



VALIDATION REPORT

ZHANGJIAKOU CHABEI WIND FARM PROJECT IN CHINA

REPORT No. 2010-9473

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VALIDATION REPORT

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Summary:

Project Name: Zhangjiakou Chabei Wind Farm Project

Country: China

Methodology: ACM0002

Version: 12.1.0

GHG reducing Measure/Technology: Wind power generation

ER estimate: 203 090 tCO₂e per year (average)

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 project activity "Zhangjiakou Chabei Wind Farm Project" in China, as described in the PDD, version 1.2 of 21 February 2011, meets all relevant UNFCCC requirements for the CDM and all relevant host Party criteria and correctly applies the baseline and monitoring methodology ACM0002 version 12.1.0. DNV thus requests the registration of the project as a CDM project activity.

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Report title: Zhangjiakou Chabei Wind Farm Project in China			
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Indexing terms

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Abbreviations

BM	Build Margin
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CEF	Carbon Emission Factor
CER	Certified Emission Reduction
CL	Clarification request
CM	Combined Margin
CO ₂	Carbon dioxide
CO ₂ e	Carbon dioxide equivalent
DNA	Designated National Authority
DNV	Det Norske Veritas
DOE	Designated Operational Entity
EF	Emission Factor
EIA	Environmental Impact Assessment
ERPA	Emission Reduction Purchasing Agreement
FAR	Forward Action Request
FSR	Feasibility Study Report
GHG	Greenhouse gas(es)
GWP	Global Warming Potential
IPCC	Intergovernmental Panel on Climate Change
IRR	Internal Rate of Return
LoA	Letter of Approval
MP	Monitoring Plan
NCPG	North China Power Grid
NCV	Net Calorific Value
NDRC	National Development and Reform Commission
NGO	Non-governmental Organisation
ODA	Official Development Assistance
OM	Operating Margin
PDD	Project Design Document
PLF	Plant Load Factor
PPA	Power Purchase Agreement
RMB	Renminbi, Chinese currency (yuan)
UNFCCC	United Nations Framework Convention on Climate Change
VAT	Value-added tax



1 EXECUTIVE SUMMARY – VALIDATION OPINION

DNV Climate Change Services AS (DNV) has performed a validation of the project activity “Zhangjiakou Chabei 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 fulfilment of stated criteria.

The host Party is China and the Annex I Party is United Kingdom of Great Britain and Northern Ireland. Both Parties fulfil the participation criteria. China has approved the project and authorized the project participants CGN (Chabei) Wind Power Co., Ltd.. The DNA from China confirmed that the project assists in achieving sustainable development.

The project correctly applies the baseline and monitoring methodology ACM0002, version 12.1.0 “Consolidated baseline methodology for grid-connected electricity generation from renewable sources” /33/.

The Zhangjiakou Chabei Wind Farm Project is located in Chabei District, Zhangjiakou City, Hebei Province, China. The project involves installation and operation of 67 wind turbines with 1.5 MW capacity of each unit; the total installed capacity of proposed project activity is 100.5 MW. The annual electricity delivered to the North China Power Grid (NCPG) is expected to be 213 735 MWh. As a result, 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 total emission reductions from the project are estimated to be on the average 203 090 tCO₂e per year over the selected 7 year renewable crediting period. The emission reduction forecast has been checked and it is deemed likely that the stated amount is achieved given that the underlying assumptions do not change.

The monitoring plan provides for the monitoring of the project’s emission reductions. The monitoring arrangements described in the monitoring plan are feasible within the project design and it is DNV’s opinion that the project participants are able to implement the monitoring plan.

In summary, it is DNV’s opinion that the project activity “Zhangjiakou Chabei Wind Farm Project” in China, as described in the PDD, version 1.2 dated 21 February 2011, meets all relevant UNFCCC requirements for the CDM and all relevant host Party criteria and correctly applies the baseline and monitoring methodology ACM0002, version 12.1.0. Hence, DNV requests the registration of the project as a CDM project activity.

Beijing and Oslo, 9 May 2011

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2 INTRODUCTION

Carbon Resource Management Ltd has commissioned DNV Climate Change Services AS (DNV) to perform a validation of the Zhangjiakou Chabei 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). 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 ACM0002 /33/. The validation was based on the recommendations in the Validation and Verification Manual version 1.2 /32/.

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.



3 METHODOLOGY

The validation consisted of the following three phases:

- I a desk review of the project design documents
- II follow-up interviews with project stakeholders
- III the resolution of outstanding issues and the issuance of the final validation report and opinion.

The following sections outline each step in more detail.

3.1 Desk review of the project design documentation

The following tables list the documentation that was reviewed during the validation.

3.1.1 Documentation provided by the project participants

- /1/ Carbon Resource Management Ltd.: *CDM-PDD for project activity "Zhangjiakou Chabei Wind Farm Project" in China*, version 1.1 dated 10 December 2010, version 1.2 dated 21 February 2011.
- /2/ Carbon Resource Management Ltd.: *IRR calculation spreadsheet for project activity "Zhangjiakou Chabei Wind Farm Project" in China*, version 1.1 dated 10 December 2010, version 1.2 dated 21 February 2011.
- /3/ Carbon Resource Management Ltd.:
ER calculation spreadsheet, version 1.1 dated 10 December 2010, version 1.2 dated 21 February 2011;
Grid EF calculation spreadsheet, version 1.2 dated 10 December 2010.
- /4/ Beijing National Water Conservancy & Electric Power Engineering Co., Ltd.: *FSR for project activity "Zhangjiakou Chabei Wind Farm Project" in China*, dated in September 2009.
- /5/ National Development and Reform Commission: *Approval letter of FSR*, dated 23 June 2010.
- /6/ Beijing National Water Conservancy & Electric Power Engineering Co., Ltd.: *EIA for project activity "Zhangjiakou Chabei Wind Farm Project" in China*, dated in September 2007.
- /7/ Hebei Province Environmental Protection Bureau: *Approval letter of EIA*, dated 29 December 2007.
- /8/ State Grid Corporation of China: *Approval of Grid Connection (GuoJiaDianWangFaZhanHan [2008] No.132) for project activity "Zhangjiakou Chabei Wind Farm Project" in China*, dated 21 May 2008.
- /9/ Hebei Province Price Bureau: *Approval of feed-in tariff (JiJiaGuan [2010] No. 35) for project activity "Zhangjiakou Chabei Wind Farm Project" in China* (http://www.hebwj.gov.cn/upfiles/xy_col32gjc_20100708104313007126.htm), dated 8 July 2010.



- /10/ Department of Land and Resources of Hebei Province: *Land use approval for project activity "Zhangjiakou Chabei Wind Farm Project" in China (JiGuoTuZiHan [2008] No. 571)*, dated 10 October 2008.
- /11/ CGN (Chabei) Wind Power Co., Ltd. and Xinjiang Goldwind Science & Technology Co., Ltd.: *Turbines procurement contract and technical specification agreement* (Contract Number: WPC-10-125-C), signed on 28 July 2010.
- /12/ CGN Wind Power Co., Ltd. and Zhangjiakou Sanbei Lafake Wind Power Equipment Co., Ltd.: *the tower purchase contract for 33 turbines* (Contract Number: WPC-10-020-C), signed on 25 August 2010.
- /13/ CGN Wind Power Co., Ltd. and The 7th Construction Company of China National Petroleum Corporation: *the tower purchase contract for 34 turbines* (Contract Number: WPC-10-021-C), signed on 26 August 2010.
- /14/ CGN Wind Power Co., Ltd. and Hebei Construction Group Co., Ltd.: *Construction contract of turbine foundation and road works* (Contract Number: WPC-10-387-C), signed on 9 August 2010.
- /15/ Tianli Project Management Consulting Co., Ltd.: *Construction starting permit*, dated 23 August 2010
- /16/ Tianli Project Management Consulting Co., Ltd.: *The construction progress report by the end of 31 December 2010*, dated 13 January 2011.
- /17/ CGN (Chabei) Wind Power Co., Ltd.: *The board meeting minutes for CDM consideration*, dated 16 July 2010.
- /18/ CGN Wind Power Co., Ltd. and Carbon Resource Management Ltd.: *Emission Reduction Purchasing Agreement (ERPA)*, signed on 19 July 2010.
- /19/ Carbon Resource Management Ltd and DNV Climate Change Services AS: *CDM validation contract*, signed on 3 September 2010.
- /20/ CGN (Chabei) Wind Power Co., Ltd.: *Notification form to NDRC of China for demonstration and assessment of prior consideration of the CDM*, issued on 16 September 2010.
- /21/ NDRC: *Confirmation on notification of prior consideration of the CDM*, dated 25 September 2010.
- /22/ Carbon Resource Management Ltd: *Notification form to UNFCCC for demonstration and assessment of prior consideration of the CDM*, dated 18 August 2010.
- /23/ UNFCCC: *Notification of prior consideration of the CDM*, dated 18 August 2010. http://cdm.unfccc.int/Projects/PriorCDM/notifications/index_html
- /24/ CGN (Chabei) Wind Power Co., Ltd.: *50 copies of answered questionnaire for the stakeholder consultation survey*, dated 16 June 2010.
- /25/ CGN (Chabei) Wind Power Co., Ltd.: *CDM Training and Monitoring Manual (version 01)*, dated in October 2010.
- /26/ Zhangjiakou Commerce and Industry Bureau: *Business License of CGN (Chabei) Wind Power Co., Ltd. (No. 130700400001647)*, issued on 15 July 2010 and valid to 14 July 2040.
- /27/ Hebei Province Municipal Government: *Certificate of approval for establishment of foreign investment enterprise of CGN (Chabei) Wind Power Co., Ltd. (ShangWaiZi JiZi [2010] No. 0029)*, issued on 12 July 2010.
- /28/ Industrial and Commercial Bank of China Shenzhen branch, *Loan Commitment Letter*



for project activity “Zhangjiakou Chabei Wind Farm Project” in China, dated 12 April 2010.

- /29/ Chengde Hongsong wind farm & Shangyi Manjing wind farm both applied carbon funding to help overcome this serious barrier:
<https://vcsprojectdatabase1.apx.com/mymodule/ProjectDoc/EditProjectDoc.asp?id1=71>
 ;
http://www.personal.barclays.co.uk/PFS/A/Content/Files/3370_Bar_CN_Wind_China_V3.pdf

3.1.2 Letters of approval

- /30/ National Development and Reform Commission (DNA of China): *Letter of approval (LoA)*, dated 31 December 2010.

It is confirmed from the official website of DNA of China:

<http://cdm.ccchina.gov.cn/WebSite/CDM/UpFile/File2559.doc>

- /31/ Department of Energy and Climate Change (DNA of United Kingdom of Great Britain and Northern Ireland): *LoA (DNA Ref: CRMSA/02/2011)* dated 4 February 2011.

It is confirmed from the official website of DNA of United Kingdom of Great Britain and Northern Ireland:

http://www.decc.gov.uk/assets/decc/what%20we%20do/global%20climate%20change%20and%20energy/tackling%20climate%20change/intl_strategy/mechanisms/clean_de v/1_20100527094605_e_@@_cdmukapprovedprojects.pdf

3.1.3 Methodologies, tools and other guidance by the CDM Executive Board

- /32/ CDM Executive Board: *Validation and Verification Manual*. Version 1.2 dated on 30 July 2010, http://cdm.unfccc.int/Reference/Manuals/accr_man01.pdf
- /33/ CDM Executive Board: *Baseline and monitoring methodology ACM0002*, “Consolidated baseline methodology for grid-connected electricity generation from renewable sources”, version 12.1.0, dated 26 November 2010.
- /34/ CDM Executive Board: Tool to calculate the emission factor for an electricity system, version 02.1.0, dated 15 April 2011.
- /35/ CDM Executive Board: Tool to calculate project or leakage CO₂ emissions from fossil fuel combustion (not applicable to the proposed project), version 02, dated 2 August 2008.
- /36/ CDM Executive Board: *Tool for the demonstration and assessment of additionality*, version 5.2, dated 26 August 2008.
- /37/ CDM Executive Board: *Answer to DNV’s request for deviation of Chinese project activities from AM0005*, received on 1 December 2005.
<http://cdm.unfccc.int/Projects/deviations/87512>
- /38/ CDM Executive Board: *Guidelines for the reporting and validation of plant load factors version 1*, dated 17 July 2009.
- /39/ CDM Executive Board: *Guidelines on the demonstration and assessment or prior consideration of the CDM*, version 3, dated 11 September 2009.
- /40/ CDM Executive Board: *Guidelines for completing the project design document (CDM-PDD) and the proposed new baseline and monitoring methodologies (CDM-NM)*,



version 7, dated 2 August 2008

- /41/ CDM Executive Board: *Guidance on the Assessment of Investment Analysis*, Version 3.1, dated 15 January 2010
- /42/ CDM Executive Board: *Information Note on the Highest Tariffs applied by the Executive Board in Its Decisions on Registration of Projects in the People's Republic of China*, Version 01, dated June 2010,
http://cdm.unfccc.int/Reference/Notes/reg_note07.pdf

3.1.4 Documentation used by DNV to validate / cross-check the information provided by the project participants

- /43/ China NDRC and Ministry of Construction, "*Economic Evaluation Code and Parameter for Construction Project (Version 3)*", issued in August 2006.
- /44/ IPCC: *2006 IPCC Guidelines for National Greenhouse Gas Inventories Reference Manual*, 2006.
- /45/ State Power Corporation of China: *Interim Rules on Economic Assessment of Electrical Engineering Retrofit Projects*, Beijing, China Electric Power Press, dated March 2003.
- /46/ State Council of the People's Republic of China: *The Law of the People's Republic of China on Enterprise Income Tax ([2007] No.63)*, dated 16 March 2007.
- /47/ State Council of the People's Republic of China: *China Income Tax Implementation Regulation ([2007] No.512)*, dated 6 December 2007.
- /48/ State Council of the People's Republic of China: *Provisional Regulations of the People's Republic of China on City Maintenance and Construction Tax (GuoFa[1985] No. 19)*, issued on 8 February 1985.
- /49/ State Council of the People's Republic of China: *The Decision of the State Council on Amending the Interim Provisions on the Collection of Education Tax (GuoWuYuanLing[2005] No. 448)*, dated 20 August 2005.
- /50/ State Council of the People's Republic of China: *The Interim Regulations of the People's Republic of China on Value Added Tax (No. 538)*, dated 10 November 2008 and implemented on 1 January 2009.
- /51/ State Council of the People's Republic of China: *Provisional Regulations of the People's Republic of China on Value Added Tax (GuoWuYuanLing[1993] No.134)*, issued on 13 December 1993 and effective on 1 January 1994.
- /52/ Ministry of Finance and the State Administration of Taxation: *Provisional Regulations of the People's Republic of China on Value Added Tax (CaiShui[2001] No.198)*, issued on 1 December 2001 and effective on 1 January 2002.
- /53/ Ministry of Finance and the State Administration of Taxation: *Notice of the about Policies regarding the Value Added Tax on Products Made through Comprehensive Utilization of Resources and Other Products (CaiShui[2008] No. 156)*, dated 9 December 2008 and effective on 1 January 2009.
- /54/ 1. Hebei Province Price Bureau: Notice on tariff adjust of Hebei Province power grid, dated 26 June 2006;
 2. NDRC of China: Tariff approval of wind power projects, dated 9 June 2007;
 3. NDRC of China: Tariff approval in the wind power projects, dated 3 December 2007;



4. NDRC of China: The Notice about Completing the on-grid Power Tariff with the Wind Power Generation, FaGaJiaGe [2009] No. 1906, dated 20 July 2009.
- /55/ NDRC of China: *Tariff approval document (JiJiaGe [2002] No. 242)*, dated February 2002.
- /56/ The General Office of the State Council: *Notice on Strictly Prohibiting the Installation of Fuel-fired Generation with the Capacity of 135 MW or below*, Decree No.2002.6, dated 15 April 2002.
http://www.gov.cn/gongbao/content/2002/content_61480.htm
- /57/ Data source for common practice:
1, Shi Pengfei: China Wind Farms Capacity Statistics in 2007.
<http://www.cwea.org.cn/upload/20080324.pdf>
2, Shi Pengfei: Statistics of domestic wind farm installation capacity in 2008.
<http://www.cwea.org.cn/upload/20090305.pdf>
3, Chinese Wind Energy Association: Statistics of domestic wind farm installation capacity in 2009.
<http://www.cwea.org.cn/upload/201006102.pdf>
4, Hebei Province Price Bureau: *Notice on the adjustment of electricity price of the north power grid in Hebei Province*, dated 20 February 2002.
5, <http://cdm.unfccc.int/Projects/registered.html>
- /58/ Compilation Committee of China Electric Power Yearbook: *China Electric Power Yearbook 2004-2009*.
- /59/ Department of Industry and Transport Statistics of National Bureau of Statistics and Energy Bureau of NDRC of China: *China Energy Statistical Yearbook 2006-2008*.
NDRC: *Summary of Statistic Materials on Power Industry*, dated 2008.
- /60/ China NDRC: *The emission factor calculation for each power grid of China*, dated 2 July 2009. <http://cdm.ccchina.gov.cn/WebSite/CDM/UpFile/File2333.pdf>
- /61/ National People's Congress Standing Committee: *Law of the People's Republic of China on the Environmental Impact Assessment*, effective from 1 September 2003.
- /62/ State Electricity Regulatory Commission: *The statistics on newly built thermal plants*, dated 2 July 2009. From China NDRC official website
<http://qhs.ndrc.gov.cn/qjfzjz/W020090703644239079814.doc>
- /63/ State Council: *Notice of Electric Power Sector Reform Programme and decided to undertake the power sector reform in China*, dated 10 February 2002.
<http://www.china5e.com/show.php?contentid=43549>
- /64/ The document indicating disadvantage stage of other renewable energy project in project site including solar PV, biomass, geothermal and hydropower technology.
People Daily: *The development of renewable technology in GHG emission reduction* (<http://scitech.people.com.cn/GB/5347113.html>, for solar PV and biomass), dated 31 January 2007.
People Daily: *Looking forward to the introduction of geothermal power generation incentives* (http://paper.people.com.cn/zgnyb/html/2009-08/03/content_310862.htm, for geothermal), dated 3 August 2009.
China net: *20 years' stagnation of geothermal power technology in China* (http://www.china.com.cn/news/tech/2010-12/20/content_21579531.htm, for



geothermal), dated 20 December 2010.

