



VALIDATION REPORT

Heilongjiang Yilan Hezuolinchang Wind Power Project in China

REPORT No. 2007- 2092

REVISION No 01



VALIDATION REPORT

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CERTIFICATION AS

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Client: China Fulin Windpower Development Corporation	Client ref.: Ms. Hu Fang

Project Name: Heilongjiang Yilan Hezuolinchang Wind Power Project

Country: China

Methodology: ACM0002

Version: 06

GHG reducing Measure/Technology: Wind Power

ER estimate: 64 222 tCO₂e/year

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 "Heilongjiang Yilan Hezuolinchang Wind Power Project", as described in the project design document, version 4.0 dated 16 July 2008, meets all relevant UNFCCC requirements for the CDM all relevant host Party criteria and and correctly applies the approved baseline and monitoring methodology ACM0002 version 06. Hence, DNV requests the registration of "Heilongjiang Yilan Hezuolinchang Wind Power Project" as a CDM project activity.

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Key words:

Climate Change

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Validation

Clean Development Mechanism

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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 ₂ e	Carbon dioxide equivalent
DNV	Det Norske Veritas
DNA	Designated National Authority
EB	Executive Board
EIA	Environmental Impact Assessment
FSR	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
NDRC	National Development and Reform Committee
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

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1 EXECUTIVE SUMMARY – VALIDATION OPINION

Det Norske Veritas Certification AS (DNV) has performed a validation of the “Heilongjiang Yilan Hezuolinchang 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 fulfilment of stated criteria.

The host Party is China and the Annex I Party is United Kingdom of Great Britain and Northern Ireland. Both Parties fulfil the participation criteria and have approved the project and authorized the project participants. The DNA from China confirmed that the project assists in achieving sustainable development.

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

By generating renewable energy which will displace electricity in Northeast China Power Grid, the project results in reductions of CO₂ emissions that are real, measurable and give long-term benefit 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 64 222 tCO₂e per year over the selected 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.

The monitoring methodology ACM0002 has been correctly applied and the monitoring plan sufficiently provides for collection of data to determine the project’s emission reductions. Adequate training and monitoring procedures have been implemented.

In summary, it is DNV’s opinion that the “Heilongjiang Yilan Hezuolinchang Wind Power Project” in China, as described in the PDD version 4.0 dated 16 July 2008 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.

2 INTRODUCTION

China Fulin Windpower Development Corporation has commissioned Det Norske Veritas Certification AS (DNV) to perform a validation of the “Heilongjiang Yilan Hezuolinchang 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.

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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 /7/ 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.

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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.

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 “Heilongjiang Yilan Hezuolinchang Wind Power Project”, version 4.0 dated 16 July 2008; version 3.0, 6 April 2008 and version 2.0, 15 August 2007.
- /2/ Letter of Approval issued by DNA of China in January 2008.
- /3/ Letter of Approval issued by DNA of UK on 5 March 2008.
- /4/ The feasibility study report by Xinjiang Province Wind and Electricity Design Institute in March 2007 and the approval letter by Development and Reform Commission of Heilongjiang Province on 22 May 2007.
- /5/ The EIA of the Heilongjiang Yilan Hezuolinchang Wind Power Project by Ha Erbin railroad Environment Protection Co. Ltd. in April 2006 and the approval letter by Environmental Protection Bureau of Heilongjiang Province on 22 May 2006.
- /6/ Copies of stakeholder consultation questionnaires (30) & Stakeholder representative meeting minutes
- /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 of 30 November, 2007 at EB36.
- /10/ China Electric Power Yearbooks 1999-2006.
- /11/ China Energy Statistics Yearbooks 2004, 2005, 2006.
- /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/ Chinese DNA’s guidance for the determination of grid boundaries and emission factors (August 09, 2007), NDRC official website: <http://cdm.ccchina.gov.cn/WebSite/CDM/UpFile/File1364.pdf>

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- /14/ China's Regional Grid Baseline Emission Factor Calculation (OM) issued by Chinese DNA (August 09, 2007), NDRC official website
<http://cdm.ccchina.gov.cn/WebSite/CDM/UpFile/File1358.xls>
- /15/ China's Regional Grid Baseline Emission Factor Calculation (BM) issued by Chinese DNA (August 09, 2007), NDRC official website
<http://cdm.ccchina.gov.cn/WebSite/CDM/UpFile/File1374.pdf>.
- /16/ Revised 2006 IPCC Guidelines for National Greenhouse Gas Inventories
- /17/ 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 No. 2002-6.
- /18/ State Power Corporation of China. Interim Rules on Economic Assessment of Electrical Engineering Retrofit Projects. Beijing: China Electric Power Press, 2003
- /19/ Yilan Longyuan Wind Power Co., Ltd. (Project Owner) production personnel training plan & one training record
- /20/ Order of construction starting for Yilan Maanshan & Hezuolinchang projects dated 10 June 2007
- /21/ The propositional letter on the expected tariff of the proposed project from local Development and Reform Bureau on 14 April 2007.
- /22/ CDM consultation Letter of Intent with China Fulin Windpower Development Corp., on 8 May 2007
- /23/ Grid connection intent contract with Heilongjiang Province Electricity Co., Ltd. in December 2007
- /24/ Monitoring plan
- /25/ Business licence of the project owner
- /26/ Lowering down the wind power in-grid tariff
<http://www.eri.org.cn/manage/upload/uploadimages/eri200672795944.pdf>
- /27/ international low interest loan or national soft loan for Haufu Fujin Wind Farm and Huafulu Mulan Wind Farm
<http://www.chinapower.com.cn/newsarticle/1005/new1005504.asp>
<http://www.china5e.com/news/power/200208/200208220027.html>
- /28/ Shi Pengfei (Deputy Director, Chinese Wind Energy Association), Statistics on China Wind Farm Installed Capacity in 2005.
<http://www.cwea.org.cn/upload/200612391640820.doc>

Main changes between the version published for the 30 days stakeholder commenting period and the final version submitted for registration:

- *Changes related to the CARs and CLs identified in the DNV's draft validation report and related to Proposed text as per EB40/41 Guidelines on financial analysis, project starting date and CDM consideration..*

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3.2 Follow-up Interviews with Project Stakeholders

	Date	Name	Organization	Topic
/29/	26 December 2007	Mr. Chen Qiang, Project Manager	Yilan Longyuan Wind Power Co., Ltd. (Project Owner)	<ul style="list-style-type: none"> ➤ 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
/30/	26 December 2007	Ms Hu Fang, Project Manager, CDM Department	China Fulin Windpower Development Corp. (consultant)	<ul style="list-style-type: none"> ➤ 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 is to resolve any outstanding issues which need 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 "Heilongjiang Yilan Hezuolinchang 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.

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

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

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

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

Figure 1 Validation protocol tables

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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 is 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	China
GHG auditor (applicant)	Zhang	Xiaojun Johnsen	China
CDM Validator	Sun	Shuyong	China
Technical Reviewer	Sharma	Anjana	India
Sector expert	Lehmann	Michael	Norway

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

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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 validation findings relate to the project design as documented and described in the PDD, version 4.0 dated 16 July 2008.

4.1 Participation Requirements

The project participants are Yilan Longyuan Wind Power Co., Ltd. of China and EDF Trading Limited of United Kingdom of Great Britain and Northern Ireland. The host Party is China and the participating Annex I Party United Kingdom of Great Britain and Northern Ireland. Both Parties fulfill the requirements for participating in a CDM project. Both have ratified the Kyoto Protocol and established a DNA as per the participating requirements for CDM under the Kyoto Protocol.

