



VALIDATION REPORT

Hebei Shangyi Manjing North Wind Farm Project in China

REPORT No. 2008-1337

REVISION No. 01



VALIDATION REPORT

DET NORSKE VERITAS
 CERTIFICATION AS
 Climate Change Services
 Veritasveien 1,
 1322 HØVIK, Norway
 Tel: +47 67 57 99 00
 Fax: +47 67 57 99 11
 http://www.dnv.com
 Org. No: NO 945 748 931 MVA

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Approved by: Hendrik W. Brinks	Organisational unit: DNV Certification, International Climate Change Services
Client: Carbon Resource Management Ltd	Client ref.: Mr. Nicholas A Clarke

Project Name: Hebei Shangyi Manjing North Wind Farm Project

Country: China

Methodology: ACM0002

Version: 8

GHG reducing Measure/Technology: Wind Power

ER estimate: 110 849 tCO₂e per annum

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 Hebei Shangyi Manjing North Wind Farm Project in China, as described in the PDD version 1.2 of 5 January 2009, meets all relevant UNFCCC requirements for the CDM and all relevant host Party criteria and correctly applies the baseline and monitoring methodology ACM0002 version 8. DNV thus requests the registration of the project as a CDM project.

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Work carried out by: Peng Huang , Zhi Ang (Walter) Tang		
Work verified by: Anjana Sharma, Weidong Yang		

Key words:

Climate Change

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Validation

Clean Development Mechanism

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Abbreviations

BM	Building Margin
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CEF	Carbon Emission Factor
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
EIA	Environmental Impact Assessment
FSR	Feasibility Study Report
GHG	Greenhouse gas(es)
GWP	Global Warming Potential
IPCC	Intergovernmental Panel on Climate Change
IRR	Internal Return Rate
LoA	Letter of Approval
MP	Monitoring Plan
NCPG	North China Power Grid
NCV	Net Caloric Value
NDRC	National Development and Reform Committee
NGO	Non-governmental Organisation
ODA	Official Development Assistance
OM	Operating Margin
PDD	Project Design Document
SCE	Standard Coal Equivalent
SEPA	State Environmental Protection Administration
SERC	State Electricity Regulatory Commission
RMB	Renminbi, Chinese currency (yuan)
UNFCCC	United Nations Framework Convention on Climate Change
VAT	Value-added tax

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1 EXECUTIVE SUMMARY – VALIDATION OPINION

Det Norske Veritas Certification AS (DNV) has performed a validation of the “Hebei Shangyi Manjing North Wind Farm Project” in China. The validation was performed on the basis of UNFCCC criteria for the Clean Development Mechanism and host Party criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

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

The host Party is China and the Annex I Party is United Kingdom of Great Britain and Northern Ireland. Both Parties fulfill the participation criteria and have approved the project and authorized the project participants. The DNA of China confirmed that the project assists in achieving sustainable development. The validation did not reveal any information that indicates that the project can be seen as a diversion of official development assistance (ODA) funding towards China.

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

By generating renewable energy the project will displace fossil fuel based grid electricity. The project results in reductions of CO₂ emissions that are real, measurable and give long-term benefits to the mitigation of climate change. It is demonstrated that the project is not a likely baseline scenario. Emission reductions attributable to the project are hence additional to any that would occur in the absence of the project activity.

The monitoring plan complies with the applied methodology ACM0002, version 8. Adequate training and monitoring procedures have been developed and will be implemented before the starting date of the crediting period.

The total emission reductions from the project are estimated to be on the average 110 849 tCO_{2e} per year over the 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.

In summary, it is DNV’s opinion that the “Hebei Shangyi Manjing North Wind Farm Project” in China as described in the PDD version 1.2 of 5 January 2009 meets all relevant UNFCCC requirements for the CDM and all relevant host Party criteria and correctly applies the baseline and monitoring methodology ACM0002 version 8. DNV thus requests the registration of the “Hebei Shangyi Manjing North Wind Farm Project” as a CDM project.

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2 INTRODUCTION

Carbon Resource Management Ltd has commissioned DNV to perform a validation of the Hebei Shangyi Manjing North Wind Farm 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) /1/. 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 /4/ 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 consists 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/ Project Design Document for Hebei Shangyi Manjing North Wind Farm Project, version 1.0 of 2 May 2008, version 1.1 of 20 June 2008, version 1.2 of 5 January 2009.
- /2/ Letter of Approval issued by China DNA in July 2008.
- /3/ Letter of Approval issued by United Kingdom of Great Britain and Northern Ireland DNA dated 22 October 2008.
- /4/ EB 44 Report Annex 3: Validation and Verification Manual Version 01.
http://cdm.unfccc.int/EB/044/eb44_repan03.pdf
- /5/ CDM Executive Board: ACM0002 Approved methodology, “Consolidated methodology for grid-connected electricity generation from renewable sources”, version 8 of 28 November 2008.
- /6/ CDM Executive Board: *Tool for the demonstration and assessment of additionality*, version 5.2 of 16 May 2008.
- /7/ CDM Executive Board: “*Tool to calculate the emission factor for an electricity system*”, version 1.1, dated 29 July 2008, adopted at EB41.
- /8/ CDM Executive Board, Guidance for request for deviation titled “Application of AM0005 and AMS-I.D in China” (<http://cdm.unfccc.int/Projects/Deviations>)
- /9/ Feasibility Study Report (FSR) of Hebei Shangyi Manjing North Wind Farm Project by Beijing Jikedian Renewable Energy Development Center in November 2007 and the approval letter by Development and Reform Commission of Hebei Province dated 27 February 2008.
- /10/ Environmental Impact Assessment (EIA) of Hebei Shangyi Manjing North Wind Farm Project by the Environmental Impact Assessment Department of Hebei Engineering Consultant Institute in May 2007 and the approval letter by Environmental Protection Bureau of Hebei Province dated 20 June 2007.
- /11/ IPCC: *Revised 2006 IPCC Guidelines for National Greenhouse Gas Inventories Reference Manual*.2006.
- /12/ China Electric Power Yearbook, 2003~2007.

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- /13/ China Energy Statistical Yearbook, 2005~2007.
- /14/ China NDRC, the emission factor calculation for each power grid of China, published on 18 July 2008, NDRC official website:
<http://cdm.ccchina.gov.cn/english/NewsInfo.asp?NewsId=3239>
- /15/ Interim Rules on Economic Assessment of Electrical Engineering Retrofit Projects Issued by State Power Corporation of China in 2002.
- /16/ The General Office of the State Council, *Notice on Strictly Prohibiting the Installation of Fuel-fired Generation with the Capacity of 135MW or below*, Decree No.: 2002.6.
- /17/ The Temporary Stipulation of the Construction Management of Small Scale Units of Fuel-fired Power Generation of August 1997.
- /18/ Intention letter on grid connection of Hebei Shangyi Manjing North Wind Farm Project between Guohua (Hebei) Renewable Energy Co., Ltd. and Zhangjiakou Power Co., Ltd. dated 13 January 2008.
- /19/ Corporation license of Guohua (Hebei) Renewable Energy Co., Ltd. approved by Administration for Industry and Commerce of Hebei Province, Registered No.:130000100115.
- /20/ Letter of loan commitment for Hebei Shangyi Manjing North Wind Farm Project from Zhangbei County branch of Industrial & Commercial Bank of China (ICBC), in September 2008.
- /21/ The on-grid tariff of the latest wind farms before the FSR approved as 0.54 RMB/kWh by NDRC in June 2007 (fagainengyuan[2007]1260).
- /22/ Preliminary approval for the land use of Hebei Shangyi Manjing North Wind Farm Project by Hebei Shangyi County Department of Land and Resources, dated 19 October 2006.
- /23/ Approval letter of land levy and agreement of land levy compensation between Hebei Shangyi Manjing North Wind Farm Project and the Department of Land and Resources of Hebei Province, dated 30 July 2006.
- /24/ Project construction starting permission by Zhongzi Engineering Construction Supervision Company, dated 31 March 2008.
- /25/ Supervision contract between Guohua (Hebei) Renewable Energy Co., Ltd. and Zhongzi Engineering Construction Supervision Company, in March 2008.
- /26/ The personnel training plan for Hebei Shangyi Manjing North Wind Farm Project–Guohua (Hebei) Renewable Energy Co., Ltd. in March 2008.
- /27/ CDM Monitoring and Quality Control Manual by Guohua (Hebei) Renewable Energy Co., Ltd. dated May 2008.
- /28/ Wind turbines purchase contract of Hebei Shangyi Manjing North Wind Farm Project between Guohua (Hebei) Renewable Energy Co., Ltd. and GE Energy (Shenyang) Co., Ltd. dated 20 March 2008.
- /29/ The 50 copies of the Stakeholder questionnaires of Hebei Shangyi Manjing North Wind Farm Project dated 11 December 2007.
- /30/ Interim Rules on Economic Assessment of Electrical Engineering Retrofit Projects. Beijing: China Electric Power Press, 2003.

