information regarding the raising of price of wind turbines http://info.electric.hc360.com/2007/06/28101158551-6.shtml

/30/ The relevant evidence for price of raw materials gradually increasing http://www.china.com.cn/chinese/EC-c/1246238.htm
The evidence for employee's salary gradually increasing http://www.chinadaily.com.cn/hqcj/2007-09/03/content_6075777.htm

/31/ Interim Regulation for Tariff of Renewable Energy Power Generation and Expenses Sharing Management (FaGaiJiaGe[2006] No.7) http://www.gov.cn/ztzl/2006-01/20/content_165910.htm

/32/ The relevant evidence for the on-grid tariff gradually decreasing

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http://www.eri.org.cn/manage/upload/uploadimages/eri200672795944.pdf
http://www.2008red.com/member_pic_461/files/qiangweinengyuan/html/article_2757_1.shtml

/33/ The evidences showing Donggang & Hengshan Windfarm as demonstration projects enjoyed high tariff with international loan: http://www.nepri.com.cn/dljs/aaa/qw/2001/DLQK-DB-DBDL-2001-011-005.pdf

/34/ The specific windfarm power tariff regulation issued by NDRC, 3 December 2007 http://www.gov.cn/zwgk/2008-02/19/content_892937.htm

/35/ The ERPA signed by the project owner with Kommunalkredit Public Consulting GmbH 15 November 2007

/36/ The advanced payment receipt from the Tieling Longyuan wind power Co.Ltd., for purchasing wind turbines., dated 6 April 2007

/37/ Electric equipment installation contract signed dated 6 June 2007

/38/ Equipment purchasing agreement signed dated 5 January 2007

/39/ Wind turbine installation contract signed in March 2007

The main changes between the version of the PDD published for the 30 days stakeholder commenting period and the final version submitted for registration:

- *The IPCC default values used for OM & BM calculation have been changed from IPCC 1996 to IPCC 2006.*
- *The latest data from China Electric Power Yearbooks 2006 & China Energy Statistics Yearbooks 2006 have been used for OM & BM calculation*
- *The sensitivity analysis has been re-analyzed to show the changes of four critical parameters (total investment, annual O&M costs, on-grid tariff and electricity output) by determining the value at which the IRR will be equal to the benchmark (instead of analsizing ±10% fluctuation of three parameters only) .*
- *PDD is revised according to the resolutions of CAR(s) and CL(s) raised during validation and the most recent EB requirements and Guidelines on financial analysis, project start and CDM consideration (EB38-EB41).*

3.2 Follow-up Interviews with Project Stakeholders

	Date	Name	Organization	Topic
/40/	2007-07-17	Mr. Liu Xupeng, Project Manager	Yichun Longyuan Wind Power Co., Ltd. (Project Owner)	➢ Project background information. ➢ Project technology, operation, maintenance and monitoring capability. ➢ Project additionality. ➢ Project monitoring and

				management plan. ➢ Project approval status (incl. EIA approval, CDM project approval status) ➢ Stakeholder consultation process
/41/	2007-07-17	Mr. Li Gang Project Manager, CDM Department	China Fulin Windpower Development Corp. (consultant)	➢ Applicability of selected methodology. ➢ Baseline determination. ➢ Emission reductions calculation. ➢ Emission reduction monitoring plan

3.3 Resolution of Outstanding Issues

The objective of this phase of the validation was to resolve any outstanding issues which needed to be clarified prior to DNV's positive conclusion on the project design. In order to ensure transparency a validation protocol is customised for the project. The protocol shows in transparent manner criteria (requirements), means of verification and the results from validating the identified criteria. The validation protocol serves the following purposes:

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

The validation protocol consists of three tables. The different columns in these tables are described in the figure below. The completed validation protocol for the "Liaoning Changtu Quantou Wind Power Project" is enclosed in Appendix A to this report.

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

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

A request for clarification (CL) may be used where additional information is needed to fully clarify an issue.

VALIDATION REPORT

Validation Protocol Table 1: Mandatory Requirements for CDM Project Activities		
Requirement	***Reference***	***Conclusion***
The requirements the project must meet.	*Gives reference to the legislation or agreement where the requirement is found.*	*This is either acceptable based on evidence provided (**OK**), a **Corrective Action Request (CAR)** of risk or non-compliance with stated requirements or a request for **Clarification (CL)** where further clarifications are needed.*

Validation Protocol Table 2: Requirement checklist				
Checklist Question	***Reference***	***Means of verification (MoV)***	***Comment***	***Draft and/or Final Conclusion***
The various requirements in Table 2 are linked to checklist questions the project should meet. The checklist is organised in different sections, following the logic of the large-scale PDD template, version 03 - in effect as of: 28 July 2006. Each section is then further sub-divided.	*Gives reference to documents where the answer to the checklist question or item is found.*	*Explains how conformance with the checklist question is investigated. Examples of means of verification are document review (DR) or interview (I). N/A means not applicable.*	*The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached.*	*This is either acceptable based on evidence provided (**OK**), or a **corrective action request (CAR)** due to non-compliance with the checklist question (See below). A request for clarification (CL) is used when the validation team has identified a need for further clarification.*

Validation Protocol Table 3: Resolution of Corrective Action 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 CAR or a CL, these should be listed in this section.	*Reference to the checklist question number in Table 2 where the CAR or CL is explained.*	*The responses given by the project participants during the communications with the validation team should be summarised in this section.*	*This section should summarise the validation team's responses and final conclusions. The conclusions should also be included in Table 2, under "Final Conclusion".*

Figure 1 Validation protocol tables

VALIDATION REPORT

3.4 Internal Quality Control

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

3.5 Validation Team

Role/Qualification	Last Name	First Name	Country
Team Leader/GHG Auditor	Jiao	Qinghong (Rowena)	China
Team member	Ma	Jiandong	China
CDM Validator	Sun	Shuyong	China
Draft report Technical reviewer	Rescalvo	Miguel	Norway
Technical reviewer(applicant)	Tang	Walter(Zhiang)	China
Technical reviewer	Viddal	Mari Grooss	Oslo
Sector Expert	Michael	Lehmann	Norway

The qualification of each individual validation team member is detailed in Appendix B to this report.

4 VALIDATION FINDINGS

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

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

4.1 Participation Requirements

The project participants are Tieling Longyuan Wind Power Co., Ltd. from the host Party China and Kommunalkredit Public Consulting GmbH from Annex-1 Party Austria. Both the participating Parties meet the requirements to participate in the CDM.

The DNA of China has issued the letter of approval (LoA) /2/ on 26 August 2007, authorizing Tieling Longyuan Wind Power Co., Ltd. as project participant and also confirming that the project assists in achieving sustainable development.

The DNA of Austria has also issued a LoA /3/ on 19 December 2007, authorizing Kommunalkredit Public Consulting GmbH as project participant.

The validation did not reveal any information that indicates that the project can be seen as a diversion of official development assistance (ODA) funding towards China.

4.2 Project Design

The main project characteristics are described in the FSR /4/. The project involves installation and operation of 58 wind turbines in Quantou County, Changtu City, Liaoning Province, P.R.China.

The installed capacity of each unit is 850 kW, which is providing a total capacity of 49.3MW (58 x 850 kW). The whole set technology of the 850 kW Gamesa52 wind turbine is introduced from Gamesa Eólica of Spain, who is one of the biggest turbine manufacturers with providing advanced products, products installations and services in the renewable energy sectors.

Being a renewable electricity project, the project activity will generate greenhouse gas (GHG) emission reductions by avoiding CO_2 emissions from electricity generation by fossil fuel power plants.

The project construction permission was obtained on 08 February 2007 which is defined as the project starting date. The expected operational lifetime of the project activity is 21 years. A renewable crediting period of 7 years has been chosen for the project, starting from 01 January 2009.

VALIDATION REPORT

4.3 Baseline Determination

The project applies the approved baseline methodology ACM0002 (version 06), titled "Consolidated methodology for grid-connected electricity generation from renewable sources".