The letter of approval (LoA) /2/ from the DNA of China, authorizing Yilan Longyuan Wind Power Co., Ltd. as the project participant and confirming that the project assists Chinese sustainable development, was issued in January 2008.

The letter of approval (LoA) /3/ from the DNA of United Kingdom of Great Britain and Northern Ireland, authorizing EDF Trading Limited as project participant, was issued on 5 March 2008.

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 project involves installation and operation of 29 sets of Vestas V52-850KW/4/ wind turbines on the west side of Jinbu East Hill in Yilan County, Heilongjiang Province, China.

The installed capacity of each unit is 850 kW, thus constituting a total installed capacity of 24.65 MW /4/. The annual output has been estimated as 56.04 GWh/year. DNV has validated the proposed project at a plant load factor (PLF) of 0.259 which has been verified from FSR /4/. It has been confirmed by DNV from the FSR /4/ that the PLF assumed by the project developer is based on 30 years of the statistically meteorological data from 1971 to 2000. The emission reductions are estimated to be 64 222 tCO₂e per year and 449 554 tCO₂e over the first seven-year crediting period.

The project applies Vestas V52-850KW type turbines produced in Tianjin factories which are invested by Vestas corporation from Denmark. The whole set technology of the Vestas V52-850KW wind turbines is introduced by Vestas Wind System A/S, which are representing the advancement of domestic wind power.

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Being a renewable electricity project, the project activity will generate greenhouse gas (GHG) emission reductions by avoiding CO₂ emissions from electricity generation by fossil fuel power plants.

The project's system boundaries are clearly defined as the Northeast China Power Grid (NCPG), which is in line with the delineation of the grid boundaries regulated by DNA of China.

The project start has been considered as 10 June 2007 which corresponds to the date of construction permission/20/. 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 1 January 2009.

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 the proposed project activity is:

- 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 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. The defined project boundary is in line with ACM0002 (version 06).

Emission sources and gases included in the project boundary are:

	<i>GHGs involved</i>	<i>Description</i>
<i>Baseline emissions</i>	<i>CO₂</i>	<i>The Northeast Power Grid</i>
<i>Project emissions</i>	<i>N/A</i>	<i>Project emission is regarded as zero as the project is a renewable energy (wind source) project.</i>
<i>Leakage</i>	<i>N/A</i>	<i>There are no leakages that need to be considered in applying this methodology.</i>

The alternative baseline scenarios have been identified as below:

- Construction of the thermal power plant with equivalent installed capacity or annual electricity generation.
- The proposed project activity not undertaken as a CDM project activity;
- Construction of a power plant using other renewable energy, such as hydro with equivalent installed capacity or annual electricity generation;

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d) Equivalent electricity service provided by the Northeast China Power Grid.

As demonstrated in section 4.4 below, the only plausible baseline scenario is d): Equivalent electricity service provided by the Northeast China Power Grid.

In the baseline scenario the electricity delivered from the project activity to the grid would have been generated by fossil fuels 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.

The baseline determination is transparent and reasonable.

4.4 Additionality

DNV was able to confirm that the benefits of CDM revenues were seriously considered in the decision to go ahead with the project. The feasibility study of the proposed project was done in March 2007 /4/ and the same original FSR was approved on 22 May 2007 /4/. As per the feasibility study report (FSR), the proposed project was financially attractive with a project IRR of 8.76% based on the assumed electricity tariff of 0.6028RMB/kWh /4/.

However, on 14 April 2007, the project developer received the propositional letter from the local DRC regarding the actual tariff for the project. The tariff, as per the letter from local DRC, was 0.5622RMB/kWh /21/. Considering this tariff, the project IRR reduced to 6.71% (compared to the benchmark in China of 8 % /18/ for wind projects), making the project financially unattractive. So the project developer resorted to apply for CDM credits to overcome the financial risk associated with the project (substantiated by contract between project developer and CDM consulting company).

DNV was able to verify the agreement with the CDM consulting company on 8 May 2007 for the development of the proposed project as CDM project /22/. The project starting date is defined as the date of the construction permit on 10 June 2007 /20/.

Based on the above discussion, DNV is able to conclude that though the project being financially attractive initially, the tariff announced by the local DRC made the proposed project weak. It was only after taking into consideration the CER credits that the project developer decided to go ahead with the project.

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The additionality of the project has been established using the “*Tool for the demonstration and assessment of additionality*” version 04 approved by the CDM-EB.

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

Sub-step 1a. Define alternatives to the project activity:

The project developer has identified the following alternatives to the project activity:

- a) Construction of the thermal power plant with equivalent installed capacity or annual electricity generation.
- b) The proposed project activity not undertaken as a CDM project activity;
- c) Construction of a power plant using other renewable energy, such as hydro with equivalent installed capacity or annual electricity generation;
- d) Equivalent electricity service provided by the Northeast China Power Grid.

Sub-step 1b. Consistency with mandatory laws and regulations:

It has been confirmed that all alternatives except alternative (a) are in compliance with the mandatory laws and regulations in the host country.

As required by the “Tool for the demonstration and assessment of additionality”, DNV was able to verify that the thermal power plants with installed capacity less than 135 MW are strictly prohibited /17/ in the areas that are covered under the large grids like provincial grids. It has also been verified that the non-compliance of the above mentioned law is not a common practice in China. Hence, this alternative has been completely eliminated from further discussions.

The project developer has carried out the analysis of other remaining alternatives to select the most realistic and credible alternatives that are available to them in the absence of project activity. The results of analysis are as presented below:

Alternative (b)- The proposed project activity not undertaken as a CDM project activity is a realistic and credible alternative but it faces barriers as discussed below in subsequent steps of additionality.

Alternative (c)- It has also been verified by DNV that the main business area of the project developer is the development of wind power generation sources /25/. The project developer does not have experience in handling power generation units based on other renewable sources. Hence, this is not a realistic and credible alternative for the project developer and has been eliminated from further discussion.

Alternative (d)- Continuation of current electricity supply from the grid is in compliance with all mandatory laws and regulations in the host country, does not involve any additional investments and also does not face any barrier. Hence, in the absence of project activity, this is the most attractive option. Based on this discussion, the alternative (d) has been selected as the baseline scenario.

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Based on the above discussion, DNV would like to indicate that though the alternatives (b-d) are in compliance with the mandatory laws and regulations in the host country but only alternative (b) and alternative (d) are the realistic and credible alternative available to the project developer.

Hence, the project developer has considered alternative (b) and alternative (d) for further analysis..

Step 2: Investment analysis.

The project developer has carried out investment analysis for the proposed project to demonstrate that it is not financially attractive in the absence of project activity. In accordance with the “Tool for the demonstration and assessment of additionality”, since the proposed project generates financial and economic benefits through the sale of electricity, simple cost analysis can not be applied for this project. Similarly, since the other realistic and credible alternative (alternative (d) as identified in step-1) i.e. the grid, is not a similar investment project, therefore, option II i.e. investment comparison analysis is also not an appropriate choice. Hence, benchmark analysis (option III of Step 2 of Tool for the demonstration and assessment of additionality) has been selected for conducting the investment analysis.

Project IRR has been selected as the financial indicator. It has been compared against the benchmark of 8% /18/return on total investment. DNV was able to confirm that in China, for all investments in electricity generation like hydropower generation, wind farm projects etc., the project developers can expect a minimum return of 8% on total investment in the project. In context of the proposed project, the project IRR has been determined to be 6.71% (in the absence of CDM revenues) which is much less than the benchmark of 8%. DNV has verified the IRR calculations and is able to confirm that the calculations presented are in accordance with the EB’s latest guidance on the assessment of financial calculations (EB38 - EB41).

