



VALIDATION REPORT

HEILONGJIANG YILAN HEZUOLINCHANG PHASE II WIND POWER PROJECT IN CHINA

REPORT No. 2008-9257

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 Phase II Wind Power Project

Country: China

Methodology: ACM0002

Version: 8

GHG reducing Measure/Technology: Wind Power

ER estimate: 64 098 tCO₂ e/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 Phase II Wind Power Project" in China, as described in the PDD of version 3.0 dated 1 December 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 8. Hence, DNV requests the registration of "Heilongjiang Yilan Hezuolinchang Phase II Wind Power Project" as a CDM project activity.

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Report title: Heilongjiang Yilan Hezuolinchang Phase II Wind Power Project in China		
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Work verified by: Felipe Antunes (draft), Anu Chaudhary (final)		

Key words:

Climate Change

Kyoto Protocol

Validation

Clean Development Mechanism

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Abbreviations

BM	Build Margin
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
CL	Clarification request
CO ₂	Carbon dioxide
CO ₂ e	Carbon dioxide equivalent
DNV	Det Norske Veritas
DNA	Designated National Authority
EF	Emission Factor
EIA	Environmental Impact Assessment
EPB	Environmental Protection Bureau
GHG	Greenhouse gas(es)
IPCC	Intergovernmental Panel on Climate Change
IRR	Internal Rate of Return
LoA	Letter of Approval
MP	Monitoring Plan
NECPG	Northeast China Power Grid
NCV	Net Calorific Value
NDRC	National Development and Reform Commission
NGO	Non-governmental Organisation
ODA	Official Development Assistance
OM	Operating Margin
PDD	Project Design Document
PLF	Plant Load Factor
SCE	Standard coal equivalent
UNFCCC	United Nations 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 Phase II 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 Switzerland. Both parties fulfil the participation criteria and have approved the project and authorized the project participants. The DNA of China has also confirmed that the project assists in achieving sustainable development.

The project correctly applies ACM0002 version 8: “Consolidated baseline & monitoring methodology for grid connected electricity generation from renewable sources”.

By generating renewable energy which will displace electricity in NECPG, the project results in reduction 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 average 64 098 tCO₂e/year over the selected 7 year renewable 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 Phase II Wind Power Project” in China, as described in the PDD version 3.0 dated 1 December 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 8. DNV thus requests the registration of the project as a CDM project activity”.



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2 INTRODUCTION

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

2.1 Objective

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

2.2 Scope

The validation scope is defined as an independent and objective review of the project design document (PDD). The PDD is reviewed against the criteria stated in Article 12 of the Kyoto Protocol, the CDM modalities and procedures as agreed in the Marrakech Accords, and the relevant decisions by the CDM Executive Board, including the approved baseline and monitoring methodology. The validation team has, based on the recommendations in the Validation and Verification Manual /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.

The following sections outline each step in more detail.

3.1 Desk Review of the Project Design Documentation

The following table outlines the documentation reviewed during the validation:

- /1/ China Fulin Windpower Development Corporation, Project Design Document for the “Heilongjiang Yilan Hezuolinchang Phase II Wind Power Project”, version 2.0 dated 30 August 2008 and version 3.0 dated 1 December 2008.
- /2/ DNA of China, Letter of Approval issued in December 2008.
- /3/ DNA of the Switzerland, Letter of Approval issued on 19 December 2008.
- /4/ Xinjiang Wind and Electricity Design Consulting Co., Ltd., Feasibility Study Report of Heilongjiang Yilan Hezuolinchang Phase II Wind Power Project in January 2008 and Development and Reform Commission of Heilongjiang Province: the approval letter on 19 February 2008.
- /5/ Ha Erbin railroad Environment Protection Co. Ltd., EIA in April 2006 and Environmental Protection Bureau of Heilongjiang Province: The approval letter for first and second phase projects on 22 May 2006.
EIA approval reconfirmation for first and second phase projects developed by Yilan Longyuan Wind Power Co., Ltd. from Environmental Protection Bureau of Heilongjiang Province on 19 March 2008.
- /6/ China Fulin Windpower Development Corporation, Project IRR calculation spreadsheet of 17 November 2008.
- /7/ EB 44 Report Annex 3: Validation and Verification Manual Version 01. http://cdm.unfccc.int/EB/044/eb44_repan03.pdf
- /8/ ACM0002 “Consolidated methodology for grid-connected electricity generation from renewable sources” version 8.
- /9/ CDM EB: Tool for the demonstration and assessment of additionality, Version 5.2.
- /10/ CDM EB, Tool to calculate the emission factor for an electricity system, version 1.1.
- /11/ China Electric Power Yearbook 2000-2007
- /12/ China Energy Statistical Yearbooks 2005, 2006 and 2007
- /13/ Technical administrative code of electric energy metering (DL/T448 - 2000).



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- /14/ CDM Executive Board, Guidance for request for deviation titled “Application of AM0005 and AMS-I.D in China” <http://cdm.unfccc.int/Projects/Deviations>
- /15/ IPCC: 2006 IPCC Guidelines for National Greenhouse Gas Inventories Reference Manual.
- /16/ State Power Corporation of China. *Interim Rules on Economic Assessment of Electrical Engineering Retrofit Projects*. Beijing: China Electric Power Press, 2003.
- /17/ Yilan Longyuan Wind Power Co., Ltd., Meeting minutes for serious CDM consideration by board directors on 11 January 2008.
- /18/ CDM development contract between Yilan Longyuan Wind Power Co., Ltd. and China Fulin Windpower Development Corporation on 3 March 2008.
- /19/ Business license for Yilan Longyuan Wind Power Co., Ltd.: Valid from 29 December 2006 to 28 December 2026, focusing on wind farm construction and operation after getting approval for the project.
- /20/ The Power Purchase Agreement (PPA) between Yilan Longyuan Wind Power Co., Ltd. and Jiamusi City Electricity Bureau signed in July 2008.
- /21/ Loan contract from Heilongjiang Branch of Bank of China for 66% bank loan of the total of Heilongjiang Yilan Hezuolinchang Phase II Wind Power Project on 20 June 2008.
- /22/ The personnel training scheme for Heilongjiang Yilan Hezuolinchang Phase II Wind Power Project in 2008 and training record in 2008.
- /23/ The Management and Operation Manual for Heilongjiang Yilan Hezuolinchang Phase II Wind Power Project.
- /24/ Updated Chinese DNA’s guidance for the determination of grid boundaries and emission factors (30 December 2008)
<http://cdm.ccchina.gov.cn/WebSite/CDM/UpFile/2008/20081230102527637.pdf>
 OM: <http://cdm.ccchina.gov.cn/WebSite/CDM/UpFile/File1888.pdf>
 BM: <http://cdm.ccchina.gov.cn/WebSite/CDM/UpFile/2008/20081231101111351.pdf>
- /25/ China NDRC, the statistics by State Electricity Regulatory Commission (SERC) on newly built thermal plants in 10th "Five-Year Plan" period 2000-2005, and NDRC official website:
<http://cdm.ccchina.gov.cn/WebSite/CDM/UpFile/2006/20061215144747182.pdf>
- /26/ Notice on Strictly Prohibiting the Installation of Fuel-fired Generators with the Capacity of 135 MW or below, Issued by State Council Office, decree No. 2002-6.
- /27/ Answered questionnaire for the stakeholder comments by project owner between 15 January and 20 January 2008 and stakeholder public conference on 15 January 2008.
- /28/ Analysis report on wind turbines demand exceeding supply globally
<http://energy.people.com.cn/GB/5720709.html>
- /29/ The exploitable hydro resource in Northeast China is relatively limited



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- <http://www.agro-labs.ac.cn/21c/jpg/2-1-5.jpg>
Hydro power development lacks good investment conditions in Heilongjiang province
<http://www.studa.net/shuili/060223/16432147-2.html>
- /30/ Evidences that power generation like solar PV, geothermal and biomass of the similar installed capacity as the proposed project are far from being attractive investment:
Solar: <http://www.ccchina.gov.cn/cn/NewsInfo.asp?NewsId=5884>
<http://finance.people.com.cn/GB/1038/59942/59949/6294546.html>
Biomass: http://jjckb.xinhuanet.com/cjxw/2007-11/27/content_75467.htm;
Geothermal: <http://finance.sina.com.cn/review/essay/20070526/19103633141.shtml>
- /31/ The turbine supply contract between Yilan Longyuan Wind Power Co., Ltd. and GAMESA wind (Tianjin) Co., Ltd. on 26 February 2008.
- /32/ Application for construction start plan for Heilongjiang Yilan Hezuolinchang Phase II Wind Power Project by Yilan Longyuan Wind Power Co., Ltd. dated 15 April 2008.
- /33/ International low interest loan or national soft loan for Haufu Fujin Wind Farm and Huaifu Mulan Wind Farm
<http://www.chinapower.com.cn/newsarticle/1005/new1005504.asp>
- /34/ The threshold of policy change regarding the wind farm projects caused by implementation of State Council approved Reform Plan of Power System in 2002
<http://hy.stock.cnfol.com/070518/124,1469,2981102,00.shtml>
http://www.ndrc.gov.cn/xwfb/t20050708_28096.htm
<http://www.grchina.com/gb/greenpower/advise-0-5.htm>
- /35/ Grid-connected wind farms similar to the proposed project in Heilongjiang province :
Shi Pengfei, the statistics concerning installed capacity before 2005 of China
<http://www.cwea.org.cn/upload/200612391640820.doc>
Tariff statistics of China dated 27 September 2006
http://www.biox.cn/enviro/200609/20060927025244_268647.shtml
China Electric Power Yearbook 2002-2006
- /36/ Trial Measures for the Administration of the Pricing of, and the Sharing of Costs in Connection with, the Generation of Electricity Using Renewable Energy Resources, FAGAIJIAGE(2006) No.7.
- /37/ Recent tariff cap approval for the wind farms in China by NDRC on 3 December 2007
http://www.gov.cn/zwgk/2008-02/19/content_892937.htm
- /38/ The operational hour of a fossil fuel plant (5 612 hours): China Electric Power Yearbook 2007, page 626.