The applied baseline methodology is justified as it has been demonstrated that the project activity ensures that:

- It is a grid connected zero emission renewable power generation activity from wind energy.
- The project does not involve switching from fossil fuel to renewable energy at the project site.
- The geographic and system boundaries for the relevant electricity grid can be clearly identified and information on the characteristics of the grid is available.

The project boundary is defined as the site of the project activity and the Northeast China Power Grid (NCPG) including the Liaoning, Jilin and Heilongjiang provincial grids. This is in line with the delineation of grid boundaries as provided by the DNA of China /16/. The defined project boundary is in line with ACM0002 (version 06).

Emission sources and gases included in the project boundary are:

	GHGs involved	*Description*
Baseline emissions	CO_2	*The Northeast China Power Grid*
Project emissions	*N/A*	*Project emission is regarded as zero as the project is a renewable energy (wind source) project.*
Leakage	*N/A*	*There are no leakages that need to be considered in applying this methodology.*

In the baseline scenario, the electricity delivered from the project activity to the grid would have been generated by fossil fuel grid-connected power plants and by the addition of new generation sources. This is reflected in the combined margin (CM) - the weighted average of the operating Margin (OM) emission factor and the build margin (BM) emission factor. The weighting is set to respectively 75% and 25%, the default values stipulated by ACM0002 version 06 for wind farm projects.

The NCPG is dominated by coal-fired power plants. It is deemed likely that coal-fired power plants will continue to dominate the power sector due to the local availability of low-cost coal. It is expected that renewable capacity additions will not have significant effects on the mix of the NCPG during the first crediting period.

4.4 Additionality

The additionality of the project has been established using the "*Tool for the demonstration and assessment of additionality*" version 4, approved by the CDM-EB.

VALIDATION REPORT

It has been demonstrated by the chronological events that CDM revenues were considered for the project activity prior to start of construction.

a) Tieling Longyuan Wind Power Co., Ltd., the project developer, conceptualized the project in July 2006 by the preparation of the feasibility study report. The feasibility study report was approved on 05 September 2006 /4/.

b) On 5 January the project developer signed the turbine contract, however with the clause that the contract was changeable. The actual prepayment of 6% of the total turbine costs was only made 7 April 2007/36/, which was after the project starting date. The payment receipt was verified by DNV.

c) c) On 08 January 2007, the project developer received the propositional letter regarding on-grid tariff for Liaoning Changtu Quantu wind farm issued by Development and Reform Commission of Changtu County, which mentioned the tariff for the project as 0.62 RMB/kwh incl. VAT (0.5714 RMB/kwh excl. VAT compared to the 0.5998RMB/kWh excl. VAT initially in the FSR), that resulted in low IRR of the project (7.24% compared to the previous 8,44% IRR of the FSR) /22/.

d) On 14 January 2007, the project developer received loan application supporting letter from the China Development Bank /23/.

e) On Directorate Decision was made for CDM project development dated 15 January 2007 /24/.

f) Construction permission from Pengyu construction supervision Co. Ltd., of Heilongjiang province was obtained on 08 February 2007 /25/. This is considered as the starting date of the project.

g) Subsequently, the PDD was published for public stakeholder comments as part of validation in May 2007.

h) On 15 November 2007, the ERPA was signed /35/.

All the relevant evidences supporting this information have been provided and verified by DNV.

Step 1: the following four alternatives consistent with the current laws and regulations have been identified for the project activity.

a) The proposed project activity not undertaken as a CDM project activity;

b) Construction of a coal-fired power plant with equivalent installed capacity or annual electricity power generation;

c) Construction of a power plant using other renewable resources with the same installed capacity as the project;

d) The equivalent electricity output or electricity generation addition provided by the Northeast China Power Grid (NCPG).

VALIDATION REPORT

The alternative b) was eliminated based on the evidence that in China coal-fired power plants of less than 135MW, if without special permission, are prohibited for construction in the areas covered by large grids and the installation of thermal power units with less than 135MW is under tight control /14/. The alternative c) was eliminated because in the project site, Changtu county, there is no river nearby with enough hydro resources /27/, whilst other renewable energy technologies such as solar PV, geothermal and biomass are possible to be applied in the NCPG, however, this is still in the demonstration phase and can bring only poor economic benefits, which can not be operated without support from the national policies /28/, therefore the alternative c) is unrealistic and should be eliminated.

Step 2: Investment analysis.

Since the alternative a) generates revenues, the benchmark analysis has been applied for conducting the investment analysis.

It has been demonstrated that in China an IRR of 8 % for the total investment of a project is regarded as a benchmark /15/ for investments in hydropower plants, fossil fuel fired plants and wind farm projects. Based on the data from the feasibility study report, the project IRR without CER revenues is 7.17% /26/, which shows that the project is not financially attractive compared to the benchmark in the absence of CDM benefits.

In line with the EB guidance in EB38 minutes of meeting paragraph (54), DNV confirms that

a) The input parameters (except tariff) used in the financial analysis are taken from the Feasibility Study Report (FSR) developed by Xinjiang Windpower Design Institute and approved by Development and Reform Commission of Liaoning Province on 05 September 2006 /4/. The electricity tariff of 0.5714 Yuan/kWh (excluding VAT) has been sourced from the propositional letter of Development and Reform Bureau of Changtu County dated 08 January 2007 /22/. The input parameters used in the financial analysis can thus be considered information provided by an independent and recognized source.

b) DNV has compared the input parameters for the financial analysis included in the PDD with the parameters stated in the FSR /4/ and the above mentioned source /22/ and was able to confirm that the values applied are consistent with the value stated in the FSR and the above mentioned source /22/. The electricity tariff information (08 January 2007) /22/ was available at the time when decision to proceed with the project was made (08 February 2007) /25/.

c) The FSR was approved on 05 September 2006 and thus only 5 months prior to the decision to proceed with the project activity which was on 08 February 2007. Given this relative short period of time between approval of the FSR and the decision to proceed with the project activity it is unlikely in the context of the project that the input values would have materially changed and that it is thus reasonable to assume that the FSR has been the basis of the decision to proceed with the investment in the project. The same apply for the propositional letter of Development and Reform Bureau of Changtu County, dated 08 January 2007, and thus only one month prior to the decision to proceed with the project activity.

d) The input parameters used in the financial analyses were compared with the data reported for other similar proposed CDM projects in the Liaoning province, by comparing investment costs per MW, electricity tariff, PLF and percentage of O&M costs relative to total investment costs, etc. DNV was able to confirm that the input parameters used in the financial analysis are reasonable and adequately represent the economic situation of the project.

A sensitivity analysis has been carried out for parameters contributing more than 20% to revenues or costs. Reasonable variations of the total investment, annual operational costs, and electricity output and on-grid tariff were checked by calculating the variation necessary to reach the benchmark and then discussing the likelihood for that to happen. None of the parameters in the sensitivity analysis are considered to have any significant positive correlation.

It could be seen that if the total investment decreases by 5.4%, the project IRR could exceed the benchmark. However, it is not likely the total investment will decrease by 5.4%. Firstly, the 86.38% of total investment is used to purchase wind turbines equipment and installation /4/; secondly, main parts of the wind turbine are exported from Spain; thirdly, the demand of wind turbines in recent years exceeds greatly supply in the whole world that leads the raising of price of wind turbines /29/. Therefore, it is not likely to decrease the total investment of the proposed project.

The annual O&M cost is insensitivity factor on the project IRR, which will only begin exceeding the benchmark if it decreases by 25.9%. According to the FSR, the O&M cost is estimated by an accredited third party and approved by local NDRC, also the construction materials and employee' salaries, as a part of O&M costs, are gradually increasing with the raising of the price index /30/. Therefore it is not likely to decrease O&M by 25.9%.