DNV has verified all the input values used for the IRR calculations. It has been observed that most of the input values like total investment, operational lifetime, annual O&M expenses, installed capacity and estimated PLF/annual electricity generation, rate of residual life of the assets, taxes etc have been sourced from the feasibility study report (FSR) /4/. However, the tariff has been sourced from the “Propositional letter for tariff” issued by the local Development and Reform Bureau on 14 April 2007 /21/. This is mainly because the original FSR was based on the estimated tariff of 0.6028RMB/kWh /4/ and the project was financially attractive (IRR 8.76%). However, after the announcement of actual tariff (which is prior to the start of the project activity dated 10 June 2007) for the proposed project (i.e. 0.5622 RMB per unit) /21/, the project became financially unattractive (IRR 6.71% in the absence of CDM revenues). Hence, the same has been considered for the IRR calculations.

DNV assessed that the time gap between the approval of the original FSR (dated 22 May 2007) and the actual start date of the project (10 June 2007) is very short (one month). Similarly, the “Propositional letter for tariff” was issued by the local Development and Reform Bureau on 14 April 2007/21/, only two months prior to the decision to proceed with the project activity (i.e. the start date of the project). Taking this into account, it is highly unlikely that the input values (derived from original FSR and the “Propositional letter for tariff” used for IRR calculations of the proposed project) would have materially changed and

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that it is thus reasonable to assume that the FSR and the “Propositional letter for tariff” have been the basis of the decision to proceed with the investment in the project.

Furthermore, in DNV’s opinion, the input values sourced from the feasibility study report and the “Propositional letter for tariff” can be considered as accurate and trustworthy. The “Propositional letter for tariff” was issued by the local Government. Also, in China, the feasibility study report (FSR) is required to be developed by a third party who is accredited for this task directly by the government. In this particular project, FSR was developed by Xinjiang Province Wind and Electricity Design Institute in March 2007. This entity is accredited by Ministry of China Construction. DNV was able to verify the accreditation of this entity /4/. Further, an approval letter of FSR is issued by the government only after it passes the public assessment of the sector experts designated by the government. DNV was able to verify the approval of the original FSR of the proposed project /4/.

DNV has also compared the input parameters (used in the financial analyses of the proposed project) with the other CDM windfarm projects developed in Heilongjiang province. Investment costs per unit of electricity, electricity tariff, PLF, percentage of O&M costs relative to total investment costs, etc. were compared. Based on this comparison, DNV is able to conclude that all compared parameters are in reasonable ranges. In addition, by applying our sectoral competence, 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.

Moreover, 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/PLF 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. The result of the analysis is as follows:

<i>Key Indicators</i>	<i>Variation of the parameter indicator needed to reach benchmark</i>
Operation and maintenance cost	- 45.78%
Investment costs	- 9.8%
Electricity tariff	+ 10.14%
PLF	+ 10.14%

Based on the arguments and the evidences presented by the project developer, DNV assessed the likelihood of above mentioned scenarios. The results are as follows:

Investment costs: as mentioned above, if the investment cost decreases by 9.8%, the project IRR will touch the benchmark. However, DNV was able to confirm that this scenario is highly unlikely mainly because of the fact that in wind power generation units, the major

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portion of the investment is in the wind energy units (WEGs). In this particular project, 78.5% of the total investment goes into the purchase of WEGs. The same has been verified from the feasibility study report /4/. The wind turbines demand exceeds supply in the whole world that leads the price of wind turbines to gradually increase.

Tariff: DNV was able to confirm that the proposed project is an un-tendering project while the tariff is regulated by the regulating entities. Historically, the tariff of wind farms in Heilongjiang Province is also decreasing as China government is gradually lowering down the wind power in-grid tariff and evidence by the regulating tariff of the proposed project issued by the Development and Reform Bureau of Yilan County in April 2007 /21/ regulated the tariff of the proposed project as no more than 0.5622 Yuan/kWh. So assuming a 10.14% of tariff increase is deemed unlikely.

Plant load factor (PLF)/Annual generation: The PLF reflects the annual generation output of the proposed project, which depends on the average wind speed at the project site for a specific wind turbine. According to the FSR /4/, the annual output is estimated based on the long term (from 1971 to 2000) weather statistic data provided by local meteorological station and wind resources measurement, so the PLF is likely to fluctuate only within a small range. Assuming a 10.14% of increase is thus deemed unrealistic.

Annual operation and maintenance expenses (O&M): If the annual O&M cost decreases by 45.78%, the project IRR could reach the benchmark. This is not deemed possible since in FSR /4/ the detailed operation costs is composed of four kinds of costs - maintenance costs, annual salaries for the employees, insurance premium of fixed assets and other costs while it is substantiated that the price of material and salaries of the employees are gradually increasing in China, which leads annual O&M costs to gradually increase.

Based on the above discussion and the evidences verified, DNV is able to conclude that above mentioned scenarios are highly unlikely.

The other realistic alternative (as identified in step-1) i.e. grid electricity, does not involve any similar investment and hence does not face any barrier. It can continue supplying electricity in the absence of project activity.

In conclusion, the investment analysis and sensitivity assessment have shown that the project activity is not the most financially attractive option.

Step 3: Barrier analysis.

Investment analysis has shown that the project is the economically less attractive without the revenue from the sale of CERs. Barrier analysis is not selected.

Step 4: Common practice analysis.

DNV verified from all sources available /28/ that two existing wind farms since 2002 (2002 is a threshold for economic revolution in electricity sector) with the capacity of 10-50MW in Heilongjiang province without revenues from CDM are listed in the common practice analysis. It shows that both wind farms enjoyed higher electricity tariff (almost 40% higher than current tariff) and favorable policies and are funded by international low interest loan or national soft loan /27/ that are impossible for the proposed wind farm project. Therefore, the project activity cannot be said to represent common practice. In summary, it is sufficiently

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demonstrated that the project is not a likely a baseline scenario and that emission reductions occurring from this will hence be 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.

Monitoring of sustainable development indicators is not required by the Chinese DNA. The environmental impacts are considered minor and will be monitored by the local environmental authority during the project lifetime.

4.5.1 Parameters determined ex-ante

The combined margin emission factor is determined *ex-ante* based on the most recent information available. More detailed information is provided below.

4.5.2 Parameters monitored ex-post

The methodology requires monitoring of the following for wind farm projects:

- Electricity generation from the proposed project activity;
- Data needed to recalculate the operating margin emission factor, if needed, based on the choice of the method to determine the operating margin (OM), consistent with “Consolidated baseline methodology for grid-connected electricity generation from renewable sources” (ACM0002);
- Data needed to recalculate the build margin emission factor, if needed, consistent with “Consolidated baseline methodology for grid-connected electricity generation from renewable sources” (ACM0002);

However, since the grid emission factor has been fixed *ex ante*, the only parameter that needs to be monitored *ex post* is the net electricity generation from the proposed project.

The electricity generated from the project will be measured by the two meters (accuracy degree is 0.5S, bidirectional) on hourly basis and recorded monthly on project site. In addition, an electronic multifunctional electricity meter on the entrance side of substation of the Northeast Power Grid and a back-up meter on the exit side of the 35/220 kV substation of the wind farm (accuracy degree is 0.2S, bidirectional) will be installed to measure and account the electricity by the proposed project. This data will be cross verified against the sales receipts from the grid.

The metering equipment will be properly calibrated annually according to the requirement from Technical administrative code of electric energy metering (DL/T448 - 2000).

4.5.3 Management system and quality assurance

The project’s Monitoring plan /24/ 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.