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

- *Changes related to Guidelines on financial analysis, project starting date and CDM consideration.*
- *New VVM of EB 44 Report Annex 3*
- *OM and BM updated*
- *Updated from ACM0002 version 7 to ACM0002 version 8*



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3.2 Follow-up Interviews with Project Stakeholders

On 3 December 2008, DNV performed interviews with project stakeholders to confirm selected information and to resolve issues identified in the document review. DNV did not perform site visit for Heilongjiang Yilan Hezuolinchang Phase II Wind Power Project since the proposed the project is under preparation and installing and documents such as the design /4/ /1/, was sufficient and it was deemed that no site visit was necessary.

	Date	Name	Organization	Topic
/39/	3 December 2008	Ms. Hu Fang	China Fulin Windpower Development Corporation	<ul style="list-style-type: none"> ➤ Baseline determination of the project ➤ Applicability of selected methodology ACM0002 ➤ Issues related to the additionality ➤ Common practice analysis ➤ Emission reductions calculation ➤ Emission reduction monitoring plan and project management
/40/	3 December 2008	Mr. Chen Qiang	Yilan Longyuan Wind Power Co., Ltd.	<ul style="list-style-type: none"> ➤ Information of project construction ➤ The development of wind-power project in province the project located ➤ The approval status (incl. EIA approval, the feasibility study report approval, CDM project approval) ➤ Project management ➤ Emission reduction monitoring plan ➤ Consulting process for stakeholder's comments ➤ Investment risks and barriers

3.3 Resolution of Outstanding Issues

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

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

The validation protocol consists of three tables. The different columns in these tables are described in the figure below. The completed validation protocol for the Heilongjiang Yilan Hezuolinchang Phase II Wind Power Project is enclosed in Appendix A to this report.



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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 (CAR) are issued, where:

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

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



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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 validation report underwent a technical review before requesting registration of the project activity. The technical review was performed by a technical reviewer qualified in accordance with DNV's qualification scheme for CDM validation and verification.

3.5 Validation Team

<i>Role/Qualification</i>	<i>Last Name</i>	<i>First Name</i>	<i>Country</i>	<i>Type of involvement</i>					
				<i>Desk review</i>	<i>Interviews</i>	<i>Reporting</i>	<i>Supervision of work</i>	<i>Technical review</i>	<i>Expert input</i>
Project Manager/ CDM validator	Zhang	Xiaojun, Johnsen	China	√	√	√			
CDM validator/ technical team leader	Deng	Cuiping	China				√		
GHG Auditor	Dong	Nan Donald	China		√				
Technical Reviewer (Draft)	Antunes	Felipe	Brazil					√	
Technical Reviewer (Final)	Chaudhary	Anu	India					√	

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



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4 VALIDATION FINDINGS

The preliminary 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 preliminary validation findings relate to the project design as documented and described in the revised and resubmitted PDD, version 3.0 dated 1 December 2008.

4.1 Participation Requirements

The project participants are Yilan Longyuan Wind Power Co., Ltd. of China and Essent Trading International S.A. of Switzerland. The host Party China and Annex I Party Switzerland meet the requirements to participate in the CDM. 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 received in December 2008.

The letter of approval (LoA) /3/ from the DNA of Switzerland, authorizing Essent Trading International S.A. of Switzerland as project participant, was received on 19 December 2008.

Funding for the project activity was obtained through the funds of equity of the project owner and a loan from the bank /21/. As such, 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 “Heilongjiang Yilan Hezuolinchang Phase II Wind Power Project” is located in Yilan County, Harbin City, Heilongjiang Province. The geographical coordinates of the wind farm is north latitude 46°08’ and east longitude 129°47’.

The project involves installation and operation of 29 wind turbines with 850 kW unit capacity, made in Tianjin which are invested by Gamesa corporation from Spain. DNV checked all parameters of the turbines from PDD against FSR /4/ to be able to confirm the consistency. The total installed capacity of the proposed project activity is 24.65 MW. It is expected that the proposed project will supply approximately 56 040 MWh electricity per year at a plant load factor (PLF) of 26% /4/ to NECPG. The electricity generated from the project will be transmitted to NECPG by the 220 kV line via wind farm 35 kV step-up substation.

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.



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The project activity start date has been verified by DNV corresponding to Wind turbines purchasing agreement on 26 February 2008 /31/ as construction start permit (15 April 2008) /32/ is later than wind turbine purchase date.

The expected operational lifetime of the project activity is 20 years /4/. A renewable crediting period of 7 years has been chosen for the project, starting on 1 July 2009. The emission reductions are estimated to be on average 64 098 tCO₂e/year and 448 686 tCO₂e over the first seven-year crediting period.

The project description is to the consideration of DNV complete and accurate.

4.3 Baseline Determination

The project correctly applies the approved baseline methodology ACM0002 (version 8), titled “Consolidated methodology for grid-connected electricity generation from renewable sources”.

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

- It is a grid connected zero emission renewable electricity capacity additions from wind energy.
- It does not involve switching from fossil fuel to renewable energy at the project site.
- The project is connected to NECPG for which the geographical and system boundaries are clearly identified and information on the characteristics of this grid is available.

The spatial extent of the project boundary is clearly defined as the site of the project activity and all power plants connected physically to NECPG including Liaoning, Heilongjiang and Jilin power grids, to which the project is connected. This is in line with the delineation of grid boundaries as provided by the DNA of China /24/. The defined project boundary is in line with ACM0002 (version 8).

The selected sources and gases are justified for the project activity. Emission sources and gases included in the project boundary are:

	<i>GHGs involved</i>	<i>Description</i>
<i>Baseline emissions</i>	<i>CO₂</i>	The baseline emission factor for the project is determined <i>ex-ante</i> as a combined margin, consisting of operating margin (OM) and build margin (BM) of NECPG.
<i>Project emissions</i>	<i>N/A</i>	Project emission is regarded as zero as the project is a renewable energy (wind source) project.
<i>Leakage</i>	<i>N/A</i>	There are no leakages that need to be considered in applying this methodology.

The baseline scenario is the following (since project activity is the installation of a new grid-connected renewable power plant/unit as per ACM0002 version 8):



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Electricity delivered to the grid by the project would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources.

The NECPG 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 NECPG during the first crediting period.

The baseline determination is transparent and reasonable.

4.4 Additionality

The additionality of the project has been established using the “*Tool for the demonstration and assessment of additionality*” version 5.2 approved by the CDM-EB.

4.4.1 CDM consideration and continued action to secure CDM status

The project activity start date has been verified by DNV corresponding to turbine purchase and supply contract between Yilan Longyuan Wind Power Co., Ltd. and GAMESA wind (Tianjin) Co., Ltd. 26 February 2008 /31/ as construction start permit (15 April 2008) /32/ is later than wind turbine purchase date and the commencement of validation (date of publication of the PDD for stakeholder) was on 30 October 2008.

DNV has assessed and verified the evidence and timeline for serious CDM consideration of the project activity in line with EB41 annex 46 as follows:

- The FSR financial analysis /6/ conducted by Xinjiang Wind and Electricity Design Consulting Co., Ltd. on January 2008 according to FSR /4/ dated January 2008, shows that the lower 6.94% IRR presented a financial barrier for PP, so PP was suggested to consider CDM benefit in FSR planning stage.
- Board of directors considered CDM revenues due to the financial barrier 11 January 2008 as verified by the board meeting minutes /17/.

After the starting date of 26 February 2008, Yilan Longyuan Wind Power Co., Ltd. and “China Fulin Windpower Development Corporation” signed CDM development contract on 3 March 2008 /18/. The global stakeholder consultation started 30 October 2008. DNV consider satisfactory actions were undertaken to secure CDM status in parallel with the physical implementation of the project activity.

4.4.2 Identification of alternatives to the project activity

Four realistic and credible alternatives to the project activity are considered:

- a) The proposed project not undertaken as a CDM project activity;
- b) The fossil fuel-fired plant with the same annual electricity output as the proposed project;
- c) Other renewable energy projects with the same annual electricity output as the proposed project;
- d) Continuation of the current situation, i.e. provision of equivalent amount of annual



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power output by the NECPG grid.

DNV considers the list of realistic and credible alternatives to be complete.

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 (the equivalent of the proposed project to thermal power plant /38/ is 20 MW) are strictly prohibited /26/ 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, alternative (b) has been completely eliminated from further discussions.