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- /31/ The solar PV, biomass and geothermal are hardly to be developed and applied due to their high cost, lack of policy-encouragement, poor technical innovation and experts.
<http://scitech.people.com.cn/GB/5347113.html>,
http://www.sdpc.gov.cn/zjgx/t20071123_174054.htm,
<http://www.chinaenergy.gov.cn/news.php?id=15688>.
- /32/ The minute of the board meeting of Guohua (Hebei) Renewable Energy Co., Ltd. decide to apply Hebei Shangyi Manjing North Wind Farm Project as CDM project, dated 10 December 2007.
- /33/ IRR calculation spreadsheet of the Hebei Shangyi Manjing North Wind Farm Project, version 1.2 of 4 March 2009.
- /34/ In the last 2 years (from 2006 to 2007), the demands for the turbines and its accessories exceeded the supply. <http://energy.people.com.cn/GB/5720709.html>.
 The price of the raw material such as steel and cooper is increasing, which results in the price of wind turbines and equipments increasing, as demonstrated in The Development of Wind Power, published by People's Daily.
- /35/ On-grid tariff of wind farm in Hebei province 2005, the study on Pricing Policy of Wind Power in China,P3
 On-grid tariff of wind farm in Hebei province 2006, the approval letter of Hebei bureau of price, Jijiaguanzi (2006)57
 On-grid tariff of wind farm in Hebei province 2007, the approval letter of NDRC, Fagainengyuan [2007]1260,[2007]3303
 On-grid tariff of wind farm in Hebei province 2008, the approval letter of NDRC, Fagainengyuan [2008]1876
- /36/ "Statistics of domestic wind farm installation capacity in 2007", Shi Pengfei; Notice on the adjustment of electricity price from the Hebei Price Bureau.
- /37/ Law of the People's Republic of China on Environmental Impact Assessment.
- /38/ CDM Emission Reduction Purchase Agreement between Guohua (Hebei) Renewable Energy Co., Ltd. and Carbon Resource Management Ltd , dated 17 December 2007.
- /39/ VCS 1.0 Verification report of Shangyi Manjing Wind Farm project by DNV, report number 2008-0426, version 01 of 17 March 2008.
- /40/ VCS draft 2.0 Verification report of Chengde Hongsong Wind Farm project by DNV, report number 2006-2181, version 01 of 10 January 2007.
- /41/ The national industry standard of the Technical Administrative Code of Electric Energy Metering (DL/T448-2000).

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

- 1) The project starting date changed from 31 March 2008 (the permit to start construction) to 20 March 2008 (the date of the wind turbines purchase contract signed) in the last version of the PDD.
- 2) Approved methodology, "Consolidated methodology for grid-connected electricity generation from renewable sources", version 8 is applied to the project activity.
- 3) The approved "Tool to calculate the emission factor for an electricity system", Version 1.1, in effect as of EB 41, is applied to the project activity.
- 4) Revised the calculation of emission factor for NCPG, on the basis of the latest 2006

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data available at the time of web-hosting PDD.

- 5) Because of the EF apply the latest data source when the PDD was web hosting, slightly decreasing the IRR with CDM revenue from the 9.4% of web hosting PDD to 9.3% of the final version PDD.
- 6) Issues addressing the CARs and the CLs raised in this report and related to the new requirements and Guidelines from EB38-EB41 regarding financial analysis, CDM consideration and project starting date.

After reviewing the revised PDD, DNV issued this final validation report and opinion.

3.2 Follow-up Interviews with Project Stakeholders

The representatives of the project owner, Guohua (Hebei) Renewable Energy Co., Ltd. and the project consultant and CERs buyer, Carbon Resource Management Ltd were interviewed in DNV Beijing office on 8 September 2008 by Huang Peng of DNV, to resolve the issues identified during the desk review of the PDD.

During the desk review, the relevant documents including FSR /9/, EIA /10/, approval letter of land levy and agreement of land levy compensation /23/, and the wind turbines purchase contract /28/ were provided and assessed. The information about this project was able to be confirmed from these documents. The project is a new build wind farm project; through the documents which the project participant provided, including PDD, FSR, EIA, PPA and other relevant background documents /1/-/41/, DNV can confirm the project design, construction, operation and monitoring plan and all baseline scenario information. In addition, according to EIA /10/ and Approval letter of land levy and agreement of land levy compensation /23/, no migration was involved in this project. The construction of the project was at a very beginning stage at the time of validation and it was around three months between the construction start date (31 March 2008) and the validation date (4 July 2008); no further issues can be assessed through on site visit. Thus, DNV can justify that a physical site visit for this project was not arranged during the validation process.

The main topics and personnel of the interviews are summarized in the table below:

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	Date	Name	Organization	Topic
/42/	2008-9-8	Mr. Yan Weiming Mr. Li Zao	Guohua (Hebei) Renewable Energy Co., Ltd. (project owner and operator)	<ul style="list-style-type: none"> ➤ The development of wind power project in Hebei Province ➤ The approval status (incl. EIA approval, the feasibility study report approval, CDM project approval) ➤ Emission reduction monitoring plan ➤ Consulting process for stakeholder's comments ➤ Information of project construction ➤ Project management ➤ Investment risks and barriers
/43/	2008-9-8	Mr. Shi Xiangfeng Ms. Gao Yan	Carbon Resource Management Ltd (project consultant and CERs buyer)	<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

3.3 Resolution of Outstanding Issues

The objective of this phase of the validation is to resolve any outstanding issues which need 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.

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The validation protocol consists of two tables. The different columns in these tables are described in the figure below. The completed validation protocol for the Hebei Shangyi Manjing North Wind Farm Project is enclosed in Appendix A to this report.

Findings established during the validation can either be seen as a non-fulfilment of 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

The validation team consisted of the following personnel:

<i>Role/Qualification</i>	<i>Last Name</i>	<i>First Name</i>	<i>Country</i>	<i>Type of involvement</i>					
				Desk review	Site visit / Interviews	Reporting	Supervision of work	Technical review	Expert input
GHG auditor/project manager	Huang	Peng	China	√	√	√			
CDM validator/ Technical team leader	Tang	Zhi Ang (Walter)	China				√		
Technical reviewer (draft report)	Anjana	Sharma	India					√	
Technical reviewer (final report)	Yang	Weidong	USA					√	

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

4 VALIDATION FINDINGS

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

The validation findings relate to the project design as documented and described in the revised and resubmitted project design documentation version 1.2 of 5 January 2009.

4.1 Participation Requirements

The project participants are Guohua (Hebei) Renewable Energy Co., Ltd. of China and Carbon Resource Management Ltd of United Kingdom of Great Britain and Northern Ireland. Both China as the host Party and United Kingdom as the Annex-I Party meet the requirements to participate in the CDM.

The DNA of China has issued a Letter of Approval (LoA) /2/ in July 2008, authorizing Guohua (Hebei) Renewable Energy Co., Ltd. as project participant and also confirmed that the project assists in achieving sustainable development.

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The DNA of United Kingdom of Great Britain and Northern Ireland has issued a LoA /3/ on 22 October 2008, authorizing Carbon Resource Management Ltd as project participant.

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

4.2 Project Design

The project involves installation and operation of 33 wind turbines in Shangyi County, Zhangjiakou City, Hebei Province of China. The installed capacity of each unit is 1.5 MW, thus constituting a total generation capacity of 49.5 MW. The installation also includes a central control room for control, measurement and surveillance of the wind farm. The wind turbines will be supplied by GE Energy (Shenyang) Co., Ltd., while the turbine technology is introduced from Germany /28/.

The project's system boundaries are clearly defined as the North China Power Grid (NCPG) /18/, which is in line with the delineation of the grid boundaries regulated by DNA of China.

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

The issuance date of the construction permission for Hebei Shangyi Manjing North Wind Farm Project was 31 March 2008 /24/. Before that, the project owner signed wind turbines purchase contract with GE Energy (Shenyang) Co., Ltd. on 20 March 2008 /28/. The latter is defined as the starting date of the project activity. According to the project Feasibility Study Report (FSR) /9/, the expected operational lifetime of the project activity is 20 years. A renewable crediting period of 7 years has been chosen for the project, starting from 1 September 2009. The emission reductions are estimated to be 110 849 tCO₂e per year and 775 943 tCO₂e over the first seven-year renewable crediting period.

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

4.3 Baseline Determination

The project applies the approved baseline methodology ACM0002 (version 8), titled "Consolidated methodology for grid-connected electricity generation from renewable sources" /5/.

The applicability of this methodology is justified since:

- The project is a wind farm project with the installation capacity of 49.5 MW, which has been confirmed from FSR /9/.
- The electricity from the project activity is proposed to be supplied to the North China Power Grid (NCPG), and information on the characteristics of NCPG can be clearly identified/14/;
- The project is a new wind farm power plant with installed capacity 49.5 MW, not be involved switching from fossil fuels to renewable energy sources at the site of the project activity, as confirmed by FSR /9/.