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

4.6 Estimate of GHG Emissions

The emission reduction ER_y by the project activity during the crediting period is the difference between baseline emissions (BE_y), project emissions (PE_y) and emissions due to leakage (Ly), as follows:

- 1) Baseline emissions: baseline emissions (BE_y in tCO_2) are the product of the baseline emissions factor (EF_y in $t CO_2/MWh$) times the electricity supplied by the project activity to the grid (EG_y in MWh).
- 2) Project emissions: there are no emissions from the project which is a renewable energy project.
- 3) Leakage: no leakage has to be considered for the proposed project activity.
- 4) Emission reduction: $ER_y = BE_y - PE_y - Ly = BE_y$.

According to the FSR of the proposed project, the estimated annual electricity generation delivered to the power grid will be: $EG_y = 56.04 \text{ GWh} / 4$.

The annual emissions are: $ER_y = BE_y = EG_y \times EF_y (1.1460 \text{ t } CO_2/MWh) = 64\,222 \text{ t } CO_2$

For 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 ($NCVi$) of each type of fossil fuel, the IPCC 2006 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. Vintage data for the years 2004-2006 /11/ from China Energy Statistics Yearbooks and China Electric Power Yearbooks 1999-2006 /10/ editions are used for operating margin calculation. The OM is calculated to be $1.2404 tCO_2/MWh$ /14/ as 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 1998 to 2005 is chosen and reach 21.34% of total installed capacity.

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- The weight of installed capacity additions for thermal power plant is accounted for 91.31% of total installed capacity additions.
 - There are no data available of installed capacity additions for oil and gas power in NCPG. However China Energy Statistics Yearbook (2006) /16/ shows that the oil and gas used in NCPG are very small, and only for starting up systems of coal fired power plant, accounting for 1.12% of the total CO₂ emissions. The installed capacity addition for coal, oil and gas power plants being regarded as proportional with their CO₂ emissions percentage is deemed reasonable.
 - The coal consumption efficiency of 343.33 g SCE/kWh is selected as the best technology commercially available in China. It can be acknowledged as the best available data available for estimating the BM in the China /11/. This best technology corresponds to a 35.82% of power supply efficiency for coal-fired electricity generation. The gas and oil consumption efficiency of 258 g SCE/kWh is selected as the best technology commercially available in China /11/. It can be acknowledged as the best available data available for estimating the BM in the China. This best technology corresponds to a 47.67% of power supply efficiency for gas or oil-fired electricity generation.
 - The IPCC 2006 value of 25.8tC/TJ and a carbon oxidation factor of 100% are used to calculate the BM emission coefficients.
 - The EF_{BM} is calculated as 0.8632 t CO₂/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 1.1460 t CO₂/MWh is fixed *ex ante* for the entire first crediting period.

4.7 Environmental Impacts

An EIA has been conducted according to Chinese law & regulation. The potential environmental impacts have been sufficiently identified. No significant environmental impacts are expected from the project activity. Environmental Protection Bureau of Heilongjiang Province approved the EIA on 22 May 2006 /5/.

4.8 Comments by Local Stakeholders

Besides the stakeholder consultation process required by Chinese EIA regulations, an additional stakeholder consultation process have been performed through inviting local residents to comment on the project activity. Yilan Longyuan Wind Power Co., Ltd. carried out a survey through questionnaires in Wujiazi village in the area where the project will be sited /6/. There were no adverse comments on the project activity and all comments are supportive of the project. A summary of comments is provided and all comments /6/ have been verified by DNV.

4.9 Comments by Parties, Stakeholders and NGOs

The PDD, version 02, dated 15 August 2007 was made publicly available on DNV's climate change website (<http://www.dnv.com/certification/climatechange>) and Parties, stakeholders and NGOs were through the CDM website invited to provide comments during a 30 days period from 30 August 2007 to 28 September 2007.

No comments were received in this period.



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APPENDIX A

CDM VALIDATION PROTOCOL



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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	CAR-1 OK
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	CAR-1 OK
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	UK's assigned



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Requirement	Reference	Conclusion
recorded.	§31b	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	UK has in place a national system for estimating GHG emissions and annually submits is 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-5 & CL-6 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		
12 . Documentation on the analysis of the environmental impacts of the project	CDM Modalities and Procedures	CL-2



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Requirement	Reference	Conclusion
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.	§37c	Table 2 Section D OK
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	CL-4 Table 2 B.2 OK
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
18. The project design document shall be in conformance with the UNFCCC CDM-	CDM Modalities and Procedures	OK



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Requirement	Reference	Conclusion
PDD format.	Appendix B, EB Decision	
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	CL-8 Table 2 B.10 & B.13 OK



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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 <i>The project design is assessed.</i>					
A.1. Project Boundaries <i>Project Boundaries are the limits and borders defining the GHG emission reduction project.</i>					
A.1.1. Are the project’s spatial boundaries (geographical) clearly defined?	/1/ /4/	DR	Yes. The project is located on the west side of Jinbu East Hill in Yilan County, Harbin City, Heilongjiang Province, P. R. China. However, the spatial boundaries 124°50’ E, 46°07’ N for the proposed project mentioned in the PDD were not found in FSR or EIA, which needs to be clarified.	CL1	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 (regional) China Power Grid (NCPG) are defined as the project’s system boundaries.		OK
A.2. Participation Requirements <i>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 Participant.</i>					

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A.2.1. Which Parties and project participants are participating in the project?	/1/	DR	China and United Kingdom of Great Britain and Northern Ireland are the two Parties participating in the proposed project activity. China is hosting the project and UK is the Annex I Party. The project participants are Yilan Longyuan Wind Power Co., Ltd. from P. R. China and EDF Trading Limited from UK.		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 UK 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	Both Parties, China and UK, fulfil the requirements for participating in a CDM project activity. Both have ratified the Kyoto Protocol and have established the DNAs for CDM related activities. <u>China:</u> ▪ China ratified the Kyoto Protocol on 30 August 2002. ▪ Chinese DNA is the National Development and Reform Commission	CAR-1	OK



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			(NDRC). <u>United Kingdom of Great Britain and Northern Ireland:</u> <ul style="list-style-type: none">UK ratified the Kyoto Protocol on 31 May 2002.DNA of UK is the Department for Environment, Food and Rural Affairs. However, the project developer needs to provide the confirmation of voluntary participation by both Parties in the proposed project activity.		
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 <i>Validation of project technology focuses on the project engineering, choice of technology and competence/ maintenance needs. The validator should ensure that environmentally safe and sound technology and know-how is used.</i>					
A.3.1. Does the project design engineering reflect	/1/	DR	The total 29 sets of Vestas V52-850KW wind	CL-2	OK

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current good practices?	/5/		turbines will be installed, providing a total capacity of 24.65MW. However, both EIA and its approval is designed for the project having the installed capacity as 49.3MW (58 x 850kw), which is not in line with what mentioned in the feasibility study report and PDD (29 x 850kw = 24.65MW). The same needs to be clarified		
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 wind turbines applied for the proposed project is Vestas. But, where are the wind turbines manufactured? Where the whole set technology is introduced domestically or abroad and the technology will result in better performance than any commonly used technologies in China are not described clearly in PDD.	CL-2	OK
A.3.3. Does the project make provisions for meeting training and maintenance needs?	/1/ /19/ /29/	DR I	The project owner has made the training schedule for the whole project personnel, which has been provided to DNV. However, the training record provided by the project developer does not confirm the implementation of the training schedule as	CL-3	OK

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			planned. The project developer is requested to clarify.		
A.4. Contribution to Sustainable Development <i>The project's contribution to sustainable development is assessed.</i>					
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.	CAR4	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 aid in economic development.		OK
B. Project Baseline <i>The validation of the project baseline establishes whether the selected baseline methodology is appropriate and whether the selected baseline represents a likely baseline scenario.</i>					