Alternative (c): DNV was able to confirm that the proposed project is located in the region which has no other exploitable sources of renewable energy such as hydropower/29/ /11/. For biomass and geothermal energy in China, biomass and geothermal power generation technology is still in the demonstration phase and can bring only poor economic benefits, which is difficult to be operated without policies& financial support /30/. For the solar energy, the technology and financial barriers prevent implementation of those kinds of projects in the area of the proposed project /30/. The same has been verified by DNV.

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, only alternative (a) and alternative (d) need a further analysis.

4.4.3 Investment analysis: Choice of approach

As the project generates economic benefits through the sales of electricity other than CDM related income and the alternative does not involve any investments, a benchmark analysis is justified for the project.

4.4.4 Investment analysis: Benchmark selection

The benchmark has been defined as a project-IRR of 8% after tax. DNV was able to verify that in China, for projects involving investment in the energy generation units including hydropower plants, fossil fuel fired plants and wind farm projects, minimum return of 8% /16/ on total investment can be expected. Hence, the same has been selected as the benchmark for the proposed project. This benchmark is still valid and the most recent one; and most Feasibility Study Reports (FSR) in China uses this document as reference for selecting the benchmark. Hence, the same has been selected as the benchmark for the proposed project.

4.4.5 Investment analysis: Input Parameters

DNV has verified all the input values used for the IRR calculations. It has been confirmed that the input values have been sourced from the feasibility study report (FSR) /4/. The financial calculations and assumptions have been assessed as:



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- The static total investment is 222.14 million RMB from FSR; and the tariff 0.5717 before accumulative operation 30 000 hours, 0.4209 after accumulative operation 30 000 hours sourced from FSR;
- The period of financial assessment (project IRR) is 20 years; reflecting the period of expected technical lifetime;
- The fair value of the project activity is 10% of original value of the fixed assets at the end of the assessment period and it is included as a cash inflow in the final year;
- The cost of financing expenditures (i.e. loan repayments and interest) is verified as not being included in the calculation of project IRR;
- Operating and maintenance costs reflect the local practice. The cost increases year by year due to aging and is not related to inflation, which is not included in FSRs in China.
- All formulas used in this analysis are readable and all relevant cells are viewable and unprotected.

Furthermore, DNV would also like to mention that FSR in China is required to be developed by a third party which is accredited for this task directly by the government. 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. Hence, a FSR can, in our opinion, be regarded as an accurate and trustworthy report coming from a recognized entity. In context of the proposed project activity, the FSR was prepared by China Fulin Windpower Development Corporation accredited by NDRC and the FSR was approved by Provincial Development and Reform Commission on 19 February 2008.

It is worthwhile to mention here that the FSR of the proposed project was approved by Provincial Development and Reform Commission on 19 February 2008 /4/ which is 10 days prior to the decision to proceed with the project activity (i.e. the start date of the project) which was on 26 February 2008 /32/. Given this short period of time between approval of the FSR and the decision to proceed with the project activity it is unlikely in the context of the project that the input values would have materially changed and that it is thus reasonable to assume that the FSR has been the basis of the decision to proceed with the investment in the project.

Furthermore, the input parameters used in the financial analysis of the proposed project were also compared with other similar CDM wind farm projects developed in Heilongjiang province and validated by DNV by comparing investment costs per MW, electricity tariff, plant load factor (PLF), percentage of O&M costs relative to total investment costs, etc. Based on the information verified, DNV is of the opinion that all the 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. So the project IRR analysis is considered correct and conservative.



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4.4.6 Investment analysis: Calculation and conclusion

The IRR calculations were provided in a spreadsheet /6/. The calculations were verified and found to be correct by DNV. The assumptions used in the calculations were deemed to be correct by DNV. The project-IRR without CDM revenues is 6.94%, which confirms that the project in the absence of CDM benefits and compared to the benchmark of 8% /16/ is not financially attractive. With CER revenues the project IRR increases to 9.78%, which is above the benchmark.

4.4.7 Investment analysis: Sensitivity analysis

Moreover, a sensitivity analysis has been carried out for parameters contributing to more than 20% of the revenues or costs to check the robustness of the financial analysis. Reasonable variations of the static investment, annual operational costs, and 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.

DNV was able to verify that the project IRR will touch the benchmark only if the above mentioned parameters change by values as mentioned below:

<i>Key Indicators</i>	<i>Variation of the parameter indicator needed to reach benchmark</i>
Static investment costs	-7.13%
Operation and maintenance cost	-34.84%
Electricity tariff	7.04%
Plant load factor (PLF)	8.57%

The proposed project is an un-tendering project while the tariff is fixed for a long term according to China's Management Rules on Tariff issued by NDRC /36/. The tariff of the un-tendering projects should be determined by the government with reference to the tariff of tendering wind projects. Recently, the tariff caps concluded in Heilongjiang province /37/ shows that it is very difficult that the actual tariff will be higher than the expected tariff of 0.5622 Yuan /37/. So assuming a 7.04% of tariff increase is unrealistic.

DNV was able to confirm that 7.13% decrease in investment costs is unlikely to happen, as the cost of turbines, engineering/construction and related accessories which forms the main part of the investment as 79% of the total investment of the proposed project goes to purchase and installation of electric equipments (wind turbines and transformers) according to the FSR /4/, and it is confirmed that the turbine's price steadily goes up due to urgent turbines demand /28/. Similarly, it is not realistic that the annual O&M cost decreases by 34.84%.



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The supplied power 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 FSR /4/, the annual output is estimated based on over 10-years of meteorological data of the wind resource in local area (1996 to 2006) and onsite wind resources measurement. Based on this information, the supplied power is likely to fluctuate only within a small range. Assuming 8.57% increase is thus unrealistic.

Analysis above shows that very unrealistic favorable circumstances would be needed for the IRR to reach the benchmark. Therefore the project is not financially attractive. This demonstrates that the project activity would not be implemented without the CDM.

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

4.4.8 Common practice analysis.

DNV verified from 1) Shi Pengfei, the statistics concerning installed capacity before 2005 of China; 2) Tariff statistics of China dated 27 September 2006; 3) China Electric Power Yearbook 2002-2006 /35/ that only two wind farms have been constructed since 2002 (2002 is a threshold for economic reform in electricity sector /34/) in Heilongjiang province without revenues from CDM. 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 /33/ that are impossible for the proposed wind farm project. Therefore the project activity can not be said to represent common practice.

In summary, it is sufficiently 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 8 “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;



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- 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 “Tool to calculate the emission factor for an electricity system”, version 1.1;
- Data needed to recalculate the build margin emission factor, if needed, consistent with “Tool to calculate the emission factor for an electricity system”, version 1.1;

The operating margin and build margin emission factor are determined *ex-ante*; therefore the parameter monitored *ex-post* is the electricity generation from the proposed project activity. The electricity generated from the project will be measured by four electronic multifunctional electricity meters (accuracy degree is 0.2S-0.5S, bidirectional) installed in the transformer substation on hourly basis and recorded monthly at the substation (interconnection facility connecting the facility to the grid). This data will be cross verified against the sales receipt from the grid.

Calibration is annually carried out by the Heilongjiang Electric Power Company with the records being provided to the project owner, and these records will be maintained by the project owner and will be provided to the designated third party.

If any errors are detected, the party owning the meter shall repair, recalibrate or replace the meter and give the other party sufficient notice to allow a representative to attend during any corrective activity.

The monitoring plan is in accordance with the monitoring methodology. The monitoring plan will give opportunity for real measurements of achieved emission reductions.

4.5.3 Management system and quality assurance

Monitoring tasks must be implemented according to the monitoring plan in order to ensure that the real, measurable and long-term greenhouse gas (GHG) emission reductions for the proposed project is monitored and reported.

The personnel training plan /22/ and management and operation manual /23/, including responsibilities and authorities for project management, procedures for monitoring and reporting, QA/QC procedures, procedures for calibration of metering equipment and training, were verified.

The reading of the electricity meter will be hourly measured and monthly recorded. The project developer will establish a CDM team, the outline of which is shown in the PDD, and a project management and operation manual as described below:

The operational manager will collect the information and data required by the monitoring plan. The collected information will be recorded and sent to the CDM project manager and the responsible staffs on a monthly basis. The CDM project manager will be in charge of the implementation of the monitoring plan and report to the general manager who will verify the calculations and reports.

The project management and operation manual contains procedures for tracking information. All paper-based information will be stored by the project owner. Detailed procedures are expected to be in place prior to the start of the crediting period to enable subsequent verification of emission reductions. The relevant documents will be kept for at least two years after the end of the crediting period.



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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 (L_y), as follows:

- 1) Baseline emissions: baseline emissions (BE_y in tCO_2) are the product of the baseline emissions factor ($EF_{grid,CM,y}$ in tCO_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.

The baseline emission factor for the project is determined *ex-ante* in line with the Tool to calculate the emission factor for an electricity system /10/ as a combined margin, consisting of combination of the operating margin (OM) and build margin (BM). The weights were correctly given as 0.75 and 0.25, respectively.

