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# VALIDATION REPORT

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## INNER MONGOLIA WUCHUAN YIHEMEI WIND FARM 49.5 MW PROJECT IN CHINA

REPORT No. 2010-9262

REVISION No. 01

DET NORSKE VERITAS



## VALIDATION REPORT

Date of first issue: 2010-10-20		ConCert Project No.: PRJC-259374-2010-CCS-CHN
Recommended for approval Hendrik W. Brinks	Approved by Hendrik W. Brinks	Organisational unit: DNV Climate Change and Environmental Services
Client: Carbon Resource Management S.A.		Client ref.: Mr. James Xie

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### Summary:

**Project Name:** Inner Mongolia Wuchuan Yihemei Wind Farm 49.5 MW Project

**Country:** China

**Methodology:** ACM0002

**Version:** 12.1.0

**GHG reducing Measure/Technology:** Grid-connected electricity generation from wind power

**ER estimate:** 108 873 tCO<sub>2</sub>e per year (average)

### Size

☒ Large Scale

☐ Small Scale

### Validation Phases:

☒ Desk Review

☒ Follow up interview

☒ 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 "Inner Mongolia Wuchuan Yihemei Wind Farm 49.5 MW Project" in China, as described in the PDD, version 2.0 of 2 December 2010, 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.

Report No.: 2010-9262		Subject Group: Environment
Report title: Inner Mongolia Wuchuan Yihemei Wind Farm 49.5 MW Project in China		
Work carried out by: Gong Zheng Justin, Zhang Yongkang Phillip		
Work verified by: Lin Wu (applicant), Tang Zhiang (Walter)		
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### Indexing terms

#### Key words

Climate Change

Kyoto Protocol

Validation

Clean Development Mechanism

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## ***Abbreviations***

BM	Build Margin
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CEF	Carbon Emission Factor
CER	Certified Emission Reduction(s)
CH <sub>4</sub>	Methane
CL	Clarification request
CM	Combined Margin
CO <sub>2</sub>	Carbon dioxide
CO <sub>2</sub> e	Carbon dioxide equivalent
DNA	Designated National Authority
DNV	Det Norske Veritas
DRC	Development and Reform Commission
EB	Executive Board
EF	Emission Factor
EIA	Environmental Impact Assessment
ERPA	Emission Reduction Purchasing Agreement
EPB	Environmental Protection Bureau
FSR	Feasibility Study Report
GHG	Greenhouse gas(es)
IPCC	Intergovernmental Panel on Climate Change
IRR	Internal Rate of Return
LoA	Letter of approval
MP	Monitoring Plan
NCV	Net Calorific Value
NDRC	National Development and Reform Commission
NCPG	North China Power Grid
NGO	Non-governmental Organisation
ODA	Official Development Assistance
OM	Operating Margin
PDD	Project Design Document
PLF	Plant Load Factor
RMB	Renminbi, Chinese currency (Yuan)
tCO <sub>2</sub> e	Tonnes of CO <sub>2</sub> equivalents
UNFCCC	United Nations Framework Convention on Climate Change
VAT	Value-added tax



## 1 EXECUTIVE SUMMARY – VALIDATION OPINION

*Det Norske Veritas Certification AS (DNV) has performed a validation of the project activity “Inner Mongolia Wuchuan Yihemei Wind Farm 49.5 MW 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 fulfil the participation criteria and have approved the project and authorized the project participants. The DNA from China confirmed that the project assists in achieving sustainable development.*

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

*Inner Mongolia Wuchuan Yihemei Wind Farm 49.5 MW Project is located at Xiwulanbulang Town, Wuchuan County, Hohhot City, Inner Mongolia Autonomous Region, China. It involves the installation and operation of 33 sets of 1.5 MW wind turbines, aggregating to the total installed capacity of 49.5 MW. The annual electricity delivered to the North China Power Grid (NCPG) is expected to be 114 580 MWh corresponding to a plant load factor of 26.42%. The proposed project will achieve CO<sub>2</sub> emission reductions by replacing electricity generated by fossil fuel fired power plant connected into the NCPG. As a result, the project results in reductions of CO<sub>2</sub> emissions that is real, measurable and gives 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 108 873 tCO<sub>2</sub>e per year over the selected 7 years 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 “Inner Mongolia Wuchuan Yihemei Wind Farm 49.5 MW Project” in China, as described in the PDD, version 2.0 dated 2 December 2010, 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, 2011-01-19

Gong Zheng  
CDM Validator

DNV Beijing, China

Hendrik W. Brinks  
Technical Director for CDM

Det Norske Veritas Certification AS



## 2 INTRODUCTION

Carbon Resource Management S.A. has commissioned Det Norske Veritas Certification AS (DNV) to perform a validation of the Inner Mongolia Wuchuan Yihemei Wind Farm 49.5 MW Project in China (hereafter called “the project”). This report summarises the findings of the validation of the project, performed on the basis of UNFCCC criteria for the CDM, as well as criteria given to provide for consistent project operations, monitoring and reporting. UNFCCC criteria refer to Article 12 of the Kyoto Protocol, the CDM modalities and procedures and the subsequent decisions by the CDM Executive Board.

### 2.1 Objective

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

### 2.2 Scope

The validation scope is defined as an independent and objective review of the project design document (PDD) /1/. The PDD is reviewed against the criteria stated in Article 12 of the Kyoto Protocol, the CDM modalities and procedures as agreed in the Marrakech Accords and the relevant decisions by the CDM Executive Board, including the approved baseline and monitoring methodology ACM0002 (version 12.1.0) /37/. The validation was based on the recommendations in the Validation and Verification Manual /36/.

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 “Inner Mongolia Wuchuan Yihemei Wind Farm 49.5 MW Project” in China, version 1.1 dated 2 September 2010 and version 2.0 dated 2 December 2010.
- /2/ Carbon Resource Management Ltd.: IRR calculation spreadsheet, version 1.1 dated 2 September 2010 and version 2.0 dated 2 December 2010.
- /3/ Carbon Resource Management Ltd.: Emission factor calculation spreadsheet of the NCPG, version 1.1 dated 2 September 2010 and version 2.0 dated 2 December 2010.  
Carbon Resource Management Ltd.: Emission reduction calculation spreadsheet of the project, version 1.1 dated 2 September 2010 and version 2.0 dated 2 December 2010.
- /4/ Beijing GrandTrend International Economic and Technical Consulting Co., Ltd.: The FSR of “Inner Mongolia Wuchuan Yihemei Wind Farm 49.5 MW Project”, dated December 2008.  
Development and Reform Commission of Inner Mongolia Autonomous Region: The approval letter of FSR, No [2009] 1457, issued on 13 July 2009.
- /5/ Environment Science Research Institute of Inner Mongolia Autonomous Region: The EIA of Inner Mongolia Wuchuan Yihemei Wind Farm 49.5 MW Project, dated 18 March 2007.  
Environmental Protection Bureau of Inner Mongolia Autonomous Region: The approval letter of EIA, No [2007] 62, dated 23 April 2007.
- /6/ Industry and Commercial administration of Wuchuan County, Inner Mongolia Autonomous Region: Business license for Wuchuan County Yihe Wind Power Generation Co., Ltd.: Valid from 26 August 2009 to 25 August 2039, focusing on wind farm construction and operation after getting approval for the project, dated 29 April 2010.
- /7/ Land and Resources Department of Inner Mongolia Autonomous Region: Land occupation approval for Inner Mongolia Wuchuan Yihemei Wind Farm 49.5 MW Project, 2008-No. 143, dated 30 May 2008.
- /8/ Inner Mongolia Power Co., Ltd.: The evaluation report of grid-connection for Inner Mongolia Wuchuan Yihemei Wind Farm 49.5 MW Project, dated 17 June 2009.



- /9/ Wuchuan County Yihe Wind Power Generation Co., Ltd.: 40 copies of stakeholder consultation questionnaires, dated 30 November 2009.
- /10/ Wuchuan County Yihe Wind Power Generation Co., Ltd.: Board meeting minute on CDM consideration, dated 6 October 2009.
- /11/ Emission Reduction Purchase Agreement (ERPA) and CDM development agreement were signed between Wuchuan County Yihe Wind Power Generation Co., Ltd. and Carbon Resource Management S.A. on 8 November 2009.
- /12/ CDM development authorization was signed between Carbon Resource Management S.A. and Carbon Resource Management Ltd.
- /13/ Wind turbine and tower pylon purchase contract signed between Wuchuan County Yihe Wind Power Generation Co., Ltd. and Xinjiang Gold Wind Technology Co., Ltd. dated 10 March 2010.
- /14/ The construction starting permission of the proposed project was issued by Inner Mongolia Kangwo Construction supervision Company and authorized to start the project activity on 8 April 2010.
- /15/ Wind turbine and tower construction and installation contract signed between Wuchuan County Yihe Wind Power Generation Co., Ltd. and Jilin Xiehe Electricity Engineering Company, dated 20 March 2010.
- /16/ Wind turbine 110 kV Main-transformer purchase contract signed between Wuchuan County Yihe Wind Power Generation Co., Ltd. and Xinjiang Transformer Company, dated April 2009.
- /17/ Wind turbine Box-transformer purchase contract signed between Wuchuan County Yihe Wind Power Generation Co., Ltd. and Shenyang Haocheng Electricity Company, dated April 2010.
- /18/ Carbon Resource Management Ltd.: The geographical coordinates list for each wind turbine of the project, dated 2 December 2010.
- /19/ Notification form to NDRC – China DNA for demonstration and assessment of prior consideration of the CDM was submitted by Wuchuan County Yihe Wind Power Generation Co., Ltd. on 7 May 2010 and confirmed by NDRC on 17 May 2010.
- /20/ Notification form to UNFCCC secretariat for prior consideration of CDM was issued by Wuchuan County Yihe Wind Power Generation Co., Ltd. and received on 10 May 2010.
- /21/ Carbon Resource Management S.A. and DNV: Validation Contract of Inner Mongolia Wuchuan Yihemei Wind Farm 49.5 MW Project, dated on 3 September 2010.
- /22/ The proposed project is located in the extreme shortage of water resources area and there is no economically exploitable hydro resource.  
[http://amuseum.cdstm.cn/AMuseum/diqiuziyuan/wr0\\_4.html](http://amuseum.cdstm.cn/AMuseum/diqiuziyuan/wr0_4.html)
- /23/ China solar power plants, biomass power plants and geothermal industry are still in the demonstration phase and limited by the cost.  
<http://www.newenergy.org.cn/html/00711/3180816088.html>  
[http://www.sdpc.gov.cn/zjgx/t20071123\\_174054.htm](http://www.sdpc.gov.cn/zjgx/t20071123_174054.htm)  
<http://www.newenergy.org.cn/Html/0098/870929050.Html>
- /24/ China New Energy Net: The average investment level of wind farm project in China is 8 000 to 12 000 RMB/kW, dated 28 April 2007.  
<http://www.in-en.com/newenergy/html/newenergy-20072007042885858.html>