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B.1. Baseline Methodology <i>It is assessed whether the project applies an appropriate baseline methodology.</i>					
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 involves electricity generation using renewable wind 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 <i>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.</i>					

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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/	DR	The alternative baseline scenarios have been identified as below: a) Construction of the thermal power plant with equivalent installed capacity or annual electricity generation. b) The proposed project activity not undertaken as a CDM project activity; c) Construction of a power plant using other renewable energy, such as hydro with equivalent installed capacity or annual electricity generation; d) Equivalent electricity service provided by the Northeast China Power Grid. Alternative a) does not comply with the Chinese law as thermal power plant with capacity less than 135 MW are prohibited to		OK



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			<p>be built in areas covered by large grids such as provincial grids¹. Alternative c) as power plants of the similar installed capacity utilizing renewable energy such as solar PV, geothermal, biomass and hydro, it has been argued that the proposed project owner is dedicated only to the wind power development in Heilongjiang Province according to the business scope, and has no experience and ability to develop other renewable energy power plants. Alternative b) is not a realistic and credible if the proposed project activity not undertaken as a CDM project activity (see B.3.1). Therefore, the only realistic and credible alternative for the proposed project is d) the equivalent electricity service provided by the NCPG.</p> <p>However, the argument that the project developer is into the business of developing only wind power sources and does not have experience in handling any other renewable source based power generation unit needs to</p>	CL-4	

¹ 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 No. 2002-6.



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			be demonstrated clearly.		
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 into force of decision 17.CP 7. It does not need to be taken into account.		OK
B.3. Additionality Determination <i>The assessment of additionality will be validated with</i>					

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<i>focus on whether the project itself is not a likely baseline scenario.</i>					
B.3.1. Is the project additionality assessed according to the methodology?	/1/ /4/ /9/ /18/	DR	<p>The additionality of the project, demonstrated by applying the “Tool for demonstration and assessment of additionality”, version 04, is in compliance with the methodology.</p> <p>Step 1. Identification of alternatives to the project activity consistent with current laws and regulations</p> <p><i>Sub-step 1a. Define alternatives to the project activity:</i></p> <p>a) Construction of the thermal power plant with equivalent installed capacity or annual electricity generation.</p> <p>b) The proposed project activity not undertaken as a CDM project activity;</p> <p>c) Construction of a power plant using other renewable energy, such as hydro with equivalent installed capacity or annual electricity generation;</p> <p>d) Equivalent electricity service provided by the Northeast China Power Grid.</p> <p><i>Sub-step 1b. Consistency with mandatory</i></p>		OK

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			<p><i>laws and regulations:</i></p> <p>As discussed above, the only realistic and credible alternative for the project scenario is the equivalent capacity or electricity service provided by the NCPG.</p> <p><u>Step 2.</u> Investment analysis:</p> <p>As the proposed project generates financial and economic benefits through the sales of electricity other than CDM related income, a simple cost analysis (option I of the methodology) can not be applied. The alternative for the baseline scenario of the proposed project is not a similar investment project, so option II is also not an appropriate choice.</p> <p>Hence, a benchmark analysis (option III of Step 2 of tool for the demonstration and assessment of additionality) is selected for conducting the investment analysis.</p> <p>In accordance with the “<i>Economical assessment and parameters for construction project, 3th edition</i>”, the benchmark IRR on</p>	CL-5	



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			<p>total investment for Chinese wind power industry is 8%. However, the project developer is required to provide the evidence for this.</p> <p>It has been argued that the project IRR in the absence of CDM revenues is 6.71 which improves to 9.16 with the support of CDM revenues. The analysis clearly shows that the proposed project is not financially attractive without CDM revenues. However, the project developer needs to demonstrate this by providing the detailed IRR calculation sheets along with the documentary evidence for all the assumptions considered for the calculations</p> <p>Following issues were also observed during the review of PDD, version 02, dated 01 July 2007. The project developer is requested to clarify these issues:</p> <p>1) The static total investment 222.43 million yuan should be showing in the table 1 instead of 228.97 million yuan.</p> <p>2) The evidence of electricity tariff/grid</p>		



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			<p>access agreement (0.6028yuan/kw.h in FS, 0.5594yuan/kw.h in PDD)</p> <p>3) Annual average O & M cost 7.26 million yuan showing in PDD is not in line with FSR as 7.39 million yuan.</p> <p>4) The project developer also needs to justify the PLF considered for the IRR calculations</p> <p>A sensitivity analysis has also been carried out to analyse the affect of variation in the parameters like total investment, tariff ad annual O&M cost. The variation within the range of -10% to +10% has been considered for the analysis.</p> <p>However, the project developer is requested to clarify the following points:</p> <ul style="list-style-type: none">- However, as per the table 3 & figure 2 of the PDD, it is not accurate to say that if total investment decreases by 10%, also the tariff increases by 10%, the project IRR will exceed the benchmark.		



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			<ul style="list-style-type: none">- Evidence/data needs to be provided in support of the fact that major of the investment goes into the purchase of wind turbines.- Evidence needs to be provided to support the fact that the probability of the tariff higher than the estimated value is very small since tariff is regulated by the regulating entities. The project developer also needs to justify the PLF considered for the IRR calculations- The project developer needs to determine each input parameter's value at which the IRR will be equal to the benchmark and assess the likelihood of attaining the arrived values against each parameter and confirm that it is not likely that the IRR will become equal to the benchmark. <p><u>Step 3</u>: Barrier analysis: This is not applied for the project. However,</p>		



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			<p>it should be indicated in the PDD.</p> <p><u>Step 4:</u> Common practice analysis:</p> <p>The common practice shows the existing wind farms projects located in the Heilongjiang Province with the capacity between 10-40MW. Amongst the eight wind power projects in the region, only two projects (commissioning in 2003 and 2004) are running without CDM revenues. It has been explained that these two projects were able to survive since they enjoyed better tariffs as compared to the existing plants.</p> <p>The project developer is requested to provide the following information:</p> <ul style="list-style-type: none">- The justification (In reference to the “Tools for assessment and demonstration of additionality”) for the selection of Heilongjiang province as the region for the common practice analysis. The same needs to be included in the PDD.- The data source provided to justify the common practice analysis is not adequate and the arguments need to		



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			be justified correctly. The project developer is also requested to revise the additionality discussion in accordance with the latest version of additionality tools i.e. version 04.		
B.3.2. Are all assumptions stated in a transparent and conservative manner?	/1/	DR	See B.3.1	CL-5	OK
B.3.3. Is sufficient evidence provided to support the relevance of the arguments made?	/1/	DR	See B.3.1	CL-5	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/ /19/	DR	In the initial PDD, version 02, dated 15 August 2007, the project starting date has been mentioned as 25 May 2007. However, during the site visits, it was found that the construction permit was obtained on 10 June 2007, which approved that the project construction starting date was 14 June 2007. The project developer is requested to clarify and to revise the project start date accordingly. The project developer is also requested to provide an evidence for the fact that the benefits of CDM revenues were seriously considered in the decision to proceed with the	CL-6	OK

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B.4. Calculation of GHG Emission Reductions – Project emissions <i>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.</i>			project.		
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	Not Applicable.		OK
B.4.3. Are uncertainties in the project emission estimates properly addressed?	/1/ /8/	DR	Not Applicable.		OK
B.5. Calculation of GHG Emission Reductions – Baseline emissions <i>It is assessed whether the baseline emissions are stated according to the methodology and whether the argumentation for the choice of default factors and values – where applicable – is justified.</i>					