The electricity tariff is a very important factor on project IRR. If it increases by 5.4%, the project IRR will begin to exceed the benchmark. However, it is unlikely for the tariff of the proposed project to have an increase of 5.4%. First of all, according to the tariff regulation issued by Chinese NDRC in 2006 /31/, the on-grid tariff of wind power generation projects is determined by State Council price department through bidding. It shows that such tariff is gradually lowering down in the past years, it has been verified that the tariff for wind project has decreased with about 1.2-0.55 RMB/kWh since before 2004/32/. Secondly, as per the specific tariff regulation/34/, it shows that the tariff of wind farms in Liaoning Province is also not higher than 0.61 RMB/kWh (including VAT). Thirdly, based on the propositional letter regarding on-grid tariff for Liaoning Changtu Quantou wind farm issued by Development and Reform Commission of Changtu County dated on 08 Janaury 2007 /22/, the tariff (0.5714RMB excluding VAT) for the proposed project has been defined as 1.63% higher than the government tariff 0.62RMB/kWh(including VAT) of December 2007 in Liaoning province /34/, i.e. the tariff is decreased in about a year. The above evidences have been verified by DNV and it is therefore deemed not likely that the tariff of the proposed project could increase 5.4%.

The PLF is a key parameter impacting the financing attractiveness of the project since the PLF reflects the annual electricity output. If the PLF (or annual electricity output) increases by 5.4%, the project IRR could also exceed the benchmark. However, the PLF value (or

annual electricity output) depends on the wind speed of the project site at the specific wind turbine. As per the feasibility study report, the annual electricity output is calculated based on the 30 years weather statistic data from 1976 to 2005, using the professional software WAsP to obtain the richest wind source area, then using another software WindFarmer to optimize the location of each turbine in order to maximize power generation /4/. Therefore the probability that the PLF (or annual electricity output) is 5.4% higher than the estimated value is unreasonable.

In conclusion, the investment analysis and sensitivity assessment have shown that the project activity is unlikely to be the most financially attractive option.

Step 3: Barrier analysis.

No barrier analysis has been applied.

Step 4: Common practice analysis.

It has been demonstrated by an analysis of the operating wind power plants located in Liaoning Province with the capacity between 10MW – 50 MW that they are either demonstration projects which enjoyed high tariff than the proposed project /33/ or have applied for CDM project due to the similar investment barriers/financial unattractiveness as the proposed project. The analysis has been verified and is deemed to be acceptable.

In summary, it is sufficiently demonstrated that the project is not a likely a baseline scenario and that emission reductions are hence additional.

4.5 Monitoring

The project applies the approved monitoring methodology ACM0002 version 06 "Consolidated monitoring methodology for zero emissions grid-connected electricity generation from renewable sources". The selected monitoring methodology is applicable for the project activity as it involves grid-connected renewable power generation using wind energy.

4.5.1 Parameters determined ex-ante.

The grid emission factor of the Northeast China power grid is determined by the ex-ante options of the ACM0002 and is fixed constant for the entire 7 years crediting period of the project activity. The combined margin grid emission factor has been calculated as the weighted average of operating margin and the build margin considering a weight age of 75:25 for wind projects, in line with the methodology.

The combined margin emission factor is determined *ex-ante* based on the most recent information available. The calculation of the operating margin (OM) emission factor, the simple OM emission factor calculation method is selected because low cost must run projects constitute less than 50% of the total grid generation and data is not available for applying the dispatch data analysis.

The aggregated generation and fuel consumption data are used due to the fact that more disaggregated data are not available in the NCPG. Country specific data for net calorific value

VALIDATION REPORT

(NCV_i) of each type of fossil fuel, the IPCC 1996 default values for the oxidation factor of each type of fossil fuel and the total electricity delivered to the NCPG are selected and are deemed reasonable. China Energy Statistics Yearbooks 2003, 2004 and 2005 editions China Electric Power Yearbooks 2003-2005 editions are used for operating margin calculation. The OM is calculated to be 1.1983 tCO_2/MWh as a generation-weighted average for the three years.

Because plant specific fuel consumption and electricity generation data is not public available in China, DNV requested guidance from the CDM Executive Board for a deviation of the baseline methodology of AM0005 and received the following answers which are deemed to be applicable for this project.

- Use of capacity additions for estimating the build margin emission factor for grid electricity.
- Use of weights estimated using installed capacity in place of annual electricity generation.
- 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).

Since AM0005 has been replaced by ACM0002, the application of the above confirmation from EB to this project is deemed to be acceptable.

Following the EB's guidance the build margin is calculated as follows:

- The capacity additions from the years 1997 to 2004 is chosen and reach 23.28% of total installed capacity.
- The weight of installed capacity additions for thermal power plant is accounted for 89.26% of total installed capacity additions.
- The standard coal consumption of 336.66gSCE/kWh is used to determine the BM emission factor, which is deemed conservative /16/.
- The local value of 25.8 tC/TJ for carbon content of the coal and the IPCC 1996 default value of carbon oxidization factor are used to calculate the BM.
- The BM is calculated at 0.8108 tCO_2/MWh.

The weights ω_{OM} and ω_{BM} are selected as 0.75 and 0.25, respectively, as stipulated for wind project by ACM0002 (version 06). The combined margin of 1.1014 t CO_2/MWh is fixed *ex-ante* for the entire first crediting period.

The data used to calculate OM and BM is derived from China Energy Statistical Yearbooks 2003, 2004, 2005 editions and China Power Electric Power Yearbooks 1998 to 2005 editions. They are the latest data available at the time of PDD submission.

The GHG calculations are complete and transparent, and their accuracy has been verified.

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4.5.2 Parameters monitored ex-post

In line with the methodology, the only parameter that needs to be monitored ex-post is the electricity exported to the grid by the project activity. The net electricity generated from the project will be measured hourly and recorded monthly. This data will be cross verified against the sales receipt from the grid.

4.5.3 Management system and quality assurance

The project's Monitoring Plan (B7.2 of the PDD) includes:

- A description of the responsibilities and authorities for project management,

- Procedures for monitoring and reporting, and QA/QC procedures,

- A description of the installation of metering equipment,

- Procedures for the calibration of metering equipment,

- A description of training and maintenance needs.

- Procedures for day-to-day records keeping & storage.

Detailed procedures are in place. These will be maintained and implemented to enable subsequent verification of emission reductions.

4.6 Estimate of GHG Emissions

The emission reductions ERy by the project activity during the crediting period is calculated as the difference between the baseline emissions (BEy), project emissions (PEy) and emissions due to leakage (Ly).

The baseline emissions are calculated as the product of the net electricity exported to the grid and the grid emission factor of the concerned grid. The net electricity exported to the grid is measured and the grid emission factor has been calculated ex-ante and is fixed for the entire crediting period.

Being a renewable energy project (wind power), there are no project emissions.

Leakage: no leakage has to be considered for the proposed project activity.

Hence the emission reductions: ERy = BEy – PEy – Ly = BEy..

Based on the 4.5.1 of the report, ERy=BEy=EFy*EGy=1.1014*100751=110 967 tCO_2e/year, the output of power generation supplied to the Grid is estimated to be 100 751 MW/year /4/

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4.7 Environmental Impacts

An Environmental Impact Assessment (EIA) has been conducted according to Chinese law & regulation. The potential environmental impacts have been identified. No significant environmental impacts are expected from the project activity. The Environmental Protection Bureau of Liaoning Province approved the project activity on 26 June 2006 /5/.

VALIDATION REPORT

4.8 Comments by Local Stakeholders

Besides the stakeholder consultation process stipulated in the Chinese EIA regulation, the project owner held a stakeholders conference in January 2007. Total 13 stakeholder representatives from the local Development and Reform Bureau, the local Environmental Protection Bureau, the local Power Supply Corporation, etc. attended meeting. Also a public survey was conducted on the local residents through distributing and collecting responses to the questionnaires during December 2006 – January 2007 (30 questionnaires collected). There were no adverse comments on the project activity and 100% of the respondents agree with the development of the project. All the questionnaires with comments have been verified by DNV /6/.