- /25/ China Auto Net: The price of wind turbines increases in recent years, dated 11 May 2007.  
<http://energy.people.com.cn/GB/5720709.html>
- /26/ NDRC: Codes on Compiling Feasibility Study Report of Wind Farms”, prescribes the – 10% to +10% variation range, dated 25 May 2005,  
[http://www.windpower.org.cn/news/links/js\\_2005\\_0508.htm](http://www.windpower.org.cn/news/links/js_2005_0508.htm)
- /27/ China United Steel Net: The material price and salary for O&M cost keep increasing in recent years, dated 11 January 2008.  
<http://www.custeel.com/Scripts/viewArticle.jsp?articleID=1285262>  
National Bureau of Statistics of China: The expense of living in China increases fast, dated 24 January 2008.  
[http://www.stats.gov.cn/tjfx/jdfx/t20080124\\_402460060.htm](http://www.stats.gov.cn/tjfx/jdfx/t20080124_402460060.htm)  
Inner Mongolia Autonomous Region Bureau of Statics: The resident consumption prices increase recently, dated 12 March 2009.  
<http://www.nmgtj.gov.cn/Html/jjshfztjgb/2009-7/0/2385.shtml>
- /28/ NDRC: China implemented power sector reform in February 2002, to establish a more commercialized power market in China, dated 11 April 2002.  
[http://www.ndrc.gov.cn/xwfb/t20050708\\_28096.htm](http://www.ndrc.gov.cn/xwfb/t20050708_28096.htm)
- /29/ NDRC of China: approved power tariff of the similar wind power projects. The approval letter of NDRC and the tariff for the Western Inner Mongolia is 0.51 RMB/kWh (incl. VAT), dated 23 July 2008, No. 2008 (1876)  
[http://www.ndrc.gov.cn/zcfb/zcfbtz/2008tongzhi/t20080813\\_230718.htm](http://www.ndrc.gov.cn/zcfb/zcfbtz/2008tongzhi/t20080813_230718.htm)
- /30/ NDRC regulation: The thermal power plant that has the capacity of less than 50 MW should be shut down and the construction of thermal power plant that has the capacity of less than 135 MW will be forbidden, dated 15 April 2002.  
[http://www.gov.cn/gongbao/content/2002/content\\_61480.htm](http://www.gov.cn/gongbao/content/2002/content_61480.htm)
- /31/ China Xinhua Net: Dali Wind Farm Project Phase III. Demonstration project supported by national debt fund, dated 18 October 2007.  
<http://www.chifeng.gov.cn/html/2008-11/3130.shtml>  
[http://www.gd.xinhuanet.com/newscenter/ztbd/2007-10/18/content\\_11435955.htm](http://www.gd.xinhuanet.com/newscenter/ztbd/2007-10/18/content_11435955.htm)
- /32/ Da Mao Qi Bailingmiao wind farm project implemented as a Gold Standard VER project and registered on 15 May 2009.  
<https://gs1.apx.com/mymodule/ProjectDoc/EditProjectDoc.asp?id1=449>
- /33/ Professor Shi Pengfei: China Wind Farm Installed Capacity Statistic in 2006 -2007.  
[http://www.cwea.org.cn/download/display\\_info.asp?cid=&sid=&id=19](http://www.cwea.org.cn/download/display_info.asp?cid=&sid=&id=19)  
[http://www.cwea.org.cn/download/display\\_info.asp?cid=2&sid=&id=25](http://www.cwea.org.cn/download/display_info.asp?cid=2&sid=&id=25)

### 3.1.2 Letters of approval

- /34/ National Development and Reform Commission NDRC (DNA of China): Letter of approval of Inner Mongolia Wuchuan Yihemei Wind Farm 49.5 MW Project, No.2010 2580, dated August 2010.  
[http://qhs.ndrc.gov.cn/qjfbz/t20100721\\_362034.htm](http://qhs.ndrc.gov.cn/qjfbz/t20100721_362034.htm)
- /35/ Department of Energy & Climate Change (DNA of the United Kingdom of Great



Britain and Northern Ireland): *Letter of approval of Inner Mongolia Wuchuan Yihemei Wind Farm 49.5 MW Project*, dated 29 October 2010.

The evidence on the authenticity of LoA is verified by the communication letter between Department of Energy & Climate Change and the project participant dated 29 October 2010.

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

- /36/ CDM Executive Board: *Validation and Verification Manual*, Version 1.2.  
[http://cdm.unfccc.int/Reference/Manuals/accr\\_man01.pdf](http://cdm.unfccc.int/Reference/Manuals/accr_man01.pdf)
- /37/ CDM Executive Board: *Baseline and monitoring methodology* ACM0002, version 12.1.0  
“*Consolidated baseline methodology for grid-connected electricity generation from renewable sources*”, dated 17 September 2010.
- /38/ CDM Executive Board: *Tool for the demonstration and assessment of additionality*, version 5.2, dated 16 May 2008.
- /39/ CDM Executive Board: *Tool to calculate the emission factor for an electricity system*, version 2, dated 16 October 2009.
- /40/ CDM Executive Board: *Guidelines on the demonstration and assessment or prior consideration of the CDM*, EB 49 Annex 22.  
[http://cdm.unfccc.int/EB/049/eb49\\_repan22.pdf](http://cdm.unfccc.int/EB/049/eb49_repan22.pdf)
- /41/ CDM Executive Board: *Guidance on the Assessment of Investment Analysis (Version 3.1)*, EB 51 Annex 58 dated 4 December 2009.
- /42/ CDM Executive Board: *Guidance for the reporting and validation of plant load factors (version 01)*, EB 48 Annex 11 dated 17 July 2009.
- /43/ 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/UserManagement/FileStorage/6POIAMGYOEDOTKW25TA20EHEKPR4DM>
- /44/ IPCC: 2006 IPCC Guidelines for National Greenhouse Gas Inventories Reference Manual, 2006.
- /45/ 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), EB 54 Para 53, dated June 2010.
- /46/ 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.

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

- /47/ China Energy Statistic Yearbook 2006-2008  
*NDRC: Summary of Statistic Materials on Power Industry, 2008*
- /48/ China Electric Power Yearbook 2004-2008
- /49/ NDRC: The boundary and emission factor calculation for each power grid of China,



- published on 2 July 2009, NDRC official website:  
[http://qhs.ndrc.gov.cn/qjfzjz/t20090703\\_289357.htm](http://qhs.ndrc.gov.cn/qjfzjz/t20090703_289357.htm)
- /50/ State Power Corporation of China: Interim Rules on Economic Assessment of Electrical Engineering Retrofit Projects. Beijing, China Electric Power Press, March 2003.
- /51/ Approved tariff documents by NDRC:  
 Notification of electricity tariff for wind power projects issued by NDRC, [2004]1093, in June 2004.
- /52/ Approved tariff documents by NDRC:  
 Notification of electricity tariff for wind power projects issued by NDRC, (Fa Gai Jia Ge [2006] 2908), dated 22 December 2006.
- /53/ Approved tariff documents by NDRC:  
 Notification of electricity tariff for wind power projects issued by NDRC (Fa Gai Jia Ge [2007] 1260), dated 9 June 2007:  
[http://www.hebwj.gov.cn/upfiles/xy\\_col32gjc\\_\\_\\_20070718164220007126.htm](http://www.hebwj.gov.cn/upfiles/xy_col32gjc___20070718164220007126.htm)
- /54/ Approved tariff documents by NDRC:  
 Notification of electricity tariff for wind power projects issued by NDRC (Fa Gai Jia Ge [2009] 1906), dated 20 July 2009:  
[http://www.sdpc.gov.cn/zcfb/zcfbtz/2009tz/t20090727\\_292827.htm](http://www.sdpc.gov.cn/zcfb/zcfbtz/2009tz/t20090727_292827.htm)
- /55/ Approved tariff documents by NDRC:  
 Notification of electricity tariff for wind power projects issued by NDRC (Fa Gai Jia Ge [2007] 3303), dated 3 December 2007  
[http://jgs.ndrc.gov.cn/zcfg/t20080218\\_193011.htm](http://jgs.ndrc.gov.cn/zcfg/t20080218_193011.htm)
- /56/ VAT:  
 State Council: Provisional Regulations of the People's Republic of China on Value Added Tax, State Council No.134 [1993], issued on 13 December 1993 and effective on 1 January 1994.
- /57/ Ministry of Finance & State Administration of Taxation: Notice of the Ministry of Finance and the State Administration of Taxation about policies regarding the value added tax on comprehensive utilization of resources and other products, No.156 [2008], issued on 9 December 2008 and effective on 1 January 2009.  
<http://www.js-n-tax.gov.cn/Page1/StatuteDetail.aspx?StatuteID=8931>
- /58/ State Council: Provisional Regulations of the People's Republic of China on Value Added Tax, State Council No.538 [2008], issued on 5 November 2008 and effective on 1 January 2009.  
[http://www.chinaacc.com/new/63\\_67\\_/2008\\_11\\_17\\_wa8088515201711180021980.shtm](http://www.chinaacc.com/new/63_67_/2008_11_17_wa8088515201711180021980.shtm)
- /59/ Circular on Several Issues Concerning the Implementation of Transformation and Reform of Value-added Tax in China dated 19 December 2009, Caishui [2008]170  
<http://www.chinatax.gov.cn/n8136506/n8136593/n8137537/n8138502/8745403.html>
- /60/ Law of the People's Republic of China on Enterprise Income Tax, Promulgated by Decree No.63 of the President of the People's Republic of China on 16 March 2007, effective on 1 January 2008.  
[http://news.xinhuanet.com/legal/2007-03/19/content\\_5866953.htm](http://news.xinhuanet.com/legal/2007-03/19/content_5866953.htm)
- /61/ The State Administration of taxation: Notification about confirming the implement time of the adjusted company's rate of residual value' Guoshuihan [2005] No. 883, dated 14 September 2005:



- <http://www.chinatax.gov.cn/n8136506/n8136563/n8193451/n8193526/n8194270/8245508.html>
- /62/ Surtax for education:  
State Council: Interim Provision on Education Tax Law, effected on 1 October 2005.  
[http://www.law-lib.com/law/law\\_view1.asp?id=99771](http://www.law-lib.com/law/law_view1.asp?id=99771)  
People's Government of Inner Mongolia Autonomous Region: Administrative Regulation of Inner Mongolia Autonomous Region on Education Supplementary Tax Collection, dated 10 October 2005.  
<http://www.chinaacc.com/new/63/159/183/2006/1/li17657182914160027514-0.htm>
- /63/ City maintenance and construction tax:  
<http://202.108.90.130/chinatax/jibenfa/jibenfa0401.htm>.
- /64/ NDRC: Economic Assessment Method and Parameters of Construction Project (Version 3), dated 3 July 2006.
- /65/ China Wind Power Report 2008, published by China Renewable Energy Institute Association (CREIA) and WWF in October 2008
- /66/ Law of the People's Republic of China on Renewable Energy, valid from 1 January 2006.  
[http://www.gov.cn/ziliao/flfg/2005-06/21/content\\_8275.htm](http://www.gov.cn/ziliao/flfg/2005-06/21/content_8275.htm).

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

- 1) Changes related to the CARs and CLs identified in the DNV's draft validation report.
- 2) The starting date of the crediting period was changed from 1 January 2011 version 1.1 dated 2 September 2010 to 1 May 2011 in sections A.4.4 and C.2.1.1. of the PDD version 2.0 dated 2 December 2010.
- 3) Project-IRR without CDM incomes has been changed from 5.72% to 5.73% because of "Recovery of free cash is included into cash in" in the IRR calculation spreadsheet version 2.0 dated 2 December 2010. And the values related to sensitivity analysis have changed accordingly.

After reviewing the revised PDD, version 2.0 dated 2 December 2010, DNV issued this final validation report and opinion.

### 3.2 Follow-up interviews with project stakeholders

Since the project is a newly built wind farm project and started to construction on 8 April 2010 /14/, there will be few issues that could be verified during the physical site visit when the validation was commenced. According to the FSR /4/ and EIA /5/ of this project, the project is located in nature grassland and remote area and no resettlement was involved in this project activity. This also can be confirmed during the follow-up interview with the project owner. Meanwhile, the PDD /1/ and other background documents relating to the project design and baseline, like wind turbine and tower pylon purchase /13/, construction and installation contracts /15/, were provided and assessed effectively as a part of the validation. Hence, DNV could justify that a physical site visit for this project was not arranged during the validation process.



The follow-up interview was held on 18 October 2010 by Gong Zheng Justin and Zhang Yongkang Phillip from DNV in DNV Beijing office. The representatives of the project owner, Wuchuan County Yihe Wind Power Generation Co., Ltd., and CDM consultant, Carbon Resource Management Ltd., were interviewed to resolve the issues identified during the desk review.

	Date	Name	Organization	Topic
/67/	18 October 2010	Mr. Du Shuyao Mr. Han Jin	Wuchuan County Yihe Wind Power Generation Co., Ltd.	<ul style="list-style-type: none"> <li>➤ Information of project construction</li> <li>➤ The development of wind power project in Inner Mongolia the project located</li> <li>➤ The approval status (incl. EIA approval, the FSR approval, CDM project approval)</li> <li>➤ Project management</li> <li>➤ Emission reduction monitoring plan</li> <li>➤ Consulting process for stakeholder's comments</li> </ul>
/68/	18 October 2010	Ms. Li Xia	Carbon Resource Management Ltd.	<ul style="list-style-type: none"> <li>➤ Baseline determination of the project</li> <li>➤ Applicability of selected methodology ACM0002</li> <li>➤ Issues related to the additionality</li> <li>➤ Common practice analysis</li> <li>➤ Emission reductions calculation</li> <li>➤ Monitoring plan and project management</li> </ul>

### 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 "Inner Mongolia Wuchuan Yihemei Wind Farm 49.5 MW 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**

<b>Requirement</b>	<b>Reference</b>	<b>Conclusion</b>
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 ( <b>OK</b> ) or a <b>corrective action request (CAR)</b> if a requirement is not met.