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B.5.1. Are the calculations documented according to the approved methodology and in a complete and transparent manner?	/1/ /8/	DR	<p>Yes, baseline emissions have been calculated by multiplying the net electricity supplied to the grid and the emission factor of the grid. The project developer is requested to include the information regarding the meter locations.</p> <p>The grid emission has been calculated as the weighted average of operating margin (OM) and build margin (BM).</p> <p>The only simple OM emission factor calculation method is selected. Country specific data for net calorific value (<i>NCVi</i>) of each type of fossil fuel, the IPCC 2006 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.</p> <p>The <i>EF_{OM}</i> is calculated to be 1.2404tCO₂/MWh as generation-weighted average for the three years.</p> <p><u>For BM calculation, the approach is as follow:</u></p> <p>- Use of capacity additions for estimating the</p>		OK

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			<p>build margin emission factor for grid electricity.</p> <p>- Use of weights estimated using installed capacity in place of annual electricity generation.</p> <p>-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).</p> <p>a. The thermal power capacity additions from the years 1998 to 2005 is chosen and reach 21.34% of total installed capacity addition.</p> <p>b. The weight of installed capacity additions for thermal power plant is accounted for 91.31% of total installed capacity additions.</p> <p>c. The coal consumption efficiency of 343.33 g SCE/kWh is selected as the best technology commercially available in China. The gas and oil consumption efficiency of 258 g SCE/kWh is selected</p>	CL7	



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			<p>as the best technology commercially available in China.</p> <p>d. The IPCC 2006 value of 25.8tC/TJ and a carbon oxidation factor of 100% are used to calculate the BM emission coefficients.</p> <p>The EF_{BM} is calculated as 0.8632 t CO₂/MWh.</p> <p>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 1.1460 t CO₂/MWh is fixed <i>ex ante</i> for the entire first crediting period.</p> <p>However, how much has standard coal consumption been applied to determine the BM emission factor for the proposed project? Is it conservative? (What's the fuel consumption efficiency being selected as the best technology commercially available in China?)</p>		



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B.5.2. Have conservative assumptions been used when calculating the baseline emissions?	/1/	DR	Refer to B.5.1.	CL-7	OK
B.5.3. Are uncertainties in the baseline emission estimates properly addressed?	/1/	DR	No significant uncertainties can be addressed for this project.		OK
B.6. Calculation of GHG Emission Reductions – Leakage <i>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.</i>					
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	Not Applicable.		OK



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B.6.3. Are uncertainties in the leakage emission estimates properly addressed?	/1/ /8/	DR	Not Applicable.		OK
B.7. Emission Reductions <i>The emission reductions shall be real, measurable and give long-term benefits related to the mitigation of climate change.</i>					
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 electricity output delivered to the grid from each turbine will be monitored and recorded at the substation. The cross check with the electricity sales invoice is clearly identified. It is estimated that the implementation of the proposed project as planned will result in reduction of approximately 64 222 tCO ₂ e/year.		OK
B.8. Monitoring Methodology <i>It is assessed whether the project applies an appropriate monitoring methodology.</i>					
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		OK



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			sources” and is in a complete and transparent manner.		
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, for this project activity, whichever occurs later?	/1/ /8/	DR	Yes. All the relevant data records will be kept for 2 years after the end of the crediting period.		OK
B.9. Monitoring of Project Emissions <i>It is established whether the monitoring plan provides for reliable and complete project emission data over time.</i>					
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 <i>It is established whether the monitoring plan provides for reliable and complete baseline emission data over time.</i>					
B.10.1.Does the monitoring plan provide for the collection and archiving of all relevant data	/1/	DR	The project uses the <i>ex-ante</i> determination of emission factor for grid electricity. Only		OK

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necessary for determining baseline emissions during the crediting period?			electricity supplied to the grid will be monitored and double checked <i>ex-post</i> .		
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
B.10.3.Is the measurement method clearly stated for each baseline indicator to be monitored and also deemed appropriate?	/1/	DR	How many & where the meters to be installed and what measurement method to be applied are not identified clearly in the monitoring plan.	CL-8	OK
B.10.4.Is the measurement <i>equipment</i> described and deemed appropriate?	/1/	DR	Refer to B.10.3	CL-8	OK
B.10.5.Is the measurement <i>accuracy</i> 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 in place.		OK
B.10.6.Is the measurement <i>interval</i> for baseline data identified and deemed appropriate?	/1/	DR	The electricity supplied to the grid will be measured hourly and recorded monthly.		OK
B.10.7.Is the registration, <i>monitoring</i> , <i>measurement</i> and <i>reporting</i> procedure defined?	/1/	DR	Yes. Such information is available in the monitoring plan of the PDD.		OK

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B.10.8.Are procedures identified for <i>maintenance</i> 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
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 <i>It is assessed whether the monitoring plan provides for reliable and complete leakage data over time.</i>					
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	Not Applicable.		OK
B.11.3.Is the measurement method clearly stated for each leakage value to be monitored and deemed appropriate?	/1/ /8/	DR	Not Applicable.		OK
B.12. Monitoring of Sustainable Development Indicators/					

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Environmental Impacts <i>It is assessed whether choices of indicators are reasonable and complete to monitor sustainable performance over time.</i>					
B.12.1. Is the monitoring of sustainable development indicators/ environmental impacts warranted by legislation in the host country?	/1/	DR	The legislations in China do 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 <i>It is checked that project implementation is properly prepared for and that critical arrangements are addressed.</i>					
B.13.1. Is the authority and responsibility of overall	/1/	DR	The management structure is illustrated in the		OK

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project management clearly described?		I	PDD. The management group is responsible for the overall CDM management of the proposed project.		
B.13.2.Are procedures identified for training of monitoring personnel?	/1/ /19/	DR	Yes. All management groups including monitoring personnel will receive the sufficient training in terms of monitoring and verification.		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	The procedures for the data collection and reporting have been 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 <i>It is assessed whether the temporary boundaries of the project are clearly defined.</i>					
C.1.1. Are the project’s starting date and operational	/1/	DR	The estimated lifetime of the project is 21		OK

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lifetime clearly defined and evidenced?	/4/ /20/		years as per feasibility study. In the initial PDD, version 02 dated 15 August 2007; the project start date has been mentioned as 25 May 2007 which is the construction start date. However, during the site visits, it was observed that the construction permit was obtained on 10 June 2007, which approved the starting date of construction as 14 June 2007. The project developer is requested to clarify the difference and revise the PDD accordingly.	CL-9	
C.1.2. Is the start of the crediting period clearly defined and reasonable?	/1/	DR	The project developer has chosen a renewable crediting period with the start date of the crediting period being 01 January 2008, which is obviously not practical. The project developer is requested to change the start date of crediting period.	CL-10	OK
D. Environmental Impacts <i>Documentation on the analysis of the environmental impacts will be assessed, and if deemed significant, an EIA should</i>					

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<i>be provided to the validator.</i>					
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, ecological environment, etc. has been sufficiently described in the PDD.		OK
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	There are some Chinese local standards for an EIA, and the EIA for this project activity was approved by the Environmental Protection Bureau of Heilongjiang Province.	CL-2	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					

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<i>The validator should ensure that stakeholder comments have been invited with appropriate media and that due account has been taken of any comments received.</i>					
E.1.1. Have relevant stakeholders been consulted?	/1/ /5/ /6/	DR	Yes. The project owner successfully held a stakeholder meeting in Yilan County dated on 15 August 2006. Total 12 stakeholder representatives from the Development and Reform Bureau & Environmental Protection Bureau of Yilan County, the Yilan Power Supply Corporation, and the Villagers from Wujiazi village where the proposed project is located, were attending the meeting. Also The 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 had 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