Chinanews net: *Wind and hydropower together*

(<http://www.chinanews.com/ny/news/2009/12-25/2037683.shtml>, for hydropower), dated 20 December 2010.

Hydrology and water resources information network of Zhangjiakou City: *Status of water resources in Zhangjiakou City*

(<http://www.zjksw.net/ReadNews.asp?NewsID=580>, for hydropower), dated 25 March 2008.

/65/ Carbon Resource Management Ltd: *The PDD was made publicly available on the CDM website* from 18 December 2010 to 16 January 2011, version 1.1, dated 10 December 2010.

<http://cdm.unfccc.int/Projects/Validation/DB/400EHAWTS1H85PTN0N0O82339FEMFQ/view.html>

3.2 Follow-up interviews with project stakeholders

This project is a greenfield power plant and large scale project. Through reviewing the relevant documents provided by project participant including FSR and FSR approval /4/ /5/, EIA and EIA approval /6/ /7/ and other relevant background documents, DNV confirmed the project design, monitoring plan and baseline scenario information.

The follow up interview was carried out on 17 January 2011 in DNV Beijing office. Representatives of the project owner, CGN (Chabei) Wind Power Co., Ltd. and the project consultant, Carbon Resource Management Ltd. were interviewed by CDM validator Xue Yanju and Song Ke Karl from DNV to resolve the issues identified during the desk review.

During the desk review, the relevant documents including the PDD /1/, IRR calculation spreadsheet /2/, ER calculation spreadsheet /3/, FSR and FSR approval /4/ /5/, EIA and EIA approval /6/ /7/, grid connection approval /8/, feed-in tariff approval /9/, Land use approval /10/, Turbines procurement contract and technical specification agreement /11/, the tower purchase contract for 33 turbines /12/, the tower purchase contract for 34 turbines /13/, Construction contract of turbine foundation and road works /14/, construction permit /15/, the construction progress report by the end of 31 December 2010 /16/, CDM prior consideration notification forms /20/-/23/, and local stakeholder consultation survey evidences /24/, were provided and assessed. The information about this project was confirmed from these documents.

The construction progress report issued by supervision company Tianli Project Management Consulting Co., Ltd. on 13 January 2011, the construction of the project was at an initial stage on civil works at the time of validation. The time gap was around five months between construction starting date 23 August 2010 based on the construction starting permit issued by supervision company /15/ and interview date of 17 January 2011; Finally according to EIA /6/ no migration was involved in this project. Based on the above mentioned reasons and the fact that it was a greenfield project and all relevant documents were available, DNV did not consider it necessary to conduct a physical site visit for this project as part of the validation process.



	Date	Name	Organization	Topic
/66/	2011-1-17	Ms. Zhang Ling Ms. Zhou ting Mr. Shi Xiangfeng	Carbon Resource Management Ltd.	<ul style="list-style-type: none"> ➤ Baseline determination of the project ➤ Applicability of selected methodology ACM0002 ➤ Issues related to the additionality ➤ Investment Analysis ➤ Common practice analysis ➤ Emission reductions calculation ➤ Monitoring plan and project management ➤ Stakeholder consulting process
/67/	2011-1-17	Mr. Wang Zisong	CGN (Chabei) Wind Power Co., Ltd.	<ul style="list-style-type: none"> ➤ Information of project construction status ➤ The approval status (incl. EIA approval, the feasibility study report approval, LoA) ➤ Project management ➤ Project finance ➤ Emission reduction monitoring plan ➤ Consulting process for stakeholder's comments

Main changes between the version published for the 30 days stakeholder commenting period and the final version PDD version 1.2 submitted for registration:

- Changes related to the CARs and CLs are identified in the DNV's draft validation report;
- In section A.4.1 of the PDD, the coordinates of the project boundary corners are to decimal format;
- In the table 1 of section A.4.3 of the PDD, the data source of turbines technology specifications was added;
- In the table 2 of section A.4.4 of the PDD, the emission reductions were updated from the start of crediting period 1 July 2011 instead of using 12 monthly periods from 2011;
- In the figure 3 of section B.3, the GHG gases were indicated in this figure;
- In the table 4 of section B.5, the timeline of the implementation of the project was updated;
- In sub-step 2d of section B.5, the detail information about the estimation of electricity generation was described, including the applied data vintage year and the professional



software;

After reviewing the revised PDD, version 1.2 dated 21 February 2011, DNV issued this final validation report and opinion.

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 was customised for the project. The protocol shows in a transparent manner the criteria (requirements), means of verification and the results from validating the identified criteria. The validation protocol serves the following purposes:

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

The validation protocol consists of four tables. The different columns in these tables are described in the figure below. The completed validation protocol for the project activity "Zhangjiakou Chabei Wind Farm Project" in China is enclosed in Appendix A to this report.

A corrective action request (CAR) is raised if one of the following occurs:

- (a) The project participants have made mistakes that will influence the ability of the project activity to achieve real, measurable additional emission reductions;
- (b) The CDM requirements have not been met;
- (c) There is a risk that emission reductions cannot be monitored or calculated.

A clarification request (CL) is raised if information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met.

A forward action request (FAR) is raised during validation to highlight issues related to project implementation that require review during the first verification of the project activity. FARs shall not relate to the CDM requirements for registration.



Validation Protocol Table 1: Mandatory Requirements for CDM Project Activities				
Requirement	Reference	Conclusion		
The requirements the project must meet.	Gives reference to the legislation or agreement where the requirement is found.	This is either acceptable based on evidence provided (OK) or a corrective action request (CAR) if a requirement is not met.		

Validation Protocol Table 2: Requirement Checklist				
Checklist question	Reference	Means of verification (MoV)	Assessment by DNV	Draft and/or Final Conclusion
The various requirements in Table 1 are linked to checklist questions the project should meet. The checklist is organised in different sections, following the logic of the CDM-PDD	Gives reference to documents where the answer to the checklist question or item is found.	Means of verification (MoV) are document review (DR) , interview (I) or any other follow-up actions (e.g., on site visit and telephone or email interviews) and cross-checking (CC) with available information relating to projects or technologies similar to the proposed CDM project activity under validation.	The discussion on how the conclusion is arrived at and the conclusion on the compliance with the checklist question so far.	OK is used if the information and evidence provided is adequate to demonstrate compliance with CDM requirements. A corrective action request (CAR) is raised when project participants have made mistakes, the CDM requirements have not been met or there is a risk that emission reductions cannot be monitored or calculated. A clarification request (CL) is raised if information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met. A forward action request (FAR) during validation is raised to highlight issues related to project implementation that require review during the first verification of the project activity.

Validation Protocol Table 3: Resolution of Corrective Action and Clarification Requests			
Corrective action and/or clarification requests	Ref. to checklist question in table 2	Response by project participants	Validation conclusion
The CARs and/ or CLs raised in Table 2 are repeated here.	Reference to the checklist question number in Table 2 where the CAR or CL is explained.	The responses given by the project participants to address the CARs and/or CLs .	The validation team's assessment and final conclusions of the CARs and/or CLs .

Validation Protocol Table 4: Forward Action Requests		
Forward action request	Ref. to checklist question in table 2	Response by project participants
The FARs raised in Table 2 are repeated here.	Reference to the checklist question number in Table 2 where the FAR is explained.	Response by project participants on how forward action request will be addressed prior to first verification.

Figure 1 Validation protocol tables



3.4 Internal quality control

The validation report will undergo a technical review performed by a technical reviewer qualified in accordance with DNV's qualification scheme for CDM validation and verification.

3.5 Validation team

<i>Role</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	TA 1.2 competence
Team leader (Validator)	Xue	Yan Ju (Andi)	China	✓	✓	✓	✓		✓
Assessor under training	Song	Ke (Karl)	China	✓	✓	✓			
Technical reviewer	Agnes	Dudek	Norway					✓	✓

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



4 VALIDATION FINDINGS

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

The final validation findings relate to the project design as documented and described in the PDD, version 1.2 dated 21 February 2011.

4.1 Participation requirements

The project participants are CGN (Chabei) Wind Power Co., Ltd. from China, Carbon Resource Management Ltd from United Kingdom of Great Britain and Northern Ireland. The host Party (China) and the Annex I Party (United Kingdom of Great Britain and Northern Ireland) meet all relevant participation requirements. China ratified the Kyoto Protocol on 30 August 2002. Chinese DNA is the National Development and Reform Commission (NDRC).

The letter of approval (LoA) from host Party was issued by the DNA of China on 31 December 2010 /30/, authorizing CGN (Chabei) Wind Power Co., Ltd. of China as project participant and confirming that the project assists in achieving sustainable development.

The LoA issued by the DNA of China was received directly from project participant /30/. DNV has checked the authenticity of LoA issued by the China of DNA from the official website of China DNA /30/.

The LoA from the DNA of United Kingdom of Great Britain and Northern Ireland was received from project participant /31/. DNV has checked the authenticity of LoA issued by Annex I Party from the official website of DNA of United Kingdom of Great Britain and Northern Ireland /31/.

DNV consider the LoA to be in accordance with paragraphs 45- 48 of the VVM

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

4.2 Project design

The Zhangjiakou Chabei Wind Farm Project is located in Chabei District, Zhangjiakou City, Hebei Province, China. The centre geographical coordinate of the wind farm are east longitude 114.8158° and north latitude 41.4569° sourced from the FSR approved by National Development and Reform Commission on 23 June 2010 /5/.

The project involves installation and operation of 67 wind turbines with 1.5 MW capacity of each unit; the total installed capacity of proposed project activity is 100.5 MW. The wind turbines are manufactured by Xinjiang Goldwind Science & Technology Co., Ltd. /11/. DNV checked all parameters of the turbines from PDD /1/ against FSR /4/ and turbines procurement contract /11/ to be able to confirm the consistency. Each turbine will have a 690 V-to-35 kV box transformer. All turbines are connected to the 220 kV newly-built onsite substation. The onsite substation is connected via a 220 kV transmission line to the substation on the grid side, through where the power generated is transferred to North China Power Grid (NCPG). DNV confirms the applied technology and the project design engineering reflect current good practices.



The annual electricity delivered to the NCPG is expected to be 213 735 MWh at a plant load factor of 24.3% according to the FSR prepared in September 2009 /4/ by Beijing National Water Conservancy & Electric Power Engineering Co., Ltd. which is an independent third party accredited by the government with the highest grade (grade A).

The electricity generated from the proposed project will be linked to the on-site newly-built 220 kV substation, and then delivered to the NCPG under the approval of grid connection (GuoJiaDianWangFaZhanHan [2008] No.132) /8/.

The project activity start date has been verified by DNV corresponding to the turbines procurement contract signed on 28 July 2010 /11/ which is the earliest financial commitment for the project participants.

The expected operational lifetime of the project activity is 20 years according to the FSR /4/ and the turbines procurement contract and the technical specification agreement /11/. A renewable crediting period of 7 years has been chosen for the project, starting on 1 July 2011 or the date of registration, whichever is later. The emission reductions are estimated to be on average 203 090 tCO₂e per year.

DNV considers the project description of the project contained in the PDD to be complete and accurate. The PDD complies with the relevant forms and guidance for completing the PDD.

4.3 Application of selected baseline and monitoring methodology

The project applies the approved consolidated baseline and monitoring methodology ACM0002 version 12.1.0, titled “Consolidated baseline methodology for grid-connected electricity generation from renewable sources” /33/.

The applicability of this methodology is justified since:

1. The project is a wind farm project with the installation capacity of 100.5 MW, which has been confirmed from the FSR and its approval /4/ /5/, and the turbines procurement contract /11/.
2. The electricity from the project activity is proposed to be supplied to the NCPG /8/, and information on the characteristics of NCPG can be clearly identified.
3. The project is a new wind farm power plant with installed capacity 100.5 MW, which does not involve switching from fossil fuels to renewable energy sources at the site of the project activity, as confirmed by the FSR /4/ and the interview /66/ /67/.

The assessment of the project’s compliance with the applicability criteria of ACM0002 (version 12.1.0) are documented in detail in section B.2 of Table 2 in the validation protocol in Appendix A to this report.

4.4 Project boundary

The spatial extent of the project boundary is defined as the site of the project and all power plants connected physically to the NCPG, including Beijing, Tianjin, Hebei, Shanxi, Inner Mongolia, and Shandong Province /60/. There are no significant transmission constraints amongst the power plants of the NCPG, nor with the proposed project. It is DNV’s opinion that the project boundary of Zhangjiakou Chabei Wind Farm Project is clearly defined.

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>Main emission source in North China Power Grid.</i>
<i>Project emissions</i>	<i>N/A</i>	<i>Project emission is regarded as zero as the project is a renewable energy (wind source) project and no backup power existed at the project site.</i> <i>Therefore no project emission sources of more than 1% of the emission reductions were identified.</i>
<i>Leakage</i>	<i>N/A</i>	<i>There are no leakages that need to be considered in applying this methodology ACM0002 version 12.1.0 /33/.</i>

The identified boundary and selected sources and gases are justified for the project activity. The validation of the project activity did not reveal other greenhouse gas emissions occurring within the proposed CDM project activity boundary as a result of the implementation of the proposed project activity which are expected to contribute more than 1% of the overall expected average annual emission reduction, which are not addressed by ACM0002 (version 12.1.0).

4.5 Baseline identification

Since the project is considered to be additional, cf. Section 4.6, the baseline scenario is in accordance with ACM0002 version 12.1.0 that the electricity delivered to the grid by the project activity would otherwise have been generated by the operation of grid-connected power plants in NCPG and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in the “Tool to calculate the emission factor for an electricity system”.

The grid emission factor has been determined *ex-ante* based on the most recent information available at the time of the PDD was web-hosted on 18 December 2010 /33/. The weighting is set to be 75% operating margin emission factor and 25% build margin emission factor /33/.

The approved baseline methodology has been correctly applied to identify a complete list of realistic and credible baseline scenarios, and the identified baseline scenario most reasonably represents what would occur in the absence of the proposed CDM project activity.

All the assumption and data used by the project participants are listed in the PDD and/or supporting documents. All documentation relevant for establishing the baseline scenario are correctly quoted and interpreted in the PDD. Assumptions and data used in the identification of the baseline scenario are justified appropriately, supported by evidence and can be deemed reasonable. Relevant national and/or sectoral policies and circumstances are considered and listed in the PDD.



4.6 Additionality

The additionality of the project has been established using the “Tool for the demonstration and assessment of additionality” version 5.2 /36/.

4.6.1 Evidence for prior CDM consideration and continuous actions to secure CDM status

The turbines purchase contract between CGN (Chabei) Wind Power Co., Ltd. and Xinjiang Goldwind Science & Technology Co., Ltd. was signed on 28 July 2010 /11/, which is the first significant financial commitment for this project compared to the construction contract of turbine foundation and road works signed on 9 August 2010 /14/, the tower purchase contract for 33 turbines signed on 25 August 2010 /12/ and the tower purchase contract for 34 turbines signed on 26 August 2010 /13/. Thus, the date of turbines purchase contract 28 July 2010 /11/ was substantiated as the starting date of the project activity. This is, in DNV’s opinion, considered as the earliest of financial commitments to expenditure for the project activity.