The project boundary is clearly defined as the site of project activity and the system boundary is defined as the NCPG of China, including Beijing, Tianjin, Hebei, Shanxi, Shandong and

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Inner Mongolia power grid/14/. There are no significant transmission constraints between the power plants of the NCPG grid, nor with the proposed project.

The emission source in this project boundary is as following table:

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

The selected sources and gases are justified for the project activity.

The alternative baseline scenarios have been identified as below:

- 1) The proposed project activity undertaken without being registered as a CDM project activity;
 - 2) A fossil fuel-fired power plant with the comparable capacity or electricity generation;
 - 3) A power plant using other source of renewable energy with the comparable capacity or electricity generation, such as PV, biomass and hydro, etc;
 - 4) Comparable capacity or electricity generation addition provided by the NCPG.
- DNV considers the list of realistic and credible alternatives to be complete.

Alternative 1: The proposed project activity undertaken without being registered as a CDM project activity: This is a realistic and credible alternative available to the project developer but this cannot be considered as baseline scenario. This alternative faces financial barriers (as presented below in the additionality discussion, section 4.4) and would not happen without any external financial support.

Alternative 2: A fossil fuel-fired power plant with the comparable capacity or electricity generation: This is not consistent with the regulation “Notice on Strictly Prohibiting the Installation of Thermal Power Generation Units with the Capacity of 135 MW or below” /16/. The equivalent amount of annual electricity generation from capacity 49.5 MW wind farm is less than from the thermal power plant. In other words, the thermal power plant capacity with equivalent power generation must be less than 49.5 MW which is much less than 135 MW. Therefore, this alternative can be excluded.

Alternative 3: A power plant using other source of renewable energy with the comparable capacity or electricity generation, such as PV, biomass and hydro, etc: The project region belongs to water resources shortage area in Hebei Province, so no economically exploitable water resources exist in project site /31/. Due to the technology development status and the high cost for power generation, solar PV, geothermal and biomass face the difficulties and barriers /31/. Therefore, other sources of renewable energy are not feasible and excluded. All relevant evidences were referenced in PDD and verified by DNV.

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Based on above discussion, DNV was able to confirm that the only plausible baseline scenario is 4): Comparable capacity or electricity generation addition provided by the NCPG.

In the baseline scenario the electricity delivered from the project activity to the grid would have been generated by fossil fuels grid-connected power plants and by the addition of new generation sources. The baseline for the proposed project is the amount of electricity generated by the proposed project per year (EG_y) multiplied by the emission factor (tCO_2/MWh) of the grid. The grid emission factor has been determined *ex ante* based on the most recent information available at the time of PDD submission and is fixed for the entire first crediting period. This is reflected in the combined margin (CM) - the weighted average of the operating margin (OM) emission factor and the build margin (BM) emission factor. The weighting is set to respectively 75% and 25%.

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

The baseline determination is transparent and reasonable.

4.4 Additionality

The additionality of the project has been established using the “*Tool for the demonstration and assessment of additionality*” version 05.2 approved by the CDM-EB /6/.

4.4.1 CDM consideration and continued action to secure CDM status

On 20 March 2008, the wind turbines purchase contract was signed /28/. This date was substantiated as the start date of this project activity. On 31 March 2008, the project construction starting permission was issued by Zhongzi Engineering Construction Supervision Company /24/. Based on this, 20 March 2008 was chosen as the starting date of the project activity.

In the FSR of November 2007 /9/ by Beijing Jikedian Renewable Energy Development Center, FSR was proposed due to the lower IRR of 6.5%. On 10 December 2007, the decision /32/ for applying for CDM was made in the board meeting. On 17 December 2007, the ERPA with Carbon Resource Management Ltd (CER buyer) was signed /22/. On 27 February 2008, the FSR was approved by the Development and Reform Commission of Hebei province/9/. This shows that CDM was seriously considered in the decision to proceed with the project activity.

The global stakeholder consultation started on 4 July 2008. The continued actions to secure CDM status in parallel with the physical implementation of the project is found satisfactory.

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

The alternative baseline scenarios for the project activity have been suitably identified as,

- 1) The proposed project activity undertaken without being registered as a CDM project activity;
- 2) A fossil fuel-fired power plant with the comparable capacity or electricity generation;

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- 3) A power plant using other source of renewable energy with the comparable capacity or electricity generation, such as PV, biomass and hydro, etc;
- 4) Comparable capacity or electricity generation addition provided by the NCPG.

As mentioned in Section 4.3 alternative 2) and 3) are not realistic and credible alternatives and can be exempted from further consideration.

4.4.3 Investment analysis: Choice of approach

As the proposed project generates financial and economic benefits other than CDM related income through the sales of electricity and the alternative to the project does not involve an investment, a benchmark analysis (option III) is justified for conducting the investment analysis.

4.4.4 Investment analysis: Benchmark selection

According to the *Interim Rules on Economic Assessment of Electrical Engineering Retrofit Projects* /30/, in China an IRR of 8% (after tax) for the total investment of a project is regarded as a benchmark for investing in large scale hydropower plants, fossil fuel fired plants as well as wind farm projects. The benchmark of 8% (after tax) is therefore appropriate for this project. DNV was able to confirm this is suitable and reasonable as following:

1. This benchmark was determined by the national administration of this industry in China /30/;
2. This benchmark is for project and after tax and the investment analysis for this project will be for project and after tax also;
3. This benchmark is in line with the *Interim Rules on Economic Assessment of Electrical Engineering Retrofit Projects* /30/. The Rules are applied for the risk premiums of large scale wind farm power project.

4.4.5 Investment analysis: Input parameters

The input parameters used in the financial analysis of the Hebei Shangyi Manjing North Wind Farm Project are taken from the Feasibility Study Report (FSR) developed by Beijing Jikedian Renewable Energy Development Center in November 2007 and the approval letter by Development and Reform Commission of Hebei Province dated 27 February 2008 /9/. The input parameters used in the financial analysis can thus be considered information provided by an independent and recognized source.

DNV compared the input parameters for the financial analysis included in the PDD with the parameters stated in the FSR /9/ and was able to confirm that the values applied are consistent with the values stated in the FSR /9/.

The FSR was approved on 27 February 2008 and the project start date was on 20 March 2008 /28/. Given this negligible 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. It is thus reasonable to assume that the FSR has been the basis of the decision to proceed with the investment in the project.

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The input parameters used in the financial analysis were compared with the data reported for other similar wind farm CDM projects in Hebei province, comparing the investment costs per MW, electricity tariff (0.54 RMB/kWh including VAT), percentage of O&M costs relative to total investment costs. By in addition 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.

4.4.6 Investment analysis: Calculation and conclusion

The IRR calculations were provided in a spreadsheet /33/. The calculations were verified and found to in line with EB's guidance on investment analysis. The assumptions used in the calculations were deemed to be correct by DNV. The project-IRR over 20 years without CDM revenues is 6.5%, which confirms that the project in the absence of CDM benefits and compared to the benchmark of 8% is not financially attractive. With CER revenues the project-IRR increases to be above the benchmark.

4.4.7 Investment analysis: Sensitivity analysis

Moreover, a sensitivity analysis has been carried out for parameters contributing more than 20% to revenues or costs to check the robustness of the financial analysis. Reasonable variations of the static total investment, annual O&M costs, on-grid tariff and annual supplied power 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.

Static total investment	O&M costs	on-grid tariff	annual supplied power
-11.95%	-52.3%	+10.75%	+10.75%

It is shown that the benchmark is reached only when the total investment and O&M decreases by 11.95% and 52.3% respectively, while the on-grid tariff and annual supplied power increase by 10.75%. However, it is unlikely that these situations will happen as demonstrated in the following:

As the main part of total investment cost /9/, the equipment and materials are currently increasing /34/, which was confirmed by DNV. Hence, the total investment cost is unlikely to decrease by 11.95%.

Faced with the increase of the price of the raw material such as steel and cooper, which results in the price of wind turbines and equipments increasing in China during these recent years /34/, it is highly unlikely that O&M will decrease by 52.3%.

The electricity tariff is determined as per the NDRC or the local price bureau relevant guidance document (0.54 RMB/kWh) /35/. It has also been verified by DNV that the on-grid tariff of wind farms in Hebei Province has decreasing trend since 2005 /35/. Hence it is deemed unlikely that the tariff can increase by 10.75% to make the project IRR reach the benchmark.

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Annual supplied power is limited by wind resources on the project site. In the FSR /9/, the determination of installed capacity and operation hours was discussed sufficiently in relation to the wind resources. Moreover, the grid-in electricity output is based on long-term meteorological data of the wind resource in the local area, for 30 years (from 1977 to 2006) and onsite wind resources measurement. Hence, it is highly unlikely for the output to increase by 10.75%.

The sensitivity analysis shows that even if considering the reasonable variations of those critical parameters, without the income from CERs sales, the “Hebei Shangyi Manjing North Wind Farm Project” is unlikely to be the most financially attractive option.

4.4.8 Common practice analysis

In China, most policies are promulgated in provincial level by combining the national policy with the region’s condition. In addition, abundant and high quality wind resources in Hebei Province make this region different from other regions in the aspect of electricity output, eventually in the aspect of economic feasibility. Hence, it is reasonable that Hebei Province is selected as scope for common practice analysis.