4.9 Comments by Parties, Stakeholders and NGOs

The PDD of 15 March 2007 was made publicly available on DNV's climate change website (http://www.dnv.com/focus/climate_change/projects/projectdetails.asp?ProjectId=1229) and Parties, stakeholders and NGOs were through the CDM website invited to provide comments during a 30 days period from 31 May 2007 to 29 June 2007.

No comments were received in this period.

APPENDIX A

CDM VALIDATION PROTOCOL

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

Requirement	Reference	Conclusion
About Parties		
1. The project shall assist Parties included in Annex I in achieving compliance with part of their emission reduction commitment under Art. 3.	Kyoto Protocol Art.12.2	OK
2. The project shall assist non-Annex I Parties in contributing to the ultimate objective of the UNFCCC.	Kyoto Protocol Art.12.2	OK
3. The project shall have the written approval of voluntary participation from the designated national authority of each Party involved.	Kyoto Protocol Art. 12.5a / CDM Modalities and Procedures §40a	OK ~~CAR 1~~
4. The project shall assist non-Annex I Parties in achieving sustainable development and shall have obtained confirmation by the host country thereof.	Kyoto Protocol Art. 12.2 / CDM Modalities and Procedures §40a	OK ~~CAR 1~~
5. In case public funding from Parties included in Annex I is used for the project activity, these Parties shall provide an affirmation that such funding does not result in a diversion of official development assistance and is separate from and is not counted towards the financial obligations of these Parties.	Decision 17/CP.7, CDM Modalities and Procedures Appendix B, § 2	OK Table 2 A.2.4
6. Parties participating in the CDM shall designate a national authority for the CDM.	CDM Modalities and Procedures §29	OK Table 2 A.2.3
7. The host Party and the participating Annex I Party shall be a Party to the Kyoto Protocol.	CDM Modalities §30/31a	OK Table 2 A.2.3.
8. The participating Annex I Party's assigned amount shall have been calculated and	CDM Modalities and Procedures	Austria's

Requirement	Reference	Conclusion
recorded.	§31b	assigned amount is 92% of the emission level in 1990.
9. The participating Annex I Party shall have in place a national system for estimating GHG emissions and a national registry in accordance with Kyoto Protocol Article 5 and 7.	CDM Modalities and Procedures §31b	Austria has in place a national system for estimating GHG emissions and annually submits its most recent inventory to the UNFCCC
About additionality		
10. Reduction in GHG emissions shall be additional to any that would occur in the absence of the project activity, i.e. a CDM project activity is additional if anthropogenic emissions of greenhouse gases by sources are reduced below those that would have occurred in the absence of the registered CDM project activity.	Kyoto Protocol Art. 12.5c, CDM Modalities and Procedures §43	OK ~~CL 3~~ & ~~CL 4~~ Table 2 B.3
About forecast emission reductions and environmental impacts		
11. 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
For large-scale projects only		

VALIDATION REPORT

Requirement	Reference	Conclusion
12. Documentation on the analysis of the environmental impacts of the project activity, including transboundary impacts, shall be submitted, and, if those impacts are considered significant by the project participants or the Host Party, an environmental impact assessment in accordance with procedures as required by the Host Party shall be carried out.	CDM Modalities and Procedures §37c	OK Table 2 Section D
About stakeholder involvement		
13. Comments by local stakeholders shall be invited, a summary of these provided and how due account was taken of any comments received.	CDM Modalities and Procedures §37b	OK Table 2 Section E
14. Parties, stakeholders and UNFCCC accredited NGOs shall have been invited to comment on the validation requirements for minimum 30 days, and the project design document and comments have been made publicly available.	CDM Modalities and Procedures §40	OK
Other		
15. The baseline and monitoring methodology shall be previously approved by the CDM Executive Board.	CDM Modalities and Procedures §37e	OK Table 2 B.1 & B.8
16. A baseline shall be established on a project-specific basis, in a transparent manner and taking into account relevant national and/or sectoral policies and circumstances.	CDM Modalities and Procedures §45c,d	OK ~~CL 2~~ Table 2 B.2
17. The baseline methodology shall exclude to earn CERs for decreases in activity levels outside the project activity or due to force majeure.	CDM Modalities and Procedures §47	OK

VALIDATION REPORT

Requirement	Reference	Conclusion
18. The project design document shall be in conformance with the UNFCCC CDM-PDD format.	CDM Modalities and Procedures Appendix B, EB Decision	OK
19. Provisions for monitoring, verification and reporting shall be in accordance with the modalities described in the Marrakech Accords and relevant decisions of the COP/MOP.	CDM Modalities and Procedures §37f	OK ~~CL 6~~ & ~~CL 7~~ Table 2 B.10 & B.13

VALIDATION REPORT

Table 2 Requirements Checklist

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	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 boundaries (geographical) clearly defined?	/1/ /4/	DR	Yes. The project is located in Quantou County, Changtu City, Liaoning Province, P.R.China. However, the spatial geographical boundaries of the project are east longitude 124°11′25", north latitude 42°50′58" as per PDD, which is not in line with Feasibility Study and its approval document (124°13′ E, 42°50′ N).	~~CL 1~~	OK
A.1.2. Are the project's system boundaries (components and facilities used to mitigate GHGs) clearly defined?	/1/	DR	The project site and the Northeast China Power Grid (NCPG) are defined as the project's system boundaries.		OK
A.2. Participation Requirements *Referring to Part A, Annex 1 and 2 of the PDD as well as the CDM glossary with respect to the terms Party, Letter of Approval, Authorization and Project*					

VALIDATION REPORT

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV *	COMMENTS	Draft Concl.	Final Concl.
Participant.					
A.2.1. Which Parties and project participants are participating in the project?	/1/	DR	The project participants are Tieling Longyuan Wind Power Co., Ltd., P. R. China and Kommunalkredit Public Consulting, Austria.		OK
A.2.2. Have all involved Parties provided a valid and complete letter of approval and have all private/public project participants been authorized by an involved Party?	/1/ /2/ /3/	DR	The letters of approval from the DNA of China and Austria have not been obtained.	~~CAR 1~~	OK
A.2.3. Do all participating Parties fulfil the participation requirements as follows: - Ratification of the Kyoto Protocol - Voluntary participation - Designated a National Authority	/1/	DR	- China ratified the Kyoto Protocol on 30 August 2002. - Austria ratified the Kyoto Protocol on 30 May 2002. - Voluntary Participation of the Parties will be confirmed after the LoAs from both of them are submitted to DNV. - Austria's assigned amount is 92% of the emission level in 1990. - Chinese DNA is the National Development and Reform Commission (NDRC). - DNA of Austria is Federal Ministry of	~~CAR 1~~	OK

VALIDATION REPORT

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV *	COMMENTS	Draft Concl.	Final Concl.
			Agriculture, Forestry, Environment and Water Management.		
A.2.4. Potential public funding for the project from Parties in Annex I shall not be a diversion of official development assistance.	/1/	DR	The validation did not reveal any information to indicate that the project can be seen as a diversion of official development assistance (ODA) funding towards the China.		OK
A.3. 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.3.1. Does the project design engineering reflect current good practices?	/1/	DR	Yes. The project design engineering reflects current good practices in China.		OK
A.3.2. Does the project use state of the art technology or would the technology result in a significantly better performance than any commonly used technologies in the host country?	/1/ /4/	DR	The brand of Gamesa Eólica wind turbines applied is from Spain. The whole set technology is introduced from Spain, which result in a significantly better performance than any commonly used technologies in china.		OK
A.3.3. Does the project make provisions for meeting training and maintenance needs?	/1/	DR	The project owner has arranged some management & technical personnel for the		OK