The starting date of the project is after 2 August 2008 and before the global stakeholder consultant from 18 December 2010. The notification of intent to consider the project as a CDM project was submitted on 16 September 2010 to NDRC of China /20/ and was confirmed on 25 September 2010 /21/. Moreover, the notification of intent to consider the project as a CDM project was submitted to UNFCCC on 18 August 2010 /22/ and was confirmed on 18 August 2010 /23/. This is within six months of the starting date and demonstrates that CDM was seriously considered in the decision to proceed with the project activity.

The CDM validation contract was signed between Carbon Resource Management Ltd and DNV Climate Change Services AS on 3 September 2010 /19/ and validation started with the global stakeholder consultation on 18 December 2010. Since no gaps of more than two years were identified between actions to secure CDM status, sufficient actions to secure CDM status in parallel with the physical implementation of the project activity was confirmed.

It is DNV’s opinion that the proposed CDM project activity complies with the requirements of the latest version of the guidance on prior consideration of CDM.

4.6.2 Identification of alternatives to the project activity

Four alternatives to the project have been identified and discussed:

- a) The proposed project not undertaken as a CDM project activity
- b) The thermal power plant with the same annual electricity output as the proposed project.
- c) Other renewable energy project with the same annual electricity output as the proposed project.
- d) To provide the same electricity output by the NCPG.

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

The baseline scenario selection was appropriately assessed as below:

Alternative a): The proposed project itself, but not undertaken as a CDM project activity: this is a realistic and credible alternative available to the project owner.

Alternative b): The thermal power plant with the same annual electricity output as the proposed project: In 2008, the average operation time of thermal power plant in Hebei Province power grid of NCPG is 5 270 hours /58/. The net electricity supplied to NCPG by



the proposed project is 213 735 MWh /1/. To provide the same output as the proposed project, the alternative thermal power plant would have to have a capacity of 40.6 MW. Based on the above analysis and the Chinese mandatory regulation “Notice on Strictly Prohibiting the Installation of Fuel-fired Generation with the Capacity of 135 MW or below” /56/, alternative b) “The thermal power plant with the same annual electricity output as the proposed project” is excluded.

Alternative c): Construction of a power plant using other renewable energy, such as hydro, solar PV, geothermal and biomass power plant with equivalent installed capacity or annual electricity generation: In China, solar PV, biomass and geothermal generation technology is still in the demonstration phase and can bring only poor economic benefits, which can not be operated without support from the national policies /64/. The proposed project is located in an area lacking water resource /64/. Thus, DNV was able to verify other renewable energy sources are either not available in the geographical area of the project or are not commercially available at present. The alternative c) is thus not a likely alternative.

Hence, only alternative a) and d) will be discussed at next steps.

4.6.3 Investment analysis:

Choice of approach

As the project generates financial and economic benefits other than CDM related income through the sales of electricity and the alternative scenario of the proposed project is not a similar investment project, a benchmark analysis is justified for conducting the investment analysis.

Benchmark selection

According to *Interim Rules on Economic Assessment of Electrical Engineering Retrofit Projects* /45/ which is still in effect at the date of this report, 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 in China. 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 /45/;
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 Interim Rules on Economic Assessment of Electrical Engineering Retrofit Project /45/ is referred to the risk premiums of large scale wind farm power project.

Input parameters

The input parameters used in the financial analysis of this project activity are all taken from the FSR developed by the Beijing National Water Conservancy & Electric Power Engineering Co., Ltd. in September 2009 /4/ and the approval letter was issued by the National Development and Reform Commission on 23 June 2010 /5/, which can thus be considered information provided by an independent and recognized source.



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DNV compared the input parameters for the financial analysis /2/ included in the PDD /1/ with parameters stated in the FSR /4/ and was able to confirm that the values applied are consistent with the value stated in the FSR /4/.

The FSR was approved on 23 June 2010 /5/ and thus only 1 month prior to the decision to proceed with the project activity (i.e. project start date) which was on 28 July 2010 /11/. Given this short period of time between approval of the FSR and the decision to proceed with the project activity, it is unlikely in the context of the project that the input values would have materially changed and that it is thus reasonable to assume that the FSR has been the basis of the decision to proceed with the investment in the project.

Furthermore, the input parameters used in the financial analysis were compared with the data reported for other wind power registered CDM projects developed in Hebei Province, by comparing the investment cost per kW, annual O&M costs per kW, PLF, ratio of residual value and other costs per kW indicated in Table 1.

Table 1: similar CDM projects registered in UNFCCC in Hebei Province

No.	Project Title	UNFCCC Ref #	Installed capacity (MW)	Investment per kW (RMB /kW)	Annual O&M costs (RMB/kW)	Residual Value	Other costs (RMB/kW)
1	Zhangbei Manjing Windfarm Project	233	45	-	91.18	-	-
2	Hebei Shangyi Manjing East Wind Farm Project	842	49.5	9 468	464.65	-	-
3	Zhangbei Mijiagou 49.5 MW Windfarm Project	845	49.5	9 726	204.04	5%	103.0
4	Hebei Kangbao Wolongtushan 30 MW Wind Farm Project	878	30	9 170	187.17	-	-
5	Guyuan 30.6MW Wind-farm Project	873	30.6	10 654	175.40	2.15%	26.0
6	Hebei Haixing 49.5MW Wind Farm Project	2007	49.5	11 171	173.13	1.66%	-
7	Hebei Chengde Songshan Wind Farm Project	877	49.5	8 303	343.43	-	-
8	Hebei Shangyi Manjing West Windfarm Project	2040	49.5	9 205	251.11	0.00%	48.0
9	Hebei Shirensan Wind Power Project	2067	49.5	9 908	257.84	5.00%	40.0
10	Hebei Yuxian Kongzhongcaoyuan 49.5MW Wind Farm Project	2088	49.5	10 797	217.17	2.73%	58.6
11	Hebei Chongli Qingsanying 49.3MW Wind Farm Project	2140	49.3	10 336	230.43	5.00%	40.0



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No.	Project Title	UNFCCC Ref #	Installed capacity (MW)	Investment per kW (RMB /kW)	Annual O&M costs (RMB/kW)	Residual Value	Other costs (RMB/kW)
12	CECIC HKC Danjinghe Wind Farm Project	2170	200	7 737	228.00	4.97%	10.0
13	Hebei Wanquan Yulong Wind Power Project	2205	36	9 351	224.72	5.00%	40.0
14	CECIC Zhangbei Dayangzhuang Wind Farm Project	1855	49.5	7 640	270.80	4.00%	23.0
15	Hebei Shangyi Qijiashan Wind Farm Project	1854	199.5	9 212	184.21	4.00%	50.0
16	Hebei Chengde Huifeng Windfarm Project	1873	49.5	10 798	250.51	3.29%	40.0
17	Hebei Chengde Fengze Wind Farm Project	1715	49.5	10 162	281.21	4.00%	55.0
18	Guohua Hebei Huanghua 49.5 MW Wind farm Project (Phase I)	2125	49.5	9 938	269.37	5.00%	48.0
19	Hebei Weichang Longyuan Construction Investment Shanwanzi	2870	49.5	10 708	278.99	10.00%	40.0
20	Yueliangshan 49.5MW Wind Power Project	1464	49.5	9 577	300.40	12.00%	40.6
21	Dongbaliang 49.5MW Wind Power Project	1423	49.5	9 900	289.70	12.00%	40.8
22	Hebei Leting 49.5MW Wind Farm Project Phase I	3160	49.5	11 247	209.97	0.00%	18.2
23	Hebei Fengning Luotuogou 1st Phase Wind Power Project	2462	48	10 545	214.79	4.00%	21.9
24	Guyuan Wuhuaping 49.5 MW Wind Power Project	3356	49.5	12 660	161.41	5.00%	9.9
25	Guohua Hebei Huanghua (Phase II) 49.5MW Windfarm Project	3021	49.5	9 819	225.16	5.00%	15.0
26	Hebei Chengde Peifeng Wind Farm Project	3079	49.5	9 890	246.67	4.00%	-



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No.	Project Title	UNFCCC Ref #	Installed capacity (MW)	Investment per kW (RMB /kW)	Annual O&M costs (RMB/kW)	Residual Value	Other costs (RMB/kW)
27	Hebei Kangbao Sanxiatian Wind Farm Project	3312	49.5	13 031	117.78	5.00%	-
28	Dehe Zhangbei Phase I Wind Farm Project	4046	49.5	9 124	252.12	3.00%	15.0
29	CECIC HKE Zhangbei Lvnaobao Wind Power Project	3399	100.5	8 864	269.65	6.00%	-
30	CECIC Zhangbei Gaojialiang Wind farm Project	4095	49.5	8 846	132.53	9.00%	15.0
	The proposed project	-	100.5	10 277	232.24	3%	25

1) Total Static Investment

It can be seen from the table above that the investment cost per MW of 10 277 RMB/kW for the proposed project is within the range of other wind projects (7 640 RMB/kW - 13 031 RMB/kW) in Hebei Province. Also DNV has checked all contracts available at validation including turbines procurement contract /11/, construction contract of turbine foundation and road works /14/ and tower purchase contracts /12/ /13/, which accounts for 84.19% of the static investment /1/ /4/. For comparison reason, even if the total static investment was assumed to be 84.19% of the estimated value in FSR /1/ /4/, the project IRR 7.07% is still lower than benchmark 8% /2/.

Therefore DNV could confirm that the investment of the proposed project is deemed to be reasonable and conservative in Hebei Province.

2) O&M Cost

The O&M costs for wind power projects may vary according to the site location, conditions for transportation, applied technology and number of turbines. As shown in the table above, the proposed project is deemed to have a reasonable annual O&M cost 232.24 RMB/kW comparing with other wind power projects (91.18 RMB/kW – 464.65 RMB/kW) located in the same region Hebei Province, and enable DNV to confirm that the O&M cost is reasonable.

3) Other costs (part of the O&M cost)

The other costs of the proposed project applied in the FSR developed by Beijing National Water Conservancy & Electric Power Engineering Co., Ltd. in September 2009 /4/ were verified by DNV. That was 25 RMB/kW and it mainly include other management expenses, other manufacturing expenses and other operating expenses, etc., which is in line with the “Economic Evaluation Code and Parameter for Construction Project (version 3)” issued by the NDRC and the Ministry of Construction of China /43/. As shown in table 1, the value of other costs for the proposed project is relatively low compared to other projects in Hebei Province, which is deemed to be conservative.

4) Electricity generation

Annex 11 to the CDM EB’s 48th meeting report gives a guideline for validation of plant load



factor for renewable energy. One option is to use plant load factor provided to the government while applying the project activity for implementation approval. The FSR has this purpose and hence according to current CDM regulation, the checking that the value is in line with the FSR should be considered sufficient for validation of plant load factor. This estimated electricity generation used in the PDD is for this project in line with the FSR.

Furthermore, the electricity generation is derived from the FSR /4/ prepared by Beijing National Water Conservancy & Electric Power Engineering Co., Ltd. which was an independent third party accredited by the government. DNV can thus confirm that the plant load factor has been validated as per the requirements of EB's 48th Annex 11 /38/.

The annual electricity output was estimated on the basis of the long-term meteorological data of the local wind resources, for recent 38 years from 1971 to 2008 and one year on-site wind resource measurement /4/. Therefore, the estimated annual electricity output of the project activity is deemed to be appropriate and reasonable.

5) Power Tariff

The tariff applied in the whole project life of proposed project is 0.54 RMB/kWh (including VAT) which is assumed in the approved FSR /4/. The latest tariff notification before the project starting date (28 July 2010) was issued by NDRC on 20 July 2009 /54/ used the same tariff 0.54 RMB/kWh (including VAT).

In July 2009 /54/, China has been divided into four areas based on the wind resource conditions and construction conditions. Zhangjiakou City in Hebei Province, where the proposed project is located, is classified as wind resource area II, and the wind power tariff is fixed as 0.54 RMB/kWh (including VAT).

On 10 February 2002, the State Council of China issued the Notice of Electric Power Sector Reform Programme and decided to undertake the power sector reform in China. The reform was to divide the former single national power company into regional companies and to separate generation and distribution responsibilities and introduce market forces. Projects before the electricity reform is therefore not comparable with today's situation.

DNV also cross-checked all tariff approval documents in Hebei Province as shown in Table 2.

Table 2: Tariff for wind power in Hebei Province

Year	project	on-grid tariff (with VAT) RMB/kWh	CDM status	reference
1996 - 1998	Zhangbei Changcheng 9 MW wind farm	0.65	Early demonstration and ODA-funded projects	JiJiaGe[2002]No.242 issued by NDRC in February 2002
2001	Chengde Hongsong 3.6MW wind farm			
2006	Chengde Hongsong wind farm	0.6	Voluntary Carbon Standard	JiJiaGuanZi [2006]No.57 issued by Price Bureau of Hebei province In June 2006
	Guohua Shangyi wind farm	0.6	Voluntary Carbon Standard	
	Hebei Shangyi Manjing East Wind Farm	0.6	CDM Ref 0842, registered	
	Zhangbei Manjing Wind Farm	0.6	CDM Ref 0233, registered	



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	Zhangbei Mijiagou 49.5 MW Wind Farm	0.6	CDM Ref 0845, registered	
	Hebei Kangbao Wolongtushan 30 MW Wind farm	0.6	CDM Ref 0878, registered	
2007	CECIC HKC Danjinghe Wind Farm	0.5006	CDM Ref 2170, registered	FaGaiNeng Yuan [2007] No. 654 issued by NDRC in March 2007
2007	Hebei Haixing 49.5MW Wind Farm	0.61	CDM Ref 2007, registered	FaGaiJiaGe [2007]No. 1260 issued by NDRC in June 2007
	Guyuan 30.6MW Wind farm	0.54	CDM Ref 0873, registered	
	Hebei Shirensan Wind farm	0.54	CDM Ref 2067, registered	
	Hebei Chengde Songshan Wind farm	0.54	CDM Ref 0877, registered	
	Hebei Wanquan Yulong Wind farm	0.54	CDM Ref 2205, registered	
	Hebei Yuxian Kongzhongcaoyuan 49.5MW Wind Farm Project	0.54	CDM Ref 2088, registered	
	Hebei Chongli Qingsanying 49.3MW Wind Farm phase I	0.54	CDM Ref 2140, registered	
2007	Hebei Shangyi Manjing West Wind Farm	0.54	CDM Ref 2040, registered	FaGaiJiaGe [2007]No. 3303 issued by NDRC in December 2007
	Hebei Weichang Zhangjiawan Wind farm	0.54	under validation	
	Hebei Weichang Longyuan Construction Investment Shanwanzi Wind farm	0.54	under validation	
2008	Hebei Shangyi Qijiashan Wind Farm	0.5006	CDM Ref 1854, registered	FaGaiNengYuan [2008] No. 1812 issued by NDRC in July 2008
2008	CECIC Zhangbei Dayangzhuang Wind Farm	0.54	CDM Ref 1855, registered	FaGaiJiaGe [2008]No. 1876 issued by NDRC in July 2008
2009	Hebei Huifeng	0.54	CDM Ref 1873, registered	JiJiaGuan [2009] No. 69 issued by Price Bureau of Hebei province In August 2009
	Hebei Fengze	0.54	CDM Ref 1715	
	Hebei Chongli Qingsanying Phase II	0.54	under validation	
	Hebei Yuxian Kongzhongcaoyuan 49.5MW Wind Farm Project phase II	0.54	under validation	



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	Hebei Kangbao sanxiatian Wind farm	0.54	under validation	
	Hebei guyuan wuhuaping	0.54	under validation	
	CECIC zhangbei Wind Farm phase III	0.54	CDM Ref 1895	
	Longyuan Baimiaotan	0.54	NA	
	Longyuan Shangyi shirenfeng	0.54	under validation	
	Guohua Hebei Chicheng wind farm	0.54	under validation	
	Zhangbei bode longxiaoertai wind farm	0.54	NA	
	Guohua Shangyi wind farm phase III	0.54	CDM Ref 1792	
	Huarun weichang yudaokou	0.54	applying CDM	
	Huarun yueliangshan	0.54	applying CDM	
	Huarun dongbaliang	0.54	applying CDM	
	Hebei zhuzixia	0.54	under validation	
	Hebei guangfayong	0.54	under validation	
	Huaneng Leting	0.61	under validation	
	Guohua Huanghua phase I	0.61	CDM Ref 2125	
2010	The proposed project	0.54	Under validation	JiJiaGuan[2010]No. 35 issued by Price Bureau of Hebei province on 8 July 2010

As shown in Table 2, the highest tariff after the electricity reform in 2002 in Hebei Province is 0.61 RMB/kWh (including VAT). The highest tariff 0.65 RMB/kWh (including VAT) occurred for two projects, one before the electricity reform and one approximately at the same time as the electricity reform: “Zhangbei Changcheng 9 MW Wind Farm” and “Chengde Hongsong 3.6 MW Wind Farm”. According to “Information Note on the Highest Tariffs applied by the Executive Board in its Decisions on Registration of Projects in the People’s Republic of China” published by CDM EB in June 2010 /42/, the highest approved tariff of Hebei Province in China is 0.65 RMB/kWh (including VAT).