There are two similar wind farm projects (Chengde Hongsong 50.1 MW wind project and the Shangyi Manjing 34.5 MW wind project) in Hebei province with installed capacity more than 15 MW /36/. Both Chengde Hongsong wind farm and Shangyi Manjing wind farm did not obtain the high on-grid tariff anticipated in their feasibility studies, they were all have low IRR and were also facing serious financial barriers during operating period. Both projects agreed carbon funding to help overcome this serious barrier. DNV has checked all sources /39//40/ mentioned in the PDD and could conclude that the construction of a wind farm project of 49.5 MW is not a common practice in Hebei province.

From the above, it was shown that this project is not financial attractive and common practice. It is highly unlikely to have been constructed without benefits from CDM. DNV can confirm all assumptions and analysis as well as the information source. It is deemed that the project is not a likely baseline scenario, and that emission reductions resulting from the project are additional.

4.5 Monitoring

The monitoring methodology selected complies with the requirements of ACM0002 version 8 “Consolidated monitoring methodology for zero emissions grid-connected electricity generation from renewable sources” /5/. The monitoring plan is in accordance with the monitoring methodology. The monitoring plan will give opportunity for real measurements of achieved emission reductions.

4.5.1 Parameters determined *ex-ante*

The combined margin emission factor is determined *ex-ante* based on the most recent information available at the time the PDD was submitted for validation; the detailed calculations of the combined margin emission factor are described in the following section 4.6. The parameters are listed in below table:

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<i>Data and Parameters</i>	<i>Unit</i>	<i>Ex-ante determined value</i>
Operating margin of NCPG (OM)	tCO ₂ /MWh	1.1169
Build Margin of NCPG (BM)	tCO ₂ /MWh	0.8687
Emission factor of NCPG	tCO ₂ /MWh	1.0548

4.5.2 Parameters monitored *ex-post*

The parameter monitored *ex-post* is the net electricity generation from the proposed project activity.

The net electricity generated from the project will be measured hourly and recorded monthly. This data will be cross verified against the sales receipt from the grid.

4.5.3 Management system and quality assurance

The project's monitoring plan includes:

- A description of the responsibilities and authorities for project management;
- Procedures for training;
- A description of the installation of metering equipment;
- Procedures for the calibration of metering equipment;
- Monitoring of the net electricity delivered to the North China Power Grid;
- Data quality control;
- Data management system;
- Reporting and verification.

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

The application of the monitoring methodology is transparent and DNV considers the project participants able to implement the monitoring plan.

4.6 Estimate of GHG Emissions

The emission reductions (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 tCO₂) are the product of the grid emission factor ($EF_{grid,CM,y}$ in tCO₂/MWh) times the electricity supplied by the project activity to the grid (EG_y in MWh). According to the feasibility study of the proposed project /9/, the net electricity generated is approximately 105 090 MWh, i.e. $EG_y = 105\,090$ MWh;

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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 grid emission factor of the North China Power Grid (NCPG) is determined *ex-ante* for the 7 years crediting period following the tool to calculate the emission factor for an electric system, version 1.1 dated 29 July 2008 /7/, based on the most recent information available at the time the PDD was submitted for validation. It has been calculated as 75:25 as the weights of the operating margin and the build margin.

The PDD was published in July 2008, and the calculation of the grid emission factor has been updated to the latest data available at the commencement of validation. The data used in the emission factor calculation is in accordance with data in the China Electric Power Yearbook from 2003 to 2007 (published annually) /12/ and the China Energy Statistical Yearbook from 2005 to 2007 /13/.

The aggregated generation and fuel consumption data are used as more disaggregated data are not available in the NCPG. Country specific data for the net calorific value of each type of fossil fuel, which were obtained from the China Energy Statistical Yearbook /13/, the IPCC 2006 default values /11/ for the oxidation factor and emission factor of each type of fossil fuel and the total electricity delivered to the NCPG selected are deemed reasonable /12/.

Operating Margin: Simple OM was chosen since the low cost /must run resources constitute less than 50% of total grid generation (0.89% in 2002, 0.86% in 2003, 0.76% in 2004, 0.75% in 2005, and 0.74% in 2006) /12/.

Vintage data for the years 2004, 2005 and 2006 /12/ /13/ are used for the OM emission factor calculation, which was the most recent data available at the time of submission of the PDD for validation. The OM is calculated to be 1.1169 tCO₂/MWh. The sources and calculation has been verified by DNV.

Build Margin: Because plant specific fuel consumption and electricity generation data are not publicly available in China, the guidance requested by DNV from the CDM Executive Board for a deviation of the baseline methodology of AM0005 has been applied for calculation of the build margin (BM) emission factor for this project /8/:

- Use of capacity additions from the years 2004 to 2006 is chosen and reaches 21.75% of the total installed capacity.
- Use of weights estimated using installed capacity in place of annual electricity generation. Thermal power plant accounts for 95.64% of the total installed capacity additions in this period. Since specific data for each technology is not available, the fraction of fuels (coal 98.932%; natural gas 0.975%; oil 0.093%) was estimated from the CO₂ intensity for the fuels used in NCPG.
- Efficiencies of 37.28% for coal power plants and 48.81% for oil- or gas power plants are defined as the best technology commercially available in China by the DNA of China /14/.

The BM is calculated as 0.8687 tCO₂e/MWh, which was verified from the spreadsheet for BM calculation.

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The resulting combined margin emission factor is 1.0548 tCO₂e/MWh is fixed *ex-ante* for the first crediting period. The annual electricity delivered to the NCPG is expected to be 105 090 MWh /9/. The expected annual baseline emissions of the project is 110 849 tCO₂e.

The baseline emission estimate can be replicated using the data and parameter values provided in the PDD and supporting files submitted for registration. The data sources mentioned have been verified by DNV.

In summary, the GHG calculations are complete and transparent, and the data 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 the “Law of the People’s Republic of China on Environmental Impact Assessment” /37/. The potential environmental impacts have been sufficiently identified.

No significant environmental impacts are expected from the project activity. The Environmental Protection Bureau of Hebei Province approved the project activity on 20 June 2007 /10/.

4.8 Comments by Local Stakeholders

Besides the stakeholder consultation process stipulated in the Chinese EIA regulation, the project developer has conducted an additional stakeholder consultations. Local stakeholders from local residents and local government were invited through a questionnaire to provide comments on the project. In the survey, 50 questionnaires were distributed to local stakeholders and 50 questionnaires were returned giving a 100% response rate.

DNV has checked all the questionnaires received /29/. The survey shows that the proposed project receives support from the local people.

DNV considers the local stakeholder consultation was carried out adequately.

4.9 Comments by Parties, Stakeholders and NGOs

The PDD (version 1.1) of 20 June 2008 was made publicly available on DNV’s climate change website ¹ and Parties, stakeholders and NGOs were through the CDM website invited to provide comments during a 30 days period from 4 July 2008 to 2 August 2008.

No comments were received in this period.

¹ www.dnv.com/certification/climatechange/Projects/ProjectDetails.asp?ProjectId=1934



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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		
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
The project shall assist non-Annex I Parties in contributing to the ultimate objective of the UNFCCC.	Kyoto Protocol Art.12.2.	OK
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
The project shall assist non-Annex I Parties in achieving sustainable development and shall have obtained confirmation by the host country thereof.	Kyoto Protocol Art. 12.2, CDM Modalities and Procedures §40a	CAR-1 OK
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
Parties participating in the CDM shall designate a national authority for the CDM.	CDM Modalities and Procedures §29	OK
The host Party and the participating Annex I Party shall be a Party to the Kyoto Protocol.	CDM Modalities §30/31a	OK
The participating Annex I Party's assigned amount shall have been calculated and recorded.	CDM Modalities and Procedures §31b	OK
The participating Annex I Party shall have in place a national system for estimating	CDM Modalities and Procedures §31b	OK



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Requirement	Reference	Conclusion
GHG emissions and a national registry in accordance with Kyoto Protocol Article 5 and 7.		
About additionality		
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		
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		
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		
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
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		
The baseline and monitoring methodology shall be previously approved by the CDM Executive Board.	CDM Modalities and Procedures §37e	OK
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
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
The project design document shall be in conformance with the UNFCCC CDM-PDD format.	CDM Modalities and Procedures Appendix B, EB Decision	OK
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



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Table 2 Requirements Checklist

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
A. General Description of Project Activity <i>The project design is assessed.</i>					
A.1 Project Boundaries <i>Project Boundaries are the limits and borders defining the GHG emission reduction project.</i>					
A.1.1. Are the project’s spatial boundaries (geographical) clearly defined?	/1/	DR	Yes. Hebei Shangyi Manjing North Wind Farm Project is located in Shangyi County, Zhangjiakou City, Hebei Province of China. The geographical coordinates of the project site is longitude 114°16’East and latitude 41°05’ North.		OK
A.1.2. Are the project’s system boundaries (components and facilities used to mitigate GHGs) clearly defined?	/1/	DR	Yes. The projects system boundaries are clearly defined. The power generated will be exported to the North China Power Grid (NCPG), which is defined as project system boundary.		OK
A.2. Participation Requirements <i>Referring to Part A, Annex 1 and 2 of the PDD as well as the CDM glossary with respect to the terms Party, Letter of Approval, Authorization and Project Participant.</i>					