**Validation Protocol Table 2: Requirement Checklist**

<b>Checklist question</b>	<b>Reference</b>	<b>Means of verification (MoV)</b>	<b>Assessment by DNV</b>	<b>Draft and/or Final Conclusion</b>
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 <b>document review (DR)</b> , <b>interview (I)</b> or any other follow-up actions (e.g., on site visit and telephone or email interviews) and <b>cross-checking (CC)</b> 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.	<b>OK</b> is used if the information and evidence provided is adequate to demonstrate compliance with CDM requirements. A <b>corrective action request (CAR)</b> 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 <b>clarification request (CL)</b> is raised if information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met. A <b>forward action request (FAR)</b> 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**

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

**Validation Protocol Table 4: Forward Action Requests**

<b>Forward action request</b>	<b>Ref. to checklist question in table 2</b>	<b>Response by project participants</b>
The <b>FARs</b> raised in Table 2 are repeated here.	Reference to the checklist question number in Table 2 where the <b>FAR</b> 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 underwent 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><b>Role</b></i>	<i><b>Last Name</b></i>	<i><b>First Name</b></i>	<i><b>Country</b></i>	<i><b>Type of involvement</b></i>						
				Administrative	Desk review	Site visit / Interviews	Reporting	Supervision of work	Technical review	Sectoral competence
Project manager	Gong	Zheng	China	✓						
Technical team leader (CDM validator)	Gong	Zheng	China		✓	✓	✓	✓		✓
GHG auditor	Zhang	Yongkang	China		✓	✓	✓			
Technical reviewer	Tang	Zhiang	China						✓	✓
Technical reviewer (applicant)	Lin	Wu	China						✓	✓

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 2.0 dated 2 December 2010 /1/.

### 4.1 Participation requirements

The project participants are Wuchuan County Yihe Wind Power Generation Co., Ltd. of China and Carbon Resource Management S.A. of the United Kingdom of Great Britain and Northern Ireland. The host Party (China) and the Annex I Party (the United Kingdom of Great Britain and Northern Ireland) meet all relevant participation requirements.

China ratified the Kyoto Protocol on 30 August 2002 and its DNA is the NDRC. The United Kingdom of Great Britain and Northern Ireland ratified it on 31 May 2002 and its DNA is Department of Energy and Climate Change.

A letter of approval (LoA) /34/ was issued by DNA of China in August 2010, authorizing Wuchuan County Yihe Wind Power Generation Co., Ltd. as a project participant and confirming that the project assists Chinese sustainable development. A letter of approval (LoA) /35/ from DNA of the United Kingdom of Great Britain and Northern Ireland was issued on 29 October 2010 and Carbon Resource Management S.A. has been authorized as project participant.

The LoAs from China and the United Kingdom of Great Britain and Northern Ireland were directly received from the project participants.

The authenticity of LoA from China has been verified and demonstrated to be real and valid by the website link /34/. The evidence on the authenticity of LoA from Annex I Party is verified by the communication letter between Department of Energy & Climate Change and the project participant /35/. DNV considers the letters are in accordance with paragraphs 45-48 of the VVM /36/.

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

Inner Mongolia Wuchuan Yihemei Wind Farm 49.5 MW Project is located at Xiwulanbulang Town, Wuchuan County, Hohhot City, Inner Mongolia Autonomous Region, China. Its geographical coordinates were East Longitude: 110°54'59"~110°57'05", North Latitude: 41°11'35"~41°13'09", sourced from the FSR approved by Development and Reform Commission of Inner Mongolia Autonomous Region on 13 July 2009 /4/. And DNV could confirm that all the wind turbines are located within the coordinate scopes /18/.

The project involves installation and operation of 33 wind turbines. The installed capacity of each unit is 1.5 MW, thus constituting a total installed capacity of 49.5 MW. The wind turbines were manufactured by the Xinjiang Gold Wind Technology Co., Ltd. /13/, and this



wind turbine supplier has advanced domestic technologies and wide applications in China. DNV has checked all the parameters of the turbines from the PDD version 2.0 /4/ dated 2 December 2010 against those equipment specifications listed in the wind turbine purchase contract /13/ and was able to confirm these figures are consistent.

The project's system boundaries are clearly defined as the site of the project activity and all power plants connected physically to the North China Power Grid (NCPG), which is in line with the delineation of the grid boundaries regulated by DNA of China /49/.

Being a renewable electricity project, the project activity will generate greenhouse gas (GHG) emission reductions by avoiding CO<sub>2</sub> emissions from electricity generation by fossil fuel power plants. The project is expected to supply 114 580 MWh electricity annually to the NCPG and substitute part of electricity that would generated by the NCPG which is dominated by fuel-fired power plants, and thus greenhouse gas (GHG) emission reductions could be achieved. The plant load factor is 26.42% as sourced from the FSR developed by Beijing GrandTrend International Economic and Technical Consulting Co., Ltd. in December 2008 /4/, which is an accredited third party.

The wind turbine and tower pylon purchase contract dated 10 March 2010 /13/ has been verified by DNV, compared to the construction contract signing date of 20 March 2010 /15/ and construction starting permission dated 8 April 2010 /14/. Therefore, the wind turbine and tower pylon purchase contract was considered as the earliest financial commitment for the project activity and 10 March 2010 is the starting date of the project activity.

The operation lifetime of the proposed project is 20 years derived from the FSR /4/ and a renewable crediting period of 7 years has been chosen for the project, starting from 1 May 2011, or the date of registration whichever is later. The emission reductions are estimated to be 108 873 tonnes CO<sub>2</sub> per year and total 762 111 tonnes CO<sub>2</sub> over the 7 years renewable crediting period /1/ /4/.

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 /1/.

### 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*" /37/.

The applicability of this methodology is justified since:

- The project is a Greenfield wind farm project with the installation a grid connected zero emission renewable electricity capacity of 49.5 MW, which has been confirmed by the FSR /4/.
- The project is a Greenfield wind farm power plant with installed capacity of 49.5 MW, not involved switching from fossil fuels to renewable energy sources at the site of the project activity, as confirmed by the FSR /4/.
- The project boundary is defined as the site of project activity and all power plants connected physically to the NCPG, including Beijing, Tianjin, Shandong, Shanxi, Inner



Mongolia and Hebei power grids to which the project is connected. This is in line with the delineation of grid boundaries as provided by the DNA of China /49/.

DNV has concluded that the application of the baseline methodology is transparent and reasonable.

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 project boundary is clearly defined as the site of project activity and all power plants connected physically to the NCPG including Beijing, Tianjin, Shandong, Shanxi, Inner Mongolia and Hebei power grids /49/. 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 Inner Mongolia Wuchuan Yihemei Wind Farm 49.5 MW Project is clearly defined.

Emission sources and gases included in the project boundary are:

	<i>GHGs involved</i>	<i>Description</i>
<i>Baseline emissions</i>	CO <sub>2</sub>	Main emission sources in the NCPG.
<i>Project emissions</i>	CO <sub>2</sub>	Project emission is regarded as zero as the project is a renewable energy (wind source) project.
<i>Leakage</i>	N/A	There are no leakages that need to be considered in applying this methodology /37/.

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) /37/.

#### 4.5 Baseline identification

Since the project was shown to be additional, cf. Section 4.6, the baseline scenario is defined by ACM0002 version 12.1.0 /37/ as that the electricity delivered to the grid by the project activity would otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in the "Tool to calculate the emission factor for an electricity system" /39/.

The CM emission factor is determined *ex-ante* for the crediting period as the weighted average of the operating margin (OM) emission factor and the build margin (BM) emission factor with the weights of 75% and 25%, respectively.



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

Therefore, the baseline scenario is the continuation of the current situation, i.e. to get equivalent supply from the NCPG.

DNV considers the selected baseline to be applicable and in line with the methodology ACM0002 version 12.1.0 /37/.

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 and correctly quoted and interpreted in the PDD /1/. 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 /1/.

## 4.6 Additionality

The additionality of the project has been established using the “*Tool for the demonstration and assessment of additionality*” version 5.2 approved by the CDM-EB /38/.

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

On 10 March 2010 the wind turbine and tower pylon purchase contract was signed /13/, which is the first significant financial commitment for this project activity. And it is clear that wind turbine and tower pylon construction and installation contract was signed on 20 March 2010 /15/. And the construction starting permission of the proposed project was issued on 8 April 2010 /14/, when were all later than wind turbine and tower pylon purchase contract date. Thus, 10 March 2010 was substantiated as the starting date of the project activity.

DNV has reviewed the following evidences to validate the starting date of the project activity

Time	Item
10 March 2010	Wind turbine and tower pylon purchase contract signed /13/.
20 March 2010	Wind turbine and tower pylon construction and installation contract signed /15/.
8 April 2010	The Construction starting permission signed /14/.
17 May 2010	The CDM notification form was confirmed by NDRC /19/.
10 May 2010	The prior consideration of the CDM Form was received by EB /20/.

Since the starting date of the proposed project is 10 March 2010 (which is later than 2 August 2008), the notification form of CDM project to NDRC /19/ was sent by the project participant and confirmed by Chinese NDRC on 17 May 2010, and the prior consideration of the CDM Form to EB was received on 10 May 2010 /20/. Since it is within of six months



of the project activity starting date, it is justified that the CDM was seriously considered in the decision to proceed with the project activity in accordance.

In addition, the board meeting of Wuchuan County Yihe Wind Power Generation Co., Ltd. on 6 October 2009 was held to decide to develop CDM /10/ to overcome the financial barrier according to the suggestion from the FSR /4/ because the project activity is not financially attractive without CDM revenue.

And on 16 September 2010 the project was public on website of UNFCCC and the validation started and thus, only six months after the starting date of 10 March 2010. Given this short period between initiatives taken by the project participants to secure CDM status, the efforts to secure CDM status in parallel with the physical implementation are considered sufficient.

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 /40/.

#### **4.6.2 Identification of alternatives to the project activity**

Four alternatives to the project have been identified and discussed:

- a) The proposed project activity undertaken without being registered 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) Comparable capacity or electricity generation addition provided by the NCPG.

The alternative b) does not comply with the Chinese law /30/. This law strictly prohibits the installation of thermal power plants with a capacity below 135 MW in areas covered by large grids such as provincial grids. For the alternative c), DNV was also able to confirm that the proposed project is located in the dry region which has no hydropower energy to exploit /22/. Also due to the technology development limitation and the high cost for power generation, solar PV, geothermal and biomass with the same annual electricity output as the proposed project are alternatives far from being attractive investment in the region /23/. Hence, alternative b) and c) are not credible alternatives for the project developer and has been eliminated before further discussion.

Hence, alternative a) and d) are the alternatives consistent with current laws and regulations as potential alternatives and thus will be discussed at the 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 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

##### **Benchmark selection**

According to "Interim Rules on Economic Assessment of Electrical Engineering Retrofit Projects" /50/ which is still valid, a project-IRR of 8% (after tax) for the total investment of



a project is regarded as a benchmark for investing in large scale 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 /50/;
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 Projects* /50/ is referred to the risk premiums of large scale wind farm power project.

### Input parameters

The input parameters used in the financial analysis are taken from the FSR developed by Beijing GrandTrend International Economic and Technical Consulting Co., Ltd. in December 2008 (which is an independent third party accredited by the government) and approved by Development and Reform Commission of Inner Mongolia Autonomous Region on 13 July 2009 /4/. An approval letter of the FSR is issued by Chinese government only after it passes the public assessment of the sector experts designated by the government. It is in DNV's opinion that FSR can be regarded as an accurate and trustworthy source of information coming from a recognized entity once it has the approval letter from the government. Thus the input parameters used in the financial analysis can 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 /4/ and was able to confirm that all the values applied are consistent with the values stated in the FSR /4/.

The FSR was approved on 13 July 2009 /4/ and thus only eight month prior to the decision to proceed with the project activity (i.e. starting date of the project) which was on 10 March 2010 /13/. 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 /4/ has been the basis of the decision to proceed with the investment in the project.

Wind power projects, in Eastern Inner Mongolia and Western Inner Mongolia, are different due to export to different grids and different wind resources in these two regions. The proposed project is located in Western Inner Mongolia. Therefore, it is reasonable that Western Inner Mongolia is chosen as the analysis area. The input parameters used in the financial analysis were compared with the data from other similar registered wind power CDM projects in the same region, as shown in the following table, by comparing the investment cost per kW, the percentage of annual O&M costs relative to the total investment costs, depreciation period and other costs, DNV is in the opinion that all compared parameters of the project are in reasonable ranges.