DNV verified the tariff approval document (JiJiaGe[2002]No. 242 issued by NDRC in February 2002) and found that the projects “Zhangbei Changcheng 9 MW Wind Farm” and “Chengde Hongsong 3.6 MW Wind Farm” were all early demonstration and ODA-funded projects /55/. It should be noted that even if the highest tariff 0.65 RMB/kWh is applied, the project IRR without CER revenue would be 7.73%, which is still lower than the benchmark of 8%.

6) Taxes

The taxes and depreciation rate applied in the project financial assessment are shown in the following table:

Table 3: Tax Rates involved in the project



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Value added tax (VAT)	17%
Income tax	25%
Rate of residual value	3%
Depreciation period (years)	15
Education tax (of the VAT)	3%
City building tax (of the VAT)	5%

(a) VAT for equipment

17% VAT is paid as usual for purchased goods. According to the Interim Regulations of the People's Republic of China on Value Added Tax (No. 538) issued by State Council on 10 November 2008 and implemented from 1 January 2009 /50/, the equipment VAT can be credited over the operation period against the tariff VAT until the VAT from the equipment VAT is fully recovered. For this project, this happens in the 6th year of operation.

(b) VAT on tariff

The VAT rate on the tariff of 17% applied to the financial analysis is substantiated by the following arguments.

On 13 December 1993, the "*Provisional Regulations of the People's Republic of China on Value Added Tax (GuoWuYuanLing[1993] No.134)*" was issued by State Council and became effective on 1 January 1994 /51/. Under this Regulation ([1993] No.134) /51/, the VAT occurred on the sales of electricity was stipulated to be 17%.

On 1 December 2001, the "*Provisional Regulations of the People's Republic of China on Value Added Tax (CaiShui[2001] No.198)*" was issued by Ministry of Finance and the State Administration of Taxation, and become effective on 1 January 2002 /52/. As stated in this notice (CaiShui[2001] No.198) /52/, the payable value added tax should be half levied for sales of electricity generated from the wind power. Based on the documents introduced above, the VAT rate involved in some wind power projects with the commission dates after 2002 is 8.5%, i.e. half of 17%.

However, on 9 December 2008, the "*Notice of the about Policies regarding the Value Added Tax on Products Made through Comprehensive Utilization of Resources and Other Products (CaiShui[2008] No. 156)*" was issued by Ministry of Finance and the State Administration of Taxation, and become effective on 1 January 2009 /53/. As stipulated in this notice (No.156 [2008]) /53/, VAT refund half upon levy shall be applicable for selling the electricity generation from wind power etc. The regulation entered into force on 1 January 2009 and the former regulation (CaiShui[2001] No.198) /52/ was repealed simultaneously.

Based on the document introduced above, the VAT rate adopted by the proposed project is 17%. Half of the VAT incurred by the electricity sales has been annually recovered from the 7th year to 20th operation year after the equipment VAT is fully recovered.

(c) Income tax rate

The income tax rate (25%) is derived from the FSR, which is in line with the Law of the People's Republic of China on Enterprise Income Tax /46/.

(d) Depreciation period

The depreciation period of 15 year is derived from the FSR and thus the depreciation rate per year is 6.47%. According to the China Income Tax Implementation Regulation ([2007] No.512) /47/, an enterprise shall begin computing depreciation for a fixed asset in the month following the month in which the asset is into service, and shall cease computing depreciation



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for a fixed asset in the month following in which the asset's use is ceased. The minimum number of years for computing depreciation of fixed assets is 10 years for the manufacturing and business operations. Therefore, the depreciation period of 15 years for the proposed project is in line with the China Income Tax Implementation Regulation ([2007] No.512) /47/.

(e) Education tax (of the VAT) and city building tax (of the VAT)

The education tax (of the VAT) of 3% is following the Decision on Amending the Interim Provisions on the Collection of Education Tax /49/. The City Building tax (of the VAT) of 5% is in accordance with the Provisional Regulations on City Maintenance and Construction Tax (GuoFa[1985] No. 19) /48/.

The rate of residual value (3%) is derived from the FSR /4/ and residual value is recovered at the end of operation period in the project IRR calculation spreadsheet /2/. According to the China Income Tax Implementation Regulation ([2007] No.512) /47/, the net residual value of a fixed asset shall be reasonably determined by an enterprise according to the nature and condition of the fixed asset. It may not be changed once determined. As shown in the table 1, the residual value of the CDM registered similar projects is ranged from 0% to 12%. Therefore, the rate of residual value (3%) applied to the proposed project is deemed to be acceptable.

In the IRR calculation spreadsheet version 1.2 /2/, the tax benefits from interest payments are considered, in compliance with the "Guidance on the Assessment of Investment Analysis" (Version 3) issued in CDM EB51 annex 48 /41/.

In conclusion, 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.

Calculation and conclusion

The IRR calculations were provided in a spreadsheet /2/. The calculations were verified and found to be correct by DNV. The assumptions used in the calculations were deemed to be correct by DNV. The project IRR without CDM revenues is 5.06%, 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 8.49%, which is above the benchmark of 8%.

Sensitivity analysis

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 investment, annual operational costs, and annual output delivered to the grid and on-grid tariff were checked by calculating the variation necessary to reach the benchmark and then discussing the likelihood for that to happen. None of the parameters in the sensitivity analysis are considered to have any significant positive correlation.

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

Table 4 Variation of key indicators when IRR reach the benchmark

<i>Key Indicators</i>	<i>Variation of the parameter indicator needed to reach</i>
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	<i>benchmark 8%</i>
Static investment costs	-21.9%
Annual O&M cost	Below -100%
Electricity tariff	22.7%
Annual electricity delivered to the grid	22.7%

1) Total Static Investment:

DNV was able to confirm that a 21.9% decrease in investment costs is unlikely to happen. DNV has checked all contracts available at validation including turbines procurement contract /11/, Construction contract of turbine foundation and road works /14/ and tower purchase contracts /12/ /13/, which accounts for 84.19% of the static investment /1/ /4/. For comparison reason, even if the total static investment was assumed to be 84.19% of the estimated value in FSR /1/ /4/, the project IRR 7.07% is still lower than benchmark 8% /2/.

Therefore DNV confirms that the total static investment is not likely to decrease as much as 21.9%.

2) O&M Cost:

Even if the O&M cost is assumed as zero, the project IRR without CER increase to 7.91% and still lower than benchmark 8%. DNV can confirm that it is not possible and realistic to operate a wind farm without annual O&M cost.

3) Power Tariff:

To reach the 8% benchmark, the power tariff must increase by 22.7% to 0.663 RMB/kWh (including VAT), which is even higher than the highest tariff 0.65 RMB/kWh (including VAT) as per “Note on the Highest Tariffs applied by the Executive Board in Its Decisions on Registration of Projects in the People’s Republic of China” published by CDM EB in June 2010 /42/. Based on the above mentioned and according to the notification on on-grid tariff policy issued by NDRC dated 20 July 2009 /54/, China has been divided into four areas based on the wind resource conditions and construction conditions. Wind resource area I represents the area with most abundant wind resources. Zhangbei County in Hebei Province, where the proposed project is located, is classified as wind resource area II, and the wind power tariff is fixed as 0.54 RMB/kWh (including VAT) from the time 20 July 2009 /54/.

Therefore, the power tariff increases by 22.7% to reach benchmark 8% will unlikely happen.

4) Annual Power Generation:

Grid-in electricity output is limited by wind resources on the project site. In the FSR, the determination of installed capacity and operation hours was discussed sufficiently in relation to the wind resources. The annual output in the FSR is based on the recent 38 years from 1971 to 2008 of wind statistic data provided by local meteorological station /4/. The volume of annual generation therefore is expected to accurately represent the long-term average power supply during the lifetime of the wind farm, taking into account yearly variations in power generation. The analysis data showed that there is no increasing trend for wind speeds over



the whole operation period /4/. Hence, it is highly unlikely for the annual power output to increase by 22.7%.

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

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

4.6.4 Common Practice

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.

All projects above 15 MW installed capacity was considered, which is considered an acceptable range.

The 2002 is the year benchmark as 2002 is a threshold for economic reform in electricity sector /63/ and only projects after this date are considered.

Following the above three rules there are two projects not applying CDM: Chengde Hongsong Wind Farm project with the capacity of 50.1 MW, and Shangyi Manjing wind farm project with the capacity of 34.5 MW, which both have secured the carbon financing from the voluntary carbon market /29/ and thus were excluded from the common practice analysis.

All other wind farm projects in Hebei Province are registered in UNFCCC or applying for CDM fund support, since the very low feed-in tariff make the projects face the financial difficulty.

DNV has checked all sources /57/ mentioned in the PDD and could conclude that the construction of a wind farm project of 100.5 MW without funding from GHG reduction is not a common practice in Hebei Province.

In summary, it is demonstrated that, the project is not a likely baseline scenario and the emission reductions are additional to what would have happened in absence of the project activity.

4.7 Monitoring

The project applies the approved monitoring methodology ACM0002 version 12.1.0, "Consolidated baseline methodology for grid-connected electricity generation from renewable sources" /33/.

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

Monitoring of sustainable development indicators is not required by the Chinese DNA /30/. The environmental impacts are considered minor and will be monitored by the local environmental authority during the project lifetime /7/.



The project monitoring plan is in compliance with the monitoring methodology ACM0002 (version 12.1.0) /33/.

It is DNV's opinion, that the project participants are able to implement the monitoring plan.

4.7.1 Parameters determined ex-ante

The combined margin emission factor is determined *ex-ante* based on the most recent information available upon the PDD's global stakeholder comment; the detailed calculations of the combined margin emission factor are described in the following section 4.6. The parameters are listed in below table:

<i>Data and Parameters</i>	<i>Unit</i>	<i>Ex-ante Determined Value</i>	Source of data used
Operating margin of NCPG (OM)	tCO ₂ /MWh	1.0069	China Electric Power Yearbook 2004-2008; China Energy Statistical Yearbook, 2006-2008 /58/ /59/.
Build Margin of NCPG (BM)	tCO ₂ /MWh	0.7802	
Emission factor of NCPG	tCO ₂ /MWh	0.9502	The emission factor calculation for each power grid of China /60/

4.7.2 Parameters monitored ex-post

The parameter monitored *ex-post* is the net electricity generation from the proposed project activity ($EG_{facility,y}$). The net electricity generated from the project will be measured through the metering equipment at the on-site substation, with the error resulting not exceeding 0.5%. The main meter and backup meter will be installed at the on-site substation to monitor $EG_{facility,y}$. The detailed information will be stated in the monitoring and management manual and updated in accordance with PPA, which has not been signed. All meters will be calibrated once a year /1/.

The data of meters will be continuously measured and recorded monthly. This data will be cross verified against the records for sold electricity. Data will be archived for 2 years following the end of the last crediting period by means of electronic and paper backup. CGN (Chabei) Wind Power Co., Ltd. will be responsible for the overall monitoring and reporting and will keep all the data and material /1/.

In the future in case other wind farms share the same transformer, substation or transmission line with the proposed project, there will be additional meters separately installed at the project site to monitor the electricity supplied by other wind farms to grid respectively, so as to calculate the share of the net electricity generation from the proposed project activity ($EG_{facility,y}$).

4.7.3 Management system and quality assurance

The project's monitoring plan including the management system and quality assurance has been clarified as follows:

1. Responsibility

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2. Training
3. Installation of meter
4. Calibration
5. Monitored data
6. Quality control
7. Data management system
8. Reporting and verification

Detailed procedures have been elaborated and attached at Annex 4 of 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.

4.8 Algorithms and/or formulae used to determine emission reductions

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 tCO_2) are the product of the grid emission factor ($EF_{grid,CM,y}$ in tCO_2/MWh) times the electricity supplied by the project activity to the grid (EG_y in MWh).
- 2) Project emissions: there are no emissions from the project which is a renewable wind energy project.
- 3) Leakage: No leakage has to be considered for the proposed project activity.

The baseline emission factor for the project is determined *ex-ante* as a combined margin, consisting of combination of the operating margin (OM) and build margin (BM) according to “Tool to calculate the emission factor for an electricity system” version 02.1.0 /34/. The grid emission factor of the NCPG is determined *ex-ante* for the 7 years crediting period following ACM0002 version 12.1.0, based on the most recent information available at the time the PDD was web-hosted. It has been calculated as the weighted average ($w_{OM} = 0.75$; $w_{BM} = 0.25$) of the operating margin and the build margin.

According to the FSR of the proposed project /4/, the net electricity generated is 213 735 MWh, i.e. $EG_y = 213\,735$ MWh;

The EF_y is calculated to be $0.9502\, tCO_{2e}/MWh$ illustrated as below. Therefore, the estimated annual emission reduction of the first crediting period is as follows:

$$ER_y = BE_y = EG_y * EF_y = 203\,090\, tCO_{2e}$$

The grid emission factor is determined *ex-ante* as a combined margin, consisting of combination of the operating margin (OM) and build margin (BM).

The PDD version 1.1 was published for global stakeholders’ comments on 18 December 2010 /65/, and the data used for calculation of the grid emission factor was the most available at that moment. DNV checked the calculation and confirmed that the calculation process in the

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PDD version 1.2 /1/ was acceptable with resulting of $EF_y = 0.9502 \text{ tCO}_2\text{e/MWh}$ /3/ /60/. The data used in the EF calculation is in accordance with data in the China Electric Power Yearbook from 2004 to 2008 (published annually) /58/, the China Energy Statistical Yearbook from 2006 to 2008 /59/, IPCC2006 data /44/, and the Summary of Statistic Materials on Power Industry by NDRC /62/.

Operating Margin: Simple OM was chosen and this is justified since the low-cost/must-run resources constitute less than 50% of total grid generation (0.9% in 2003, 0.8% in 2004, 0.7% in 2005, 0.8% in 2006 and 0.9% in 2007) /58/.

Aggregated generation and fuel consumption data are used due to the fact that more disaggregated data are not available in the NCPG (option B). The total electricity delivered to the NCPG has been used which are obtained from the China Electric Power Yearbook from 2004 to 2008 (published annually) /58/. Country specific data for net calorific value of each type of fossil fuel is obtained from the China Energy Statistical Yearbook 2008 /59/; the statistic data for fuel consumption of fossil fuels within the grid is obtained from the China Energy Statistical Yearbook from 2006 to 2008 /59/, and the electricity transported between grids is obtained from the Summary of Statistic Materials on Power Industry by NDRC /59/. The emission factors of each type of fossil fuel were taken from IPCC2006 data.

The OM is calculated to be $1.0069 \text{ tCO}_2\text{e/MWh}$. The sources and calculation has been verified by DNV /3/.

Build margin: Build margin was determined *ex-ante*. 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.

- Use of capacity additions from the years 2005 to 2007 is chosen and reaches 32.98% of the total installed capacity /58/.
- Use of weights estimated using installed capacity in place of annual electricity generation. Thermal power plant accounts for 95.25% of the total installed capacity additions in this period. Since specific data for each technology is not available, the fraction of fuels (coal 98.63%; natural gas 1.30%; oil 0.07%) was estimated from the CO_2 intensity for the fuels used in NCPG /58/ /59/.
- Efficiencies of 38.1% for coal power plants and 49.99% for oil or gas power plants are defined as the best technology commercially available in China by the DNA of China /62/.

Country specific net calorific value of each kind of fuel from the China Energy Statistics Yearbook 2008 /59/, and IPCC 2006 default values /44/ for emission factors of each kind of fuel are used to calculate the BM in the NCPG. The official supporting documentation has been verified /44/ /59/.

The BM is calculated to be $0.7802 \text{ tCO}_2\text{e/MWh}$, which was verified by the provided emission factor calculation spreadsheet /3/.

The resulting combined margin emission factor $0.9502 \text{ tCO}_2\text{e /MWh}$ is fixed *ex-ante* for the first crediting period. The annual electricity delivered to the NCPG is expected to be 213 735 MWh. The expected annual baseline emission of the project is 203 090 tCO_2e .



The emission reduction calculation were provided in a spreadsheet /2/, and it 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.

Based on the calculations and results presented in the sections above the implementation of the project activity will result in an average *ex-ante* estimation of emission reduction conservatively calculated to be 203 090 tCO₂e per year for the selected crediting period.