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CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
A.2.1. Which Parties and project participants are participating in the project?	/1/	DR	The host Party involved in the project is China and the Annex I participating Party is United Kingdom of Great Britain and Northern Ireland. Guohua (Hebei) Renewable Energy Co., Ltd.is the project participant from the Host Party (P. R. China). Carbon Resource Management Ltd from the Sponsor Party (United Kingdom).		OK
A.2.2. Have all involved Parties provided a valid and complete letter of approval and have all private/public project participants been authorized by an involved Party?	/2/ /3/	DR	No. The letters of approval from the DNAs of China and United Kingdom of Great Britain and Northern Ireland have not been obtained.	CAR-1	OK
A.2.3. Do all participating Parties fulfil the participation requirements as follows: - Ratification of the Kyoto Protocol - Voluntary participation - Designated a National Authority	/2/ /3/	DR	China ratified the Kyoto Protocol on 30 August 2002. United Kingdom of Great Britain and Northern Ireland’s assigned amount is 92% of the emission level in 1990. Both of them are voluntary participation. DNA of China is National Development and Reform Commission. The DNA of United Kingdom of Great		OK



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			Britain and Northern Ireland is the Department for Environment, Food and Rural Affairs.		
A.2.4 Potential public funding for the project from Parties in Annex I shall not be a diversion of official development assistance.	/1/	DR	The validation did not reveal any information that indicates that the project can be seen as a diversion of official development assistance (ODA) funding towards China.		OK
A.3. Technology to be employed <i>Validation of project technology focuses on the project engineering, choice of technology and competence/ maintenance needs. The validator should ensure that environmentally safe and sound technology and know-how is used.</i>					
A.3.1. Does the project design engineering reflect current good practices?	/1/ /9/	DR	Yes. The project design engineering reflects current good practices.		OK
A.3.2. Does the project use state of the art technology or would the technology result in a significantly better performance than any commonly used technologies in the host country?	/1/ /9/	DR I	Yes. The technology used for the project is domestically produced and is of state of the art.		OK
A.3.3 Does the project make provisions for meeting training and maintenance needs?	/1/	DR I	Yes. The project owner will make provisions for the training and maintenance needs before the operation of the project.		OK

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CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
A.4. Contribution to Sustainable Development <i>The project's contribution to sustainable development is assessed.</i>					
A.4.1. Has the host country confirmed that the project assists it in achieving sustainable development?	/2/	DR	Not yet. The LoA from the DNA of China has not been issued.	CAR-1	OK
A.4.2 Will the project create other environmental or social benefits than GHG emission reductions?	/1/ /9/ /10/	DR I	Yes. As a renewable energy project, the project may substitute some coal fired power plant and produce positive environmental and economic benefits and contribute to the local sustainable development especially in generating clean electricity, reducing greenhouse gas emissions, creating employment opportunities and reducing other pollutants resulting from the fossil fuel fired power plants in China.		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>					

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CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
B.1.1. Does the project apply an approved methodology and the correct version thereof?	/1/ /5/	DR	Yes, the project applies the methodology ACM0002 “Consolidated methodology for grid-connected electricity generation from renewable sources” version 8 approved by the EB.		OK
B.1.2. Are the applicability criteria in the baseline methodology all fulfilled?	/1/ /5/	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 (North China Power Grid) can be clearly identified.		OK
B.2. Baseline Scenario Determination <i>The choice of the baseline scenario will be validated with focus on whether the baseline is a likely scenario, and whether the methodology to define the baseline scenario has been followed in a complete and transparent manner.</i>					
B.2.1. What is the baseline scenario?	/1/	DR	Provision of equivalent amount of annual power output by the grid (North China Power Grid) where the proposed project is connected into is the baseline scenario.		OK
B.2.2. What other alternative scenarios have been considered and why is the selected scenario the most likely one?	/1/	DR	Four alternative baseline scenarios to the project have been identified and discussed:		OK

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			1) The proposed project activity undertaken without being registered as a CDM project activity; 2) Thermal power plant with comparable capacity or electricity generation; 3) Other renewable energy with comparable capacity or electricity generation; 4) Comparable capacity or electricity generation addition provided by the NCPG. 1) has less financial attractiveness ,as discussed in the analysis below; 2) does not accord with the existing Chinese mandatory regulations;3) is not feasible for the project owner due to the lack of resource, experience and ability to develop other renewable energy power plants. Only alternative 4) “Comparable capacity or electricity generation addition provided by the NCPG” is a realistic alternative consistent with current laws and regulations.		
B.2.3. Has the baseline scenario been determined according to the methodology?	/1/	DR	Yes. “Comparable capacity or electricity generation addition provided by the NCPG” is the baseline scenario determined according		OK

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			to the methodology.		
B.2.4. Has the baseline scenario been determined using conservative assumptions where possible?	/1/	DR	Yes. According to the deduction from the available information, the assumptions are conservative.		OK
B.2.5. Does the baseline scenario sufficiently take into account relevant national and/or sectoral policies, macro-economic trends and political aspirations?	/1/	DR	Yes. All relevant national and sectoral policies, regulations and department rules and disciplines are considered such as the renewable energy law and policies by central government.		OK
B.2.6. Is the baseline scenario determination compatible with the available data and are all literature and sources clearly referenced?	/1/ /9/ /12/ /13/ /16/ /17/	DR	For the CM calculation, this version of PDD was submitted in June 2008, so the 2006 data should be included.	CL	OK
B.2.7. Have the major risks to the baseline been identified?	/1/	DR	There are no significant risks to the baseline except the enforcement of the Chinese renewable law. However, this law does not need to be taken into account as it is being implemented only now i.e. after the entry into force of decision 17.CP 7.		OK
B.3. Additionality Determination <i>The assessment of additionality will be validated with</i>					

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<i>focus on whether the project itself is not a likely baseline scenario.</i>					
B.3.1. Is the project additionality assessed according to the methodology?	/1/ /5/ /6/	DR	Yes. The additionality of the Hebei Shangyi Manjing North Wind Farm Project, as required by ACM0002, is demonstrated by applying the “ <i>Tool for the demonstration and assessment of additionality</i> ”, version 05 of 16 May, 2008. Please use the latest version of the additionality tool.	CL-2	OK
B.3.2. Are all assumptions stated in a transparent and conservative manner?	/1/ /6/	DR	Yes. All assumptions are stated in a transparent and conservative manner.		OK
B.3.3. Is sufficient evidence provided to support the relevance of the arguments made?	/1/ /6/ /15/ /16/ /21/	DR I	Yes. The “ <i>Tool for the demonstration and assessment of additionality</i> ” version 05 is applied. Please use the latest version of the additionality tool <ul style="list-style-type: none">• Identification of the alternatives to the project activity consistent with the current laws and regulations. The alternative baseline scenarios for the	CL-2	OK

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			<p>project activity have been suitably identified as,</p> <p>1) The proposed project activity undertaken without being registered as a CDM project activity;</p> <p>2) A fossil fuel-fired power plant with the comparable capacity or electricity generation;</p> <p>3) A power plant using other source of renewable energy with the comparable capacity or electricity generation, such as PV, biomass and hydro, etc;</p> <p>4) Comparable capacity or electricity generation addition provided by the NCPG.</p> <p>As mentioned in Section 4.3 alternative 2) and 3) are not realistic and credible alternatives and can be exempted from further consideration.</p> <p>• Investment analysis: Choice of approach</p> <p>As the proposed project generates financial</p>		

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* MoV = Means of Verification, DR= Document Review, I= Interview			<p>and economic benefits other than CDM related income through the sales of electricity and the alternative to the project does not involve an investment, a benchmark analysis (option III) was selected for conducting the investment analysis.</p> <ul style="list-style-type: none">• Investment analysis: Benchmark selection <p>According to the <i>Interim Rules on Economic Assessment of Electrical Engineering Retrofit Projects/30/</i>, in China an IRR of 8% (after tax) for the total investment of a project is regarded as a benchmark for investing in large scale hydropower plants, fossil fuel fired plants as well as wind farm projects. The benchmark of 8% (after tax) is therefore appropriate for this project. DNV was able to confirm this is suitable and reasonable as following:</p> <p>1. This benchmark was determined by the national administration of this industry in China /30/;</p>		

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			<p>2. This benchmark is for project and after tax and the investment analysis for this project will be for project and after tax also;</p> <p>3. This <i>Interim Rules on Economic Assessment of Electrical Engineering Retrofit Projects</i> /30/ is referred to the risk premiums of large scale wind farm power project.</p> <ul style="list-style-type: none">Investment analysis: Input parameters <p>The input parameters used in the financial analysis of the Hebei Shangyi Manjing North Wind Farm Project are taken from the Feasibility Study Report (FSR) developed by Beijing Jikedian Renewable Energy Development Center in November 2007 and the approval letter by Development and Reform Commission of Hebei Province dated 27 February 2008/9/. The input parameters used in the financial analysis can thus be considered information provided by an independent and recognized source.</p>		