VALIDATION REPORT

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV *	COMMENTS	Draft Concl.	Final Concl.
	/19/ /40/	I	training regarding the wind farm knowledge, equipment operation, maintenance, site management, etc. The training reports are provided to DNV.		
A.4. Contribution to Sustainable Development *The project's contribution to sustainable development is assessed.*					
A.4.1. Has the host country confirmed that the project assists it in achieving sustainable development?	/1/ /2/	DR	The letter of approval from the DNA of China confirming the project being in line with the sustainable development policies of host country has not been received yet.	~~CAR 1~~	OK
A.4.2. Will the project create other environmental or social benefits than GHG emission reductions?	/1/	DR	Yes. As a renewable energy project, it will produce positive environmental and economic benefits and contribute to the local sustainable development particularly will mitigate local environmental pollution caused by coal-fired power plants, increase new job opportunities for local people and simulate the economic development.		OK
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*					

VALIDATION REPORT

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV *	COMMENTS	Draft Concl.	Final Concl.
scenario.					
B.1. Baseline Methodology *It is assessed whether the project applies an appropriate baseline methodology.*					
B.1.1. Does the project apply an approved methodology and the correct version thereof?	/1/ /8/	DR	Yes. The project applies the methodology of ACM0002 "Consolidated methodology for grid-connected electricity generation from renewable sources", version 06, which was approved by EB on 19 May 2006.		OK
B.1.2. Are the applicability criteria in the baseline methodology all fulfilled?	/1/	DR	Yes. The project is a capacity addition from a renewable energy source and does not involve on-site fuel switch from fossil fuels to a renewable source. The geographic and system boundaries for the relevant electricity grid (Northeast China Power Grid) can be clearly identified.		OK
B.2. Baseline Scenario Determination *The choice of the baseline scenario will be validated with focus on whether the baseline is a likely scenario, and whether the methodology to define the baseline scenario has been followed in a complete and transparent manner.*					

VALIDATION REPORT

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV *	COMMENTS	Draft Concl.	Final Concl.
B.2.1. What is the baseline scenario?	/1/ /8/	DR	The baseline scenario is that the equivalent amount of electricity delivered to the NCPG by the project, would have otherwise been generated by the operation of other grid-connected power plants and by the addition of new generation sources.		OK
B.2.2. What other alternative scenarios have been considered and why is the selected scenario the most likely one?	/1/ /14/ /27/ /28/	DR	The alternative baseline scenarios have been identified as below: a) The proposed project activity not undertaken as a CDM project activity; b) Construction of a coal-fired power plant with equivalent installed capacity or annual electricity generation. c) Construction of a power plant using other renewable energy, such as hydropower, solar PV, biomass and geothermal with equivalent installed capacity or annual electricity generation; d) Equivalent electricity service provided by the Northeast China Power Grid. For alternative a), since the financial internal rate of return (IRR) of total investment of this		OK

VALIDATION REPORT

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV *	COMMENTS	Draft Concl.	Final Concl.
			project activity is 7.17%, lower than the benchmark IRR (8%), thus the project not undertaken as CDM project is not financially feasible (see B.3.1). Alternative b) does not comply with the Chinese law as coal-fired power plants with a capacity less than 135 MW are prohibited to be built in areas covered by large grids such as provincial grids /14/. Alternative c) as power plants of the similar installed capacity utilizing renewable energy such as hydropower, solar PV, biomass and geothermal is the alternative far from being attractive investment in the grid in China because of the technology development status and the high cost for power generation /28/. Furthermore, it is not feasible to develop hydro resources as it will result in the lack of hydro resources in Changtu County /27/. Therefore, the only realistic and credible alternative for the proposed project is d) the		

VALIDATION REPORT

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV *	COMMENTS	Draft Concl.	Final Concl.
			equivalent electricity service provided by the NCPG. However, please provide the evidence to support the statement of the alternative c) above.	~~CL 2~~	
B.2.3. Has the baseline scenario been determined according to the methodology?	/1/ /8/	DR	Yes.		OK
B.2.4. Has the baseline scenario been determined using conservative assumptions where possible?	/1/	DR	Yes.		OK
B.2.5. Does the baseline scenario sufficiently take into account relevant national and/or sectoral policies, macro-economic trends and political aspirations?	/1/	DR	Yes. The renewable energy law, sectoral policy and development trends in NCPG have been taken into account.		OK
B.2.6. Is the baseline scenario determination compatible with the available data and are all literature and sources clearly referenced?	/1/	DR	Yes.		OK
B.2.7. Have the major risks to the baseline been identified?	/1/	DR	There are no significant risks to the baseline except the enforcement of the Chinese renewable law. However, as this law is being implemented only now, i.e. after the entry		OK

VALIDATION REPORT

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV *	COMMENTS	Draft Concl.	Final Concl.
			into force of decision 17.CP 7. It does not need to be taken into account.		
B.3. Additionality Determination *The assessment of additionality will be validated with focus on whether the project itself is not a likely baseline scenario.*					
B.3.1. Is the project additionality assessed according to the methodology?	/1/ /4/ /9/ /20/	DR	The additionality of the project, demonstrated by applying the "Tool for demonstration and assessment of additionality", version 03, is in compliance with the methodology. Step 1. Identifying alternatives to the project activities consistent with current laws and regulations: As discussed above, the only realistic and credible alternative for the project scenario is the equivalent capacity or electricity service provided by the NCPG. Step 2. Investment analysis: Benchmark analysis is justified to conduct the investment analysis.		OK

VALIDATION REPORT

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV *	COMMENTS	Draft Concl.	Final Concl.
			In China an IRR of 8% for total investment of a project is regarded as benchmark for investments in hydropower plants, fossil fuel fired plants and wind farm projects. However, the detailed IRR calculation spreadsheet is required to be provided. Some problems showing at table 2 of B.5 of PDD are as below: 1) The evidence of electricity tariff (0.5998yuan/kw.h in FS, 0.5598yuan/kw.h in PDD). 2) Income tax is 15% in PDD, not in line with FS as 33%. 3) O & M cost RMB315.77 million yuan in PDD, but RMB270.03 million yuan in FS. A sensitivity analysis shows the changes to different degrees in accordance with the fluctuation of three parameters within the	~~CL 3~~	

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV *	COMMENTS	Draft Concl.	Final Concl.
			range of negative 10 percent to positive 10 percent. It could be seen that the project IRR begins to exceed the benchmark in the case that the total investment decreases by about 10% and the tariff increases by about 10%. The annual O&M cost has little effect on the impact of IRR, which, therefore shall be regarded as an insensitive factor. However, please show the specific data/evidence mentioning in the PDD for the sensitivity analysis that it is not possible for the initial tariff estimated to be raised by about 10% and it is very difficult to lower the total investment of the project. Also the PLF or electricity generation should also be a variable considered in the sensitivity analysis. Step 3: Barrier analysis: No barrier analysis has been applied for proposed project.		

VALIDATION REPORT

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV *	COMMENTS	Draft Concl.	Final Concl.
			Step 4: Common practice analysis: The common practice shows the similar wind farm projects with capacity of 10-50MW existing in Liaoning Province. However, please give the data source to support the statement in the common practice analysis.		
B.3.2. Are all assumptions stated in a transparent and conservative manner?	/1/	DR	See B.3.1	~~CL 3~~	OK
B.3.3. Is sufficient evidence provided to support the relevance of the arguments made?	/1/	DR	See B.3.1	~~CL 3~~	OK
B.3.4. If the starting date of the project activity is before the date of validation, has sufficient evidence been provided that the incentive from the CDM was seriously considered in the decision to proceed with the project activity?	/1/ /4/	DR	The starting date of construction for the proposed project was 26 September 2006 as per PDD. However, the evidence for showing above needs to be provided.	~~CL 4~~ ~~CL8~~	OK