All assumptions and data used by the project participants are listed in the PDD and/or supporting documents, including their references and sources. All documentation used by the project participants as the basis for assumptions and source of data is correctly quoted and interpreted in the PDD. All values used in the PDD are considered reasonable in the context of the proposed CDM project activity. The baseline methodology has been applied correctly to calculate project emissions, baseline emissions, leakage and emission reductions. All estimates of the baseline, project and leakage emissions can be replicated using the data and parameter values provided in the PDD.

4.9 Environmental impacts

An Environmental Impact Assessment (EIA) has been conducted according to Law of the People's Republic of China on the Environmental Impact Assessment /61/. The potential environmental impacts have been sufficiently identified. No significant environmental impacts are expected from the project activity. The Hebei Province Environmental Protection Bureau approved the project activity on 29 December 2007 /7/.

4.10 Comments by local stakeholders

Besides the stakeholder consultation process stipulated in the Chinese EIA regulation, the project developer has conducted an additional stakeholder consultation on 16 June 2010. Carbon Resource Management Ltd carried out a survey of the potential stakeholders, including local residents in the area using a questionnaire. 50 questionnaires were distributed to local stakeholders and 50 questionnaires were returned giving a 100% response rate /24/. According to the summary of comments received from local stakeholders /24/, there is no negative opinion on this project.

DNV considers the local stakeholder consultation carried out adequately.

4.11 Comments by Parties, stakeholders and NGOs

The PDD, version 1.1 dated 10 December 2010, was made publicly available on the CDM website

(<http://cdm.unfccc.int/Projects/Validation/DB/400EHAWTS1H85PTN0N0O82339FEMFQ/vi ew.html>) and Parties, stakeholders and NGOs were through the CDM website invited to provide comments during a 30 days period from 18 December 2010 to 16 January 2011.

No comments were received during this period.

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APPENDIX A

CDM VALIDATION PROTOCOL

Table 1 Mandatory requirements for Clean Development Mechanism (CDM) project activities

Requirement	Reference	Conclusion
About Parties		
1. The project shall assist Parties included in Annex I in achieving compliance with part of their emission reduction commitment under Art. 3.	Kyoto Protocol Art.12.2	OK
2. The project shall assist non-Annex I Parties in contributing to the ultimate objective of the UNFCCC.	Kyoto Protocol Art.12.2.	CAR-1 OK
3. The project shall have the written approval of voluntary participation from the designated national authority of each Party involved.	Kyoto Protocol Art. 12.5a, CDM Modalities and Procedures §40a	CAR-1 OK
4. The project shall assist non-Annex I Parties in achieving sustainable development and shall have obtained confirmation by the host country thereof.	Kyoto Protocol Art. 12.2, CDM Modalities and Procedures §40a	OK
5. In case public funding from Parties included in Annex I is used for the project activity, these Parties shall provide an affirmation that such funding does not result in a diversion of official development assistance and is separate from and is not counted towards the financial obligations of these Parties.	Decision 17/CP.7, CDM Modalities and Procedures Appendix B, § 2	OK
6. Parties participating in the CDM shall designate a national authority for the CDM.	CDM Modalities and Procedures §29	OK
7. The host Party and the participating Annex I Party shall be a Party to the Kyoto Protocol.	CDM Modalities §30/31a	OK
8. The participating Annex I Party's assigned amount shall have been calculated and recorded.	CDM Modalities and Procedures §31b	OK
9. The participating Annex I Party shall have in place a national system for estimating GHG emissions and a national registry in accordance with Kyoto Protocol Article 5 and 7.	CDM Modalities and Procedures §31b	OK
About additionality		
10. Reduction in GHG emissions shall be additional to any that would occur in the absence of the project activity, i.e. a CDM project activity is additional if anthropogenic emissions of greenhouse gases by sources are reduced below those	Kyoto Protocol Art. 12.5c, CDM Modalities and Procedures §43	CL-2 CL-3

Requirement	Reference	Conclusion
that would have occurred in the absence of the registered CDM project activity.		CL-5 CL-6 CL-7 OK
About forecast emission reductions and environmental impacts		
11. The emission reductions shall be real, measurable and give long-term benefits related to the mitigation of climate change.	Kyoto Protocol Art. 12.5b	OK
For large-scale projects only		
12. Documentation on the analysis of the environmental impacts of the project activity, including transboundary impacts, shall be submitted, and, if those impacts are considered significant by the project participants or the Host Party, an environmental impact assessment in accordance with procedures as required by the Host Party shall be carried out.	CDM Modalities and Procedures §37c	OK
About stakeholder involvement		
13. Comments by local stakeholders shall be invited, a summary of these provided and how due account was taken of any comments received.	CDM Modalities and Procedures §37b	OK
14. Parties, stakeholders and UNFCCC accredited NGOs shall have been invited to comment on the validation requirements for minimum 30 days, and the project design document and comments have been made publicly available.	CDM Modalities and Procedures §40	OK
Other		
15. The baseline and monitoring methodology shall be previously approved by the CDM Executive Board.	CDM Modalities and Procedures §37e	OK
16. A baseline shall be established on a project-specific basis, in a transparent manner and taking into account relevant national and/or sectoral policies and circumstances.	CDM Modalities and Procedures §45c,d	CL-2 OK
17. The baseline methodology shall exclude to earn CERs for decreases in activity levels outside the project activity or due to force majeure.	CDM Modalities and Procedures §47	OK
18. Provisions for monitoring, verification and reporting shall be in accordance with	CDM Modalities and Procedures §37f	

Requirement	Reference	Conclusion
the modalities described in the Marrakech Accords and relevant decisions of the COP/MOP.		OK

Table 2 Requirements checklist

Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
A General description of project activity					
A.1 Title of the project activity (VVM para 55-57)					
A.1.1 Does section A.1 of the PDD include a clearly identifiable project title, version number of the PDD and date of the PDD?	/1/	DR	<input checked="" type="checkbox"/> Clearly identifiable title of the project activity <input checked="" type="checkbox"/> Version number of the PDD is included <input checked="" type="checkbox"/> Date of the PDD is included.		OK
A.1.2 Is the PDD is in accordance with the applicable requirements for completing PDDs?	/1/ /40/	DR	<input checked="" type="checkbox"/> Yes <i>If no, list where the PDD is not in accordance:</i>		OK
A.2 Description of the project activity (VVM para 58-64)					
A.2.1 How was the design of the project assessed?	/1/ /5/ /6/ /15/ /16/	DR I	<i>What type is the project?</i> <input type="checkbox"/> Project in existing facility or utilizing existing equipment(s) <input type="checkbox"/> Project is either a large scale project or a small scale project with emission reductions exceeding 15 000 tCO ₂ e per year. In this case, a site visit must be performed. <input type="checkbox"/> Project is a bundled small scale project, with each project in the bundle with emission reductions not exceeding 15,000 tCO ₂ e per year. In such case the number of physical site visits may be based on sampling, if the sampling size is appropriately justified through statistical analysis. <input type="checkbox"/> The project is an individual small scale project activity with emission reductions		OK

MoV = Means of Verification, DR= Document Review, I= Interview, CC= Cross-Checking

Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
			<p>not exceeding 15 000 tCO₂e per year. In this case, DOE may not conduct a physical site visit as appropriate.</p> <p><input checked="" type="checkbox"/> Greenfield project</p> <p><i>How was the design of the project assessed?</i></p> <p><input type="checkbox"/> Physical site inspection</p> <p><input checked="" type="checkbox"/> Reviewing available designs and feasibility studies</p> <p><i>If a physical site inspection is not undertaken, justify why no site visit was undertaken:</i></p> <p>DNV conducted an assessment for site visit as follows. Firstly the proposed project is a Greenfield project as per the FSR approval; Secondly based on the construction progress report issued by supervision company Tianli Project Management Consulting Co., Ltd. on 13 January 2011, the construction of the project was at an initial stage on civil works at the time of validation. The time gap was around five months between construction starting date 23 August 2010 based on the construction starting permit issued by supervision company and interview date of 17 January 2011; Finally according to EIA no migration was involved in this project. Based on above analysis DNV can justify that a physical site visit for this project was not required during the validation stage.</p>		
A.2.2 If a greenfield project, describe the physical implementation of the project when the validation was commenced.	/1/ /4/ /5/	DR	The project is a greenfield project which has been confirmed by the approval of FSR, involving the 67 wind turbines with 1.5 MW capacity of each unit; the total installed capacity of proposed		OK

MoV = Means of Verification, DR= Document Review, I= Interview, CC= Cross-Checking

Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
		/8/ /14/ /16/ /66/		project activity is 100.5 MW. The wind turbines are manufactured by Xinjiang Goldwind Science & Technology Co., Ltd.. Under the approval of grid connection the annual electricity delivered to the NCPG is expected to be 213 735 MWh according to the FSR. The project is still in the civil works construction period, which has been confirmed by the construction progress report issued by the supervision company on 13 January 2011, and the interview with the project developer.		
A.2.3	If physical site visits were performed based on sampling (only applicable for bundled small scale projects, each with emission reductions not exceeding 15 000 tCO ₂ e per year), justify the sampling through a statistical analysis:	/1/	DR	Not applicable.		OK
A.2.4	Is the description of the proposed CDM project activity as contained in the PDD sufficiently covers all relevant elements, is accurate and that it provides the reader with a clear understanding of the nature of the proposed CDM project activity?	/1/ /4/	DR	Yes, the description of the proposed project which covers all relevant elements e.g. the project location and installed capacity, which provides a clear understanding of the nature of the proposed CDM project.		OK
A.2.5	Does the project activity involve alteration of existing installations? If so, have the differences between pre-project and post-project activity been clearly described in the PDD?	/1/ /5/	DR	Zhangjiakou Chabei Wind Farm Project is a newly built wind power project and there is no alternation, which can also be confirmed by the approval of FSR.		OK
A.2.6	Does the project design engineering reflect current good practices?	/1/ /4/ /5/ /11/	DR	All 67 turbines will be supplied by Xinjiang Goldwind Science & Technology Co., Ltd. based on Turbines procurement contract and technical specification agreement. The technology applied for the project reflects current good practices in China. The technologies employed in the proposed project activity are advanced domestic technologies.		OK

MoV = Means of Verification, DR= Document Review, I= Interview, CC= Cross-Checking

Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
A.2.7	Would the technology result in a significantly better performance than any commonly used technologies in the host country? Is any transfer of technology from any Annex-I Party involved?	/1/ /4/ /11/	DR	The project involves installation 67 wind turbines with 1.5 MW capacity of each unit, manufactured by Xinjiang Goldwind Science & Technology Co., Ltd.. And the technology applied for the project reflects current good practices in China.		OK
A.3 Participation requirements (VVM para 51-54, 125-127)						
A.3.1	Do all participating Parties fulfil the participation requirements as follows:	/1/	DR	Yes, the host Party (China) and the Annex I Party (United Kingdom of Great Britain and Northern Ireland) meet all relevant participation requirements.		OK
		China (host)		United Kingdom of Great Britain and Northern Ireland		
	a) Party has ratified the Kyoto Protocol	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
	b) Party has designated a Designated National Authority	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
	c) The assigned amount has been determined	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
A.3.2	Do the letters of approval meet the following requirements?	/1/ /30/ /31/	DR	The LoA from host country was issued by the DNA of China on 31 December 2010. The LoA from United Kingdom of Great Britain and Northern Ireland is not obtained and verified.	 CAR-1	OK

Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
				China (host)		
				United Kingdom of Great Britain and Northern Ireland		
a) LoA confirms that Party has ratified the Kyoto Protocol				<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
b) LoA confirms that participation is voluntary				<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
c) The LoA confirms that the project contributes to the sustainable development of the host country?				<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	NA	
d) The LoA refers to the precise project activity title in the PDD				<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
e) The LoA is unconditional with respect to (a) to (d) above				<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
f) The LoA is issued by the respective Party's DNA				<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
g) The LoA was received directly by the DNA or the PP				<input type="checkbox"/> DNA <input checked="" type="checkbox"/> PP	<input type="checkbox"/> DNA <input type="checkbox"/> PP	
h) In case of doubt regarding the authenticity of the letter of approval, describe how it was verified that the letter of approval is authentic				The LoA issued by DNA of China was received from CGN (Chabei) Wind Power Co., Ltd.. DNV has checked the authenticity of LoA issued by China DNA from the official website of China DNA (http://cdm.ccchina.gov.cn/WebSite/CDM/UpFile/File2559.doc).	The LoA from United Kingdom of Great Britain and Northern Ireland is not obtained and verified.	
A.3.3	Have all private/public project participants been authorized by an involved Party?	/1/ /30/	DR	The project participants are CGN (Chabei) Wind Power Co., Ltd. of China and Carbon Resource Management Ltd of United Kingdom of Great		OK

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Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
			<p>Britain and Northern Ireland.</p> <p>The letter of approval (LoA) from host country was issued by the DNA of China on 31 December 2010, authorizing CGN (Chabei) Wind Power Co., Ltd. of China as project participant.</p> <p>The LoA from United Kingdom of Great Britain and Northern Ireland is not obtained and verified.</p>	CAR-1	
A.4 Technical description of the project activity (VVM para 58-64)					
A.4.1 Is the project's location clearly defined?	/1/ /4/	DR I	Yes. The project is located in Chabei District, Zhangjiakou City, Hebei Province, China, and its centre geographical coordinate is east longitude 114°48'57" and north latitude 41°27'25" sourced from the FSR.		OK
A.5 Public funding of the project activity					
A.5.1 In case public funding from Parties included in Annex I is used for the project activity, have these Parties provided 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?	/1/ /26/ /27/	DR I CC	<p>The project will not receive any public funding from Annex I Party. The validation did not reveal any information that indicates the project can be seen as a diversion of official development assistance (ODA) funding towards China.</p> <p>According to approval of FSR, 33% of investment is from self-raised capital which is confirmed by the Business License and Certificate of approval for establishment of foreign investment enterprise of CGN (Chabei) Wind Power Co., Ltd., 67% of the investment is from loan. However, the bank loan contract needs to be provided to DNV.</p>	CL-1	OK

Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
B Application of a baseline and monitoring methodology						
B.1 Methodology applied (VVM para 65-76)						
B.1.1	Does the project apply an approved methodology and the correct version thereof?	/1/ /33/	DR	Yes. The project applies ACM0002 version 12.1.0 “Consolidated baseline methodology for grid-connected electricity generation from renewable sources”.		OK
B.1.2	If applicable, has any specific guidance provided by the CDM EB in respect to the applied methodology been considered?	/1/ /37/ /38/ /39/ /41/	DR	Yes. The following EB guidance have been considered in the project validation: Guidelines on the demonstration and assessment or prior consideration of the CDM, EB 49 Annex 22; Guidance on the Assessment of Investment Analysis (Version 3.1), EB51 Annex 58; Guidance for the reporting and validation of plant load factors (version 01), EB 48 Annex 11; EB guidance on the application of approved methodology AM0005 now consolidated into ACM0002 can be applied for the purpose of estimating the build margin emission factor for each fuel type.		OK

Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
B.2 Applicability of methodology (and tools) (VVM para 65-76) <i>Approved methodology ACM0002 “Consolidated baseline methodology for grid-connected electricity generation from renewable source” version 12.1;</i> <i>Tool for the demonstration and assessment of additionality, Version 5.2;</i> <i>Tool to calculate the emission factor for an electricity system, Version 02.</i>					
B.2.1 How was it validated that project complies with the following applicability criteria: The proposed project is the installation of a new grid-connected zero-emission renewable power generation activity from wind source;	/1/ /4/ /5/	DR I	The project is greenfield project, involving the 67 wind turbines with 1.5 MW capacity of each unit; the total installed capacity of proposed project activity is 100.5 MW according to FSR and its approval.		OK
B.2.2 How was it validated that project complies with the following applicability criteria: The proposed project is not an activity that involves switching from fossil fuels to renewable energy sources at the site of the project activity;	/1/ /4/ /5/ /66/	DR I	According to the approved FSR and interview with project developer, it is able to confirm that the proposed project didn't involve the switching from fossil fuels to renewable energy sources at the site of the project activity.		OK
B.2.3 How was it validated that project complies with the following applicability criteria: The geographic and system boundaries for the relevant electricity grid can be clearly identified and information on the characteristics of the grid is available;	/1/ /4/ /8/ /60/	DR I	The electricity generated from the proposed project will be delivered to the NCPG under the approval for grid connection, this is a grid-connected renewable power generation project; the system boundaries of the proposed project can be clearly identified and geographic boundaries are the project site. And the relevant information is available.		OK
B.2.4 How was it validated that project complies with the following applicability criteria: The proposed project is not a biomass fired power plant;	/1/ /4/ /5/	DR I	This is a newly built wind power plant.		OK
B.2.5 Is the selected baseline on of the baseline(s) described in the	/1/	DR	Yes. The baseline methodology is applicable for		OK