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			<p>DNV compared the input parameters for the financial analysis included in the PDD with the parameters stated in the FSR /9/ and was able to confirm that the values applied are consistent with the values stated in the FSR /9/.</p> <p>The FSR was approved on 27 February 2008 and the project start date was on 20 March 2008 /28/. Given this negligible 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. It is thus reasonable to assume that the FSR has been the basis of the decision to proceed with the investment in the project.</p> <p>The input parameters used in the financial analysis were compared with the data reported for other similar wind farm CDM projects in Hebei province, comparing the investment costs per MW, electricity tariff (0.54 RMB/kWh including VAT), percentage</p>		

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			<p>financial performance: static total investment, on-grid tariff, power supplied and annual O&M cost.</p> <p>The additionality tool requires considering a realistic range of assumptions for the input parameters of the financial analysis and +/- 10% does not always reflect a realistic range. The project developer needs to determine each input parameter's value at which the IRR will be equal to the benchmark and assess the likelihood of attaining the arrived values against each parameter and confirm that it is not likely that the IRR will become equal to the benchmark.</p> <ul style="list-style-type: none">• Common practice analysis: <p>As per the requirements of <i>Tool for the demonstration and assessment of additionality</i>: According to the guidance provided in EB 38 paragraph 60, registered CDM project activities are not to be included in this analysis. The CDM projects in common practice analysis should therefore be excluded.</p>	<p>CL-3</p> <p>CL-4</p>	

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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/ /9/ /24/	DR I	The project starting date was 20 March 2008. However, the evidence of considering CDM in decision-making prior to the starting of project activity is not obtained.	CL5	OK
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/ /9/	DR	Yes. Project emission is regarded as zero as the project is a renewable energy (wind source) project.		OK
B.4.2. Have conservative assumptions been used when calculating the project emissions?	/1/	DR	Ditto		OK
B.4.3 Are uncertainties in the project emission estimates properly addressed?	/1/	DR	Ditto		OK
B.5. Calculation of GHG Emission Reductions – Baseline emissions <i>It is assessed whether the baseline emissions are stated</i>					

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<i>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/ /5/ /11/ /12/ /13/ /14/	DR	Yes. The baseline emission factor for the project is determined ex-ante as a combined margin, consisting of combination of the operating margin (OM) and build margin (BM). The data sources and calculation spreadsheet of the grid emission factor is requested.	CL-6	OK
B.5.2. Have conservative assumptions been used when calculating the baseline emissions?	/1/	DR	Please provide the data source and calculation spreadsheet of the Emission Factor.	CL-6	OK
B.5.3. Are uncertainties in the baseline emission estimates properly addressed?	/1/	DR	No significant uncertainties need to be addressed.		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</i>					

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B.6.1. Are the leakage calculations documented according to the approved methodology and in a complete and transparent manner?	/1/ /5/	DR	According to ACM0002, there are no leakages that need to be considered.		OK
B.6.2. Have conservative assumptions been used when calculating the leakage emissions?	/1/	DR	Ditto		OK
B.6.3. Are uncertainties in the leakage emission estimates properly addressed?	/1/	DR	Ditto		OK
B.7. Emission Reductions <i>The emission reductions shall be real, measurable and give long-term benefits related to the mitigation of climate change.</i>					
B.7.1. Are the emission reductions real, measurable and give long-term benefits related to the mitigation of climate change.	/1/	DR	Yes. The emission reductions are real, measurable and give long-term benefits related to the mitigation of climate change. The project is forecasted to reduce CO ₂ emissions of 110 849 tCO ₂ e per year average over the crediting period by replacing the electricity generated from NCPG.		OK

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B.8. Monitoring Methodology <i>It is assessed whether the project applies an appropriate baseline methodology.</i>					
B.8.1. Is the monitoring plan documented according to the approved methodology and in a complete and transparent manner?	/1/ /5/	DR	Yes. The monitoring plan is documented according to the approved monitoring methodology ACM0002 “Consolidated methodology for grid-connected electricity generation from renewable sources” and 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/ /5/	DR	Yes. As mentioned in PDD, electronic data of electricity generation will be kept for 2 years following the end of the crediting period.		OK
B.9. Monitoring of Project Emissions <i>It is established whether the monitoring plan provides for reliable and complete project emission data over time.</i>					
B.9.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for estimation or measuring the greenhouse gas emissions within the project boundary during the crediting period?	/1/	DR	There are no emissions from the project activity needing to be considered as per ACM0002.		OK
B.10. Monitoring of Baseline Emissions <i>It is established whether the monitoring plan provides for</i>					

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<i>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 I	The project uses the <i>ex-ante</i> determination of emission factor for grid electricity. The electricity supplied to the grid will be monitored and double checked with the invoice of electricity sold to the grid. The proposed project generation is derived from the FSR which has been approved by Development and Reform Commission of Hebei Province on 27 February 2008. And the emission factor is calculated based on the China Energy Statistical Yearbooks 2005 to 2007, China Electric Power Yearbooks 2003 to 2007 and 2006 IPCC.		OK
B.10.2. Are the choices of baseline GHG indicators reasonable and conservative?	/1/	DR	Yes.		OK
B.10.3. Is the measurement <i>method</i> clearly stated for each baseline indicator to be monitored and also deemed appropriate?	/1/	DR	Yes. The electricity generated delivered to the grid will be monitored directly.		OK
B.10.4. Is the measurement <i>equipment</i> described and deemed appropriate?	/1/	DR I	Yes. From follow-up interview and desk review of PDD, it is found that the electricity delivered to the grid will be measured at the control centre using a computer system.		OK

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B.10.5. Is the measurement <i>accuracy</i> addressed and deemed appropriate? Are procedures in place on how to deal with erroneous measurements?	/1/	DR I	Yes. The metering equipments are calibrated annually to ensure accuracy. Procedures to deal with erroneous measurements have been in place.		OK
B.10.6. Is the measurement <i>interval</i> for baseline data identified and deemed appropriate?	/1/	DR I	As per methodology, monitoring frequency of monitoring data should be hourly measurement and monthly recording, which have not been identified in PDD. The project proponent needs to clarify this.	CL-7	OK
B.10.7. Is the <i>registration, monitoring, measurement</i> and <i>reporting</i> procedure defined?	/1/	DR I	Yes. The registration, monitoring, measurement and reporting procedure are defined in the monitoring plan.		OK
B.10.8. Are procedures identified for <i>maintenance</i> of monitoring equipment and installations? Are the calibration intervals being observed?	/1/	DR I	Yes. The maintenance of monitoring equipment and installations are according to the national industry standard /41/. The calibration intervals are once per year.		OK
B.10.9. Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation)	/1/	DR	Yes. The procedures for records handling are identified in the monitoring plan in PDD.		OK
B.11. Monitoring of Leakage <i>It is assessed whether the monitoring plan provides for reliable and complete leakage data over time.</i>					

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B.11.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining leakage?	/1/	DR	According to ACM0002, the project proponents do not need to consider leakage.		OK
B.11.2. Are the choices of project leakage indicators reasonable and conservative?	/1/	DR	Ditto		OK
B.11.3. Is the measurement <i>method</i> clearly stated for each leakage value to be monitored and deemed appropriate?	/1/	DR	Ditto		OK
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>					
B.12.1. Is the monitoring of sustainable development indicators/ environmental impacts warranted by legislation in the host country?	/1/	DR	Neither ACM0002 nor the Chinese DNA requires collection and archiving of relevant data concerning environmental, social and economic impacts. However the environmental impacts will be monitored by local environmental authority.		OK
B.12.2. Does the monitoring plan provide for the collection and archiving of relevant data concerning environmental, social and economic impacts?	/1/	DR	The indicators of environmental impacts will be stipulated by local environmental authority.		OK

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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>					
B.13.1. Is the authority and responsibility of overall project management clearly described?	/1/ /27/	DR	Yes. The authority and responsibility of project management is described in the PDD.		OK
B.13.2. Are procedures identified for training of monitoring personnel?	/1/ /26/ /27/	DR I	Yes. All employees responsible for operating and maintaining the wind power station will be trained by the project owner in accordance with the monitoring plan. The training programs include the on-site operation rules, monitoring requirements, safety codes and inspection specifications, etc. Only qualified employees are designated by the project owner for the positions of operating the wind power station and data recording.		OK
B.13.3. Are procedures identified for emergency preparedness for cases where emergencies can cause unintended emissions?	/1/	DR I	No emergency situation which can cause unintended emissions is expected from the project.		OK
B.13.4. Are procedures identified for review of reported	/1/	DR	Yes. The procedures for review of reported		OK