The latest data used to calculate OM and BM is derived from China Energy Statistical Yearbooks 2005-2007 /12/ editions and China Power Electric Power Yearbooks 2000-2007 editions /11/. These are the latest data available at the time of global stakeholder consultation 30 October 2008. Country specific data for net calorific value of each type of fossil fuel /12/, country specific data for emission factors for the fuel /12/, IPCC 2006 default values for the oxidation factor /15/ of each type of fossil fuel and the total electricity /11/ delivered to the NECPG were selected and deemed reasonable.

For the operating margin (OM) emission factor, simple OM was selected. The low-cost/must-run resources constitute less than 50% of the total grid generation as it is shown that 2002 to 2006 the proportions of low-cost/must run resources are 5.44%, 4.72%, 6.46%, 8.28% and 5.7% respectively. Aggregated generation and fuel consumption data are used due to the fact that more specific data for the power plants are not available in the NECPG (option C) /14/. OM was calculated to be 1.2561 tCO_2e/MWh /24/ as a generation weighted average for the years 2004, 2005 and 2006.

Because plant specific fuel consumption and electricity generation data is not publicly available in China, Following the EB's guidance the build margin is calculated as follows following the EB's guidance /14/:

- Use of capacity additions from the years 1999 to 2006 is chosen and represents 23.81% of the total installed capacity.
- Use of weights estimated using installed capacity in place of annual electricity generation. Thermal power plant accounts for 87.57% /24/ of the total installed capacity additions in this period. Since specific data for each technology is not available, the fraction of fuels (coal 98.70%; natural gas 0.22%; oil 1.08%) /24/ was estimated from the CO_2 intensity for the fuels used in NECPG.
- Use of 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. This is 37.28% for coal power plants and 48.81% for oil power plants and gas power plants /24/.



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The data applied are considered as the best data available for calculating the BM in the NECPG. The official supporting documentation has been verified. BM is calculated to be 0.8068 tCO₂e/MWh. The combined margin of 1.1438 **Error! Reference source not found.**tCO₂/MWh is fixed *ex-ante* for the entire first crediting period. According to the FSR of the proposed project, the net electricity generated is approximately 56 040 MWh and then the annual emission reductions are 64 098 tCO₂ e/year

The GHG calculations are complete and transparent, and their accuracy has been verified. No other project emission or leakage sources contributing more than 1% and not mentioned by the methodology have been found.

4.7 Environmental Impacts

An Environmental Impact Assessment (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. The EIA was approved by Environmental Protection Bureau of Heilongjiang Province on 22 May 2006 /5/.

4.8 Comments by Local Stakeholders

A stakeholders' symposium was held in a hotel of Yilan County, representatives from the Development and Reform Bureau of Yilan County, the Environmental Protection Bureau of Yilan County, the Yilan Power Supply Corporation, and several villages influenced by and around the proposed project were introduced by project proponent for the proposed project and those representatives expressed their supportive opinion for the proposed project. The symposium meeting minutes and participant register and questionnaires /27/ were presented to DNV.

DNV considers the local stakeholder consultation carried out adequately.

4.9 Comments by Parties, Stakeholders and NGOs

The PDD version 2.0 of 30 August 2008 was made publicly available on UNFCCC's website

(<http://cdm.unfccc.int/Projects/Validation/DB/RJA9GM91SZOYXS2Y6SC4D1D7H4ZPRG/view.html>) and Parties, stakeholders and NGOs were through the CDM website invited to provide comments during a 30 days period from 30 October 2008 to 28 November 2008.

No comments were received.



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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.	CAR-1 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	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
6. Parties participating in the CDM shall designate a national authority for the CDM.	CDM Modalities and Procedures §29	OK
7. The host Party and the participating Annex I Party shall be a Party to the Kyoto Protocol.	CDM Modalities §30/31a	OK
8. The participating Annex I Party's assigned amount shall have been calculated and recorded.	CDM Modalities and Procedures §31b	OK
9. The participating Annex I Party shall have in place a national system for	CDM Modalities and Procedures §31b	OK



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Requirement	Reference	Conclusion
estimating GHG emissions and a national registry in accordance with Kyoto Protocol Article 5 and 7.		
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
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		OK
12. Documentation on the analysis of the environmental impacts of the project activity, including transboundary impacts, shall be submitted, and, if those impacts are considered significant by the project participants or the Host Party, an environmental impact assessment in accordance with procedures as required by the Host Party shall be carried out.	CDM Modalities and Procedures §37c	OK
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
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



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Requirement	Reference	Conclusion
Other		
15. The baseline and monitoring methodology shall be previously approved by the CDM Executive Board.	CDM Modalities and Procedures §37e	OK
16. A baseline shall be established on a project-specific basis, in a transparent manner and taking into account relevant national and/or sectoral policies and circumstances.	CDM Modalities and Procedures §45c,d	OK
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-PDD format.	CDM Modalities and Procedures Appendix B, EB Decision	OK
19. Provisions for monitoring, verification and reporting shall be in accordance with the modalities described in the Marrakech Accords and relevant decisions of the COP/MOP.	CDM Modalities and Procedures §37f	OK

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/	DR I	The project is located on the Hengdai Mountain in Huanan District, Jiamusi City, Heilongjiang Province. The geographical coordinates of the wind farm is longitude 130°09.958', and northern latitude 46°17.038'.		OK
A.1.2. Are the project's system boundaries (components and facilities used to mitigate GHGs) clearly defined?	/1/	DR I	The project system boundary includes the project geographical location and NECPG.		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>					
A.2.1. Which Parties and project participants are participating in the project?	/1/ /2/ /3/	DR	China and Switzerland are the two Parties participating in the proposed project activity. China is hosting the project and Switzerland is the Annex I Party. The project participants are Yilan Longyuan Wind Power Co., Ltd., from the host country, China and Essent Trading International S.A. of		OK

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			Switzerland.		
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/	DR	The letter of approval from the DNA of China has not been obtained. The letter of approval from the DNA of Switzerland has not been obtained, and the confirmation regarding voluntary participation by DNA of Switzerland needs to be provided. The letter of approval from the DNA of China confirming that the project is in line with the sustainable development policies of host country has not been received.	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	The Republic of China has ratified in Kyoto Protocol on 30 August 2002, and established a DNA; National Development and Reform Commission of the People's Republic of China. DNA of Switzerland: Federal Office for the Environment FOEN, Climate Unit on ratification of the Kyoto Protocol on 31 May 2002. However, both Parties are required to provide the confirmation of voluntary participation in the proposed project activity.	CAR-1	OK
A.2.4. Potential public funding for the project from Parties in Annex I shall not be a diversion of official development assistance.	/1/ /21/	DR	Based on the proposed project approval from the government /4/, the total investment will be financed from the capital of the project owner for 33.3% and domestic bank loan for 66.7%. The validation did not reveal any information that indicates that the project can		OK

CHECKLIST QUESTION			Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.																		
* MoV = Means of Verification, DR= Document Review, I= Interview																									
					be seen as a diversion of official development assistance (ODA) funding towards the China.																				
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 current good practices?			/4/	DR	<p>Yes. The project design engineering reflects current good practices in China because the wind turbine (Gamesa52-850kW) used by the proposed project is the primary production of Gamesa Eólica who has set up the subsidiary company to produce the wind turbines in Tianjin. The main characteristics of Gamesa Eólica’s wind turbines are their robustness, adaptability, reliability and maximum performance on all types of sites and in all types of winds.</p> <p>DNV checked the parameter in FSR and confirmed that the parameters in PDD are consistent with that in FSR and equipment purchase contract /31/.</p> <table><tr><td colspan="2">Summary</td></tr><tr><td>Type</td><td>G52</td></tr><tr><td>Manufacture</td><td>Gamesa corporation</td></tr><tr><td>Nominal Capacity</td><td>850 kW</td></tr><tr><td>Lifetime</td><td>20 years</td></tr><tr><td colspan="2">Rotor</td></tr><tr><td>Type</td><td>3 blades, horizontal axis, up wind</td></tr><tr><td>Diameter (m)</td><td>52</td></tr><tr><td>Swept area (m²)</td><td>2124</td></tr></table>	Summary		Type	G52	Manufacture	Gamesa corporation	Nominal Capacity	850 kW	Lifetime	20 years	Rotor		Type	3 blades, horizontal axis, up wind	Diameter (m)	52	Swept area (m²)	2124		OK
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				<table><tr><td>Rotational speed (r.p.m)</td><td>14.6 ~ 30.8 (towers 55 and 65m) 16.2 ~ 30.8 (tower 44m)</td></tr><tr><td>Cut-in / Cut-out speed (m/s)</td><td>4 / 25</td></tr><tr><td>Rated wind speed (m/s)</td><td>14</td></tr><tr><td>Extreme wind speed (m/s)</td><td>70 (IEC)</td></tr><tr><td>Blades</td><td></td></tr><tr><td>Length (m)</td><td>25.3</td></tr><tr><td>Material</td><td>Epoxy reinforced glass fibre</td></tr><tr><td>Generator</td><td></td></tr><tr><td>Type</td><td>Doubly-fed machine</td></tr><tr><td>Rated power (kW)</td><td>850</td></tr><tr><td>Rotational speed (r.p.m)</td><td>1620</td></tr><tr><td>Control System</td><td></td></tr><tr><td>Wind turbine Control</td><td>Ingecon-W Control System</td></tr><tr><td>Remote Control</td><td>Internet</td></tr></table>	Rotational speed (r.p.m)	14.6 ~ 30.8 (towers 55 and 65m) 16.2 ~ 30.8 (tower 44m)	Cut-in / Cut-out speed (m/s)	4 / 25	Rated wind speed (m/s)	14	Extreme wind speed (m/s)	70 (IEC)	Blades		Length (m)	25.3	Material	Epoxy reinforced glass fibre	Generator		Type	Doubly-fed machine	Rated power (kW)	850	Rotational speed (r.p.m)	1620	Control System		Wind turbine Control	Ingecon-W Control System	Remote Control	Internet		
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Wind turbine Control	Ingecon-W Control System																																	
Remote Control	Internet																																	
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 I	The 29 sets of wind turbines (Gamesa52-850kW) with a nominal capacity of 850 KW will be used in the proposed project, providing a total capacity of 24.65 MW and annual net electricity generation is expected to be approximately 56.04 GWh to NECPG. Each turbine will have a 690V-to-35kV transformer, from which a 35kV line will link into the on-site 220kV switchgear at the substation constructed for the proposed project.																															
A.3.3. Does the project make provisions for meeting training and maintenance needs?	/1/ /22/ /23/	DR I	The training schedule and the training record of relative personnel have been provided by project owner to meet training and maintenance needs.			OK																												
A.4. Contribution to Sustainable Development The project's contribution to sustainable development is																																		