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Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
methodology and this hence confirms the applicability of the methodology?		/4/ /67/		the project activity.		
B.3 Project boundary (VVM para 78-80)						
B.3.1	What are the project's system boundaries (components and facilities used to mitigate GHGs)? Are they clearly defined and in accordance with the methodology?	/1/ /33/ /60/	DR I	The project system boundary includes the project geographical location and the North China Power Grid (NCPG), including Beijing, Tianjin, Hebei, Shanxi, Inner Mongolia, and Shandong Province. Yes, they are defined clearly in accordance with ACM0002 version 12.1.0.		OK
B.3.2	Which GHG sources are identified for the project? Does the identified boundary cover all possible sources linked to the project activity? Give reference to documents considered to arrive at this conclusion.	/1/ /4/ /60/	DR	The identified boundary covers all possible sources according to the approved FSR and the grid boundary published by China NDRC on 2 July 2009.		OK
B.3.3	Does the project involve other emissions sources not foreseen by the methodologies that may question the applicability of the methodology? Do these sources contribute with more than 1% of the estimated emission reductions of the project?	/1/ /4/ /60/	DR	No other project emission or leakage sources contributing more than 1% and not mentioned by the methodology have been found.		OK
B.4 Baseline scenario determination (VVM para 81-88, 105-107)						
<i>Ensure that the evaluation of all alternatives provided in the PDD and required by the methodology and also possible alternatives/offshoots of alternatives are discussed. Check that all alternatives required to be considered by the methodology are included in the final PDD. If baseline alternatives required to be considered by the methodology are considered not applicable, please assess the justification for this.</i>						
B.4.1	Which baseline scenarios have been identified? Is the list of baseline scenarios complete?	/1/ /33/	DR	Yes, the list of baseline scenarios is complete and they can be summarized as below:		OK

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Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
				a) The proposed project not undertaken as a CDM project activity b) A fossil fuel-fired power plant with the comparable capacity or electricity generation. c) A power plant using other source of renewable energy with the comparable capacity or electricity generation, such as PV, biomass and hydro, etc. d) To provide the same electricity output by the NCPG.		
B.4.2	How have the other baseline scenarios been eliminated in order to determine the baseline?	/1/ /33/	DR	The baseline scenario has been incorporated in the ACM0002 version 12.1.0.		OK
B.4.3	What is the baseline scenario?	/1/ /33/	DR	The baseline is determined as continued operation of the existing fossil fuel based power plants connected to the NCPG and the addition of new generation sources to meet electricity demand.		OK
B.4.4	Is the determination of the baseline scenario in accordance with the guidance in the methodology?	/1/ /33/	DR	Yes.		OK
B.4.5	Has the baseline scenario been determined using conservative assumptions where possible?	/1/ /33/	DR	Yes.		OK
B.4.6	Does the baseline scenario sufficiently take into account relevant national and/or sectoral policies, macro-economic trends and political aspirations?	/1/ /33/ /56/	DR	Yes. The renewable energy law and sectoral policy e.g. the regulations on prohibited construction of fossil fuel based power plant less than 135 MW and have been taken into account.		OK
B.4.7	Is the baseline scenario determination compatible with the available data and are all literature and sources clearly referenced?	/1/	DR	Yes, the baseline scenario determination is compatible with the available data.		OK
B.4.8	Is the baseline determination adequately documented in the PDD?	/1/	DR	a) All assumptions and data such as OM and BM determined ex-ante used by the project		OK

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Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
<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 		/4/ /5/ /6/ /7/ /33/ /56/		<p>participants are listed in the PDD;</p> <p>b) Yes;</p> <p>c) The FSR was prepared by Beijing National Water Conservancy & Electric Power Engineering Co., Ltd. in September 2009 and approved by National Development and Reform Commission on 23 June 2010. The EIA was prepared by Beijing National Water Conservancy & Electric Power Engineering Co., Ltd. in September 2007 and approved by Hebei Province Environmental Protection Bureau on 29 December 2007. Moreover, besides those national regulations, all other documents referred to the baseline determination have been verified by DNV. The data thus can be deemed reasonable.</p> <p>d) Yes;</p> <p>e) The wind power project is a greenfield project with the total installed capacity of 100.5 MW. The project correctly applies the approved baseline and monitoring methodology ACM0002 version 12.1.0.</p>		
B.5 Additionality determination (VVM para 94-121)						
B.5.1	What approach/tool does the project use to assess additionality? Is this in line with the methodology?	/1/ /36/	DR	The project additionality is demonstrated by applying the “Tool for the demonstration and assessment of additionality”, version 5.2.		OK
B.5.2	Have the regulatory requirements correctly been taken into account to evaluate the project activity and the alternatives?	/1/ /56/ /58/	DR	Yes. In 2008, the average operation time of thermal power plant in Hebei Province power grid of <i>NCPG</i> is 5 270 hours. The net electricity supplied to <i>NCPG</i> by the proposed project is 213 735 MWh. To provide the same output as the		OK

Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
			proposed project, the alternative thermal power plant will has the capacity of 40.6 MW. Base on above analysis and Chinese mandatory regulation “Notice on Strictly Prohibiting the Installation of Fuel-fired Generation with the Capacity of 135 MW or below”, alternative b) “The thermal power plant with the same annual electricity output as the proposed project” is excluded.		
B.5.3 Is sufficient evidence provided to support the relevance of the arguments made?	/1/ /4/ /56/	DR	<p>Four alternatives to the project have been identified and discussed:</p> <p>a) <i>The proposed project not undertaken as a CDM project activity.</i> 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 can not be considered as baseline scenario. This alternative faces financial barriers (as presented below in the additionality discussion, investment analysis between B.5.11-B.5.28) and would not happen without any external financial support.</p> <p>b) <i>A fossil fuel-fired power plant with the comparable capacity or electricity generation.</i> Refer to B.5.2 during the detailed additionality determination, sufficient evidences have been provided to exclude alternative b).</p> <p>c) <i>Other renewable energy project with the same annual electricity output as the proposed project.</i> It is requested to justify the exclusion of geothermal as an</p>	CL2	OK

Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
				alternative with documented evidence. d) <i>To provide the same electricity output by the NCPG.</i> Alternative d) is a realistic alternative consistent with current laws and regulations, which is also economically feasible.		
B.5.4	What is the project additionality mainly based on (Investment analysis or barrier analysis)?	/1/ /2/ /4/	DR	It is mainly based on investment analysis.		OK
Prior consideration of CDM (VVM para 98-103)						
B.5.5	What is the evidence for serious consideration of CDM prior to the time of decision to proceed with the project activity?	/1/ /4/ /11/ /12/ /13/ /14/ /15/ /17/ /18/ /19/ /20/ /21/ /22/ /23/	DR	<p>The project activity starting date has been verified by DNV corresponding to the turbines procurement contract signed on 28 July 2010; it is the earliest financial commitment for the project participants compared to the Construction contract of turbine foundation and road works signed on 9 August 2010 the tower purchase contract for 33 turbines signed on 25 August 2010 and the tower purchase contract for 34 turbines signed on 26 August 2010. The evidences about CDM prior consideration of the project activity have been assessed and verified by DNV as follows:</p> <p>The FSR was prepared by Beijing National Water Conservancy & Electric Power Engineering Co., Ltd. in September 2009 and the project developer was suggested to consider CDM benefit due to the low project-IRR and financially unattractive. As a result the project developer identified CDM as a mean to overcome the investment barriers to proceed with the project in the board meeting</p>		OK

Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
			<p>held on 16 July 2010.</p> <p>Emission Reduction Purchasing Agreement was signed between CGN Wind Power Co., Ltd. and Carbon Resource Management Ltd. on 19 July 2010.</p> <p>The turbines procurement contract was signed between CGN (Chabei) Wind Power Co., Ltd. and Xinjiang Goldwind Science & Technology Co., Ltd. on 28 July 2010.</p> <p>The construction permit was issued by supervision company Tianli Project Management Consulting Co., Ltd. on 23 August 2010.</p> <p>The Construction contract of turbine foundation and road works was signed between CGN Wind Power Co., Ltd. and Hebei Construction Group Co., Ltd. on 9 August 2010.</p> <p>The tower purchase contract for 33 turbines was signed between CGN Wind Power Co., Ltd. and Zhangjiakou Sanbei Lafake Wind Power Equipment Co., Ltd. on 25 August 2010.</p> <p>The tower purchase contract for 34 turbines was signed between CGN Wind Power Co., Ltd. and The 7th Construction Company of China National Petroleum Corporation on 26 August 2010.</p> <p>The CDM Validation Contract was signed between Carbon Resource Management Ltd and DNV Climate Change Services AS on 3 September 2010.</p> <p>Prior Consideration of the CDM Form was sent to UNFCCC with the intention to seek CDM status on 18 August 2010 and confirmed by</p>		

Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
				UNFCCC on 18 August 2010. Prior Consideration of the CDM Form was sent to NDRC of the commencement of Zhangjiakou Chabei Wind Farm Project and the intention to seek CDM status dated 16 September 2010 and confirmed by NDRC on 25 September 2010. Therefore it has been justified that there has been a serious consideration of the CDM before the activity commenced.		
B.5.6	If the starting date is after 2 August 2008 and before the global stakeholder consultation, has the DNA and UNFCCC confirmed that the project participants have informed in writing of the project's intention to seek CDM status?	/1/ /11/ /20/ /21/ /22/ /23/	DR	The starting date of the project is identified as the date of turbines procurement contract signed on 28 July 2010, which is after 2 August 2008 and before the global stakeholder consultant from 18 December 2010. The notification of intent to consider the project as a CDM project was submitted on 16 September 2010 to NDRC of China and was confirmed on 25 September 2010. Moreover, the notification of intent to consider the project as a CDM project was submitted to UNFCCC on 18 August 2010 and was confirmed on 18 August 2010. DNV is able to confirm the notification to host Party's DNA and UNFCCC within of six months of the project activity start date and complies with the guidelines on the demonstration and assessment of prior consideration of the CDM.		OK
Continuous efforts to secure CDM status (only to be completed if starting date is before 2 August 2008)						
B.5.7	What initiatives were taken by the project participants from the starting date of the project activity to the start of validation in parallel with the physical implementation of the	/1/	DR	NA		OK

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Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
project activity?						
B.5.8	When did the construction of the project activity start?	/1/	DR	NA		OK
B.5.9	When was the project commissioned?	/1/	DR	NA		OK
B.5.10	Does the timeline of the project confirm that continuous actions in parallel with the implementation were taken to secure CDM status?	/1/	DR	NA		OK
Investment analysis (VVM para 108-114) <i>The list of questions below must be adjusted to the parameters in the investment analysis relevant to the project under validation.</i>						
B.5.11	Does the project activity or any of the remaining alternatives generate revenues apart from CDM? Is this reflected in the PDD?	/1/ /4/ /36/	DR	Yes. The project activity apart from CDM still generates revenues through the sales of the electricity, which has been reflected in the PDD.		OK
B.5.12	Do any of the alternatives to the project activity involve investment? Is this reflected in the PDD?	/1/	DR	The alternative d) To provide the same electricity output by the NCPG does not involve investment, which has been reflected in the PDD.		OK
B.5.13	Is the choice of benchmark analysis, investment comparison or simple cost analysis correct?	/1/ /36/	DR	Yes. Benchmark analysis is selected as investment analysis method. As the proposed project generates financial and economic benefits other than CDM related income through the sales of electricity and the alternative for the baseline scenario of the proposed project is not a similar investment project, a benchmark analysis (option III) is justified for conducting the investment analysis. The choice is in line with Tool for the demonstration and assessment of additionality version 5.2.		OK
B.5.14	Is the benchmark/discount rate the latest available at the time of decision?	/1/ /45/	DR	Yes. The benchmark rate is justified according to “Interim Rules on Economic Assessment of Electrical Engineering Retrofit Projects” issued		OK

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Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
				by former State Power Corporation of China in 2003, which has been verified that it is the latest available at the time of decision by national administration of this industry in China.		
B.5.15	What is the financial indicator? Is it on equity/project basis? Before/after tax? Is the financial indicator in correspondence with the benchmark?	/1/ /45/	DR	The project-IRR is the financial indicator, which is on project basis. It needs to be presented in a transparent manner in section B.5 of PDD whether the project-IRR is after-tax or before-tax.	CL 3	OK
B.5.16	Are the underlying assumptions appropriate, e.g. what is considered as waste in the baseline is considered to have zero value?	/1/	DR	Not applicable.		OK
B.5.17	Does the income tax calculation take depreciation into account? Is the depreciation year in accordance with normal accounting practice in the host country?	/1/ /2/ /47/	DR	The depreciation value was taken into account in the income tax calculation. The depreciation year is 15 years in line with the normal accounting practice and China Income Tax Implementation Regulation ([2007] No.512) effective on 1 January 2008. However, it is requested to further justify the appropriateness of residual value rate adopted as 3%.	CL 4	OK
B.5.18	Is the time period of the investment analysis and operating time of the project realistic? Has salvage value been taken into account? Is working capital returned in the last year of operation?	/1/ /2/ /4/	DR	The time period of the investment analysis and operating time of the project is 21 years (including 1 year of construction period), which is normal practice and clarified in FSR. The working capital has been returned in the last year of operation in the IRR spreadsheet. Refer to finding addressed B.5.17, it is requested to further justify the appropriateness of residual value rate adopted as 3%.	CL 4	OK
B.5.19	When a feasibility study report or similar approved by the	/1/	DR	The input parameters used in the financial		OK

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Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
government is used as the basis for the investment analysis: Can it be confirmed that the values used in the PDD are fully consistent with the FSR and is the period of time between finalization of the FSR and the investment decision adequate?		/2/ /4/ /5/ /11/		analysis are taken from the Feasibility Study Report (FSR) developed by the accredited third party Beijing National Water Conservancy & Electric Power Engineering Co., Ltd. with the highest grade (Grade A) and approved by NDRC on 23 June 2010. The input parameters used in the financial analysis can thus be considered information provided by an independent and recognised source. DNV compared the input parameters for the financial analysis included in the PDD with the parameters stated in the FSR and was able to confirm that the values applied are consistent with the value stated in the FSR. The FSR was approved on 23 June 2010 and thus only 1 months prior to the decision to proceed with the project activity (i.e. the start date of the project) which was on 28 July 2010. Given this relative short period of time between approval of the FSR and the decision to proceed with the project activity it is unlikely in the context of the project that the input values would have materially changed and that it is thus reasonable to assume that the FSR has been the basis of the decision to proceed with the investment in the project.		
B.5.20	How was the amount of output (e.g. sales of electricity) assessed? Remember to include all the data sources used and list all the projects that have been used for cross-checking in accordance with VVM paragraph 95.	/1/ /2/ /4/ /5/ /38/	DR	<input checked="" type="checkbox"/> The plant load factor provided to banks and/or equity financiers while applying the project activity for project financing, or to the government while applying the project activity for implementation approval <input checked="" type="checkbox"/> The plant load factor determined by a third		OK

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Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
			<p>party contracted by the project participants (e.g. an engineering company)</p> <p><input type="checkbox"/> Other approach.</p> <p>Annex 11 to the CDM EB's 48th meeting report gives a guideline for validation of plant load factor for renewable energy. One option is to use plant load factor provided to the government while applying the project activity for implementation approval. The FSR has this purpose and hence according to current CDM regulation, the checking that the value is in line with the FSR should be considered sufficient for validation of plant load factor. This estimated electricity generation used in the PDD is for this project in line with the FSR.</p>		
<p>B.5.21 How was the output price (e.g. electricity price) assessed? Were the data available and valid at the time of decision? Remember to include all the data sources used and list all the projects that have been used for cross-checking in accordance with VVM paragraph 95.</p>	<p>/1/ /2/ /4/ /5/ /42/ /54/</p>	DR	<p><input type="checkbox"/> Cross-check against third-party or publicly available sources (e.g. invoices or price indices)</p> <p><input checked="" type="checkbox"/> Review of feasibility reports, public announcements and annual financial reports related to the project and the project participants</p> <p>The electricity tariff applied in investment analysis should be justified by cross-checking or other appropriate manner with the other similar projects in Hebei Province to be valid and appropriate.</p> <p>The tariff trend in Hebei Province needs to be demonstrated clearly in the PDD. It is also requested to clarify whether if the tariff trend affects the investment intention of the project owner or not.</p> <p>On verification of Reference 19 used in PDD, the tariff determination document</p>	CL5	OK