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results/data?	/27/	I	results/data has been identified in the monitoring plan. Detailed procedures will be in place and maintained and implemented at the latest prior to the start of the crediting period to enable subsequent verification of emission reductions.		
B.13.5. Are procedures identified for corrective actions in order to provide for more accurate future monitoring and reporting?	/1/	DR I	Yes. The monitoring plan could be modified according to actual conditions and requirements of DOE for more accurate monitoring and reporting.		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. Are the project’s starting date and operational lifetime clearly defined and evidenced?	/1/ /9/ /24/	DR I	The issuance date of the construction permission for Hebei Shangyi Manjing North Wind Farm Project was 31 March 2008 /24/. Before that, the project owner signed wind turbines purchase contract with GE Energy (Shenyang) Co., Ltd. on 20 March 2008/28/. The latter is defined as the starting date of the project activity. According to the project Feasibility Study Report (FSR) /9/, the lifetime of the project is expected to be 20 years.		OK

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C.2. Is the start of the crediting period clearly defined and reasonable?	/1/	DR	Yes. A renewable crediting period 7 years is selected, starting on 1 September 2009		OK
D. Environmental Impacts <i>Documentation on the analysis of the environmental impacts will be assessed, and if deemed significant, an EIA should be provided to the validator.</i>					
D.1. Has an analysis of the environmental impacts of the project activity been sufficiently described?	/1/ /10/	DR	Yes. The impacts are properly described, including the impacts on noise, discard residue, waste water and sewage, dust and air quality, ecological environment.		OK
D.2. Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, is an EIA approved?	/1/ /10/	DR	Yes. Environmental Impact Assessment has been approved by Environmental Protection Bureau of Hebei Province on 20 June 2007.		OK
D.3. Will the project creates any adverse environmental effects?	/1/ /10/	DR I	No. The project will have positive impact to the local environment.		OK
D.4. Are transboundary environmental impacts considered in the analysis?	/1/ /10/	DR I	There are no transboundary environmental impacts foreseen for the project.		OK
D.5. Have identified environmental impacts been addressed in the project design?	/1/	DR	Yes.		OK

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D.6. Does the project comply with environmental legislation in the host country?	/1/ /10/	DR	Yes. The project complies with Chinese environmental legislation as EIA was approved by local authority.		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>					
E.1. Have relevant stakeholders been consulted?	/1/ /10/ /29/	DR I	Yes. Besides the stakeholder consultation process required by Chinese EIA regulations, an additional stakeholder consultation process have been performed through inviting local residents to comment on the project activity.		OK
E.2. Have appropriate media been used to invite comments by local stakeholders?	/1/ /10/ /29/	DR I	Yes. The site surveys, distribution of questionnaires and meetings have been used to invite comments by local stakeholders.		OK
E.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/ /10/ /29/	DR	Yes. The stakeholder consultation process is in accordance with Chinese EIA regulations.		OK
E.4. Is a summary of the stakeholder comments received provided?	/1/ /10/	DR	Yes. The summary of the stakeholder comments received is described in the PDD.		OK

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E.5. Has due account been taken of any stakeholder comments received?	/29/ /1/ /10/ /29/	DR	Yes. The due account will be taken according to the requirement from the EIA report according to the PDD.		OK

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

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
A.1. Letter of approval					
A.1.1 Is the LoA received directly from the DNA or through the project participant.	/1/ /2/ /3/	DR	The letters of approval from the DNAs of China and United Kingdom of Great Britain and Northern Ireland have not been obtained. The LoA's were received through the project participant.	CAR-1	OK
A.2. Project design					
A.2.1 Does the PDD describe the CDM project activity with all relevant elements in a transparent and accurate way?	/1/ /5/ /6/ /7/ /9/	DR	Yes, the project location, the technology of the project, such as wind turbines, the transmission line, the substation, the monitoring system are clearly described in the PDD and in line with the approved FSR, system boundaries determination in line with the approved methodology ACM0002 and the delineation of grid boundaries as provided by the DNA of China.		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/	DR	The project is a new built wind farm project in the Hebei province in China. The project starting data was 20 March 2008, is earlier than the project PDD publish date of 4 July 2008		OK
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/ /2/ - /39/	DR	The Hebei Shangyi Manjing North Wind Farm Project is a new built wind farm project; the install capacity is 49.5 MW, higher than 15 MW, so it is a large scale project. This project is a new power plant. Representatives of the project owner, Guohua (Hebei) Renewable Energy Co., Ltd. and the		OK

			<p>project consultant and CERs buyer, Carbon Resource Management Ltd were interviewed in DNV Beijing office on 8 September 2008 by Huang Peng, DNV, to resolve the issues identified during the desk review of the PDD. During the desk review, the relevant documents including FSR /9/, EIA /10/, approval letter of land levy and agreement of land levy compensation /23/, and the Wind turbines purchase contract /28/ were provided and assessed. The information about this project was able to be confirmed from these documents. Through the documents which the project participant provided, including PDD, FSR, EIA and other relevant background documents /1-/39/, DNV can confirm the project design, construction, operation and monitoring plan and all baseline scenario information. In addition, according to EIA /10/ and Approval letter of land levy and agreement of land levy compensation /23/, no migration was involved in this project; the construction of the project was at a very beginning stage at the time of validation and it is around three months between the construction start date (31 March 2008) and the validation date (04 July 2008); no further issues can be assessed through on site visit. Thus, DNV can justify that a physical site visit for this project was not arranged during the validation process.</p>		
A.2.4 Does the project activity involved alteration of existing installations? If so, have the differences between pre-project and	/1/	DR	No. project is a new build wind farm project.		OK

post-project activity been clearly described in the PDD?					
A.3. 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/	DR	Yes.		OK
A.4. Documentation of baseline emissions					
A.4.1 Documentation of the baseline determination: <ul style="list-style-type: none"> • All assumptions and data used by the project participants are listed in the PDD and related document to be submitted for registration. The data are properly referenced. • All documentation is relevant as well as correctly quoted and interpreted. • Assumptions and data can be deemed reasonable • Relevant national and/or sectoral policies and circumstances are considered and listed in the PDD. • The methodology has been correctly applied to identify what would occurred in the absence of the proposed CDM project activity 	/1/ /5/ /6/ /7/ /9/ /11/ /12/ /13/	DR	<ul style="list-style-type: none"> • Yes, all data in the PDD used to determine the baseline emissions are form the EIA, FSR, revised IPCC 2006, China Electric Power Yearbook, 2003~2007, China Energy Statistical Yearbook, 2005~2007 and other reference document. • Yes, according to the reference list, all documents of the baseline determination were correctly quoted and interpreted. • The EIA was approved by Environmental Protection Bureau of Hebei Province dated 20 June 2007. and FSR was approved by Development and Reform Commission of Hebei Province dated 27 February 2008, and all other document of the baseline determination can be verified, the data can be deemed reasonable. • Relevant national include Chinese renewable law and China environment protection law and/or sectoral policies and circumstances such as the national industry standard of the Technical Administrative Code of Electric Energy Metering (DL/T448-2000) are considered and listed in the PDD. 		

			<ul style="list-style-type: none"> The baseline determination is in line with the baseline methodology procedure in ACM0002. 		
A.5. Documentation of the calculations					
A.5.1 Algorithms and/or formulae used to determine emission reductions <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/ /5/ /6/ /7/ /9/	DR	<ul style="list-style-type: none"> Yes. The EIA was approved by Environmental Protection Bureau of Hebei Province dated 20 June 2007, and FSR was approved by Development and Reform Commission of Hebei Province dated 27 February 2008, and all other document used to determine emission reductions can be verified, the data can be deemed reasonable. The data are properly referenced Yes, according to the reference list, all documents used to determine emission reductions were correctly quoted and interpreted. Yes. All values used can be deemed reasonable in the context of the project activity The calculation of emission reduction is in line with the baseline methodology procedure in ACM0002. 		OK
A.6. 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/	DR	<p>The monitoring plan clearly define the parameter, data management and QA/QC procedures, the monitoring plan deemed feasible, the emission reductions achieved by the project can be monitored continuously and completely.</p> <p>DNV assessed it by checking the monitoring plan and QA/QC procedures in the PDD,</p>		OK