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
<i>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 been not received.	CAR-1	OK
A.4.2. Will the project create other environmental or social benefits than GHG emission reductions?	/1/ /4/	DR	Yes. The project will, among others benefits, mitigate local environmental pollution caused by coal-fired power plants and create local employment opportunity.		OK
B. Project Baseline <i>The validation of the project baseline establishes whether the selected baseline methodology is appropriate and whether the selected baseline represents a likely baseline scenario.</i>					
B.1. Baseline Methodology <i>It is assessed whether the project applies an appropriate baseline methodology.</i>					
B.1.1. Does the project apply an approved methodology and the correct version thereof?	/1/ /8/	DR	Yes. The project correctly applies ACM0002 (version 8) “Consolidated baseline methodology for grid-connected electricity generation from renewable sources”.		OK
B.1.2. Are the applicability criteria in the baseline methodology all fulfilled?	/1/ /8/	DR	Yes. The project is a capacity addition from a renewable energy source and does not involve on-site fuel switch from fossil fuels to a renewable source. The geographic and system boundaries for the relevant electricity grid (NECPG) can be clearly identified.		OK
B.2. Baseline Scenario Determination <i>The choice of the baseline scenario will be validated with</i>					

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
<i>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>					
B.2.1. What is the baseline scenario?	/1/	DR	<p>As the project activity is setting up a new wind power plant, the baseline scenario as per the methodology ACM0002, is</p> <p><i>Electricity delivered to the grid by the project would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculated described in the “Tool to calculate the emission factor for an electricity system”.</i></p> <p>The grid the proposed project activity will be connected is NECPG. The selected baseline scenario in the PDD is the same.</p>		OK
B.2.2. What other alternative scenarios have been considered and why is the selected scenario the most likely one?	/1/ /8/ /26/	DR	<p>The alternative scenarios are listed as follows:</p> <ul style="list-style-type: none"> a) The proposed project activity undertaken without being registered as a CDM project activity; b) Construction of a fossil fuel-fired power plant with equivalent amount of annual electricity output; c) Construction of a power plant using other sources of renewable energy with equivalent amount of annual electricity output; d) Continuation of the current situation, i.e. 	CL	OK

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			<p>provision of equivalent amount of annual power output by the NECPG grid.</p> <p>For scenario (a), as demonstrated in section B3.1 below, it is not financially acceptable because of its low IRR.</p> <p>It has been stated that the fossil fuel-fired power plant scenario (b) with installed capacity of less than 15MW (equivalent with the proposed 24.65MW wind project) does not comply with the Chinese law as thermal power plants with a capacity below 135 MW are prohibited to be built in areas covered by large grids such as provincial grid according to Chinese DNA's guidance for the determination of grid boundaries.</p> <p>DNV can confirm that for other renewable sources like solar PV, geothermal and biomass of the similar installed capacity as the proposed project are alternatives far from being attractive investment in China /30/.</p> <p>The PP summarize the installed hydro power capacity addition less than 20 MW from the year 2003 to 2006 /11/, but clarification is required as to what extent the potential availability of hydro resources in Helingjiang province is suitable for hydro power?</p>		
B.2.3. Has the baseline scenario been determined according to the methodology?	/1/ /8/	DR	Yes.		OK

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
B.2.4. Has the baseline scenario been determined using conservative assumptions where possible?	/1/	DR	Yes. For CM calculation, the CO ₂ emission factors of the coal, oil and gas fuel-fired best technology for power generation in China is used as the CO ₂ emissions factors of the coal, oil and gas fuel-fired power plant for BM calculation.		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/ /4/	DR	Yes. The renewable energy law, sectoral policy and development trends in NECPG 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 since the analysis of wind resource for the proposed project is based on 30 years meteorological statistics and the OM and BM data is from the NDRC public source.		OK
B.3. Additionality Determination <i>The assessment of additionality will be validated with 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/ /6/ /16/	DR I	The project additionality is demonstrated by applying the “Tool for the demonstration and assessment of additionality” version 05.2. Step1. Identification of alternatives to the project activity consistent with current laws and regulations <i>Sub-step1a. Define alternatives to the project</i>		OK

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			<p><i>activity:</i></p> <p>Four alternatives to the project were identified: a) The proposed project itself, but not undertaken as a CDM project activity. b) Construction of a fossil fuel-fired power plant with equivalent installed capacity or annual electricity generation. c) Construction of a power plant using other renewable energy with equivalent installed capacity or annual electricity generation. d) Equivalent electricity service provided by the <i>NECPG</i>.</p> <p><i>Sub-step1b. Consistency with mandatory laws and regulations:</i></p> <p>Among these, b) is not in compliance with the legislations of China /26/, as the capacity of the proposed project is less than 15 MW thermal power plants based on the rated power operation hour's ratio of 5612 hours /38/ for large thermal power plant and 2273 hours /4/ for the proposed project.</p> <p>Barriers the other alternatives encounter: c) is the potential scenarios consisting of hydro, biomass or solar or geothermal power plant, among which hydro power alternative is not feasible due to lack of water resources in the location the project will be sited. But clarification is required as to what extent the potential availability of hydro resources</p>		

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			<p>project IRR without CER revenues has been verified to be 6.94%, below the benchmark of 8% /16/. DNV has verified the IRR calculations presented are in accordance with the EB's latest guidance on the assessment of financial calculations (EB38 - EB41), DNV confirms that:</p> <p>a) DNV has verified all the input values used for the IRR calculations. It has been confirmed that the input values have been sourced from the feasibility study report (FSR) /4/ prepared by Xinjiang Wind and Electricity Design Consulting Co., Ltd. accredited by Ministry of China Construction and FSR approved by Provincial Development and Reform Commission on 19 February 2008.</p> <p>b) DNV has compared the input parameters for the financial analysis included in the PDD with the parameters stated in the (FSR) /4/ and was able to confirm that the values applied are consistent with the value stated in the FSR/4/.</p> <p>The financial calculations and assumptions have been assessed as:</p> <ul style="list-style-type: none"> - The period of financial assessment (project IRR) is 21 years; reflecting the period of expected technical lifetime; - The fair value of the project activity is 10% of original value of the fixed assets at the end of the assessment period and it is included as 		

CHECKLIST QUESTION				Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
* MoV = Means of Verification, DR= Document Review, I= Interview								
						<p>a cash inflow in the final year;</p> <ul style="list-style-type: none">- The cost of financing expenditures (i.e. loan repayments and interest) is verified as not being included in the calculation of project IRR;- Operating and maintenance cost reflect the local accounting principles.- All formulas used in this analysis be readable and all relevant cells be viewable and unprotected; <p>So the project IRR analysis is considered correct and conservative.</p> <p><i>Sub-step 2d. Sensitivity analysis</i> The PP needs to analyze variation of each input parameter's value touching the benchmark and justify the impossibility of this likelihood.</p> <p><i>Step 3: Barrier analysis.</i> Barrier analysis has not been selected to demonstrate additionality.</p> <p><i>Step 4: Common practice analysis.</i> In common practice:</p> <ul style="list-style-type: none">• Clarification is requested as what is the criterion of choosing 2000 as the common practice start date and what are the criteria for similar projects compared to the proposed project activity?• The source of reference http://www.china5e.com/news/power/200208/200208220027.html cannot be connected, so PP is required to		

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			provide the valid reference.		
B.3.2. Are all assumptions stated in a transparent and conservative manner?	/1/	DR	Yes.		OK
B.3.3. Is sufficient evidence provided to support the relevance of the arguments made?	/1/	DR	Refer to B3.1	CL2	OK
B.3.4. If the starting date of the project activity is before the date of validation, has sufficient evidence been provided that the incentive from the CDM was seriously considered in the decision to proceed with the project activity?	/1/ /4/	DR I	<p>The commencement of validation (date of publication of the PDD for stakeholder) was on 30 October 2008.</p> <p>The starting date of the proposed project is taken as 15 April 2008 in PDD, but as the starting date of a CDM project activity is the earliest date at which either the implementation or construction or real action of a project activity begins, the clarification is requested for the real start date when the PP purchased turbine and booked supply contract between Yilan Longyuan Wind Power Co., Ltd. and GAMESA wind (Tianjin) Co., Ltd. on 26 February 2008 /31/.</p> <p>Regarding the EB41 requirement, evidence needs to be provided to demonstrate that the incentive from the CDM was seriously considered in the decision to proceed with the project activity and all CDM consideration arguments should be included in section B.5 of the PDD.</p>	CL3	OK