VALIDATION REPORT

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV *	COMMENTS	Draft Concl.	Final Concl.
			Also the incentive from CDM was seriously considered in the decision to proceed with the project activity is required to be described in PDD.		
B.4. Calculation of GHG Emission Reductions – Project emissions *It is assessed whether the project emissions are stated according to the methodology and whether the argumentation for the choice of default factors and values – where applicable – is justified.*					
B.4.1. Are the calculations documented according to the approved methodology and in a complete and transparent manner?	/1/ /8/	DR	Project emission is regarded as zero as the project is a renewable energy (wind source) project.		OK
B.4.2. Have conservative assumptions been used when calculating the project emissions?	/1/ /8/	DR	Ditto		OK
B.4.3. Are uncertainties in the project emission estimates properly addressed?	/1/ /8/	DR	Ditto		OK
B.5. Calculation of GHG Emission Reductions – Baseline emissions *It is assessed whether the baseline emissions are*					

VALIDATION REPORT

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV *	COMMENTS	Draft Concl.	Final Concl.
stated according to the methodology and whether the argumentation for the choice of default factors and values – where applicable – is justified.					
B.5.1. Are the calculations documented according to the approved methodology and in a complete and transparent manner?	/1/ /8/ /10/ /11/ /13/ /16/ /17/ /18/	DR	Operating Margin (OM) calculation: Because of unavailability of corresponding data in China for the dispatch data analysis, the simple OM emission factor calculation method is selected. Following the EB guidance, the average emission factor for the grid for each fuel type is calculated based on a 3-year average of the most recent statistics available (data available for 2003, 2004 and 2005 at the time of PDD submission). The simple OM emission factor is calculated as 1.2402tCO_2/MWh. Build Margin (BM) calculation: Following the EB's guidance the build margin is calculated as follows: a. The thermal power capacity additions from the years 1998 to 2005 is chosen and reach 21.34% of total installed capacity addition. b. The weight of installed capacity additions for thermal power plant is accounted for	~~CL 5~~	OK

VALIDATION REPORT

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV *	COMMENTS	Draft Concl.	Final Concl.
			91.31% of total installed capacity additions. c. The local value of 25.8 tC/TJ for carbon content of the coal and the IPCC2006 default value of carbon oxidization factor of 100% are used to calculate the BM. d. The coal consumption efficiency of 343.33 g SCE/kWh is selected as the best technology commercially available in China The build margin emission factor (EF_{BM}) is 0.8631tCO_2e/MWh. The combined baseline emission factor of the NCPG corresponds to 1.1460tCO_2e/MWh. It is not described clearly as the part of the deviation adopted based on AM0005 instead of ACM0002 to calculate the BM emission factor.		
B.5.2. Have conservative assumptions been used when calculating the baseline emissions?	/1/	DR	Yes. The calculation is based on the data sources which are verified and confirmed to be		OK

VALIDATION REPORT

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV *	COMMENTS	Draft Concl.	Final Concl.
			reasonable.		
B.5.3. Are uncertainties in the baseline emission estimates properly addressed?	/1/	DR	No significant uncertainties are addressed for this project.		OK
B.6. Calculation of GHG Emission Reductions – Leakage *It is assessed whether leakage emissions are stated according to the methodology and whether the argumentation for the choice of default factors and values – where applicable – is justified.*					
B.6.1. Are the leakage calculations documented according to the approved methodology and in a complete and transparent manner?	/1/ /8/	DR	Emissions arising due to activities such as power plant construction, fuel handling etc, could potentially give rise to leakage. However, project participants do not need to consider these emission sources as leakage in applying this methodology ACM0002. In conclusion, no leakage is expected for the proposed project activities.		OK
B.6.2. Have conservative assumptions been used when calculating the leakage emissions?	/1/ /8/	DR	Ditto		OK
B.6.3. Are uncertainties in the leakage emission estimates properly addressed?	/1/ /8/	DR	Ditto		OK

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV *	COMMENTS	Draft Concl.	Final Concl.
B.7. Emission Reductions *The emission reductions shall be real, measurable and give long-term benefits related to the mitigation of climate change.*					
B.7.1. Are the emission reductions real, measurable and give long-term benefits related to the mitigation of climate change.	/1/	DR	Yes. The emission reductions are measurable, and give long-term benefits. The project is estimated to reduce on an average of CO_2 emissions of 110 967 tCO_2e / year during the crediting period of 7 years.		OK
B.8. Monitoring Methodology *It is assessed whether the project applies an appropriate monitoring methodology.*					
B.8.1. Is the monitoring plan documented according to the approved methodology and in a complete and transparent manner?	/1/ /8/	DR	The monitoring plan is in accordance with the approved monitoring methodology ACM0002 (version 06) "Consolidated monitoring methodology for grid-connected electricity generation from renewable sources" and is in a complete and transparent manner.		OK
B.8.2. Will all monitored data required for verification and issuance be kept for two years after the end of the crediting period or the last issuance of CERs,	/1/ /8/	DR	Yes. All the relevant data records will be kept for 2 years after the end of the crediting period.		OK

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VALIDATION REPORT

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV *	COMMENTS	Draft Concl.	Final Concl.
for this project activity, whichever occurs later?					
B.9. Monitoring of Project Emissions *It is established whether the monitoring plan provides for reliable and complete project emission data over time.*					
B.9.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for estimation or measuring the greenhouse gas emissions within the project boundary during the crediting period?	/1/ /8/	DR	There are no emissions from the project activity. See B.4.1		OK
B.10. Monitoring of Baseline Emissions *It is established whether the monitoring plan provides for reliable and complete baseline emission data over time.*					
B.10.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining baseline emissions during the crediting period?	/1/	DR	The project uses the *ex-ante* determination of emission factor for grid electricity. Only electricity supplied to the grid will be monitored and double checked *ex-post*.		OK
B.10.2. Are the choices of baseline GHG indicators reasonable and conservative?	/1/	DR	Yes. The choice of baseline indicators is reasonable and conservative.		OK

VALIDATION REPORT

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV *	COMMENTS	Draft Concl.	Final Concl.
B.10.3. Is the measurement method clearly stated for each baseline indicator to be monitored and also deemed appropriate?	/1/	DR	Yes. An electricity meter is installed at the main transformer, which measures the total electricity supplied to the grid.		OK
B.10.4. Is the measurement *equipment* described and deemed appropriate?	/1/	DR	The electricity generated and delivered to the grid will be monitored by gateway metering equipment and cross-checked against electricity sales receipts.		OK
B.10.5. Is the measurement *accuracy* addressed and deemed appropriate? Are procedures in place on how to deal with erroneous measurements?	/1/	DR	The measurement accuracy of the electricity meter is 0.2S, bidirectional. The procedures on how to deal with erroneous measurements are available in the monitoring plan of the PDD.		OK
B.10.6. Is the measurement *interval* for baseline data identified and deemed appropriate?	/1/	DR	How the electricity supplied to the grid will be measured and recorded is not clearly described in Monitoring plan.	~~CL 6~~	OK
B.10.7. Is the registration, *monitoring, measurement* and *reporting* procedure defined?	/1/	DR	Yes. Such information is available in the Monitoring Plan of the PDD.		OK
B.10.8. Are procedures identified for *maintenance* of monitoring equipment and installations? Are the calibration intervals being observed?	/1/	DR	Yes. The metering equipments will be properly calibrated and checked annually for accuracy.		OK

VALIDATION REPORT

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV *	COMMENTS	Draft Concl.	Final Concl.
B.10.9. Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation)	/1/	DR	Yes. All the day-to-day records handling including what records to keep, storage area of records and how to process performance documentation is identified in the Monitoring Plan of PDD.		OK
B.11. Monitoring of Leakage *It is assessed whether the monitoring plan provides for reliable and complete leakage data over time.*					
B.11.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining leakage?	/1/ /8/	DR	Project participants do not need to consider leakage in applying this methodology.		OK
B.11.2. Are the choices of project leakage indicators reasonable and conservative?	/1/ /8/	DR	Ditto		OK
B.11.3. Is the measurement method clearly stated for each leakage value to be monitored and deemed appropriate?	/1/ /8/	DR	Ditto		OK
B.12. Monitoring of Sustainable Development Indicators/ Environmental Impacts *It is assessed whether choices of indicators are*					