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*Table 1 Comparison of investment cost per kW, other costs, depreciation period and the percentage of O&M costs relative to total investment costs among wind power projects in Western Inner Mongolia*

Ref No	Project Name	Investment cost per kW (RMB/kW)	Other costs (RMB/kW)	Percentage of O&M costs relative to total costs	Depreciation period (year)
589	Inner Mongolia Huitengliang 49.5MW Wind Power Project, China	11 058.79	N/A	N/A	N/A
823	Huadian Inner Mongolia Huitengxile 100.25MW Wind Farm Project	8 611.07	N/A	2.34%	N/A
870	Inner Mongolia Huitengxile Jingneng 100MW Wind Power Project	7 809.40	N/A	2.52%	N/A
1261	Guohua Inner Mongolia Huitengliang Wind Farm Project	10 299.49	27.5	2.08%	N/A
1327	Inner Mongolia Zhuozi 40MW Wind Power Project	9 604.00	N/A	2.55%	N/A
1577	CGN Inner Mongolia Zhurihe Phase I Wind Farm Project	9 982.02	20	2.08%	12
1621	Bayannaoer Chuanjingsumu 49.3MW Wind Power Project	9 875.46	40	2.18%	15
1662	Inner Mongolia Erlianhaote Phase I Wind Farm Project	10 235.97	25	2.14%	N/A
1815	Inner Mongolia Huitengliang Phase II Wind Power Project	9 187.68	26.62	3.23%	15
1823	Inner Mongolia Bayin'aobao 49.5MW Wind Farm Project (Phase I)	10 393.54	18.65	2.00%	15
1833	Inner Mongolia Duolun Daxishan 30.6MW Wind Power Project	9 908.17	19.28	2.03%	N/A





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1865	Sinohydro Inner Mongolia Ximeng Honggeer Wind Power Project	9 288.69	50.1	2.96%	20
1990	Inner Mongolia North Longyuan Zhurihe Wind Farm Project	9 163.03	10	1.41%	10
2027	Inner Mongolia Bayinhanggai 49.5MW Wind Farm Project	10 361.62	13	1.34%	15
2038	Fuhui Inner Mongolia Tugurige Wind Farm Project	7 822.63	13.13	2.79%	12
2047	Guohua Inner Mongolia Huitengliang West Windfarm Project	9 205.05	27.07	2.08%	15
2051	Goldwind Damao Wind Farm Project	8 416.36	12.73	2.17%	15
2072	Fuhui Inner Mongolia Narenbaolige Wind Farm Project	8 203.43	13.13	2.68%	15
2078	Inner Mongolia North Longyuan Huitengxile Windfarm Project	10 370.37	10	1.19%	15
2093	Huade Changshun 49.5MW Wind Power Project	9 185.26	20.8	2.13%	20
2135	Inner-Mongolia Ximeng Abag 49.5MW Wind Power Project	11 806.67	18.38	1.97%	15
2153	Inner Mongolia Baotou Bayin Wind Power Project	7 914.83	22.388	1.84%	15
2158	Inner Mongolia North Longyuan Huitengliang Wind Farm Project	9 282.42	10	1.41%	10
2406	CGN Inner Mongolia Duerbote Wind farm Project	10 063.43	18.38	2.06%	15





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2450	Xilinguole Huitengliang Wind Power Project Guotai Phase I	9 811.31	N/A	2.55%	20
2483	Inner Mongolia Wuliji Wind Farm Project	10 810	19	1.49%	15
2567	Inner Mongolia Jingneng Saihan Wind Farm Phase I Project	10 407	20.2	2.08%	15
2593	Inner Mongolia Keyouqianqi Wind Farm Project	9 769	15.0	2.79%	15
2597	Guohua Wulate Zhongqi Phase I 49.5 MW Wind farm Project	10 154	24.0	2.23%	12
2732	IMAR Debaotu Wind Farm Phase I 49.5MW Project	10 803.23	15.15	1.92%	15
2853	Huade Daditaihong 49.5MW Wind Power Project	9 503.43	25	1.95%	15
2911	Huaneng Damao Maoming Phase I Wind Farm Project	10 659.39	8	1.85%	15
2951	Inner Mongolia Bayannaoer Chuanjingsumu (IV) Wind Power Project	8 325.35	40	3.29%	15
3092	Inner Mongolia Chayouhouqi Hongmu 48 MW Wind Power Project	10 518	19.6	1.9%	15
3088	Baiyun'ebo 45 MW Wind farm Project	10 718	11.8	1.82%	15
3303	CGN Inner Mongolia Huitengliang Phase I Wind Farm Project	10 627	20.4	2.05%	12
	<b>The Proposed Project</b>	<b>10 566.14</b>	<b>5</b>	<b>1.73%</b>	<b>15</b>

(Data source: UNFCCC website: <http://cdm.unfccc.int/Projects/projsearch.html> and NDRC website: <http://cdm.ccchina.gov.cn/web/Main.asp?ColumnId=18&ScrollAction=1>)



### ***1) Investment costs***

The investment costs used in the financial analysis of the project were compared with the data for the similar CDM registered projects in Western Inner Mongolia. As shown in the Table 1, the investment cost of 10 566.14 RMB/kW for the proposed project is within the range of the investment cost (from 7 809.40 to 11 806.67 RMB/kW) of other similar projects connected to the NCPG in Western Inner Mongolia.

Furthermore, the investment costs were further attempted cross-checked against the real costs. At the time of first financial commitment, the wind turbine and tower pylon purchase contract was in place /13/. This is contributed 71.7% to the total investment costs according to the FSR. Compared to the estimate in the FSR, the real costs are 18% higher, which indicates that the FSR investment cost estimate was reasonable at that time.

### ***2) Electricity tariff***

In China, the Electric Power System Reform was implemented by the State Council in the year 2002 which led to a diversification in the ownership of power generation and the tariff reform. After the reform, power companies and grid companies were separated to be more market oriented; as a result, power projects prior to the year 2002 enjoyed higher electricity price than projects after the year 2002. The approved tariff for wind power projects in Eastern Inner Mongolia and Western Inner Mongolia are different due to export to different grids and different wind resources in these two regions. The proposed project is located in Western Inner Mongolia. Therefore, sourced from China Wind Power Report 2008 /65/, the projects installed after the year 2002 (conventional project) in Western Inner Mongolia were listed in the Table 2 below for the tariff comparison. From the Table 2, it was found that from June 2007 up to now, the tariffs for all the wind power projects in Western Inner Mongolia are 0.51 RMB/kWh (incl. VAT), which have been approved by NDRC /29//53//54//55/.

For the proposed project, the tariff of 0.51 RMB/kWh (incl.VAT) was the latest available at the time of the investment decision for the proposed project and is consistent with the previous tariff approvals released to local wind farms in Western Inner Mongolia by the time available:

- Tariff approval document issued by NDRC on 9 June 2007, document No. Fa Gai Jia Ge [2007] 1260 /53/
- Tariff approval document issued by NDRC on 3 December 2007, document No. Fa Gai Jia Ge [2007] 3303 /55/
- Tariff approval document issued by NDRC on 23 July 2008, document No. Fa Gai Jia Ge [2008] 1876 /29/

As presented by the above documents, the approved tariffs for wind farms in Western Inner Mongolia have been unified as 0.51 RMB/kWh (incl.VAT) since June 2007. Thus the value of 0.51 RMB/kWh (incl.VAT) applied in the FSR /4/ is reasonable as it is in line with the latest data sources as mentioned above. And the tariff used in the PDD and IRR calculation is derived from the FSR /4/. Therefore, this tariff is reasonable for the proposed project and it is common in local area.

Furthermore, the “Notification on Improving Wind Power Feed-in Tariff Policy”, document No. Fa Gai Jia Ge [2009] 1906, was issued by NDRC on 20 July 2009 /54/. It is stated that



wind farms in Western Inner Mongolia are divided into the class I wind source area and tariffs for all the farms in class I area are clearly stipulated as 0.51 RMB/kWh (incl.VAT).

Moreover, the assumed tariff of 0.51 RMB/kWh applied by the proposed project was cross checked with other wind power projects in Western Inner Mongolia in Table 2. Since 2002 most of tariff of wind power projects (conventional projects) in Western Inner Mongolia is 0.51 RMB/kWh except for 4 projects as below:

- (a) 1 project (Huitengxile Windfarm Project) with the tariff of 0.55 RMB/kWh (incl. VAT), approved by Inner Mongolia DRC in April 2004 /51/;
- (b) The tariffs of 3 projects (Inner Mongolia Ximeng Abag 49.5 MW Wind Power Project, Inner Mongolia Wulatezhongqi Wind farm and Inner Mongolia Bailingmiao Wind-farm) were approved individually (0.579, 0.5497 and 0.548 RMB/kWh, incl. VAT) on 22 December 2006 ([2006] 2908) /52/ by NDRC. After this date, NDRC unified the tariff in Western Inner Mongolia to be 0.51 RMB/kWh (incl. VAT) on 9 June 2007 and the subsequent tariffs have been unified and maintained the same.

*Table 2 Tariff analysis for the wind farm projects in Western Inner Mongolia*

<b>Tariff (RMB/kWh, incl. VAT)</b>	<b>Source</b>	<b>Date</b>	<b>Project Name</b>	<b>Installation start time</b>	<b>Is it CDM project or apply for CDM?</b>
0.55	[2004]1093	Jun-04	Huitengxile Windfarm Project	2004	Yes
0.579	[2006]2908	Dec-06	Inner Mongolia Ximeng Abag 49.5MW Wind Power Project	N/A	Yes
0.5497	[2006]2908	Dec-06	Inner Mongolia Wulatezhongqi Wind farm	2007	Yes
0.548	[2006]2908	Dec-06	Inner Mongolia Bailingmiao Wind-farm	2007	GS-VER
0.51	[2007]1260	Jun-07	Inner Mongolia Datang Zhuozi Wind Farm	2006	Yes
0.51	[2007]3303	Dec-07	Inner Mongolia Bayannaoer Chuanjingsumu 49.3MW Wind Power Project	2007	Yes
0.51	[2007]3303	Dec-07	Expansion Project of Huadian Inner Mongolia Huitengxile Wind Farm	2007	Yes
0.51	[2007]3303	Dec-07	Guohua Inner Mongolia Huitengliang West Wind Farm Project	2007	Yes
0.51	[2007]3303	Dec-07	Goldwind Damao Wind Farm Project	2008	Yes
0.51	[2007]3303	Dec-07	Fuhui Inner Mongolia Tugurige Wind Farm Project	2007	Yes
0.51	[2007]3303	Dec-07	Fuhui Inner Mongolia Narenbaolige Wind Farm Project	2007	Yes
0.51	[2007]3303	Dec-07	Inner Mongolia Bayinhanggai 49.5MW Wind Farm Project	N/A	Yes
0.51	[2007]3303	Dec-07	Guohua Inner Mongolia Huitengliang Wind Farm Project	2007	Yes
0.51	[2007]3303	Dec-07	Inner Mongolia Huitengliang 49.5MW Wind Power Project	2007	Yes
0.51	[2007]3303	Dec-	Inner Mongolia North Longyuan Huitengxile	2007	Yes



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		07	WindFarm Project		
0.51	[2007]3303	Dec-07	Xilinguole Huitengliang Wind Power Project Phase I	N/A	Yes
0.51	[2007]3303	Dec-07	Inner Mongolia North Longyuan Zhurihe WindFarm Project	2006	Yes
0.51	[2007]3303	Dec-07	Inner Mongolia Bayannaoer Chuanjingsumu Wind Power Project	2007	Yes
0.51	[2007]3303	Dec-07	Inner Mongolia Siziwangqi Bayin'aobao Wind Power Project	N/A	Yes
0.51	[2007]3303	Dec-07	Sinohydro Inner Mongolia Ximeng Honggeer Wind Power Project	N/A	Yes
0.51	[2007]3303	Dec-07	Inner Mongolia Goldwind Damao Wind Farm Phase II Project	N/A	Yes
0.51	[2007]3303	Dec-07	Inner Mongolia Bayinxile Wind Power Project	N/A	Yes
0.51	[2007]3303	Dec-07	Inner Mongolia Ximeng Zheligtentu Wind Farm Phase I Project	N/A	Yes
0.51	[2007]3303	Dec-07	Inner Mongolia Hangjin Yihewusu Wind Power Project	2007	Yes
0.51	[2007]3303	Dec-07	Inner Mongolia Zhuozi II Wind Power Project	N/A	Yes
0.51	[2007]3303	Dec-07	Inner Mongolia Bayin'aobao 49.5MW Wind Farm Project (Phase I)	N/A	Yes
0.51	[2007]3303	Dec-07	Inner Mongolia Saiwusu I Wind Power Project	N/A	Yes
0.51	[2007]3303	Dec-07	Beijing Energy Huitengxile 49.5MW Wind Power Project	N/A	Yes
0.51	[2007]3303	Dec-07	Baiyun Ebo Wind Farm Inner Mongolia	N/A	Yes
0.51	[2007]3303	Dec-07	Alashan Bayannuoergong Wind Farm Project	N/A	Yes
0.51	[2007]3303	Dec-07	Bayannaoer Wulatehouqi Hailisu Wind Farm Project	N/A	Yes
0.51	[2007]3303	Dec-07	Xilinguole Huangqi Huawei Wind Farm Project	N/A	Yes
0.51	[2007]3303	Dec-07	Chuanjing Wind Farm Inner Mongolia Luneng PhaseII	N/A	Yes
0.51	[2008]1876	Jul-08	Inner Mongolia Duolun Daxishan 30.6MW Wind Power Project	N/A	Yes
0.51	[2008]1876	Jul-08	Inner Mongolia Taipusi Gongbaolage Wind Farm Project	N/A	Yes
0.51	[2008]1876	Jul-08	Inner Mongolia Ximeng Huitengliang Area Phase I Wind Power Project	N/A	Yes
0.51	[2008]1876	Jul-08	Inner Mongolia Huitengliang Phase II Wind Power Project	N/A	Yes
0.51	[2008]1876	Jul-08	Inner Mongolia Bayannaoer Chuanjingsumu III Wind Power Project	N/A	Yes
0.51	[2008]1876	Jul-08	Inner Mongolia Erlianhaote Phase I Wind Farm Project	2007	Yes