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
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>					
B.4.1. Are the calculations documented according to the approved methodology and in a complete and transparent manner?	/1/	DR	Project emission is regarded as zero as the project is a renewable energy (wind source) project according to methodology ACM0002.		OK
B.4.2. Have conservative assumptions been used when calculating the project emissions?	/1/	DR	Not applicable.		OK
B.4.3. Are uncertainties in the project emission estimates properly addressed?	/1/	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>					
B.5.1. Are the calculations documented according to the approved methodology and in a complete and transparent manner?	/1/ /8/	DR	Baseline emissions have been calculated by multiplying the net electricity supplied to the grid and the emission factor of the grid. The grid emission has been calculated as the weighted average of operating margin (OM) and build margin (BM). Clarification is requested as the most recently available OM and BM data should be adopted to calculate the ER.	CL4	OK

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			The weights ω_{OM} and ω_{BM} are selected as 0.75 and 0.25, respectively, as stipulated for wind project by ACM0002 (version 8).		
B.5.2. Have conservative assumptions been used when calculating the baseline emissions?	/1/	DR	Yes. The CO ₂ emission factors of the coal, oil and gas fuel-fired best technology for power generation in China is used as the CO ₂ emissions factors of the coal, oil and gas fuel-fired power plant for BM calculation.		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	According to ACM0002, potential leakage effects, such as emissions arising from power plant construction and land inundation do not need to be considered.		OK
B.6.2. Have conservative assumptions been used when calculating the leakage emissions?	/1/	DR	Not Applicable.		OK
B.6.3. Are uncertainties in the leakage emission estimates properly addressed?	/1/	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</i>					

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
<i>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. It is expected that the implementation of the proposed project as planned would result in real, measurable and long-term benefits. Clarification is requested as the most recently available OM and BM data should be adopted to calculate the ER.	CL 4	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/ /23/	DR	The monitoring plan is in accordance with the approved monitoring methodology ACM0002 (version 07) “Consolidated monitoring methodology for grid-connected electricity generation from renewable sources” and is in a complete and transparent manner.		OK
B.8.2. Will all monitored data required for verification and issuance be kept for two years after the end of the crediting period or the last issuance of CERs, for this project activity, whichever occurs later?	/1/ /23/	DR	Yes.		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/	DR	The project activity is renewable electricity generation and hence no project emissions are expected to result from the project activity.		OK

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
B.9.2. Are the choices of project GHG indicators reasonable and conservative?	/1/	DR	Not applicable.		OK
B.9.3. Is the measurement method clearly stated for each GHG value to be monitored and deemed appropriate?	/1/	DR	Not applicable		OK
B.9.4. Is the measurement equipment described and deemed appropriate?	/1/	DR	Not applicable		OK
B.9.5. Is the measurement accuracy addressed and deemed appropriate? Are procedures in place on how to deal with erroneous measurements?	/1/	DR	Not applicable		OK
B.9.6. Is the measurement <i>interval</i> identified and deemed appropriate?	/1/	DR	Not applicable		OK
B.9.7. Is the <i>registration, monitoring, measurement and reporting</i> procedure defined?	/1/	DR	Not applicable		OK
B.9.8. Are procedures identified for <i>maintenance</i> of monitoring equipment and installations? Are the calibration intervals being observed?	/1/	DR	Not applicable		OK
B.9.9. 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	Not applicable		OK
B.10. Monitoring of Baseline Emissions					

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
<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 necessary for determining baseline emissions during the crediting period?	/1/	DR	The project uses the <i>ex-ante</i> determination of emission factor for grid electricity. Only net electricity supplied to the grid will be monitored and double checked with the invoice of electricity sold to the grid. As per ACM0002 version 07, PP should monitor TEG _y of the project activity as another parameter.	CL5	OK
B.10.2.Are the choices of baseline GHG indicators reasonable and conservative?	/1/ /8/	DR	The choice of baseline indicators is in line with ACM0002.		OK
B.10.3.Is the measurement method clearly stated for each baseline indicator to be monitored and also deemed appropriate?	/1/	DR	The net electricity delivered to the Grid for baseline emission calculation will be selected to be monitored and measured hourly and recorded monthly.		OK
B.10.4.Is the measurement <i>equipment</i> described and deemed appropriate?	/1/ /23/	DR	The metering equipment will be properly configured and checked periodically according to the requirement from Technical administrative code of electric energy metering (DL/T448 - 2000).		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/ /23/	DR	The accuracy of the electricity meters is described as 0.2s-0.5s. There are procedures in place on how to deal with erroneous measurements.		OK

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B.10.6. Is the measurement <i>interval</i> for baseline data identified and deemed appropriate?	/1/ /23/	DR	The electricity supplied to the grid will be measured hourly and recorded monthly, line with ACM0002.		OK
B.10.7. Is the registration, <i>monitoring</i> , <i>measurement</i> and <i>reporting</i> procedure defined?	/1/ /23/	DR	Yes.		OK
B.10.8. Are procedures identified for <i>maintenance</i> of monitoring equipment and installations? Are the calibration intervals being observed?	/1/ /23/	DR	Yes. Calibration is annually carried out by the Heilongjiang Electric Power Company with the records being provided to the project owner, and these records will be maintained by the project owner and will be provided to the designated third party.		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/ /23/	DR	Yes. The CDM manual sets out the procedures for tracking information from the primary source to data calculations, in paper format.		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/	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/	DR	Not Applicable.		OK
B.11.3. Is the measurement method clearly stated for each leakage value to be monitored and deemed appropriate?	/1/	DR	Not Applicable.		OK

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B.12. Monitoring of Sustainable Development Indicators/ Environmental Impacts <i>It is assessed whether choices of indicators are reasonable and complete to monitor sustainable performance over time.</i>		DR			
B.12.1. Is the monitoring of sustainable development indicators/ environmental impacts warranted by legislation in the host country?	/1/	DR	Monitoring of sustainable development indicators is not required by the Chinese DNA. The environmental impacts are identified in the EIA that was approved on 19 March 2008.		OK
B.12.2. Does the monitoring plan provide for the collection and archiving of relevant data concerning environmental, social and economic impacts?	/1/		Chinese DNA does not require collection and archiving of data related to environmental, social and economic impacts. The environmental impacts will be monitored by local environmental authority.		OK
B.12.3. Are the sustainable development indicators in line with stated national priorities in the Host Country?	/1/	DR	Yes. 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>		DR			
B.13.1. Is the authority and responsibility of overall project management clearly described?	/1/ /23/	DR	Yes.		

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B.13.2. Are procedures identified for training of monitoring personnel?	/1/ /22/	DR	According to PDD, the training department is set up and all staff responsible for monitoring job will be well trained before operation of project and periodically if needed.		OK
B.13.3. Are procedures identified for emergency preparedness for cases where emergencies can cause unintended emissions?	/1/	DR	No emergency situation which can cause unintended emissions is expected from the project.		OK
B.13.4. Are procedures identified for review of reported results/data?	/1/ /23/	DR	Yes. The CDM manager will be in charge of the implementation of the confirmations on monitoring, calculation data and report to the General Manager of the company.		OK
B.13.5. Are procedures identified for corrective actions in order to provide for more accurate future monitoring and reporting?	/1/ /8/	DR	Yes. If reading of the meter is inaccurate by more than the allowable error, or otherwise functioned improperly, the electricity supplied to the grid by the proposed project will be solved in 3 different ways.		OK
C. Duration of the Project/ Crediting Period <i>It is assessed whether the temporary boundaries of the project are clearly defined.</i>					
C.1.1. Are the project's starting date and operational lifetime clearly defined and evidenced?	/1/ /17/	DR I	The starting date of the project is defined as 26 February 2008 /31/ when the wind turbines purchasing agreement was signed and the stated lifetime of the project is 20 years /4/.		
C.1.2. Is the start of the crediting period clearly defined and reasonable?	/1/	DR	The expected start date of the crediting period is 01 July 2009.		OK
D. Environmental Impacts <i>Documentation on the analysis of the environmental impacts will</i>					

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<i>be assessed, and if deemed significant, an EIA should 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 EIA has been properly described, which covers atmospheric, noise, solid waste environmental impact analysis.		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	Environmental Protection Bureau of Heilongjiang Province approved first and second phase projects on 22 May 2006. EIA approval reconfirmation for first and second phase projects from Environmental Protection Bureau of Heilongjiang Province on 19 March 2008.		OK
D.1.3. Will the project create any adverse environmental effects?	/1/ /5/	DR	As per the results of EIA and the reply from the approval of the local Environmental Protection Bureau, the impacts on the environment are not significant.		OK
D.1.4. Are transboundary environmental impacts considered in the analysis?	/1/ /5/	DR	The project being a wind power project will not have any transboundary effects.		OK
D.1.5. Have identified environmental impacts been addressed in the project design?	/1/ /5/		Yes. The impacts are properly described in FSR.		OK
D.1.6. Does the project comply with environmental legislation in the host country?	/1/ /5/	DR	Yes.		OK
E. Stakeholder Comments <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>					