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Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
			(JiJiaGuanZi[2006]57) issued by Hebei Province Price Bureau on 29 June 2006, it was found that there are two wind farms with tariff of 0.65 RMB/kWh (including VAT), which is higher than 0.6 RMB/kWh (including VAT) presented in table 6 of PDD. This needs to be clarified.		
B.5.22 How were the investment costs assessed? Were the data available and valid at the time of decision? Remember to include all the data sources used and list all the projects that have been used for cross-checking in accordance with VVM paragraph 95.	/1/ /2/ /4/ /5/ /11/ /14/ /26/	DR	<input type="checkbox"/> Cross-check against third-party or publicly available sources (e.g. invoices or price indices) <input checked="" type="checkbox"/> Review of feasibility reports, public announcements, contracts and annual financial reports related to the project and the project participants The total investment costs per kW applied in the project financial analysis should be justified by cross-checking or other appropriate manner with the similar wind power projects in Hebei Province.	CL-6	OK
B.5.23 How were the O&M costs assessed? Were the data available and valid at the time of decision? Remember to include all the data sources used and list all the projects that have been used for cross-checking in accordance with VVM paragraph 95.	/1/ /2/ /4/ /32/	DR	<input type="checkbox"/> Cross-check against third-party or publicly available sources (e.g. invoices or price indices) <input checked="" type="checkbox"/> Review of feasibility reports, public announcements and annual financial reports related to the project and the project participants The O&M costs per kW applied in investment analysis should be justified by cross-checking or other appropriate manner with the other similar projects in Hebei Province to be valid and appropriate.	CL-6	OK
B.5.24 Describe the assessment of the other input parameters. Were the data available and valid at the time of decision? Remember to include all the data sources used and list all the projects that have been used for cross-checking in accordance with VVM paragraph 95.	/1/ /2/ /4/ /32/	DR	<input type="checkbox"/> Cross-check against third-party or publicly available sources (e.g. invoices or price indices) <input checked="" type="checkbox"/> Review of feasibility reports, public announcements and annual financial reports related to the project and the project participants		OK

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Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
	/53/		<p>The other fees and taxes applied in investment analysis should be justified by cross-checking or other appropriate manner with the other similar projects in Hebei Province to be valid and appropriate.</p> <p>According to the VAT deduction policy published by the State Taxation Administration (effective from 1 January 2009), VAT of static equipment can be totally deducted from the income tax and it means a decrease of the investment of static equipment for the project participant.</p> <p>Consideration of the VAT deduction policy needs to be clarified for the investment analysis.</p>	CL7	
B.5.25 Was the financial calculation spreadsheet verified and found to be correct?	/1/ /2/ /50/ /53/	DR	In case the findings addressed in CL 3, CL 4, CL 5, CL 6 and CL 7 are resolved, the conclusion will be determined.	CL3 CL5 CL4 CL6 CL7	OK
B.5.26 Sensitivity analysis: Have the key parameters contributing to more than 20% of the revenue/costs during operating or implementation been identified? Has possible correlation between the parameters been considered?	/1/ /2/ /4/ /36/	DR	A sensitivity analysis was carried out for parameters contributing more than 20% to revenues or costs in order to check the robustness of the financial analysis. Reasonable variations of the static total investment, annual O&M costs, annual electricity supplied and electricity tariff were checked by calculating the variation necessary to reach the benchmark and then discussing the likelihood for that to happen.		OK
B.5.27 Sensitivity analysis: Is the range of variations is reasonable in the project context?	/1/ /2/	DR	Same as B.5.26.		OK

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Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
		/4/ /36/				
B.5.28	Have the key parameters been varied to reach the benchmark and the likelihood of this to happen been justified to be small?	/1/ /2/ /4/ /36/	DR	Same as B.5.26.		OK
Barrier analysis (VVM para 115-118)						
B.5.29	Are the barriers identified complimentary to a potential investment analysis? Does the barrier have a clear impact on the financial returns so that it can be assessed in an investment analysis? Each barrier is discussed separately.	/1/	DR	NA		OK
Common practice analysis (VVM para 119-121)						
B.5.30	What is the geographical scope of the common practice analysis? Is this justified?	/1/ /4/	DR I	Yes, Hebei Province was chosen as the geographical scope of the common practice analysis and it was justified in the PDD.		OK
B.5.31	What is the scope of technology and size (e.g. capacity of power plant) for the common practice analysis and how has this been justified?	/1/	DR I	The installed capacity of wind power project bigger than 15 MW was defined as the scope of technology and size.		OK
B.5.32	What is the data source(s) used for the common practice analysis?	/1/ /57/	DR I	Yes. "Statistics on China Wind Farm Installed Capacity in 2007", "Statistics of domestic wind farm installation capacity in 2008" and "Statistics of domestic wind farm installation capacity in 2009" were used in the PDD.		OK
B.5.33	How many similar non-CDM-projects exist in the region within the scope?	/1/	DR I	2 similar non-CDM-projects exist in the region within the scope - Chengde Hongsong wind farm and Shangyi Manjing wind farm.		OK
B.5.34	How were possible essential distinctions between the project activity and similar activities assessed?	/1/	DR I	IRR of these two projects was lower than the benchmark 8%, so these two projects were also facing serious financial barriers during operating period and could not be implemented without		OK

MoV = Means of Verification, DR= Document Review, I= Interview, CC= Cross-Checking

Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
			carbon finance. However, for the Chengde Hongsong wind farm and Shangyi Manjing wind farm projects, tariff letter by Hebei Price Bureau and VCU Verification and Certification Report issued by DOE should be provided.	CL 8	
B.5.35 What is the conclusion of the common practice analysis?	/1/	DR	The conclusion will be got at the final report.	CL 2 CL 3 CL 4 CL 5 CL 6 CL 7 CL 8	OK
Conclusion					
B.5.36 What is the conclusion with regard to the additionality of the project activity?	/1/	DR	In case the findings addressed in CL 2, CL 3, CL 4, CL 5, CL 6, CL 7 and CL 8 are resolved, the conclusion will be determined.	CL 2 CL 3 CL 4 CL 5 CL 6 CL 7 CL 8	OK
B.6 Calculations of GHG emission reductions					
Data and parameters that are available at validation and that are not monitored (VVM para 199-203)					
B.6.1 How was the amount of fossil fuel type i ($FC_{i,j}$, t or m^3) consumed by province verified?	/1/ /59/	DR	The amount of fossil fuel type (t or m^3) consumed by province verified was referenced from China Energy Statistical Yearbook 2006-2008.		OK
B.6.2 How was the net electricity generated and delivered to the	/1/	DR	The net electricity generated and delivered to the		OK

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Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
	grid in the project electricity system ($EG_{m,y}$) in year y verified?	/58/		grid in the project electricity system in year was referenced from China Electricity Power Yearbook 2006-2008.		
B.6.3	How was the Net Calorific Value of fossil fuel type i ($NCV_{i,y}$) in year y verified?	/1/ /59/	DR	The Net Calorific Value of fossil fuel type in year was referenced from China Energy Statistical Yearbook 2008.		OK
B.6.4	How was the CO ₂ emission factor of fossil fuel type i in year y ($EF_{CO_2,i,y}$) verified?	/1/ /44/	DR	The CO ₂ emission factor of fossil fuel type in year was referenced from IPCC 2006.		OK
B.6.5	How was the installed capacity of relevant power source j connected to the grid in year y ($CAP_{j,y}$) verified?	/1/ /37/	DR	Following the EB guidance, the installed capacity instead of power generation of relevant power source connected to the grid was referenced from China Electricity Power Yearbook 2006-2008.		OK
B.6.6	How was the best commercially available technology of coal, oil and gas fired plant ($\eta_{coal,adv}$, $\eta_{oil,adv}$, $\eta_{gas,adv}$) verified?	/1/ /62/	DR	The best commercially available technology for coal, oil and gas fired plant was referenced from the statistics by State Electricity Regulatory Commission on newly built thermal plants, and China NDRC official website.		OK
B.6.7	How was the combined margin CO ₂ emission factor for grid connected power generation in year y ($EF_{grid,CM,y}$) verified?	/1/ /34/ /44/ /58/ /59/ /60/	DR	<p>The data for the combined margin (CM) CO₂ emission factor for grid connected power generation in year y was calculated according to EB “Tool to calculate the emission factor for an electricity system” version 02.1.0.</p> <p>For determination of operating margin (OM), the option (a) simple OM was selected because the low-cost/must-run resources constitute less than 50% of total generation of NCPG from 2003-2007.</p> <p>For determination of build margin (BM), the option (1) was selected.</p> <p>All the data source for calculation of CM were referenced from China Energy Statistics</p>		OK

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Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
				Yearbook 2006-2008, China Electricity Yearbook 2004-2008, IPCC 2006, also the combined margin CO ₂ emission factor was cross checked by the value issued by China NDRC.		
Baseline emissions (VVM para 89-93)						
B.6.8	Are the calculations documented according to the approved methodology and in a complete and transparent manner?	/1/ /33/ /34/ /60/	DR	Yes, the calculation procedure is documented in a transparent manner and it is cross-checked by the published data from China NDRC that all the data and calculation in the provided calculation sheet is correct.		OK
B.6.9	Have conservative assumptions been used when calculating the baseline emissions?	/1/ /33/ /34/ /44/ /58/ /59/ /60/	DR	Yes. The data used to calculate emission factor are derived from publicly published documents, i.e. China Energy Statistics Yearbooks (2006-2008) and China Electricity Power Yearbooks (2006-2008), which were the latest data sources available when the validation was carried out, including fuel consumption and average low net caloric value; - The IPCC default value adopted from “2006 IPCC guidelines for National Green house Gas Inventories”, which is the latest version for IPCC, including the carbon emission factor, carbon content and carbon oxidation factor; - The standard coal consumption and coal consumption efficiency are defined as the best technology commercially available by State Electricity Regulatory Commission. Hence, it is clear that all the assumptions and parameters used in the PDD follows a transparent and conservative approach.		OK
B.6.10	Are uncertainties in the baseline emission estimates properly	/1/	DR	No significant uncertainties can be addressed for		OK

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Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
addressed?		/33/ /34/		the project.		
Project emissions (VVM para 89-93)						
B.6.11	Are the calculations documented according to the approved methodology and in a complete and transparent manner?	/1/ /33/ /34/	DR	The project activity is renewable electricity generation and hence no project emissions are expected to result from the project activity.		OK
B.6.12	Have conservative assumptions been used when calculating the project emissions?	/1/	DR	Refer to B.6.11.		OK
B.6.13	Are uncertainties in the project emission estimates properly addressed?	/1/	DR	Refer to B.6.11.		OK
Leakage (VVM para 89-93)						
B.6.14	Are the leakage calculations documented according to the approved methodology and in a complete and transparent manner?	/1/ /33/	DR	According to ACM0002 version 12.1.0 , no leakage emissions are considered.		OK
B.6.15	Have conservative assumptions been used when calculating the leakage emissions?	/1/	DR	Refer to B.6.14.		OK
B.6.16	Are uncertainties in the leakage emission estimates properly addressed?	/1/	DR	Refer to B.6.14.		OK
Emission Reductions (VVM para 89-93)						
B.6.17	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 	/1/ /3/ /4/ /5/ /6/ /7/ /33/ /34/	DR	<p>a. Yes. The EIA was approved by Hebei Province Environmental Protection Bureau on 29 December 2007, and FSR was approved by National Development and Reform Commission on 23 June 2010, and all other document used to determine emission reductions can be verified, the data can be deemed reasonable. The data are properly referenced.</p> <p>b. Yes, according to the reference list, all documents used to determine emission reductions</p>		OK

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Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
data provided in the PDD and supporting files to be submitted for registration.				<p>were correctly quoted and interpreted.</p> <p>c. Yes. All values used can be deemed reasonable in the context of the project activity.</p> <p>d. The approved baseline and monitoring methodology ACM0002 version 12.1.0 as well as its referred tools have been correctly applied to calculate the emission reductions. And the emission reductions can be replicated by using the data and parameter provided in the PDD and supporting files submitted for registration. The data sources mentioned have been verified by DNV.</p>		
B.7 Monitoring plan (VVM para 122-124)						
Data and parameters monitored						
B.7.1	Do the means of monitoring described in the plan comply with the requirements of the methodology?	/1/ /33/	DR	Yes. The means of monitoring described in the plan complies with ACM0002 version 12.1.0.		OK
B.7.2	Does the monitoring plan contains all necessary parameters, and are they clearly described?	/1/	DR	Yes. The only parameter to be monitored is the net electricity generation supplied by the Zhangjiakou Chabei Wind Farm Project.		OK
B.7.3	In case parameters are measured, is the measurement equipment described? Describe each relevant parameter.	/1/ /33/ /34/	DR	Yes. The output from this project is monitored and recorded using two meters installed at the on-site substation. One is main meter; the other is backup meter. The meter readings are used for both CDM purposes and sales of the electricity generated to the grid company.		OK
B.7.4	In case parameters are measured, is the measurement accuracy addressed and deemed appropriate? Describe each relevant parameter.	/1/ /8/ /33/ /34/	DR	Yes. The error resulting of electricity meters will not exceed 0.5%.		OK

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Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
B.7.5	In case parameters are measured, are the requirements for maintenance and calibration of measurement equipment described and deemed appropriate? Describe each relevant parameter.	/1/ /33/ /34/	DR	The calibration of meters will be conducted by the qualified third organization, and must comply with industry standard to ensure the accuracy. The calibration frequency is one per year. The calibration records must be archived together with other monitoring records. If either party detects any error of the metering system, it should immediately inform the other party and the qualified third organization of this emergency. They should solve the problem as soon as possible by their joint endeavour. If the readings of the meters are beyond allowable error, the project owner and power grid company shall jointly prepare a reasonable estimate of the correct reading.		OK
B.7.6	Is the monitoring frequency adequate for all monitoring parameters? Describe each parameter.	/1/ /33/ /34/	DR I	The monitoring parameters will be continuous measured and monthly recorded, and then cross check measurement results with records for sold electricity, which is in line with ACM0002 version 12.1.0.		OK
B.7.7	Is the recording frequency adequate for all monitoring parameters? Describe each parameter.	/1/ /33/ /34/	DR	The monitoring parameters will be continuous measured and monthly recorded, and then cross check measurement results with records for sold electricity, which is in line with ACM0002 version 12.1.0.		OK
Ability of project participants to implement monitoring plan						
B.7.8	How has it been assessed that the monitoring arrangements described in the monitoring plan are feasible within the project design?	/1/ /25/ /33/ /34/	DR I	Detailed responsibilities and authorities for project management, monitoring procedures, training schedule and QA/QC procedures have been presented in the PDD. The monitoring practices are considered appropriate and feasible		OK

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Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
				within the project design.		
B.7.9	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/ /33/ /34/	DR I	Yes. The procedures for records handling are identified in the monitoring plan in the PDD.		OK
B.7.10	Are the data management and quality assurance and quality control procedures sufficient to ensure that the emission reductions achieved by/resulting from the project can be reported ex post and verified?	/1/ /33/ /34/	DR I	Yes. The detailed procedures related to data management, quality assurance and quality control have been elaborated in the PDD. These will be maintained and implemented to enable subsequent verification of emission reductions.		OK
B.7.11	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/ /33/ /34/	DR	Yes. The monitored data required for verification and issuance will be kept for two years after the end of the last crediting period, which has been identified in the PDD.		OK
Monitoring of sustainable development indicators/ environmental impacts						
B.7.12	Is the monitoring of sustainable development indicators/ environmental impacts warranted by legislation in the host country?	/1/ /33/ /34/	DR	Neither ACM0002 version 12.1.0 nor the China 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.7.13	Does the monitoring plan provide for the collection and archiving of relevant data concerning environmental, social and economic impacts?	/1/ /33/ /34/	DR	The indicators of environmental impacts will be stipulated by local environmental authority.		OK
B.7.14	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
C Duration of the project activity / crediting period						
C.1.1 Start date of project activity (VVM para 99-100,						

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Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
104)						
C.1.2	How has the starting date of the project activity been determined? What are the dates of the first contracts for the project activity? When was the first construction activity?	/1/ /11/ /15/	DR	The project activity start date has been verified by DNV corresponding to the turbines procurement contract signed on 28 July 2010 which is the earliest financial commitment for the project participants. The first construction activity was conducted on 23 August 2010 under the construction permit, which has been confirmed with PP during interview.		OK
C.1.3	Is the stated expected operational lifetime of the project activity reasonable?	/1/ /4/ /11/	DR	Yes. The expected operational lifetime of the project activity is 20 years according to FSR, cross checked by the Turbines procurement contract and technical specification agreement.		OK
C.1.4	Is the start date, the type (renewable/fixed) and the length of the crediting period clearly defined and reasonable?	/1/	DR	Yes. A renewable crediting period (7 years) is selected starting from 1 July 2011.		OK
D Environmental Impacts (VVM para 131-133)						
D.1.1	Are there any host country requirements for an Environmental Impact Assessment (EIA), and if yes, is an EIA approved? Does the approval contain any conditions that need monitoring?	/1/ /6/ /7/	DR	Yes. The EIA of the proposed project has been approved by Hebei Province Environmental Protection Bureau on 29 December 2007. Neither ACM0002 version 12.1.0 nor DNA of China requires collecting and archiving of data related to environmental, social and economic impacts. The environmental impacts are considered minor and will be monitored by the local environmental authority during the project lifetime.		OK
D.1.2	Does the project comply with environmental legislation in the host country?	/1/ /6/	DR	Yes. The project complies with Chinese environmental legislation as EIA has approved by		OK