VALIDATION REPORT

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV *	COMMENTS	Draft Concl.	Final Concl.
reasonable and complete to monitor sustainable performance over time.					
B.12.1. Is the monitoring of sustainable development indicators/ environmental impacts warranted by legislation in the host country?	/1/	DR	DNA of China does not require collection and archiving of data related to environmental, social and economic impacts. The environmental impacts will be monitored by local environmental authority.		OK
B.12.2. Does the monitoring plan provide for the collection and archiving of relevant data concerning environmental, social and economic impacts?	/1/	DR	The indicators of environmental impacts will be stipulated by local environmental authority.		OK
B.12.3. Are the sustainable development indicators in line with stated national priorities in the Host Country?	/1/	DR	This will be on local authority decision.		OK
B.13. Project Management Planning *It is checked that project implementation is properly prepared for and that critical arrangements are addressed.*					
B.13.1. Is the authority and responsibility of overall project management clearly described?	/1/	DR I	The management structure is illustrated in the PDD. The authority and responsibility of overall project management is described in		OK

VALIDATION REPORT

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV *	COMMENTS	Draft Concl.	Final Concl.
			the monitoring plan.		
B.13.2. Are procedures identified for training of monitoring personnel?	/1/ /19/	DR	The training reports for the key management & technical personnel are verified by DNV. However, the procedures for how the monitoring personnel will be trained are not available yet.	~~CL 7~~	OK
B.13.3. Are procedures identified for emergency preparedness for cases where emergencies can cause unintended emissions?	/1/	DR	Considering the actual status of wind farm project activities, there will be no emergencies foreseen which can cause unintended emissions.		OK
B.13.4. Are procedures identified for review of reported results/data?	/1/	DR	How the data being collected and reported is identified in the PDD.		OK
B.13.5. Are procedures identified for corrective actions in order to provide for more accurate future monitoring and reporting?	/1/	DR	Yes.		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 evidenced?	/1/ /4/	DR	The project's starting date of construction as per PDD is 26 September 2006, but the evidence for that needs to be provided.	~~CL 4~~	OK

VALIDATION REPORT

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV *	COMMENTS	Draft Concl.	Final Concl.
			Due to electric power system installation contract /37/and freight supply contract /38/and wind mill installation contract/39/ signed on 6 June 2007, 5 January 2007 and in March 2007 respectively Pls explain why is the signed date of wind mill contract not defined the starting date of project activity? Which is earlier than the construction permission date. The estimated lifetime of the project is 21 years, and evidenced by FS.	~~CL8~~	
C.1.2. Is the start of the crediting period clearly defined and reasonable?	/1/	DR	The starting date of the crediting period is expected to be 01 June 2008. (This crediting starting date was updated in the revised PDD to 1 January 2009)		OK
D. 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.*					
D.1.1. Has an analysis of the environmental impacts of the project activity been sufficiently described?	/1/ /5/	DR	Yes. The analysis of the environmental impacts of the project activities such as noise, wastewater and solid waste, air pollution,		OK

VALIDATION REPORT

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV *	COMMENTS	Draft Concl.	Final Concl.
	/21/		ecological environment, etc. has been sufficiently described in the PDD.		
D.1.2. Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, is an EIA approved?	/1/ /5/	DR	Yes. There are some Chinese local standards for an EIA, and the EIA for this project activity was approved by the Environmental Protection Bureau of Liaoning Province.		OK
D.1.3. Will the project create any adverse environmental effects?	/1/ /5/	DR	No. The project will not create any adverse environmental effects as per EIA report.		OK
D.1.4. Are transboundary environmental impacts considered in the analysis?	/1/ /5/	DR	There are no transboundary environmental impacts foreseen for the project.		OK
D.1.5. Have identified environmental impacts been addressed in the project design?	/1/ /5/	DR	Yes. The identified environmental impacts have been addressed in the project design.		OK
D.1.6. Does the project comply with environmental legislation in the host country?	/1/ /5/	DR	Yes. The project complies with Chinese environmental legislation as the EIA was approved by local authority.		OK
E. Stakeholder Comments *The validator should ensure that stakeholder comments have been invited with appropriate media and that due account has been taken of any comments received.*					

VALIDATION REPORT

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV *	COMMENTS	Draft Concl.	Final Concl.
E.1.1. Have relevant stakeholders been consulted?	/1/ /5/ /6/	DR	Yes. The public survey and stakeholders meeting were held during December 2006 – January 2007. The stakeholders meeting was taken place at Changtu County Government office dated on 16 January 2007. Total 13 stakeholder representatives mainly from the local Development and Reform Bureau, the Environmental Protection Bureau, the Power Supply Corporation, and the nearby village, etc. were attending the meeting. Also the 30 local residents were invited through distributing and collecting responses to the questionnaires. All the questionnaires with comments have been verified by DNV.		OK
E.1.2. Have appropriate media been used to invite comments by local stakeholders?	/1/ /5/ /6/	DR	Yes. The meeting and distribution of questionnaires have been used to invite the comments from the local stakeholders.		OK
E.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/ /5/	DR	Yes. The stakeholder consultation process is in accordance with Chinese EIA regulations.		OK

VALIDATION REPORT

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV *	COMMENTS	Draft Concl.	Final Concl.
E.1.4. Is a summary of the stakeholder comments received provided?	/1/ /6/	DR	Yes. A summary of the stakeholder comments received is described in the PDD.		OK
E.1.5. Has due account been taken of any stakeholder comments received?	/1/ /6/	DR	No negative comments have been received for the project. Meanwhile, the project owner took the suggestions from stakeholders seriously and put all of the measures listed in the EIA into effect during construction and operation, so as to achieve environmental, social and economic benefits.		OK

Table 2 Resolution 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
CAR 1: The letters of approval from the DNA of China and Austria have not been obtained.	A.2.2 A.2.3 A.4.1	The letters of approval (LoAs) from the DNA of China and Austria have been provided to DNV.	OK. The LoA from DNA of China was issued on 26 August 2007. The LoA from DNA of Austria was issued on 19 December 2007. This CAR is closed.
CL 1: The spatial geographical boundaries of the project are east longitude 124°11′25", north latitude 42°50′58" as per PDD, which is not in line with Feasibility Study report and its approval document (124°13′ E, 42°50′ N).	A.1.1	According to the FSR and its approval letter, the project coordinates are 124°13′ E, 42°50′ N. PDD is revised accordingly.	OK. This CL is closed.
CL 2: Please provide the evidence to support the statement of the alternative c) as power plants with the similar installed capacity utilizing renewable energy such as hydropower, solar PV, biomass and geothermal is far from being	B.2.2	Yes. The relevant links are given to support the statement in the alternative c) as below: Hydropower projects distribution of Liaoning province: http://www.kftour.com/map/18-27973-	OK. The relevant links are verified which are ok. This CL is closed.

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
attractive investment in the grid in China because of the technology development status and the high cost for power generation, also it is not feasible to develop hydro resources as it will result in the lack of hydro resources in Changtu County.		2/ Relevant information regarding solar PV, biomass and geothermal generation technology with high cost for power generation *http://www.chinaenergy.gov.cn/news.php?id=15688* PDD is revised accordingly.	
CL 3: a) Please show the specific data/evidence mentioning in the PDD for the sensitivity analysis that it is not possible for the initial tariff estimated to be raised by about 10% and it is very difficult to lower the total investment of the project. Also the PLF or electricity generation should also be a variable considered in the sensitivity analysis. b) The detailed IRR calculation spreadsheet is required to be provided. c) Some problems showing in table 2 of B.5	B.3.1 B.3.2 B.3.3	a) The sensitivity analysis has been re-analsized to show the changes of four critical parameters (total investment, annual O&M costs, on-grid electricity tariff and PLF) by determining the value at which the IRR will be equal to the benchmark. See the revised PDD for details. b) The detailed IRR calculation spreadsheet is provided to DNV. c) The following variations are clarified:	a) OK. b) OK. It has been verified that the spreadsheet for IRR calculation is reasonable. c) OK.