Data source:

UNFCCC website: <http://cdm.unfccc.int/Projects/projsearch.html>Gold Standard website: <https://gs1.apx.com/myModule/rpt/myrpt.asp?r=111>

In addition, according to the “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)” /45/, published on 24 June 2010, the highest historical tariff in Inner Mongolia is 0.54 RMB/kWh (incl VAT). However, even applied 0.54 RMB/kWh (incl. VAT) to the proposed project, its project-IRR would be 6.50%. In addition, even if the project applies the highest tariff of 0.579 RMB/kWh (Incl. VAT) in Western Inner Mongolia (for Inner Mongolia Ximeng Abag 49.5 MW Wind Power Project) to the financial analysis during the whole operation period, the project IRR will reach 7.48% and still be lower than the benchmark of 8%. Therefore, it is demonstrated that the tariff applied by the proposed project is appropriate and reasonable.

It is DNV’s opinion that the tariff of 0.51 RMB/kWh (incl VAT) implemented in the PDD /1/ is reasonable and in line with the stable wind power tariff trend.

### **3) Electricity generation**

The electricity generation used in the PDD is consistent with the value from the FSR for this project. It is expected that the proposed project will supply approximately 114 580 MWh net electricity per year, giving a plant load factor of 26.42%, sourced from the FSR /4/ developed by Beijing GrandTrend International Economic and Technical Consulting Co., Ltd. in December 2008 /4/. Annex 11 of CDM-EB 48<sup>th</sup> meeting report /42/ 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 FSR should be considered sufficient for validation of plant load factor.

As per the FSR /4/, the yearly data used to estimate the electricity generation from the project was determined based on the historical meteorological data of 30 years and one year on-site wind resources measurement, which was provided by local meteorological station; the data was then processed in professional software to calculate the annual theoretical power generation, from which the annual effective power generation was obtained through discount by considering factors such as air density, trailing stream, wind turbine efficiency etc.

Thus DNV can confirm that the assumed annual grid connected output from the FSR is appropriate and acceptable.

### **4) Operating and maintenance (O&M) costs**

The O&M costs for wind power projects may vary by site location, conditions for transportation, applied technology, number of turbines and regional inflation. As shown in the Table 1 above, the proposed project is deemed to have a similar percentage of O&M costs relative to investment costs (1.73%) compared with other similar wind power projects located in the same region (between 1.19% to 3.29%); thus, DNV can confirm that the O&M costs used for financial analysis of the propose project is reasonable.

#### *Other costs*

The term other cost refers to additional production expenses, administrative expenses and operating expenses, except depreciation, maintenance, insurance, material, salary and welfare. This definition was derived from the document “Economic Assessment Method and Parameters of Construction Project (Version 3) /64/, which was considered as the financing



assessment basis and source for preparing FSR /4/. DNV can confirm the “other costs” identified in the FSR is appropriate and it is in line with the relevant regulation for designing FSR in China.

The other costs of the proposed project derived from the FSR /4/ was verified by DNV by cross-checking the values of other similar wind power projects in the same region stated in the Table 1 above. The range of other costs in Table 1 is from 8 RMB/kW to 40 RMB/kW and the other costs of the proposed project is 5 RMB/kW. Although it is not within this range, this is still deemed as appropriate in this region and more conservative than other similar projects. Furthermore, even when removing this part from the O&M costs, the project-IRR without CER income of the proposed project will be 5.79%, which is still lower than the benchmark of 8%. Hence DNV was able to confirm that other costs of the proposed project (5 RMB/kW) are deemed to be reasonable.

### 5) 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*

Value added tax (VAT)	17%
Income tax	25%
Rate of residual value	5%
Depreciation period (years)	15
Education tax (of the VAT)	4%
City construction tax (of the VAT)	7%

#### (a) VAT for equipment

According to the current law in China, Provisional Regulations of the People’s Republic of China on Value Added Tax, the VAT for the fixed asset is defined as 17% for wind power industry /56/. According to Provisional regulations of the People’s Republic of China on value added tax from State Council No.538 [2008], issued on 10 November 2008 and implemented from 1 January 2009 /58/, the equipment VAT can be credited over the operation period against the tariff VAT until the VAT from the equipment VAT is fully recovered.

#### (b) VAT on tariff

The VAT rate of 17% on the tariff /56/ applied to the financial analysis is substantiated by the following arguments. On 9 December 2008, the “Notice of the Ministry of Finance and the State Administration of Taxation about policies regarding the value added tax on comprehensive utilization of resources and other products” (No.156 [2008]) /57/ was issued. As stipulated in this notice (No.156 [2008]) /57/, VAT refund half upon levy shall be applicable for selling the electricity generation from wind power industry. The regulation entered into force on 1 January 2009. 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 7<sup>th</sup> year to 21<sup>st</sup> year after the equipment VAT is fully recovered.





The income tax of Inner Mongolia Wuchuan Yihemei Wind Farm 49.5 MW Project is chosen as 25% that is in line with the Law of the People's Republic of China on Enterprise Income Tax /60/. DNV confirmed that the tax benefits from interest payments were considered in the calculation of income tax by including the interest of loan in total cost, in line with the requirement of Annex 58 of EB 51 meeting /41/.

The residual rate of 5% used for the proposed project is in line with the document of the State Administration of Taxation, Guoshuihan [2005] No. 883 dated 14 September 2005 /61/. The residual value is recovered at the end of the operation period in the IRR calculation spreadsheet /2/. Thus, DNV could confirm that the residual value of 5% is appropriate and reasonable.

The project applies a depreciation period of 15 year (the depreciation rate per year is 6.33%) in accordance with the FSR /4/. According to the Law of the People's Republic of China on Enterprise Income Tax /60/ 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 for a fixed asset in the month following in which the asset's use is ceased. The number of depreciation year for fixed assets must be longer than 10 years for the manufacturing and business operations. Therefore, the depreciation period of 15 years for the proposed project is in line with the Law of the People's Republic of China on Enterprise Income Tax /60/. Compared with the depreciation period of those similar registered CDM projects as shown in the Table 1, the depreciation period of 15 years adopted by the proposed project is considered to be reasonable.

The education tax (of the VAT) of 4%, including the education tax (3%) and the local education supplementary tax (1%), are respectively following the "Interim Provision on Education Tax Law" and the local education supplementary tax regulation /62/.

The city maintenance and construction tax (of the VAT) of 7% used for the proposed project is in line with the "Provisional Regulations of the People's Republic of China on City Maintenance and Construction Tax" /63/.

As for the proposed project, the IRR benchmark of 8% is post tax and the interest tax payable has been verified to be included in the calculation of the income tax.

Therefore, DNV confirms that all the tax rates used in the financial analysis of the proposed project are in line with the relevant regulations of the tax rates.

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 are likely to represent adequately the economic situation of the project.

### **Calculation and conclusion**

The project-IRR calculations over 20 years of operation 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 (post tax) without CDM revenues is 5.73%, which confirms that the project in the absence of CDM benefits and compared to the benchmark is not financially attractive. With CER revenues the project-IRR increases to 8.84%, which is above the benchmark.



### Sensitivity analysis

A sensitivity analysis has been 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 total static investment, annual operational and maintenance (O&M) costs, annual electricity output and electricity tariff were checked by calculating the variation necessary to reach the benchmark and then discussing the likelihood for that to happen. None of the parameters in the sensitivity analysis are considered to have any significant positive correlation.

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

<i>Key Indicators</i>	<i>Variation of the parameter indicator needed to reach benchmark 8%</i>
Total static investment	-16.9%
Electricity tariff	+17.8%
Annual electricity output	+17.8%
Annual Operation & Maintenance costs	-105.5%

However, it is unlikely that these variations will happen as demonstrated in the following:

#### **Total static investment:**

DNV was able to confirm that 16.9% decrease in total static investment is unlikely to happen, as a large part of the total investment of the proposed project goes towards purchasing main generation equipments such as wind turbines and on site construction cost (both contributing to 86% of total static investment) according to FSR /4/. DNV has checked and confirmed that the contracts for wind turbines purchase, construction and installation /13//15/ have been signed. Compared to the estimated investment costs for wind turbine purchase and installation in the FSR, the real costs are 9% higher than the costs in the FSR, which indicates that the actual investment could not decrease. Therefore, the static total investment is not likely to decrease by 16.9%.

#### **Electricity Tariff:**

To reach the 8% benchmark, the tariff must increase by 17.8%, which is not likely to happen. Based on the analysis of tariff above in this section, the assumed tariff of 0.51 RMB/kWh (incl. VAT) is in line with the trend of tariff in Western Inner Mongolia from the year 2007. Furthermore, the assumed tariff of the project can be cross checked according to the latest tariff of 0.51 RMB/kWh (Incl. VAT) issued by NDRC of China for wind farms in Western Inner Mongolia on 20 July 2009 /54/. In addition, even if the project applies the highest tariff of 0.579 RMB/kWh (Incl. VAT) in Western Inner Mongolia to the financial analysis during the whole operation period, the project IRR will reach 7.48% and still be lower than the benchmark of 8%. Hence the 17.8% increase of the tariff is very unlikely to happen.



**Annual electricity output:**

The annual electricity output of the proposed project depends on the average wind speed at the project site for a specific wind turbine. Annual output delivered to the grid was determined predominately by wind resources. According to the FSR /4/ wind resources are based on a 30-year wind statistic data provided by local meteorological station and one year onsite observation. Then achieved data was put into the professional WAsP software to calculate the annual theoretical electricity output. Therefore, the estimated electricity output in the FSR /4/ is based on a long period data statistics and it is not realistic for the output to increase by 17.8%.

**Annual operation & maintenance (O&M) costs:**

If O&M costs decrease by 105.5%, the project-IRR will reach the benchmark. However, the prices of the raw material and salaries of the employees have been increasing in China in recent years /27/. Hence, reasonable variations in the annual O&M costs can not cause the project to become financially viable. DNV can confirm that it is not possible that annual O&M costs will decrease by 105.5%.

The sensitivity analysis above shows that very unrealistic favorable circumstances would be needed for the project-IRR to reach the benchmark.

In conclusion, the investment analysis and sensitivity analysis have shown that the project activity without the income from CERs sales is not financially attractive.

**4.6.4 Barrier analysis**

The barrier analysis was not applied for this project.

**4.6.5 Common practice analysis**

In China, most policies are promulgated in provincial level by combining the national policy with the region's condition. In addition, abundant and high quality wind resources in Inner Mongolia Autonomous Region 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 Inner Mongolia Autonomous Region is selected as scope for common practice analysis.

It is reasonable to define as the analysis capacity with larger than 15 MW of the project. Because the large scale project is defined as the project capacity larger than 15 MW according to definition from EB, as small scale projects are not comparable in size to the 49.5 MW installed by the proposed project activity.

The chosen year benchmark after 2002 is reasonable as the year 2002 is a threshold for economic reform in electricity sector in China /28/.

Following the above three rules there are two projects not applying CDM:

Keshiketeng Banner Dali Wind Farm Project (Phase III) in 2004 and Da Mao Qi Bailingmiao wind farm in 2007.

Dali Wind Project (Phase III) wind project is a demonstration project supported by national debt fund which is not available for the proposed project /31/.

Da Mao Qi Bailingmiao wind farm implemented as a Gold Standard VER project, which registered on 15 May 2009 /32/.



DNV has checked all sources /31/ /32/ /33/ mentioned in the PDD and could conclude that the construction of a wind farm project of 49.5 MW is not a common practice in Inner Mongolia Autonomous Region.