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Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
		/7/		local authority.		
D.1.3	Will the project create any adverse environmental effects?	/1/ /6/ /7/	DR	There are no significant adverse environmental effects for the project according to the EIA and its approval.		OK
D.1.4	Have identified environmental impacts been addressed in the project design?	/1/ /6/ /7/	DR	Yes. The identified environmental impacts have been addressed in the project design.		OK
D.1.5	Has an analysis of the environmental impacts of the project activity been sufficiently described?	/1/ /6/ /7/	DR	Yes. The impacts are properly described, including the impacts on noise, air, water and solid, ecosystem environment and socio-economic impact.		OK
D.1.6	Are transboundary environmental impacts considered in the analysis?	/1/ /6/ /7/	DR	There are no trans-boundary environmental impacts foreseen for the proposed project.		OK
E Stakeholder Comments (VVM para 128-130)						
E.1.1	Have relevant stakeholders been consulted?	/1/ /6/ /7/	DR	Yes. Besides the stakeholder consultation process required by Chinese EIA regulations, an additional questionnaire survey in June 2010 has been performed through inviting different stakeholders comment on the project activity.		OK
E.1.2	Have appropriate media been used to invite comments by local stakeholders?	/1/ /6/ /7/	DR	Yes. The relevant stakeholders, involving local villagers and residents, were invited to fill in a questionnaire. The consultation process is deemed to be sufficient and reasonable.		OK
E.1.3	If a stakeholder consultation process is required by regulations/laws in the host country, has the stakeholder consultation process been carried out in accordance with	/1/ /6/ /7/	DR	Yes. The stakeholder consultation process is in accordance with Chinese EIA regulations.		OK

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Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
such regulations/laws?						
E.1.4	Is a summary of the stakeholder comments received provided?	/1/ /6/ /7/	DR	Yes. A summary of the stakeholder comments received described in the PDD.		OK
E.1.5	Has due account been taken of any stakeholder comments received?	/1/ /6/ /7/ /24/	DR	As checked the 50 questionnaires, it shows 100% of the investigated people are supportive to the project activity which is consistent with the provided questionnaires. Further clarification is sought on how the 50 answered questionnaires can be sufficient to represent all people affected by the proposed project.	CL9	OK

Table 3 Resolution of corrective action requests and clarification requests

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
CAR 1 The LoA from United Kingdom of Great Britain and Northern Ireland is not obtained and verified.	A.3.2 A.3.3	The UK LoA has been submitted to DOE.	Ok. The LoA from United Kingdom of Great Britain and Northern Ireland has been obtained and verified by DNV. CAR 1 is closed.
CL 1 According to approval of FSR, 33% of investment is from self-raised capital and confirmed by the Business License of CGN (Chabei) Wind Power Co., Ltd., 67% of the investment is from loan. However, the bank loan contract needs to be provided.	A.5.1	The bank loan contract has still not signed yet. According to the Loan Commitment Letter issued by Industrial and Commercial Bank of China shenzhen branch, the total loan was 708,000,000 Yuan RMB, which accounts for 67% of the total investment. Therefore, it is consistent with the one estimated in the approved FSR. The Loan Commitment Letter has been provided to validation team.	Ok. DNV validated the relevant evidences and was able to confirm that the 67% of investment will be raised from bank loan /28/, which is in line with the FSR approval /5/. CL 1 is closed.
CL 2 Further justification is sought on exclusion of alternative scenario geothermal as this was not discussed in the PDD.	B.5.3	Geothermal power generation faces technology and investment barriers and is difficult to be operated without policies & financial support (http://paper.people.com.cn/zgnyb/html/2009-08/03/content_310862.htm , http://www.china.com.cn/news/tech/2010-12/20/content_21579531.htm). Therefore, this alternative is not realistic. The relevant section of the PDD has been revised accordingly.	Ok. DNV verified the related evidence and considered the exclusion of alternative scenario geothermal was suitable. CL 2 is closed.

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
<p>CL 3</p> <p>It needs to be presented in a transparent manner in section B.5 of PDD whether the project-IRR is after-tax or before-tax.</p>	B.5.15	<p>The benchmark of project internal rate of return (IRR) of electric power industry is 8% (after tax) according to the <i>Interim Rules on Economic Assessment of Electrical Engineering Retrofit Projects</i> issued by former State Power Corporation of China in 2002. The relevant section of the PDD has been revised accordingly.</p>	<p>Ok.</p> <p>According to the Interim Rules on Economic Assessment of Electrical Engineering Retrofit Projects /45/, in China an IRR (after tax) of 8% for the total investment of a project is regarded as a benchmark for investing in wind farm projects. The project-IRR after tax has been stated in the revised PDD.</p> <p>CL 3 is closed.</p>
<p>CL 4</p> <p>It is requested to further justify the appropriateness of residual value rate adopted as 3%.</p>	B.5.17 B.5.18	<p>The residual value of proposed project is 3%, which is in compliance with national regulations on Income Tax (State Council No. 512 [2007]). The residual value of 3% is also within the range (0% – 12%) of other similar projects in Hebei Province.</p> <p>The statistic of other similar projects in Hebei Province has been provided to validation team.</p>	<p>Ok.</p> <p>DNV has verified the suitability of the residual value rate of 3% applied in investment analysis. According to China Income Tax Implementation Regulation ([2007] No.512) issued by State Council on 6 December 2007 /47/, the net residual value of a fixed asset shall be reasonably determined by an enterprise according to the nature and condition of the fixed asset. In addition by cross-checking with other registered CDM wind projects in the same region, it was found that the residual value rate 3% is within the range from 0%-12% of other similar projects in Hebei Province. Thus DNV considered the residual value rate adopted as 3% is reasonable.</p> <p>CL 4 is closed.</p>

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
<p>CL 5</p> <p>The electricity tariff applied in investment analysis should be justified by cross-checking or other appropriate manner with the other similar projects in Hebei Province to be valid and appropriate.</p> <p>The tariff trend in Hebei Province needs to be demonstrated clearly in the PDD. It is also requested to clarify whether if the tariff trend affects the investment intention of the project owner or not.</p> <p>On verification of Reference 19 used in PDD, the tariff determination document (JiJiaGuanZi[2006]57) issued by Hebei Province Price Bureau on 29 June 2006, it was found that there are two wind farms with tariff of 0.65 RMB/kWh (including VAT), which is higher than 0.6 RMB/kWh (including VAT) presented in table 6 of PDD. This needs to be clarified.</p>	B.5.21	<p>-The expected on-grid tariff of 0.54 RMB/kWh used for the investment analysis in the approved FSR and the PDD refers to the most recent tariff letter issued by NDRC in July 2009 (Fa Gai Jia Ge [2009]1906)). Indeed, the tariff of the proposed project was approved as 0.54 RMB/kWh (Ji Jia Guan [2010]35) on 08 July 2010 by Price Bureau of Hebei province. Therefore, 0.54 RMB/kWh, is appropriate and reasonable to be used in the investment analysis in the PDD.</p> <p>-According to <i>World Wind Energy Report 2009</i> published by World Wind Energy Association (WWEA) and dated March 2010, China at the end of 2009 had the second biggest total wind power capacity in the world, impressively with a growth rate of more than 100% successively from 2006 to 2009. The market response indicates a strong signal that the tariff trend did not affect the investment intention of the project developers in China.</p> <p>-The two wind farms mentioned in the tariff notification of Ji Jia Guan Zi [2006]57 are Zhangbei Changcheng 9</p>	<p>-Ok. DNV has verified all the relevant evidences and was able to confirm that the tariff adopted as 0.54 RMB/kWh in the investment analysis is in line with the latest tariff notification (FaGaiJiaGe [2009] No. 1906) issued by NDRC on 20 July 2009 /54/, and confirmed by the tariff approval (JiJiaGuan [2010] No. 35) for the proposed project issued by Hebei Province Price Bureau on 8 July 2010 /9/.</p> <p>-The PP has demonstrated that tariff trend did not affect the investment intention of the project developers in China.</p> <p>-Ok. DNV has checked all tariff approval documents in Hebei Province. It was found that the highest tariff 0.65 RMB/kWh (including VAT) occurred for two projects, one before the electricity reform and one approximately at the same time as the electricity reform: “Zhangbei Changcheng 9 MW Wind Farm” and “Chengde Hongsong 3.6 MW Wind Farm”. According to “Information Note on the Highest Tariffs applied by the</p>

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
		<p>MW Wind Farm (13*300kW+9*600kW+2*275kW) and Chengde Hongsong 3.6MW Wind Farm (6*600kW).</p> <p>Before the Electric Power Sector Reform Programme in March 2002, there were two experimental, small scale wind farms constructed with small turbines, Zhangbei Changcheng 9 MW Wind Farm (13*300kW+9*600kW+2*275kW) and Chengde Hongsong 3.6MW Wind Farm (6*600kW). The approval of the tariff for these two projects was dated February 2002 (http://www.fjig.gov.cn/fjwj/jgfw/gjgz_c/webinfo/2002/02/1187774415686122.htm), but the Zhangbei Changcheng wind farm first started to operate in 1998 (http://www.wpforum.cn/ArticleShow.asp?nid=2713E111-173F-4C22-A6FF-CEB7719F4ABB) and the Chengde Hongsong project started operation in 2001 (http://www.gd.xinhuanet.com/newscen ter/ztbd/2007-10/18/content_11435818.htm).</p> <p>Zhangbei Changcheng 9MW wind farm phase I (4.5MW) received foreign aid</p>	<p>Executive Board in Its Decisions on Registration of Projects in the People's Republic of China" published by CDM EB in June 2010 /42/, the highest approved tariff of Hebei Province in China is 0.65 RMB/kWh (including VAT).</p> <p>DNV verified the tariff approval document (JiJiaGe [2002] No. 242) /55/ issued by NDRC in February 2002 and found that the two projects with highest tariff in Hebei Province, "Zhangbei Changcheng 9 MW Wind Farm" and "Chengde Hongsong 3.6 MW Wind Farm" were all early demonstration and ODA-funded projects. The capacities of the two projects are 9 MW and 3.6 MW, which is lower than 15 MW and far below the proposed project with capacity of 100.5 MW. It has been justified that the two projects with tariff of 0.65 RMB/kWh (including VAT) are not comparable to the proposed projects.</p> <p>It should be noted that even if the highest tariff 0.65 RMB/kWh is applied, the project IRR without CER revenue would be 7.73%, which is still lower than the benchmark of 8%.</p>

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
		<p>from the Danish government, phase II was a Double Increase project which was supported by a grant from the Chinese government. Chengde Hongsong 3.6MW wind farm project introduced experimental 600kW wind turbines which were produced by Goldwind Science & Technology Ltd, the first domestic wind turbine supplier. The objective of these two projects was to stimulate wind power development in China and stimulate the local manufacture of components, so these two early non-commercial projects received a high tariff of 0.65 RMB/kWh (incl. VAT) approved by the provincial administration bureau. Therefore, the tariffs awarded to these two projects can not be compared to the tariff awarded to the proposed project and was excluded from the investment analysis.</p> <p>For completeness, the tariff trend of wind farm projects in Hebei province has been listed in table 6 in PDD.</p>	CL 5 is closed.

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
<p>CL 6</p> <p>It is requested to justify the following key input parameters by cross-checking or other appropriate manner with the other similar projects in Hebei Province to be valid and appropriate.</p> <ul style="list-style-type: none"> a. The total investment costs per kW; b. The O&M costs per kW. 	<p>B.5.22</p> <p>B.5.23</p>	<p>The investment cost per kW for the proposed project activity is 10,277 RMB/kW, which is comparable to the investment level of previous wind projects in China in general (8,000 to 12,000 RMB/kW). The static investment of proposed project is within the range of other similar projects in Hebei Province, which is from 7,640 to 13,031 RMB/kW. Therefore, it can be concluded that the estimated static investment costs in the FSR are reasonable.</p> <p>The estimated annual O&M cost of proposed project is 232.22 RMB/kW, which is comparable to values of registered CDM project in Hebei Province, ranging from 91.18 RMB/kW to 464.65 RMB/kW. Therefore, it can be concluded that the estimated average annual O&M costs in the FSR are reasonable.</p> <p>The statistic of registered CDM project in Hebei Province has been provided to validation team.</p>	<p>DNV has verified the statistic of similar registered CDM project in Hebei Province. The key parameters of total investment costs per MW and the O&M costs per kW applied in investment analysis have been compared with similar registered CDM projects in Hebei Province, and the validity and appropriateness of the input parameters were clarified.</p> <p>CL 6 is closed.</p>

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
CL 7 Consideration of the VAT deduction policy needs to be clarified for the investment analysis.	B.5.24	The description and relevant footnotes about VAT deduction policy are updated in B.5 Sub-step 2c of PDD.	The VAT deduction policy has been considered in the IRR calculation. The detail information about VAT deduction policy has been updated accordingly in section B.5 of the revised PDD. CL 7 is closed.
CL 8 In common practice analysis, for the Chengde Hongsong wind farm and Shangyi Manjing wind farm projects, tariff letter by Hebei Price Bureau and VCU Verification and Certification Report issued by DOE should be provided.	B.5.34	Both projects were validated by DNV. The tariff letter issued by Hebei Price Bureau and the VCU Verification and Certification Report issued by DOE which were mentioned in the PDD have been provided to validation team.	Ok. The relative reference No. 48 of Chengde Hongsong wind farm and Shangyi Manjing wind farm projects, including the tariff letter issued by Hebei Province Price Bureau and the VCU Verification and Certification Reports issued by DOE were all obtained and verified by DNV. CL 8 is closed.
CL 9 Further clarification is sought on how the 50 answered questionnaires can be sufficient to represent all people affected by the proposed project.	E.1.5	In 16 th June of 2010, the developer carried out a survey of the local villagers and residents near the area. The project is located in Chabei District, Zhangjiakou City, Hebei Province. Before the survey, the staff introduced the project information to the villagers with the loudspeaker and then 1-page questionnaires were distributed to the households at home. Finally, 50 copies of the questionnaire were distributed; all filled with	DNV has verified all the evidences related to stakeholders investigation and by interviewing with project participants /24/ /67/. PP has demonstrated the appropriateness of the survey method used to invite comments by local stakerholders. CL 9 is closed.

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
		<p>comments came back to the project owner.</p> <p>Since the project site is far from the main cities and town, there are few residents who live near the project site and are impacted by the proposed project according to EIA report (p.9 and p.23). Thus 50 questionnaires are reasonable to represent all local stakeholders near the project site.</p>	

Table 4 Forward action requests

Forward action request	Reference to Table 2	Response by project participants
NA	NA	NA

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APPENDIX B

CURRICULA VITAE OF THE VALIDATION TEAM MEMBERS



CURRICULA VITAE OF THE VALIDATION TEAM MEMBERS

Ms. Xue Yan Ju, Andi Holds a Master Degree in Applied Chemistry. Having an overall experience of around three and a half years. Prior to joining DNV having two years auditing experience in the implementation of quality management system such as ISO9001 standard for two years.

She has experience of around one and a half years in validation and verification of numerous CDM projects in DNV, in China. Her qualification, industrial experience and experience in CDM demonstrate her sufficient sectoral competence in “Energy Generation from Renewable Energy Sources”.

Mr. Song Ke, Karl holds a Master Degree in Environment Engineering. Having an overall experience of around six years. Prior to joining DNV, having around four years experience in waste industry covering design of municipal waste treatment anaerobic digestion, plus two years experience covering municipal waste treatment project management. He also possessed a Professional Engineer Certificate on specialty of Environment Protection.

He has experience of around 5 months in validation of some CDM projects in DNV.

His qualification, industrial experience and experience in CDM demonstrate his sufficient sectoral competence in “Waste Handling and Disposal”.

Agnes Dudek holds a PhD Degree in applied physics. Having an overall experience of around 10 years. Prior to joining DNV having 7 years experience in scientific research covering satellite remote sensing, mesoscale weather forecast modelling and air pollution dispersion modelling and monitoring. She has experience of 3 years in validation and verification of numerous CDM projects. Her qualification, research experience and experience in CDM demonstrate her sufficient sectoral competence in energy generation from renewable energy sources.