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
of PDD are as below: - The evidence of electricity tariff (0.5998yuan/kw.h in FS, 0.5598yuan/kw.h in PDD). - Income tax is 15% in PDD, not in line with FS as 33%. - O & M cost RMB315.77 million yuan in PDD, but RMB270.03 million yuan in FS. d) Please give the data source to support the statement in the common practice analysis.		- Tariff evidence (0.5714yuan RMB/Kwh exclu. VAT) has been provided to DNV. - Income tax is corrected as 33% as per FSR - O&M cost is corrected as RMB270.03 million RMB as per FSR. d) The detailed data sources regarding each project listed in the common practise analysis are given in the revised PDD.	- The tariff is evidenced by "Propositional letter of on-grid electricity tariff for Liaoning Changtu Quantou Wind Power project issued by Development and Reform Commission of Changtu County dated 08 January 2007 (0.62 yuan RMB incl. VAT) /22/. - OK. - OK. d) Verified all the data sources/links, which are OK. This CL is closed.
CL 4: The evidence for starting the construction of the project needs to be provided. Also the incentive from CDM was seriously considered in the decision to proceed with the project activity is required to be described in PDD.	B.3.4 C.1.1	The evidence for starting construction of the project has been provided to DNV. The incentive from CDM during decision making has been described in the PDD. The relevant evidences have been provided to DNV.	OK. It is verified that the project construction permission was obtained on 08 February 2007. All the relevant evidences have been verified by DNV. This CL is closed.

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
CL 5: Justify the usage of deviation that was adopted to calculate the BM emission factor is for AM0005 instead of ACM0002.	B.5.1	The relevant justification has been made in the revised PDD.	OK. This CL is closed.
CL 6: How the electricity supplied to the grid will be measured and recorded is not clearly described in Monitoring plan.	B.10.6	The electricity supplied to the grid will be measured continuously and recorded monthly. The monitoring plan of the PDD is revised.	OK. This CL is closed.
CL 7: The procedures for how the monitoring personnel will be trained are not available yet.	B.13.2	The procedures for training of monitoring personnel have been described in the Monitoring plan of the revised PDD.	OK. This CL is closed.
CL8 Due to electric power system installation contract /37/and freight supply contract /38/and wind mill installation contract/39/ signed on 6 June 2007, 5 January 2007 and in March 2007 respectively Please explain why the signed date of wind	C1.1	In recent years, the wind turbines demand exceeds supply in the whole world. Moreover, the throughput of the wind turbines is limited in china every year. So for the developers of wind power plants in china, they must grasp the chance to sign the equipment contract or intent letter with the	Ok, the clarification is accepted. The advanced payment receipt of 6% total payment for turbines of 6 April 2007 is verified and credible. /36/

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
mill contract is not defined as the starting date of project activity which is earlier than the construction permission date.		providers of wind turbines as early as possible. Under this condition, the project owner completed the wind turbines contract on January 5 2007 that is earlier than the permission date of construction. However, according to the article 14 of the contract (Effectiveness, Termination of the Contract and Miscellaneous), the contract content is changeable and even the contract can be terminated, specially on Jan 8, 2007, the propositional tariff letter of the project was issued by the government, on which the project turned to be financial unattractive and the project developer became hesitate to proceed with the implementation of the project, only with the help of the CDM benefits, the project owner bounced back to be confident with the project, so the project owner had not made the real payment until on April 6 2007 (a date more than 3 months later)(when the advanced payment was paid/36/) after the CDM	This CL is closed

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
		support was seriously considered. In our opinion, the start date of the project should be the earlier date of the real payment date or the construction start permission date. Since the construction start permission date is much earlier than that of real payment, we select the construction start permission date as the start date of the project. Therefore, we define the permission date of construction as the start time of the CDM project but not the sign date of equipment purchasing contract.	

APPENDIX B

CERTIFICATES OF COMPETENCE

CERTIFICATE OF COMPETENCE

Michael Lehmann

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

GHG Auditor:	Yes		
CDM Validator:	Yes	***JI Validator:***	--
CDM Verifier:	Yes	***JI Verifier:***	--
Industry Sector Expert for Sectoral Scope(s):	Sectoral scope 1, 2, 3 & 9		
Technical Reviewer for (group of) methodologies:			
ACM0001, AM0002, AM0003, AM0010, AM0011, AM0012, AMS-III.G	Yes	*AM0027*	Yes
ACM002, AMS-I.A-D, AM0019, AM0026, AM0029, AM0045	Yes	*AM0030*	Yes
ACM003, ACM0005, AM0033, AM0040	Yes	*AM0031*	Yes
ACM0004, ACM0012	Yes	*AM0032*	Yes
ACM0006, AM0007, AM0015, AM0036, AM0042	Yes	*AM0035*	Yes
ACM0007	Yes	*AM0038*	Yes
ACM0008	Yes	*AM0041*	Yes
ACM0009, AM0008, AMS-III.B	Yes	*AM0034*	Yes
AM0006, AM0016, AMS-III.D, ACM0010	Yes	*AM0043*	
AM0009, AM0037	Yes	*AM0046*	
AM0013, AM0022, AM0025, AM0039, AMS-III.H, AMS-III.I	Yes	*AM0047*	
AM0014	Yes	*AMS-II.A-F, AM0044*	Yes
AM0017	Yes	*AMS-III.A*	Yes
AM0018	Yes	*AMS-III.E, AMS-III.F*	Yes
AM0020	Yes		
AM0021, AM0028, AM0034, AM0051	Yes		
AM0023	Yes		
AM0024	Yes		

Høvik, 5 February 2007

Einar Telnes
Director, International Climate Change Services

Michael Lehmann
Technical Director

CERTIFICATE OF COMPETENCE

Qinghong (Rowena)Jiao

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

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

Høvik, 18 July 2007

Einar Telnes
Director, International Climate Change Services

Michael Lehmann
Technical Director

CERTIFICATE OF COMPETENCE

Shu Yong Sun

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

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

Høvik, 12 March 2007

Einar Telnes
Director, International Climate Change Services

Michael Lehmann
Technical Director

CERTIFICATE OF COMPETENCE

Miguel Rescalvo

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

GHG Auditor:	Yes		
CDM Validator:	Yes	***JI Validator:***	--
CDM Verifier:	--	***JI Verifier:***	--
Industry Sector Expert for Sectoral Scope(s):	--		
Technical Reviewer for (group of) methodologies:			
ACM0001, AM0002, AM0003, AM0010, AM0011, AM0012, AMS-III.G	Yes		
ACM0002, AMS-I.A-D, AM0019, AM0026, AM0029, AM0045	Yes		
ACM0006, AM0007, AM0015, AM0036, AM0042	Yes		

Høvik, 3 July 2007

Einar Telnes
Director, International Climate Change Services

Michael Lehmann
Technical Director

CERTIFICATE OF COMPETENCE

Mari Grooss Viddal

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

GHG Auditor:	Yes		
CDM Validator:	Yes	***JI Validator:***	--
CDM Verifier:	--	***JI Verifier:***	--
Industry Sector Expert for Sectoral Scope(s):	--		
Technical Reviewer for (group of) methodologies:			
ACM0001, AM0002, AM0003, AM0010, AM0011, AM0012, AMS-III.G	Yes		
ACM002, AMS-I.A-D, AM0019, AM0026, AM0029, AM0045	Yes		

Høvik, 26 September 2007

Michael Lehmann
Technical Director, International Climate Change Services

CERTIFICATE OF COMPETENCE

Zhi Ang (Walter) Tang

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

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

Høvik, 2 May 2008

Michael Lehmann
Technical Director, International Climate Change Services

Jian Dong Ma

CERTIFICATE OF COMPETENCE

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

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

Høvik, 30 October 2007

Michael Lehmann
Technical Director, International Climate Change Services