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

## 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” /37/. The selected monitoring methodology is applicable for the project activity as it involves grid-connected renewable power generation using wind energy.

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 /34/. The environmental impacts are considered minor and will be monitored by the local environmental authority during the project lifetime /5/.

The project monitoring plan is in compliance with the monitoring methodology ACM0002 (version 12.1.0) /37/.

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 at the start of the validation; the detailed calculations of the combined margin emission factor are described in the following section 4.8. The parameters are listed in below table:

<i>Data and Parameters</i>	<i>Unit</i>	<i>Ex-ante Determined Value</i>
Operating margin of NCPG (OM)	tCO <sub>2</sub> /MWh	1.0069
Build Margin of NCPG (BM)	tCO <sub>2</sub> /MWh	0.7802
Emission factor of NCPG (CM)	tCO <sub>2</sub> /MWh	0.9502

### 4.7.2 Parameters monitored ex-post

The parameter monitored *ex-post* are the quantity of net electricity generation supplied by the project plant to the grid  $EG_{facility,y}$ , the quantity of annual electricity exported to the grid by the project  $EG_{export,y}$  and the quantity of annual electricity imported from the grid by the project  $EG_{import,y}$ .

All the parameters will be measured by bi-directional main meter and back-up meter at on-site substation. They will be continuously measured and at least monthly recorded.  $EG_{facility,y}$  will be cross checked with records for sold electricity. All data will be kept at least for 2 years after the end of the last crediting period by means of electronic and paper document.

- The main and backup meters are bidirectional, measuring both exported to the grid and imported from the grid; net electricity generation supplied to the grid ( $EG_{facility,y}$ ) is



- export of electricity ( $EG_{export,y}$ ) minus import of electricity ( $EG_{import,y}$ ).
- The error of the meters shall not exceed 0.5%.
  - Meters will be calibrated and checked once a year according to relevant industrial standard.

The monitoring plan is in accordance with the monitoring methodology, it will give opportunity for real measurements of achieved emission reductions. DNV considers the project participants able to implement the monitoring plan.

#### 4.7.3 Management system and quality assurance

The project's monitoring plan includes:

- Monitoring and responsibility
- Monitored data
- Installation Metering
- Calibration
- Quality control and reporting
- Data Management
- Training program

Detailed procedures are elaborated in the PDD /1/. These will be maintained and implemented to enable subsequent verification of emission reductions.

In conclusion, the application of the monitoring methodology is transparent and DNV considers that the project participants are 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 ( $EG_{pj,y}$  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 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 16 September 2010 and the data for calculation of the grid emission factor were the most available at the commencement of validation. The data used in the EF calculation is in accordance with data in the China Electric Power Yearbook from 2004 to 2008 (published annually) /48/, the



China Energy Statistical Yearbook from 2006 to 2008 /47/, IPCC data /44/ and the emission factor calculation for each Power Grid of China published by NDRC /49/.

The assessment of the grid emission factor of the NCPG is as follows:

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*” /39/. 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 when the PDD was web-hosted on 16 September 2010. It has been calculated as the weighted average ( $w_{OM} = 0.75$ ;  $w_{BM} = 0.25$ ) of the operating margin and the build margin.

**Operating Margin:** Simple OM was chosen and this is justified since the low cost /must run resources in the most recent five years 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) /48/.

Aggregated generation (sourced from China Electric Power Yearbook /48/) and fuel consumption data (sourced from China Energy Statistical Yearbook /47/) are used due to the fact that more disaggregated data are not available in the NCPG. The total electricity delivered to the NCPG has been used which are obtained from the China Electric Power Yearbook from 2005 to 2008 (published annually). Country specific data for net calorific value of each type of fossil fuel are obtained from the China Energy Statistical Yearbook /47/ and the IPCC 2006 default data /44/ and the emission factors of each type of fossil fuel are deemed reasonable.

The OM is calculated to be 1.0069 tCO<sub>2</sub>e/MWh. The sources and calculation has been verified by DNV.

**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 /43/.

Use of capacity additions from the years 2005 to 2007 is chosen and reaches 32.98% of the total installed capacity /48/.

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<sub>2</sub> intensity for the fuels used in NCPG /47/.

Efficiencies of 38.10% 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 /49/.

The BM is calculated as 0.7802 tCO<sub>2</sub>e /MWh which was verified by the provided emission factor calculation spreadsheet /3/.

The resulting combined margin emission factor 0.9502 tCO<sub>2</sub>e/MWh is fixed *ex-ante* for the crediting period. DNV checked the calculation and confirmed that the calculation process in



the PDD /1/ and EF spreadsheet /3/ was conservative and acceptable with resulting of  $EF_{grid, CM, y} = 0.9502 \text{ tCO}_2\text{e/MWh}$ .

Therefore, the estimated annual emission reduction of the first crediting period is as follows:

According to the FSR of the proposed project /4/, the net electricity generated is approximately 114 580 MWh, i.e.  $EG_{PJ, y} = 114\,580 \text{ MWh}$ ;

$$ER_y = BE_y = EG_{PJ, y} * EF_{grid, CM, y} = 108\,873 \text{ tCO}_2\text{e}.$$

Therefore, the expected annual baseline emissions of the project are 108 873 tCO<sub>2</sub>e.

In summary, the GHG calculations are complete and transparent, and their accuracy has been verified.

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 reductions conservatively calculated to be 108 873 tCO<sub>2</sub>e 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 /1/. 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 /1/.

## 4.9 Environmental impacts

An Environmental Impact Assessment (EIA) of the project activity completed by Environment Science Research Institute of Inner Mongolia Autonomous Region on 18 March 2007 /5/, has been conducted and the potential environmental impacts both in the construction period and operation period, such as noise solid waste, waste water, air quality, land use impact and ecological impact, have been sufficiently identified. The Environmental Protection Bureau of Inner Mongolia Autonomous Region approved the EIA on 23 April 2007 /5/.

DNV could confirm that no significant environmental impacts are expected from the project activity.

## 4.10 Comments by local stakeholders

The project owner has successfully carried out a public survey by questionnaire near the project site on 30 November 2009, and totally 40 stakeholder representatives participated in this questionnaire from the local residents and local government. Totally 40 copies of questionnaires returned with 100% response rate /9/. According to the FSR /4/ and EIA /5/, also confirmed by the follow-up interview held by DNV dated 18 October 2010, the project site has very few population and all the questionnaires informants came from the surrounding villages where are several kilometers away from the project site /67/ /68/. Moreover, these 40 questionnaires informants include both male and female, residents and government officials with different age range and different educational background. Therefore, DNV could confirm that the sampling size of questionnaires is sufficient and



acceptable. 100% of the stakeholders agreed with the development of the project and thus no negative comments were received from the stakeholder representatives.

DNV considers the local stakeholder consultation carried out adequately.

#### **4.11 Comments by Parties, stakeholders and NGOs**

The PDD, version 1.1 dated 2 September 2010, was made publicly available on the CDM website and Parties, stakeholders and NGOs were through the CDM website (<http://cdm.unfccc.int/Projects/Validation/DB/IM4WPJ8LZFFCV77G3YC1O4OKOOPCG/G/view.html>) invited to provide comments during a 30 days period from 16 September 2010 to 15 October 2010.

No comments were received.

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## APPENDIX A

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### CDM VALIDATION PROTOCOL

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

Requirement	Reference	Conclusion
<b>About Parties</b>		
1. The project shall assist Parties included in Annex I in achieving compliance with part of their emission reduction commitment under Art. 3.	Kyoto Protocol Art.12.2	OK
2. The project shall assist non-Annex I Parties in contributing to the ultimate objective of the UNFCCC.	Kyoto Protocol Art.12.2.	OK
3. The project shall have the written approval of voluntary participation from the designated national authority of each Party involved.	Kyoto Protocol Art. 12.5a, CDM Modalities and Procedures §40a	<del>CAR-1</del> 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	<del>CAR-1</del> 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	<del>CAR-1</del> 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
<b>About additionality</b>		
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	<del>CL-3</del> <del>CL-4</del> <del>CL-5</del>



Requirement	Reference	Conclusion
that would have occurred in the absence of the registered CDM project activity.		<del>CL-5</del> CL-6 OK
<b>About forecast emission reductions and environmental impacts</b>		
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
<b>For large-scale projects only</b>		
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
<b>About stakeholder involvement</b>		OK
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
<b>Other</b>		
15. The baseline and monitoring methodology shall be previously approved by the CDM Executive Board.	CDM Modalities and Procedures §37e	OK
16. A baseline shall be established on a project-specific basis, in a transparent manner and taking into account relevant national and/or sectoral policies and circumstances.	CDM Modalities and Procedures §45c,d	OK
17. The baseline methodology shall exclude to earn CERs for decreases in activity levels outside the project activity or due to force majeure.	CDM Modalities and Procedures §47	OK
18. Provisions for monitoring, verification and reporting shall be in accordance with the modalities described in the Marrakech Accords and relevant decisions of the COP/MOP.	CDM Modalities and Procedures §37f	OK

**Table 2 Requirements checklist**

Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
<b>A General description of project activity</b>						
<b>A.1 Title of the project activity (VVM para 55-57)</b>						
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 in accordance with the applicable requirements for completing PDDs?	/1/	DR	<input checked="" type="checkbox"/> Yes <i>If no, list where the PDD is not in accordance:</i>		OK
<b>A.2 Description of the project activity (VVM para 58-64)</b>						
A.2.1	How was the design of the project assessed?	/1/ /2/ /3/ /4/ /5/ /13/ /15/	DR CC 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 <sub>2</sub> 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 <sub>2</sub> 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.		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><input type="checkbox"/> The project is an individual small scale project activity with emission reductions not exceeding 15 000 tCO<sub>2</sub>e 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>The proposed project is a Greenfield project, which was verified against the FSR and FSR approval..</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>Since the project was permitted to start construction on 8 April 2010 there will be few issues that could be verified during physical site visit in June 2010. According to the FSR and EIA for this project, Inner Mongolia Wuchuan Yihemei Wind Farm 49.5 MW Project is located in hill area and waste grass land, no resettlement was involved in this project activity. This is also confirmed during the interview with the project owner. Meanwhile, the PDD and other background documents, like wind turbine and tower pylon purchase, construction and installation contracts were provided and assessed. Hence, DNV can justify that a physical site visit for this project was not arranged during the</p>		

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Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
			validation process.		
A.2.2 If a greenfield project, describe the physical implementation of the project when the validation was commenced.	/1/ /4/ /67/ /68/	DR CC I	The project is a greenfield project, involving the 33 wind turbines with 1.5 MW unit capacity each, totally installed capacity of proposed project activity is 49.5 MW. The annual electricity delivered to the NCPG is expected to be 114 580 MWh according to the FSR The construction starting permission was issued by Inner Mongolia Kangwo Construction supervision Company on 8 April 2010. At the time of validation commenced, the project was still under construction. It was also confirmed by follow-up interview on 18 October 2010.		OK
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 <sub>2</sub> e per year), justify the sampling through a statistical analysis:	/1/	DR	It is not a bundled small scale projects		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 in the PDD covers all relevant elements, such as the location, installed capacity and provides a clear understanding of the nature of the proposed CDM project activity. Inner Mongolia Wuchuan Yihemei Wind Farm 49.5 MW Project is located at Xiwulanbulang Town, Wuchuan County, Hohhot City, Inner Mongolia Autonomous Region, China. Its geographical coordinates are East Longitude: 110°54.99' ~ 110°57.14', North Latitude: 41°11.04'~41°13.19'.		OK
A.2.5 Does the project activity involve alteration of existing installations? If so, have the differences between pre-project	/1/ /4/	DR	The proposed project is a newly built project. And there is no alteration of existing installations		OK

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Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
and post-project activity been clearly described in the PDD?				involved.		
A.2.6	Does the project design engineering reflect current good practices?	/1/	DR	The project involves installation 33 wind turbines with 1.5 MW unit capacity each. The manufacturer of the turbines is Xinjiang Gold Wind Technology Co., Ltd.. DNV confirmed the technologies employed in the proposed project activity are advanced domestic technologies and the project design engineering reflects current good practices.		OK
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/	DR	Yes. The technologies employed in the proposed project activity are advanced domestic technologies and the project design engineering reflects current good practices.		OK
<b>A.3 Participation requirements (VVM para 51-54, 125-127)</b>						
A.3.1	Do all participating Parties fulfil the participation requirements as follows:	/1/	DR	The LoA from Annex I party has not been provided.	<del>CAR-1</del>	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/	DR	The LoA from Annex I party has not been provided.	<del>CAR-1</del>	OK
		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		