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
E.1.1. Have relevant stakeholders been consulted?	/1/	DR	<p>On January 15th, 2008, under the support of local government, the project owner successfully held a stakeholder symposium in Yilan County. The summary /27/ of this conference was verified by DNV and showed that the participating representatives were in favor of the project activity.</p> <p>The clarification is required regarding the summary of comments; the proponent of the survey; the distribution processes of the survey and when the survey was done.</p>	CL-6	OK
E.1.2. Have appropriate media been used to invite comments by local stakeholders?	/1/	DR	<p>A survey of the potential stakeholders, including local residents and local government in the area using a questionnaire was implemented.</p> <p>The clarification is required regarding the summary of comments; the proponent of the survey; the distribution processes of the survey and when the survey was done.</p>	CL-6	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	For the renewable energy project as such wind power project, the stakeholder consultation process is not required by regulations or laws in China.		OK
E.1.4. Is a summary of the stakeholder comments received provided?	/1/ /27/	DR	The clarification is required regarding the summary of comments; the proponent of the survey; the distribution processes of the survey and when the survey was done.	CL-6	OK

CHECKLIST QUESTION		Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
* MoV = Means of Verification, DR= Document Review, I= Interview						
E.1.5. Has due account been taken of any stakeholder comments received?		/1/	DR	No negative comment to the project was received during the consultation.		OK

Table 2b: Additional requirements checklist for VVM version 1 (EB 44)

A.5. Letter of approval						
A.1.1 Is the LoA received directly from the DNA or through the project participant.		/2/ /3/	DR	The LoA of the DNA of China and the LoA of Annex I Party Switzerland were provided by China Fulin Windpower Development Corporation; but DNV confirmed its authenticity from NDRC and relative documents provided.		OK
A.6. Project design						
A.2.1 Does the PDD describe the CDM project activity with all relevant elements in a transparent and accurate way?		/1/ /4/	DR	The CDM project description provided is in a transparent and accurate way. The project activity such as project site, the capacity, the turbines and parameters etc are consistent with related information reflected in FSR.		OK
A.2.2 Has the CDM project activity at the start of the validation been constructed or does the CDM project activity use existing facilities or equipment?		/1/ /4/ /32/ /32/	DR	The project activity start date has been verified by DNV corresponding to turbine purchase and supply contract between Yilan Longyuan Wind Power Co., Ltd. and GAMESA wind (Tianjin) Co., Ltd. 26 February 2008 /31/ and the commencement of validation (date of publication of the PDD for stakeholder) was on 30 October 2008. The project activity is a newly built wind farm project constructed before the start of		OK

			the validation.		
A.2.3 Is the project a large scale project, a small scale project with average annual emission reductions above 15 000 tonnes or a bundled small scale project? Has on-site visit been carried out?	/1/ /4/	DR	The project activity is a large scale project fully addressed in FSR and PDD; On 3 December 2008, DNV performed interviews with project stakeholders to confirm selected information and to resolve issues identified in the document review. DNV did not perform site visit for Heilongjiang Yilan Hezuolinchang Phase II Wind Power Project since the information provided was sufficient to verify project design and its implementation. Documents such as the design /4/ /1/, was sufficient and it was deemed that no site visit was necessary.		OK
A.2.4 Does the project activity involve alteration of existing installations? If so, have the differences between pre-project and post-project activity been clearly described in the PDD?	/1/ /4/	DR	No, the project activity is newly built wind farm.		OK
A.7. Project emissions not addressed by the methodology					
A.3.1 Does the methodology describe all project emission source for the project activity that contributes all 1% of the emission reductions? Sources that the methodology considers not to take into account are not relevant (e.g. cement and iron consumption for building hydropower plants).	/1/ /8/	DR	Yes. Baseline emissions (BE_y in tCO_2) are the product of the baseline emissions factor ($EF_{grid,CM,y}$ in tCO_2/MWh) times the electricity supplied by the project activity to the grid (EG_y in MWh); Project emission is regarded as zero as the project is a renewable energy (wind source) project and there are no leakages that need to be considered in applying this methodology.		OK
A.8. Documentation of baseline emissions					
A.4.1 Documentation of the baseline determination: a. All assumptions and data used by the project participants are listed in the PDD and related document to be submitted for registration. The	/1/ /8/ /24/	DR	a. All assumptions and data such as OM and BM determined ex_ ante used by the project participants are listed in the PDD; b. Yes;		OK

<p>data are properly referenced.</p> <p>b. All documentation is relevant as well as correctly quoted and interpreted.</p> <p>c. Assumptions and data can be deemed reasonable</p> <p>d. Relevant national and/or sectoral policies and circumstances are considered and listed in the PDD.</p> <p>e. The methodology has been correctly applied to identify what would occurred in the absence of the proposed CDM project activity</p>			<p>c. Assumptions and data can be deemed reasonable</p> <p>d. Yes;</p> <p>e. Yes.</p> <p>The applicability of this methodology is justified since:</p> <p>It is a grid connected zero emission renewable electricity capacity additions from wind energy.</p> <p>It does not involve switching from fossil fuel to renewable energy at the project site.</p> <p>The project is connected to NECPG for which the geographical and system boundaries are clearly identified and information on the characteristics of this grid is available.</p>		
A.9. Documentation of the calculations					
<p>A.5.1 Algorithms and/or formulae used to determine emission reductions</p> <ul style="list-style-type: none"> All assumptions and data used by the project participants are listed in the PDD and related document submitted for registration. The data are properly referenced All documentation is correctly quoted and interpreted. All values used can be deemed reasonable in the context of the project activity The methodology has been correctly applied to calculate the emission reductions and this can be replicated by the data provided in the PDD and supporting files to be submitted for registration. 	/1/ /8/	DR	<p>According to the feasibility study of the proposed project, the net electricity generated is approximately 56 040 MWh, i.e. $EG_y = 56\,040\text{ MWh}$;</p> <p>And $EF_y = \text{Error! Reference source not found. } 1.1438\text{ tCO}_2/\text{MWh}$ as illustrated below;</p> <p>So, the estimated anthropogenic emission of the first crediting period is as follows:</p> <p>$ER_y = BE_y = EG_y * EF_y = 64\,098\text{ tCO}_2\text{ e/year}$.</p>		OK

A.10. Implementation of the monitoring plan					
A.6.1 How were the plans for implementation of the monitoring plan, data management, QA/QC procedures assessed? To what extent can the emission reductions achieved by the project be monitored ex-post and verified later by a DOE?	/1/ /23/	DR	Plans for implementation of the monitoring plan, data management, QA/QC procedures in PDD are assessed against the Management and Operation Manual for Heilongjiang Yilan Hezuolinchang Phase II Wind Power Project /23/ and it is deemed reasonable and sufficient. So the monitoring plan provides for the monitoring of the ex-post emission reductions expected to be achieved by the project.		OK
A.11. CDM consideration prior to starting date					
A.7.1 The prior consideration of CDM for the project activity complies with EB41 annex 46	/1/ /32/	DR	Yes.		OK

Table 3 Resolution of Corrective Action and Clarification Requests

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
<p>CAR1 The letter of approval from the DNA of China has not been obtained. The letter of approval from the DNA of Switzerland has not been obtained, and the confirmation regarding voluntary participation by DNA of Switzerland needs to be provided. The letter of approval from the DNA of China confirming if the project is in line with the sustainable development policies of the host country has not been received.</p>	<p>1. &2./Table 1 A.2.2. A.2.3. A.4.1.</p>	<p>The required documents have been submitted to DOE.</p>	<p>OK DNV has got the LoAs from both Parties and confirmation of voluntary participation from both Parties for the proposed project activity has been addressed. This CAR is closed.</p>
<p>CL1 The PP summarize the installed hydro power capacity addition less than 20 MW from the year 2003 to 2006 /11/, but clarification is required as to what extent the potential availability of hydro resources in Helingjiang province is suitable for hydro power.</p>	<p>B.2.2. B.3.1.</p>	<p>The required information has been provided in the PDD.</p>	<p>DNV was able to confirm that the proposed project is located in the region which has no other exploitable sources of renewable energy such as hydropower /29/ /11/. This CL is closed.</p>
<p>CL2 For the sensitivity analysis, PP needs to analyze variation of each input parameter's value touching the benchmark and justify the impossibility of this likelihood. In common practice: Clarification is requested as what are the</p>	<p>B.3.1. B.3.3.</p>	<p>The required information for the sensitivity analysis has been provided in the PDD. The required information for the</p>	<p>OK This CL is closed. OK</p>