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E.1.4. Is a summary of the stakeholder comments received provided?	/1/ /6/	DR	Yes. A summary of the stakeholder comments received 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 on the project. Meanwhile, the project owner will concern much on the suggestions from stakeholders 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

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Table 3 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
CAR1: The letters of approval from the DNA of China and UK have not been obtained.	A.2.2 A.2.3 A.4.1	The letters of approval from the DNA of China and United Kingdom of Great Britain and Northern Ireland have been submitted to DOE.	OK DNV has got the LoA from Parties and confirmation of voluntary participation from both Parties for the proposed project activity has been addressed. CAR 1 is closed.
CL1: The spatial boundaries 124°50' E, 46°07' N for the proposed project mentioned in the PDD are not found in FSR or EIA, which needs to be clarified.	A.1.1	The geography coordinate for the proposed project is the east longitude 129°55' E, north latitude 46°05' N, which is evidenced by original institute of FS.	OK CL 1 is closed.
CL2: <ul style="list-style-type: none"> Both EIA and its approval is designed for the project having the installed capacity as 49.3MW (58 x 850kw), which is not in line with what mentioned in the feasibility study report and PDD (29 x 850kw = 24.65MW). The relevant evidences mentioned above should be given by the project developer. 	A.3.1 A.3.2 D.1.2	<ul style="list-style-type: none"> The project has the installed capacity as 24.65MW (29 x 850kW). The approval document from the Environmental Protection Administration of Heilongjiang Province has been submitted to DOE. 29 sets of Vestas52-850 kW wind 	OK DNV obtained the approval document of 19 March 2008 from the Environmental Protection Administration of Heilongjiang Province illustrating the proposed project's division into two phases. And first phase is the proposed project. DNV would like to indicate that as per the EIA approval letter, the installed

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Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
<ul style="list-style-type: none"> Where are the wind turbines manufactured? Where the whole set technology is introduced domestically or abroad and the technology will result in better performance than any commonly used technologies in China are not described clearly in PDD. 		<p>turbines are adopted by the proposed project. All wind turbines are produced in Tianjin factories which are invested by Vestas corporation from Denmark. The required information has been provided in the PDD.</p>	<p>capacity of the first phase is stated as 24.65 MW (29x850 Kw). The approval letter has been verified by DNV.</p> <p>In FSR and PDD, the manufacturer and technical parameters are addressed clearly for Vestas52-850 kW.</p> <p>CL 2 is closed.</p>
<p>CL3:</p> <p>The training record provided is not able to confirm the training is implemented as per schedule.</p>	A.3.3	<p>The evidence of training implemented as per schedule has been submitted to DOE.</p>	<p>OK</p> <p>Document of training implemented as per schedule has been obtained. In this document, the wind generation basic knowledge; procedures for operation and regulation; turbine provider's training for operators and workers relating operation and maintenance are addressed.</p> <p>CL 3 is closed.</p>
<p>CL4:</p> <p>The argument that the project developer is only dedicated to wind power development in</p>	B.2.2	<p>According to the business licence, the business scope of the project owner is wind farm development and operation.</p>	<p>OK. DNV was able to verify the business license of the project developer. Based on the evidence</p>



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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
Heilongjiang Province according to the business scope and does not have experience in handling any other renewable source based power generation unit needs to be demonstrated clearly.		The project corporation comes into existence on 29 th December, 2006 and the project owner has less experience in wind power development and has no experience in handling any other renewable source based power generation unit.	provided, DNV accepts the fact that the main business area of the project owner is the development of wind power generation units and hence, the alternative of developing power generation units based on other renewable sources is not a credible alternative for the project developer. Hence, CL 4 is closed.
<p>CL5:</p> <p>a) In accordance with the “<i>Economical assessment and parameters for construction project, 3th edition</i>”, the benchmark IRR on total investment for Chinese wind power industry is 8%. Hence, the same has been taken as benchmark for the proposed project as well. However, the project developer is required to provide the evidence for this.</p> <p>b) The analysis clearly shows that the proposed project is not financially attractive without CDM revenues.</p>	<p>B.3.1</p> <p>B.3.2</p> <p>B.3.3</p>	<p>a) The evidence that the benchmark IRR on total investment for Chinese wind power industry is 8% has been submitted to DOE.</p> <p>b) The detailed IRR calculation sheets and the documentary evidence for all the assumptions considered for the calculations have been submitted to DOE.</p> <p>c) These problems showing in Table 1 of B.5 of PDD have been explained</p>	<p>OK</p> <p>a) DNV has verified the evidence of 8% /18/ for benchmark of wind farm projects.</p> <p>b) The financial analysis sheet has been verified by DNV and is able to confirm that the IRR calculations presented by the project developer are in accordance with the EB’s guidance on the financial analysis (EB 38-41).</p> <p>DNV also verified the input values used for the IRR calculations. It has been observed that most of the input values</p>



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Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
<p>However, the project developer needs to demonstrate this by providing the detailed IRR calculation sheets along with the documentary evidence for all the assumptions considered for the calculations.</p> <p>c) Following issues were also observed during the review of PDD, version 02, dated 01 July 2007. The project developer is requested to clarify these issues:</p> <ul style="list-style-type: none"> ▪ The static total investment 222.43 million yuan should be showing in the table 1 instead of 228.97 million yuan. ▪ The evidence of electricity tariff/grid access agreement (0.6028yuan/kw.h in FS, 0.5594yuan/kw.h in PDD) ▪ Annual average O & M cost 7.26 million yuan showing in PDD is not in line with FSR as 7.39 million yuan. ▪ The project developer also needs to justify the PLF considered for the IRR 		<p>or corrected in the PDD:</p> <p>The static total investment is 222.43 million yuan.</p> <p>The Official Letter about the tariff of the proposed project issued by the Development and Reform Bureau of Yilan County in Heilongjiang Province in April 2007 regulated the tariff of the proposed project as no more than 0.5622 Yuan/kWh (excluding VAT). The evidence has been submitted to DOE and the value of the tariff has been corrected in the PDD.</p> <p>In accordance with the “<i>Economical assessment and parameters for construction project, 3th edition</i>”, annual average O & M cost is 7.26 million yuan. The evidence has been submitted to DOE.</p>	<p>like total investment, operational lifetime, annual O&M expenses, installed capacity and estimated PLF/annual electricity generation, rate of residual life of the assets, taxes etc have been sourced from the feasibility study report. (FSR). However, the tariff has been sourced from the “Propositional letter for tariff issued by “local Development and Reform Bureau on 14 April 2007”. This is mainly because the FSR was based on the estimated tariff of 0.6028RMB/kWh and the project was financially attractive (IRR8.76%). However, the tariff considered for the proposed project is the actual tariff announced for the proposed project.</p> <p>Considering the above mentioned input values and the financial excel sheets, DNV is able to conclude that the proposed project is financially unattractive.</p>

VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
<p>calculations</p> <p>d) Evidence/data needs to be provided in support of the fact that major of the investment goes into the purchase of wind turbines.</p> <p>e) Evidence needs to be provided to support the fact that the probability of the tariff higher than the estimated value is very small since tariff is regulated by the regulating entities.</p> <p>f) The project also needs to consider the variation in the total electricity generation or PLF for the sensitivity analysis.</p> <p>g) The project developer needs to determine each input parameter's value at which the IRR will be equal to the benchmark and assess the likelihood of attaining the arrived values against each parameter and confirm that it is not likely that the IRR will become equal to the benchmark.</p> <p>h) Step 3 of B.5 Barrier analysis is not applied for the project, which should be</p>		<p>According to the Chinese Renewable Energy Law enacted on January 1st 2006, wind power generation should be purchased fully by the grid. Therefore, the PLF reflects the annual generation output of the proposed project, which has been considered for the IRR calculation in the PDD.</p> <p>(http://www.gov.cn/ziliao/flfg/2005-06/21/content_8275.htm)</p> <p>d) According to the feasibility study report of the proposed project (Appendix B), 78.5% of the total investment of the proposed project is used to the purchase and installation of wind turbine system.</p> <p>e) The Official Letter about the tariff of the proposed project issued by the</p>	<p>c) The issues pointed out during the desk review of the project design document regarding the inconsistency between the values mentioned in the PDD and those mentioned in the FSR have been taken care of by the project developer in the revised PDD. The revised PDD as well as the financial excel worksheets have been verified by DNV. The same is acceptable to DNV.</p> <p>For PLF in line with annual generation, wholly bought by the Grid which was enforced by Chinese Renewable Energy Law, has been considered for the IRR calculation in the PDD confirmed by DNV.</p> <p>d) The issue regarding the 78.5% of total investment that goes into the purchase of turbines has been verified from the feasibility study report. It has been observed that this investment is about 78.5% of the total investment.</p>

VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
<p>indicated in the PDD.</p> <p>i) The data source provided to justify the common practice analysis is not adequate and the arguments need to be justified correctly.</p> <p>j) The project developer is also requested to revise the additionality discussion in accordance with the latest version of additionality tools.</p>		<p>Development and Reform Bureau of Yilan County in Heilongjiang Province in April 2007 regulated the tariff of the proposed project as no more than 0.5622 Yuan/kWh (excluding VAT). The evidence has been submitted to DOE and the relative analysis has been shown in the PDD.</p> <p>f) The variations in PLF have been considered for the sensitivity analysis in the PDD. (http://www.gov.cn/ziliao/flfg/2005-06/21/content_8275.htm)</p> <p>g) Each input parameter's value at which the IRR will be equal to the benchmark and the relative analysis has been shown in the PDD.</p> <p>h) Step 3 of B.5 Barrier analysis is not</p>	<p>The evidence provided is acceptable to DNV.</p> <p>e) The document of tariff of the proposed project issued by the Development and Reform Bureau of Yilan County in Heilongjiang Province in April 2007 regulated the tariff of the proposed project as no more than 0.5622 Yuan/kWh (excluding VAT) has been reviewed.</p> <p>f) The issue regarding the consideration of PLF/annual electricity generation has been taken care of by the project developer in the revised PDD, version 03, dated 06 April 2008. The same has been verified by DNV.</p> <p>g) The project developer has analysed each critical input value like investment cost, tariff, PLF/Annual electricity generation and annual O&M costs till the point at which the project IRR touches the benchmark. The same has been included in the revised PDD,</p>

VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
		<p>applied for the project, which has been indicated in the PDD.</p> <p>i) The data source provided to justify the common practice analysis and the relative analysis has been shown in the PDD.</p> <p>j) The additionality discussion has been revised in accordance with the latest version of additionality tools i.e. version 04.</p>	<p>version 03, dated 06 April 2008. DNV has assessed the possibility of each parameter having that value. Based on the discussion and the evidences provided, DNV is able to conclude that the variation up to that level is highly unlikely.</p> <p>h) The issue has been addressed in the revised PDD, version 03, dated 06 April 2008.</p> <p>i) DNV verified the sources PP provided and confirmed the data for common practice is complete and reasonable.</p> <p>The PDD has been revised in accordance with the version 04 of the additionality tool.</p>
<p>CL6: The incentive from CDM for the proposed project and relevant evidences are required to be provided.</p>	<p>B.3.4</p>	<p>The incentive from CDM has been described in section B.5 of the PDD and relevant evidences have been submitted to DOE.</p>	<p>The evidence for incentive of CDM consideration has been provided and is supported by the lower tariff regulated by local government.</p> <p>CL 6 is closed.</p>

VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
<p>CL7:</p> <p>How much has standard coal consumption been applied to determine the BM emission factor for the proposed project? Is it conservative? (what's the fuel consumption efficiency being selected as the best technology commercially available in China?)</p>	<p>B.5.1</p> <p>B.5.2</p>	<p>To determine the BM emission factor for the proposed project, power supply efficiency of best coal fired power unit commercially available in China ($PE_{Coal,Adv}$) is 35.82%, power supply efficiency of best gas fired power unit commercially available in China ($PE_{Gas,Adv}$) is 47.67% and power supply efficiency of best oil fired power unit commercially available in China ($PE_{Oil,Adv}$) is 47.67%, which are from from the Announcement of Determining China Regional Power Grid Baseline Emission Factors, published by China National Development and Reform Commission. This is conservative. See the detailed information in the web station below.</p> <p>(http://cdm.ccchina.gov.cn/WebSite/CDM/UpFile/File1374.pdf)</p>	<p>OK</p> <p>This is in compliance with data from (http://cdm.ccchina.gov.cn/WebSite/CDM/UpFile/File1374.pdf) .</p> <p>CL 7 is closed.</p>
<p>CL8:</p> <p>How many & where the meters to be installed</p>	<p>B.10.3</p> <p>B.10.4</p>	<p>The net electricity supplied to the grid will be monitored through the main</p>	<p>OK</p> <p>This has been checked against</p>

VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
<p>and what measurement method to be applied are not identified clearly in the monitoring plan.</p>		<p>meter installed at the 220kV substation of the windfarm. This meter has two-way metering, recording both exports to the grid and imports from the grid; net electricity supplied to the grid is calculated as exports minus imports.</p> <p>In addition, at the project site, electricity from the turbines and the transmission lines connected to the turbines is monitored, and two meters are installed at the entrance side of the 220kV transformer station and these monitoring data will be the references to the net power supply to the grid.</p> <p>If in the future, some other wind farms share the same transformer, substation or transmission line with this windfarm, the appropriate separate meters will also be installed in the project site so that the electricity generation can be monitored respectively to calculate the share of this windfarm of the net supply to the grid.</p>	<p>monitoring plan. CL 8 is closed.</p>



VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
<p>CL9:</p> <p>During the site visits, it was observed that the construction permit was obtained on 10 June 2007, which approved the starting date of construction as 14 June 2007.</p> <p>The project developer is requested to clarify the difference and revise the PDD accordingly.</p>	C.1.1	Construction permit was obtained on 10 June 2007	<p>OK.</p> <p>The project developer has revised the PDD in accordance with the construction permission date. The construction permit dated 10 June 2007 has been verified by DNV. The project start date has been mentioned as 10 June 2007 in the revised PDD.</p> <p>CL 9 is closed.</p>
<p>CL10:</p> <p>The PP has chosen a renewable crediting period with the start date of the crediting period being 01 January 2008, which is obviously not practical.</p>	C.1.2	The start date of the crediting period has been corrected and the final start date of the crediting period will be the registered date.	<p>OK. PDD has been revised.</p> <p>CL 10 is closed.</p>

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-CDMJ1-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

Sun Shu Yong

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

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

Høvik, 6 November 2006

Einar Telnes
Director, International Climate Change Services

Michael Lehmann
Technical Director

Qinghong (Rowena) Jiao

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

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

Høvik, 18 July 2007

Einar Telnes
Director, International Climate Change Services

Michael Lehmann
Technical Director



CERTIFICATE OF COMPETENCE

Raman Venkata Kakaraparthi

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

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

Høvik, 30 October 2007

Michael Lehmann

Michael Lehmann

Technical Director, International Climate Change Services

Anjana Sharma

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

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

Høvik, 30 October 2007

Michael Lehmann

Michael Lehmann

Technical Director, International Climate Change Services