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Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
b) LoA confirms that participation is voluntary c) The LoA confirms that the project contributes to the sustainable development of the host country? d) The LoA refers to the precise project activity title in the PDD e) The LoA is unconditional with respect to (a) to (d) above f) The LoA is issued by the respective Party's DNA g) The LoA was received directly by the DNA or the 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	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DNA <input checked="" type="checkbox"/> PP	<input type="checkbox"/> Yes <input type="checkbox"/> No NA <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DNA <input type="checkbox"/> PP	The authenticity of LoA from China has been verified by DNV from following official link : <a href="http://qhs.ndrc.gov.cn/qjfzjz/t20100721_362034.htm">http://qhs.ndrc.gov.cn/qjfzjz/t20100721_362034.htm</a>		
A.3.3 Have all private/public project participants been authorized by an involved Party?	/1/	DR CC	The LoA from Annex I party has not yet been provided.	<del>CAR-1</del>	OK
<b>A.4 Technical description of the project activity (VVM para 58-64)</b>					
A.4.1 Is the project's location clearly defined?	/1/ /4/	DR CC	Yes. The proposed project is located at Xiwulanbulang Town, Wuchuan County, Hohhot City, Inner Mongolia Autonomous Region, China. Its geographical coordinates were sourced from the FSR.  The client needs to provide the detailed coordinates of each turbine to validation team.	<del>CL-1</del>	OK

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Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
<b>A.5 Public funding of the project activity</b>					
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/	DR CC	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.		OK
<b>B Application of a baseline and monitoring methodology</b>					
<b>B.1 Methodology applied (VVM para 65-76)</b>					
B.1.1 Does the project apply an approved methodology and the correct and valid version thereof?	/1/	DR	Yes, the proposed project applies approved consolidated baseline and monitoring methodology 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/ /40/ /41/ /42/ /43/	DR	Yes. The following EB guidances 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

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Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
<b>B.2 Applicability of methodology (and tools) (VVM para 65-76)</b> <i>Insert a row for each applicability criteria of the applied methodology (and tools)</i>						
B.2.1	How was it validated that project complies with the following applicability criteria: the project activity is the installation, capacity addition, retrofit or replacement of a power plant/unit of one of the following types: hydro power plant/unit (either with a run-of-river reservoir or an accumulation reservoir), wind power plant/unit, geothermal power plant/unit, solar power plant/unit, wave power plant/unit or tidal power plant/unit?	/1/ /4/ /5/	DR CC	The proposed project is the installation of a new grid-connected zero-emission renewable power generation activity from wind source, involving the 33 wind turbines with 1.5 MW unit capacity each; the total installed capacity of proposed project activity is 49.5 MW. It is also evidenced by the FSR and EIA approval.		OK
B.2.2	How was it validated that project complies with the following applicability criteria: project activities that not involve switching from fossil fuels to renewable energy sources at the site of the project activity, since in this case the baseline may be the continued use of fossil fuels at the site?	/1/ /4/	DR	The proposed project uses wind to generate electricity, and there is no fossil fuel switch in this project, which can be verified by the project design in the approved FSR.		OK
B.2.3	How was it validated that project complies with the following applicability criteria: The geographic and system boundaries of the proposed project can be clearly identified?	/1/ /4/ /49/	DR	The electricity generated from the proposed project will be delivered to the NCPG, 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. Relevant information is available.		OK
B.2.4	Is the selected baseline on of the baseline(s) described in the methodology and this hence confirms the applicability of the methodology?	/1/ /39/	DR	Yes. The selected methodology describes the baseline as follows: Electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the		OK

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Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
			combined margin (CM) calculations described in the “ <i>Tool to calculate the emission factor for an electricity system</i> ”.		
<b>B.3 Project boundary (VVM para 78-80)</b>					
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/ /4/ /49/	DR CC	The project involves totally 33 sets of 1.5 MW wind turbines with a total installed capacity of 49.5 MW and will deliver the electricity to NCPG. The proposed project and all plants connected to NCPG are defined as the project’s system boundary, which is in accordance with the methodology.		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/ /49/	DR CC	The major emission source of Inner Mongolia Wuchuan Yihemei Wind Farm 49.5 MW Project is CO <sub>2</sub> and this is in line with the approved methodology ACM0002 version 12.1.0.  The project boundary is defined as the site of the project activity and all power plants connected physically to the NCPG. This boundary covers all possible sources linked to the project activity according to the FSR and grid boundary published by 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/	DR	There is no other emission sources involved in Inner Mongolia Wuchuan Yihemei Wind Farm 49.5 MW Project. There is also no other project emission and leakage sources contribute more than 1% of the estimated emission reductions of the project.		OK
<b>B.4 Baseline scenario determination (VVM para 81-88, 105-107)</b>					
B.4.1 Which baseline scenarios have been identified? Is the list of	/1/	DR	It is required to complete the alternatives	<del>CL-2</del>	OK

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Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
baseline scenarios complete?		/37/ /38/		identification according to “Tool for the demonstration and assessment of additionality” version 5.2 in the PDD B.5.		
B.4.2	How have the other baseline scenarios been eliminated in order to determine the baseline?	/1/ /37/	DR CC	The baseline scenario has been directly determined according to the methodology ACM0002 version 12.1.0.		OK
B.4.3	What is the baseline scenario?	/1/ /37/	DR	The baseline scenario is: Electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in the “Tool to calculate the emission factor for an electricity system”. This is in line with the approved methodology ACM0002 version 12.1.0.		OK
B.4.4	Is the determination of the baseline scenario in accordance with the guidance in the methodology?	/1/ /37/	DR	Yes. The baseline scenario has been directly determined according to the methodology ACM0002 version 12.1.0.		OK
B.4.5	Has the baseline scenario been determined using conservative assumptions where possible?	/1/ /37/	DR	Yes. The baseline scenario has been determined using conservation assumptions.		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/ /37/	DR	Yes. The baseline scenario has sufficiently taken into account relevant national and/or sectoral policies, macro-economic trends and political aspirations.		OK
B.4.7	Is the baseline scenario determination compatible with the available data and are all literature and sources clearly referenced?	/1/ /37/	DR	Yes. The baseline scenario determination is compatible with the available data and all literature and sources are clearly referenced.		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"> <li>• 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.</li> <li>• All documentation is relevant as well as correctly quoted and interpreted.</li> <li>• Assumptions and data can be deemed reasonable</li> <li>• Relevant national and/or sectoral policies and circumstances are considered and listed in the PDD.</li> <li>• The methodology has been correctly applied to identify what would occurred in the absence of the proposed CDM project activity</li> </ul>	/4/ /5/ /37/ /39/		<p>participants are listed in the PDD.</p> <p>b. Yes. According to the reference list, all documents of the baseline determination were correctly quoted and interpreted.</p> <p>c. The FSR was developed by Beijing GrandTrend International Economic and Technical Consulting Co., Ltd. in December 2008 and approved by Development and Reform Commission of Inner Mongolia Autonomous Region on 13 July 2009.</p> <p>The EIA was prepared by Environment Science Research Institute of Inner Mongolia Autonomous Region on 18 March 2007 and approved by Environmental Protection Bureau of Inner Mongolia Autonomous Region on 23 April 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. Relevant national include Chinese renewable law and China environment protection law and sectoral policies and circumstances such as the national industry standard of electricity meter are considered and listed in the PDD.</p> <p>e. The proposed project is a Greenfield project with the total installed capacity of 49.5 MW. The project correctly applies the approved baseline and monitoring methodology ACM0002, version 12.1.0.</p>		

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Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
<b>B.5 Additionality determination (VVM para 94-121)</b>					
B.5.1 What approach/tool does the project use to assess additionality? Is this in line with the methodology?	/1/ /37/ /38/	DR	The tool used to assess additionality is “Tool for the demonstration and assessment of additionality” version 5.2. However, it is required to complete the alternatives identification according to “Tool for the demonstration and assessment of additionality” version 5.2 in the PDD B.5.	<del>CL2</del>	OK
B.5.2 Have the regulatory requirements correctly been taken into account to evaluate the project activity and the alternatives?	/1/ /30/	DR CC	It is required to identify all the alternatives according to “Tool for the demonstration and assessment of additionality” in the PDD and clarify whether they are in consistent with the regulatory requirements.	<del>CL2</del>	OK
B.5.3 Is sufficient evidence provided to support the relevance of the arguments made?	/1/ /30/ /50/	DR CC	It is required to identify all the alternatives according to approved methodology in the PDD and justify the conclusion they made is appropriate and be in line with the “Tool for the demonstration and assessment of additionality” version 5.2.	<del>CL2</del>	OK
B.5.4 What is the project additionality mainly based on (Investment analysis or barrier analysis)?	/1/ /38/	DR	The project additionality is mainly based on the investment analysis.		OK
<b>Prior consideration of CDM (VVM para 98-103)</b>					
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/ /9/ /10/ /11/	DR I	In December 2008, the FSR /4/ was developed by Beijing GrandTrend International Economic and Technical Consulting Co., Ltd., where the CDM was seriously considered as the key solver to the financial unfeasibility, and it was approved by Development and Reform Commission of Inner Mongolia Autonomous Region on 13 July 2009. On 6 October 2009, the decision was made at directorate meeting to proceed with the CDM		OK

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Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
			<p>project, and the date is before the project starting date. On 8 November 2009, Emission Reduction Purchase Agreement (ERPA) and CDM development Agreement were signed with Carbon Resource Management S.A.. On 30 November 2009, 40 questionnaires were finished by relevant stakeholders.</p> <p>On 10 March 2010, wind turbine and tower pylon purchase contract was signed between Wuchuan County Yihe Wind Power Generation Co., Ltd. and Xinjiang Gold Wind Technology Co., Ltd.. It was the starting date of project activity..</p> <p>DNV could confirm that these events described above demonstrated that the CDM was seriously considered before the project started.</p>		
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/ /19/ /20/	DR	<p>Yes. The starting date of proposed project is after 2 August 2008, and the notifications to DNA and UNFCCC have been provided and verified.</p> <p>The Prior Consideration notification form to UNFCCC has been received on 10 May 2010 and the notification form to NDRC has been approved on 17 May 2010. It can be verified by DNV from the links;  <a href="http://cdm.unfccc.int/Projects/PriorCDM/notifications/index_html">http://cdm.unfccc.int/Projects/PriorCDM/notifications/index_html</a>.</p> <p>On 3 September 2010 the validation contract was signed between Carbon Resource Management S.A. and DNV. And on 12 August 2010 the <i>Letter of approval</i> of Inner Mongolia Wuchuan Yihemei Wind Farm 49.5 MW Project has been issued by NDRC. On 16 September 2010 the</p>		OK

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Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
			project was webhosted on UNFCCC website and the validation started. The validation started only six months after the project starting date of 10 March 2010. Since there is short period between initiatives taken by the project participants to secure CDM status, the efforts to secure CDM status in parallel with the physical implementation are consider sufficient.		
<b>Continuous efforts to secure CDM status (only to be completed if starting date is before 2 August 2008)</b>					
B.5.7 What initiatives where 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 project activity?	/1/	DR	N/A		OK
B.5.8 When did the construction of the project activity start?	/1/	DR	N/A		OK
B.5.9 When was the project commissioned?	/1/	DR	N/A		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	N/A		OK
<b>Investment analysis (VVM para 108-114)</b> <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/ /38/	DR	Yes. The project activity will produce economic benefit (from electricity sale) other than CDM related income. This is reflected in the PDD. This can also be confirmed by the FSR of proposed project.		OK
B.5.12 Do any of the alternatives to the project activity involve investment? Is this reflected in the PDD?	/1/ /38/	DR	It needs to identify all the alternatives according to approved methodology in the PDD and justify	<del>CL2</del>	OK

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Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
			the conclusion is appropriate or not. This process should be in line with the “Tool for the demonstration and assessment of additionality” version 5.2.		
B.5.13 Is the choice of benchmark analysis, investment comparison or simple cost analysis correct?	/1/ /37/ /38/	DR	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 is justified for conducting the investment analysis. The choice is correctly in line with methodology ACM0002 version 12.1.0.		OK
B.5.14 Is the benchmark/discount rate the latest available at the time of decision?	/1/ /2/ /4/ /37/ /50/	DR CC	In accordance with Interim Rules on Economic Assessment of Electrical Engineering Retrofit Projects issued by former State Power Corporation of China, the benchmark Project IRR in China's power generation industry is 8%. The benchmark of 8% (after tax) is therefore appropriate for this project.		OK
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/ /2/ /4/ /37/ /50/	DR CC	The project IRR (after tax) is deemed as financial indicator of the proposed project. The IRR calculation is provided in a spreadsheet.		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	N/A		OK
B.5.17 Does the income tax calculation take depreciation into account? Is the depreciation year in accordance with normal	/1/ /4/	DR CC	The income tax calculation takes depreciation into account. The depreciation time is 15 years		