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>criteria of choosing 2000 as the common practice start date and what are the criteria for similar projects compared to the proposed project activity?</p> <p>The source of reference http://www.china5e.com/news/power/200208/200208220027.html cannot be connected, so PP is required to provide the valid reference.</p>		<p>common practice has been provided in the PDD.</p>	<p>The newly provided reference entails DNV's access for the related justification made by PP.</p> <p>This CL is closed.</p>
<p>CL3</p> <p>The starting date of the proposed project is taken as 15 April 2008 in PDD; however, as the starting date of a CDM project activity should be the earliest date at which either the implementation or construction or real action of a project activity begins, the clarification is requested for the real start date when the PP purchased turbine and booked supply contract between Yilan Longyuan Wind Power Co., Ltd. and GAMESA wind (Tianjin) Co., Ltd. on 26 February 2008 /31/.</p> <p>Regarding the EB41 requirement, evidence needs to be provided to demonstrate that the incentive from the CDM was seriously considered in the decision to proceed with the project activity and all CDM consideration arguments should be included in section B.5 of the PDD.</p>	<p>B.3.4.</p>	<p>The starting date of the proposed project has been corrected as 26 February 2008 in the PDD.</p> <p>The evidence has been provided to demonstrate that the incentive from the CDM was seriously considered in the decision to proceed with the project activity and all CDM consideration arguments have been included in section B.5 of the PDD.</p>	<p>OK</p> <p>The project activity start date has been verified by DNV corresponding to turbine purchase and supply contract between Yilan Longyuan Wind Power Co., Ltd. and GAMESA wind (Tianjin) Co., Ltd. 26 February 2008 /31/ as construction start permit (15 April 2008) /32/ is later than wind turbine purchase date.</p> <p>This CL is closed.</p>

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
			<p>The discussion provided in PDD version 3.0 dated 1 December 2008 clearly provide description regarding the consideration of CDM revenues for the proposed project. DNV has assessed prior CDM consideration as:</p> <p>It was verified from the feasibility study report that the project IRR without the CDM revenues was 6.94% which was much lower than the benchmark of 8% (after tax) /16/. It is verified that the project proponents were suggested to consider the benefits of CDM to develop the project already during the development of the feasibility study report /4/ in January 2008. Then directors of board held a meeting on 11 January 2008 and decided to develop the project as CDM project to get additional funding for the proposed project /17/ and the FSR of the proposed project was approved by Development and Reform Commission of Heilongjiang Province on 19 February 2008 including the consideration of CDM benefits /4/. Then the project owner signed wind turbine purchasing contract on 26 February 2008 which was verified as project start date since the construction start date is 15 April 2008</p>

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>coming later than purchase date. Later Yilan Longyuan Wind Power Co., Ltd. authorized “China Fulin Windpower Development Corporation” as CDM consultant on 3 March 2008 /18/.</p> <p>Based on the above discussion and the arguments provided, DNV is of the opinion that the CDM revenues were seriously considered in the decision to go ahead with the project.</p> <p>Hence, CL3 is closed.</p>
<p>CL4 Clarification is requested as the most recently available OM and BM data should be adopted.</p>	<p>B.5.1. B.7.1.</p>	<p>OM and BM data have been updated to NDRC data source dated 30 December 2008 in the PDD.</p>	<p>OK This CL is closed.</p>
<p>CL5 As per ACM0002 version 07, PP should monitor TEG_y of the project activity as another parameter.</p>	<p>B.10.1.</p>	<p>Monitoring of TEG_y has been considered in the PDD.</p>	<p>OK This CL is closed.</p>
<p>CL6 The clarification is required regarding the summary of comments; the proponent of the survey; the distribution processes of the survey and when the survey was done.</p>	<p>E.1.1. E.1.2. E.1.4.</p>	<p>The required information has been provided in the PDD.</p>	<p>OK. This CL is closed.</p>

APPENDIX B

CERTIFICATES OF COMPETENCE



CERTIFICATE OF COMPETENCE

Xiaojun Johnsen Zhang

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

GHG Auditor:	Yes				
Technical Area	CDM Validator	CDM Verifier	Sector Expert	Methodology Expert	Technical Reviewer
<i>Landfill gas</i>					
<i>Renewables</i>					
<i>Hydro power</i>	Jan 2009				
<i>Wind power</i>	Jan 2009				
<i>Other renewable</i>					
<i>Biomass</i>					
<i>Grid connection of isolated system</i>					
<i>Cement</i>	Jan 2009				
<i>Waste-heat / waste-gas recovery</i>					
<i>Efficiency of thermal power plants</i>					
<i>Coal mine methane</i>					
<i>Fuel switch</i>					
<i>Manure management</i>					
<i>Waste / wastewater treatment</i>					
<i>Energy efficiency</i>					
<i>N₂O</i>					
<i>HFCs</i>					
<i>Flare reduction</i>					
<i>PFCs</i>					
<i>Charcoal</i>					
<i>CO₂ recovery</i>					
<i>Transport</i>					
<i>Non-renewable biomass</i>					
<i>Biofuel</i>					
<i>Pipeline leakage reduction</i>					
<i>SF₆</i>					

Høvik, 14 January 2009

Michael Lehmann

Michael Lehmann
Technical Director, Climate Change



CERTIFICATE OF COMPETENCE

Cuiping Deng

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

<i>GHG Auditor:</i>	Yes				
<i>Technical Area</i>	<i>CDM Validator</i>	<i>CDM Verifier</i>	<i>Sector Expert</i>	<i>Methodology Expert</i>	<i>Technical Reviewer</i>
<i>Landfill gas</i>					
<i>Renewables</i>	<i>Hydro power</i>	Jan 2009	Jan 2009		
	<i>Wind power</i>	Jan 2009	Jan 2009	Jan 2009	Jan 2009
	<i>Other renewable</i>				
<i>Biomass</i>					
<i>Grid connection of isolated system</i>					
<i>Cement</i>					
<i>Waste-heat / waste-gas recovery</i>					
<i>Efficiency of thermal power plants</i>					
<i>Coal mine methane</i>					
<i>Fuel switch</i>					
<i>Manure management</i>					
<i>Waste / wastewater treatment</i>					
<i>Energy efficiency</i>					
<i>N₂O</i>		Jan 2009			
<i>HFCs</i>					
<i>Flare reduction</i>					
<i>PFCs</i>					
<i>Charcoal</i>					
<i>CO₂ recovery</i>					
<i>Transport</i>					
<i>Non-renewable biomass</i>					
<i>Biofuel</i>					
<i>Pipeline leakage reduction</i>					
<i>SF₆</i>					

Høvik, 9 January 2009

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CERTIFICATE OF COMPETENCE

Felipe Antunes

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

<i>GHG Auditor:</i>	Yes				
<i>Technical Area</i>	<i>CDM Validator</i>	<i>CDM Verifier</i>	<i>Sector Expert</i>	<i>Methodology Expert</i>	<i>Technical Reviewer</i>
<i>Landfill gas</i>					
<i>Renewables</i>					
<i>Hydro power</i>	Jan 2009				
<i>Wind power</i>				Jan 2009	Jan 2009
<i>Other renewable</i>					
<i>Biomass</i>	Jan 2009	Jan 2009			
<i>Grid connection of isolated system</i>					
<i>Cement</i>					
<i>Waste-heat / waste-gas recovery</i>					
<i>Efficiency of thermal power plants</i>					
<i>Coal mine methane</i>					
<i>Fuel switch</i>					
<i>Manure management</i>	Jan 2009	Jan 2009			
<i>Waste / wastewater treatment</i>	Jan 2009	Jan 2009			
<i>Energy efficiency</i>					
<i>N₂O</i>					
<i>HFCs</i>					
<i>Flare reduction</i>					
<i>PFCs</i>					
<i>Charcoal</i>					
<i>CO₂ recovery</i>					
<i>Transport</i>					
<i>Non-renewable biomass</i>					
<i>Biofuel</i>					
<i>Pipeline leakage reduction</i>					
<i>SF₆</i>					

Høvik, 9 January 2009

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CERTIFICATE OF COMPETENCE

Anu Chaudhary

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

GHG Auditor:	Yes				
Technical Area	CDM Validator	CDM Verifier	Sector Expert	Methodology Expert	Technical Reviewer
Landfill gas				Jan 2009	Jan 2009
Renewables					
Hydro power					
Wind power				Jan 2009	Jan 2009
Other renewable					
Biomass					
Grid connection of isolated system					
Cement					
Waste-heat / waste-gas recovery					
Efficiency of thermal power plants					
Coal mine methane					
Fuel switch					
Manure management					
Waste / wastewater treatment					
Energy efficiency					
N ₂ O					
HFCs					
Flare reduction					
PFCs					
Charcoal					
CO ₂ recovery					
Transport					
Non-renewable biomass					
Biofuel					
Pipeline leakage reduction					
SF ₆					

Høvik, 9 January 2009

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CERTIFICATE OF COMPETENCE

Nan Donald Dong

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

GHG Auditor:	Yes				
Technical Area	CDM Validator	CDM Verifier	Sector Expert	Methodology Expert	Technical Reviewer
Landfill gas					
Hydro power					
Renewables Wind power					
Other renewable					
Biomass					
Grid connection of isolated system					
Cement					
Waste-heat / waste-gas recovery					
Efficiency of thermal power plants					
Coal mine methane					
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Manure management					
Waste / wastewater treatment					
Energy efficiency					
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PFCs					
Charcoal					
CO ₂ recovery					
Transport					
Non-renewable biomass					
Biofuel					
Pipeline leakage reduction					
SF ₆					

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