			DNV was able to confirm that the monitoring plan, the data management and the QA/QC procedures have been properly defined. The only parameter needs to be monitored is the electricity generated by the project; this parameter is included in the monitoring plan; thus, the emission reductions achieved by the project will be totally monitored and can be verified later by a DOE.		
A.7. CDM consideration prior to starting date					
A.7.1 The prior consideration of CDM for the project activity complies with EB41 annex 46		DR	<p>The issuance date of the construction permission for Hebei Shangyi Manjing North Wind Farm Project was 31 March 2008 /24/. Before that, the project owner signed wind turbines purchase contract with GE Energy (Shenyang) Co., Ltd. on 20 March 2008/28/. The latter is defined as the starting date of the project activity.</p> <p>The project starting date was 20 March 2008. However, the evidence of considering CDM in decision-making prior to the starting of project activity is not obtained.</p>	CL-5	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>CAR 1: The letters of approval from the DNAs of China and United Kingdom of Great Britain and Northern Ireland have not been obtained.</p>	<p>A.2.2 A.4.1</p>	<p>The LoAs from China DNA and United Kingdom of Great Britain and Northern Ireland DNA have been provided.</p>	<p>Ok. The LoAs from China DNA and United Kingdom of Great Britain and Northern Ireland DNA have been obtained. The CAR is closed.</p>
<p>CL 1: For the CM calculation, this version of PDD was submitted in June 2008, so the 2006 data (from the yearbooks of 2007) should be included.</p>	<p>B.2.6</p>	<p>The CM calculation was updated on the basis of the latest 2006 data issued by China DNA when it was available at the time of web-hosting PDD.</p>	<p>Ok. The updated CM calculation on the basis of the latest 2006 data has been confirmed. The 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
CL 3 : The latest version of the additionality tool is requested.	B.3.1 B.3.3	The latest version of the additionality tool (version 5.2) is been used in the revised PDD.	The latest version of the additionality tool (version 5.2) is been used and confirmed by DNV. The CL is closed.
CL 3: The additionality tool requires to consider a realistic range of assumptions for the input parameters of the financial analysis and +/- 10% does not always reflect a realistic range. The project developer needs to determine each input parameter's value at which the IRR will be equal to the benchmark and assess the likelihood of attaining the arrived values against each parameter and confirm that it is not likely that the IRR will become equal to the benchmark.	B.3.3	As per the revised PDD section B5, an alternative approach is to, for each input parameter, i) determine the value at which the IRR will be equal to the benchmark and ii) assess the likelihood of the parameter having this value to confirm that it is not likely that the IRR will become equal to the benchmark. The IRR for the project equals the benchmark, when the values of static investment, annual O&M costs, on-grid tariff and electricity output change by - 11.95%, -56.9%, +10.75%, +10.75%, respectively. However, none of these scenarios are likely to happen, as have been revised and demonstrated in B.5 of the PDD. The revised sensitivity has been provided.	A sensitivity analysis has been carried out for parameters contributing more than 20% to revenues or costs to check the robustness of the financial analysis. Reasonable variations of the static total investment, annual O&M costs, on-grid tariff and annual supplied power were checked by calculating the variation necessary to reach the benchmark and then discussing the likelihood for that to happen. None of the parameters in the sensitivity analysis are considered to have any significant positive correlation. It is shown that the benchmark is reached only when the total investment and O&M decreases by 11.95% and 52.3% respectively, while the on-grid tariff and annual supplied power increase by 10.75%. However, it is unlikely that these situations will happen as demonstrated in the following: As the main part of total investment

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>cost /9/, the equipment and materials are currently increasing /34/, which was confirmed by DNV. Hence, the total investment cost is unlikely to decrease by 11.95%.</p> <p>Faced with the increase of the price of the raw material such as steel and cooper, which results in the price of wind turbines and equipments increasing in China during these recent years /34/, it is highly unlikely that O&M will decrease by 52.3%.</p> <p>The electricity tariff is determined as per the NDRC or the local price bureau relevant guidance document (0.54RMB/kWh). It has also been verified by DNV that the on-grid tariff of wind farms in Hebei Province has decreasing trend since 2005 /35/. So it is deemed unlikely that the tariff can increase by 10.75% to make the project IRR reach the benchmark.</p> <p>Annual supplied power is limited by wind resources on the project site. In FSR /9/, the determination of installed capacity and operation hours was discussed sufficiently in relation to the wind resources. Moreover, the grid-in electricity output is based on long term</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>meteorological data of the wind resource in the local area, for 30 years (from 1977 to 2006) and onsite wind resources measurement. So, it is highly unlikely for the output to increase by 10.75%.</p> <p>The sensitivity analysis shows that even if considering the reasonable variations of those critical parameters, without the income from CERs sales, the “Hebei Shangyi Manjing North Wind Farm Project” is unlikely to be the most financially attractive option.</p> <p>The 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>CL 4 :</p> <p>As per the requirements of Tool for the demonstration and assessment of additionality: According to the guidance provided in EB 38 paragraph 60, registered CDM project activities are not to be included in this analysis. The CDM projects in common practice analysis should therefore be excluded.</p>	B.3.3	<p>CDM project activities have been excluded in the common practice, pls refer to B.5 of the PDD.</p> <p>The revised common practice analysis has been provided.</p>	<p>In China, most policies are promulgated in provincial level by combining the national policy with the region's condition. In addition, abundant and high quality wind resources in Hebei Province make this region different from other regions in the aspect of electricity output, eventually in the aspect of economic feasibility. Hence, it is reasonable that Hebei Province is selected as scope for common practice analysis.</p> <p>There are two similar wind farm projects (Chengde Hongsong 50.1 MW wind project and the Shangyi Manjing 34.5 MW wind project) in Hebei province with installed capacity more than 15 MW /36/. Both Chengde Hongsong wind farm and Shangyi Manjing wind farm did not obtain the high on-grid tariff anticipated in their feasibility studies, they were all have low IRR and were also facing serious financial barriers during operating period. Both projects agreed carbon funding to help overcome this serious barrier. DNV has checked all sources /39//40/ mentioned in the PDD and could conclude that the construction of a wind farm project of 49.5 MW is not a</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
			common practice in Hebei province. The CL is closed.
<p>CL 5: The project starting date was 20 March 2008. However, the evidence of considering CDM in decision-making prior to the starting of project activity is not obtained.</p>	B.3.4	<p>The starting date of the project activity is 20 March 2008/28/, the date of the wind turbines purchase contract signed with GE Energy (Shenyang) Co., Ltd. /28/</p> <ul style="list-style-type: none"> • Environmental Impact Assessment (EIA) of Hebei Shangyi Manjing North Wind Farm Project was developed by the Environmental Impact Assessment Department of Hebei Engineering Consultant Institute in May 2007 and approved by Environmental Protection Bureau of Hebei Province dated 20 June 2007/10/; • In November 2007, the CDM was seriously considered in the FSR /9/ by Beijing Jikedian Renewable Energy Development Center due to the lower IRR of 6.5%; • On 10 December 2007, the decision /32/ for applying for CDM was made in the board meeting; 	<p>The evidence of considering CDM in decision-making prior to the starting of project activity has been obtained and the relevant documents /9/ /10//22//24//28//32/have been validated. 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
		<ul style="list-style-type: none"> On 17 December 2007, the ERPA with Carbon Resource Management Ltd (CER buyer) was signed /22/ On 27 February 2008, the FSR was approved by the Development and Reform Commission of Hebei province/9/; On 20 March 2008, the wind turbines purchase contract was signed /28/. This date was substantiated as the start date of this project activity; On 31 March 2008, the project construction starting permission was issued by Zhongzi Engineering Construction Supervision Company./24/ On 4 July 2008, the PDD of this project was submitted to DNV for validation. 	
<p>CL 6: The data sources and calculation spreadsheet of the grid emission factor is requested.</p>	<p>B.5.1 B.5.2</p>	<p>The Annex III of the PDD of the calculation of the Emission Factor has been provided.</p>	<p>Ok. The data sources of the calculation of the Emission Factor have been obtained and the calculation has been confirmed to be reasonable and conservative. 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>CL 7:</p> <p>As per methodology, monitoring frequency of monitoring data should be hourly measurement and monthly recording, which have not been identified in PDD. The project proponent needs to clarify.</p>	B.10.6	<p>The data will be continuously measured and monthly recorded, as have been revised in the PDD.</p>	<p>Ok. The monitoring frequency of monitoring data has been checked as continuously measured and monthly recorded.</p> <p>CL is closed.</p>

ENDIX B

CERTIFICATES OF COMPETENCE



CERTIFICATE OF COMPETENCE

Peng Huang

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	Jan 2009	Jan 2009			
Renewables		Jan 2009			
Wind power					
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

Michael Lehmann

Michael Lehmann

Technical Director, Climate Change Services



CERTIFICATE OF COMPETENCE

zhi Ang (Walter) Tang

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 CDM Verifier Sector Expert Methodology Expert Technical Reviewer</i>
<i>Landfill gas</i>	
<i>Hydro power</i>	Jan 2009
<i>Renewables Wind power</i>	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>	
<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

Michael Lehmann

Michael Lehmann

Technical Director, Climate Change Services



CERTIFICATE OF COMPETENCE

Anjana Sharma

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>				Jan 2009	Jan 2009
<i>Hydro power</i>	Jan 2009				
<i>Renewables</i>				Jan 2009	Jan 2009
<i>Wind power</i>					
<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>					
<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

Michael Lehmann

Michael Lehmann

Technical Director, Climate Change Services



CERTIFICATE OF COMPETENCE

Weidong Yang

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>				Jan 2009	Jan 2009
<i>Hydro power</i>					
<i>Wind power</i>					
<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>					
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<i>Biofuel</i>					
<i>Pipeline leakage reduction</i>					
<i>SF₆</i>					

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Technical Director, Climate Change Services



CERTIFICATE OF COMPETENCE