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Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
accounting practice in the host country?	/60/ /61/		and it is in accordance with normal accounting practice in China. The appropriateness of applied taxes in financial analysis like VAT, income tax rate, City Maintenance and Construction Tax rate, Education tax, etc. need to be further justified. And the data sources should also be further clarified.	<del>CL-3</del>	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/ /4/ /61/	DR CC	The investment analysis and operating time of the project is 20 years, which is appropriate. The residual value of 5% has been taken into account. However, the working capital is required to return in the last year of operation.	<del>CAR-2</del>	OK
B.5.19 When a feasibility study report or similar approved by the 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?	/1/ /4/ /13/	DR	DNV can confirm that the values used in the PDD are fully consistent with the FSR, and the period of time between the FSR approval dated 13 July 2009 and the starting date of project dated 10 March 2010 is less than 12 months. Given this relative short period of time between approval of the FSR and the starting date of 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.		OK
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/ /4/	DR	<input 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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			<p>party contracted by the project participants (e.g. an engineering company)</p> <p><input type="checkbox"/> Other approach.</p> <p><i>Provide details on how the load factor was validated::</i></p> <p>The plant load factor used in the financial analysis of this project activity is all taken from the FSR developed by Beijing GrandTrend International Economic and Technical Consulting Co., Ltd. in December 2008, which is a qualified third party. The electricity generation used in the PDD is consistent with the values from the FSR for this project. Hence, the plant load factor of the project can be considered information provided by a trustworthy and recognized source.</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/ /53/ /54/ /55/</p>	<p>DR CC</p>	<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><i>Provide details on how the output price was validated:</i></p> <p>Further clarification on the data source of the applied electricity tariff and the electricity tariff trend in the region are required.</p>	<p><del>CL</del>4</p>	<p>OK</p>
<p>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.</p>	<p>/1/ /13/ /15/</p>	<p>DR CC</p>	<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, contracts and annual financial reports related to the project and the project</p>		

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			<p>participants</p> <p><i>Provide details on how the investment costs were validated:</i></p> <p>The investment cost per kW applied in investment analysis need to be justified by cross-checking or other appropriate manner with the other similar projects in Western Inner Mongolia to be valid and appropriate. And more evidences and supporting documents are required.</p>	<del>CL-5</del>	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/	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><i>Provide details on how the O&amp;M costs were validated:</i></p> <p>The annual O&amp;M costs compared to total investment costs applied in investment analysis needs to be justified by cross-checking or other appropriate manner with the other similar projects in Western Inner Mongolia to be valid and appropriate. And more evidences and supporting documents are required.</p>	<del>CL-5</del>	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/ /60/	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><i>Provide details on how other input parameters were validated:</i></p>		

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			<p>The appropriateness of applied taxes in financial analysis like VAT, income tax rate, City Maintenance and Construction Tax rate, Education tax, etc needs to be further justified.</p> <p>The investment cost per kW and annual O&amp;M costs compared to total investment costs applied in investment analysis need to be justified by cross-checking or other appropriate manner with the other similar projects in Western Inner Mongolia to be valid and appropriate. And more evidences and supporting documents are required.</p> <p>The project participant is also required to justify "Other Costs" (5 RMB/kW) in FSR is appropriate in PDD investment analysis by cross-checking or other appropriate manner with the other similar projects in Western Inner Mongolia.</p>	<p><del>CL-3</del></p> <p><del>CL-5</del></p>	<p>OK</p> <p>OK</p>
B.5.25 Was the financial calculation spreadsheet verified and found to be correct?	/1/ /2/ /4/	DR CC	<p>The working capital is required to return in the last year of operation in the IRR calculation spreadsheet.</p> <p>The appropriateness of applied taxes in financial analysis like VAT, income tax rate, City Maintenance and Construction Tax rate, Education tax etc. need to be further justified.</p> <p>Further clarification on the data source of the applied electricity tariff and the electricity tariff trend in the region are required.</p> <p>The investment cost per kW, annual O&amp;M costs compared to total investment costs and other Costs" (5 RMB/kW) applied in investment analysis need to be justified by cross-checking or</p>	<p><del>CAR-2</del></p> <p><del>CL-3</del></p> <p><del>CL-4</del></p> <p><del>CL-5</del></p>	OK

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				other appropriate manner with the other similar projects in Western Inner Mongolia to be valid and appropriate. And more evidences and supporting documents are required.		
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/	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 total investment, annual operational and maintenance costs, and electricity output and on-grid tariff were checked by calculating the variation necessary to reach the benchmark and then discussing the likelihood for that to happen.		OK
B.5.27	Sensitivity analysis: Is the range of variations is reasonable in the project context?	/1/ /2/	DR	The sensitive analysis contains the variation - 10% to +10%. However, the parameters of variation to the 8% benchmark are required to be indicated and demonstrated in the PDD.	<del>CL-6</del>	OK
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/	DR	The project participant is requested to re-prepare the sensitivity analysis to determine each input parameter's value at which the project-IRR will be equal to the benchmark and assess the likelihood of attaining the arrived values against each parameter and confirm that it is not likely that the project IRR will become equal to the benchmark.	<del>CL-6</del>	OK
<b>Barrier analysis (VVM para 115-118)</b>						
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	N/A		OK
B.5.30	How were the investment barriers assessed to be real? Are	/1/	DR	N/A		OK

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the investment barriers substantiated by a source independent of the project participants?					
B.5.31 How does CDM alleviate the investment barriers?	/1/	DR	N/A		OK
B.5.32 Is the project activity prevented by the investment barriers and at least one of the possible alternatives to the project activity is feasible under the same circumstances?	/1/	DR	N/A		OK
B.5.33 How were the <u>technological barriers</u> assessed to be real? Are the technological barriers substantiated by a source independent of the project participants?	/1/	DR	N/A		OK
B.5.34 How does CDM alleviate the technological barriers?	/1/	DR	N/A		OK
B.5.35 Is the project activity prevented by the technological barriers and at least one of the possible alternatives to the project activity is feasible under the same circumstances?	/1/	DR	N/A		OK
B.5.36 How were the <u>barriers due to prevailing practise</u> assessed to be real? Are the barriers due to prevailing practise substantiated by a source independent of the project participants?	/1/	DR	N/A		OK
B.5.37 How does CDM alleviate the barriers due to prevailing practise?	/1/	DR	N/A		OK
B.5.38 Is the project activity prevented by the barriers due to prevailing practise and at least one of the possible alternatives to the project activity is feasible under the same circumstances?	/1/	DR	N/A		OK
B.5.39 How were the <u>other barriers</u> assessed to be real? Are the other barriers substantiated by a source independent of the project participants?	/1/	DR	N/A		OK
B.5.40 How does CDM alleviate the other barriers?	/1/	DR	N/A		OK
B.5.41 Is the project activity prevented by the other barriers and at least one of the possible alternatives to the project activity is feasible under the same circumstances?	/1/	DR	N/A		OK

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<b>Common practice analysis (VVM para 119-121)</b>					
B.5.42 What is the geographical scope of the common practice analysis? Is this justified?	/1/ /4/	DR	Inner Mongolia Autonomous Region is selected as the geographical scope for the common practice analysis. And it is justified in the PDD.		OK
B.5.43 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	Since the proposed project has an installed capacity of 49.5 MW, the similar projects are defined as the capacity larger than 15 MW in Inner Mongolia Autonomous Region. The comparing capacity is defined as the large projects which have the install capacity larger than 15 MW, and this is considered properly by DNV.		OK
B.5.44 What is the data source(s) used for the common practice analysis?	/1/ /31/ /32/ /33/	DR CC	The Source used for the common practice analysis are: 1. China Wind Farm Installed Capacity Statistic in 2007 by Mr. Shi Pengfei. 2. China Wind Farm Installed Capacity Statistic in 2008 by Mr. Shi Pengfei.		OK
B.5.45 How many similar non-CDM-projects exist in the region within the scope?	/1/ /31/ /32/ /33/	DR CC	According to the PDD, there are two similar wind projects constructed without CDM revenue support or without applying for CDM revenue support. They are Dali Wind Power Project Phase III and Da Mao Qi Bailingmiao wind farm.		OK
B.5.46 How were possible essential distinctions between the project activity and similar activities assessed?	/1/ /31/ /32/	DR	The similar wind project, Dali Wind Power Project Phase III was a demonstration wind power project supported by national debt fund in 2004. Because of the support from national government, this project was able to overcome the barriers to construct and operate successfully. However the proposed project is not able to get such fund from national government. This is the		OK

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Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
			essential distinction between Dali Wind Project and the proposed project.  Da Mao Qi Bailingmiao wind farm implemented as a Vounlatory Emission Reduction project under Gold Standard rules and registered on 15 May 2009.  Hence, the proposed project is not a common practice.		
B.5.47 What is the conclusion of the common practice analysis?	/1/ /31/ /32/ /33/	DR CC	The proposed project is not a common practice.		OK
<b>Conclusion</b>					
B.5.48 What is the conclusion with regard to the additionality of the project activity?	/1/	DR	The conclusion can not be made as there are CLs regarding the additionality. The project participants need clarify before they are closed.	CAR-2 <del>CL-3</del> <del>CL-4</del> <del>CL-5</del> <del>CL-5</del> <del>CL-6</del>	OK
<b>B.6 Calculations of GHG emission reductions</b>					
<b>Data and parameters that are available at validation and that are not monitored (VVM para 199-203)</b>					
B.6.1 How was the amount of fossil fuel type i (t or m3) consumed by province available at validation verified?	/1/ /44/ /47/ /48/ /49/	DR CC	The values need to be available at validation are available from 2006 <i>IPCC Guidelines for National Greenhouse Gas Inventories Reference Manual</i> , China Electric Power Yearbook 2004~2008 and China Energy Statistical Yearbook 2006~2008. And the EF used is		OK

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				sourced from the emission factor calculation for each power grid of China, publishing by China DNA NDRC. All these data used in the PDD are verified and confirmed by DNV.		
B.6.2	How was the net electricity generated and delivered to the grid in the project electricity system in year y verified?	/1/ /2/ /49/	DR	The emission reduction calculation process is documented in a transparent manner and it is cross-checked by the published data from NDRC that all the data and calculation in the provided calculation sheet is correct.		OK
B.6.3	How was the Net Calorific value of fossil fuel type i in year y verified?	/1/ /47/ /48/	DR CC	The Net Calorific value of fossil fuel type in year was referenced from China Energy Statistical Yearbook 2006-2008.		OK
B.6.4	How was the installed capacity of relevant power source connected to the grid verified?	/1/ /48/	DR CC	The installed capacity of relevant power source connected to the grid was referenced from China Electric Power Yearbook 2004-2008.		OK
B.6.5	How was the best commercially available technology of coal, oil and gas fired plant verified?	/1/ /47/	DR CC	The best commercially available technology for coal, oil and gas fired plant was referenced from the statistics from China Energy Statistical Yearbook 2008		OK
B.6.6	How was the electricity imported to the project electricity system from the connected electricity system in year y verified?	/1/ /48/	DR CC	The electricity imported to the project electricity system from the connected electricity system in year y was referenced from China Electric Power Yearbook.		OK
<b>Baseline emissions (VVM para 89-93)</b>						
B.6.7	Are the calculations documented according to the approved methodology and in a complete and transparent manner?	/1/	DR	The conclusion can not be made as referring to CL 2 above.	<del>CL 2</del>	OK
B.6.8	Have conservative assumptions been used when calculating the baseline emissions?	/1/ /37/ /47/	DR CC	Yes. All the used assumptions are in line with the ACM0002 version 12.1.0. The data used to calculate emission factor are derived from publicly published documents, i.e. China Energy		OK

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	/48/		Statistics Yearbooks (2006-2008) and China Electricity Power Yearbooks (2004-2008), which were the latest data sources available when the validation was carried out, including fuel consumption and average low caloric value		
B.6.9 Are uncertainties in the baseline emission estimates properly addressed?	/1/	DR	No significant uncertainties can be addressed for the project.		OK
<b>Project emissions (VVM para 89-93)</b>					
B.6.10 Are the calculations documented according to the approved methodology and in a complete and transparent manner?	/1/ /37/	DR	For the proposed wind power project activities, there are no project emissions according to the approved methodology ACM0002 “ <i>Consolidated baseline methodology for grid-connected electricity generation from renewable sources</i> ” version 12.1.0.		OK
B.6.11 Have conservative assumptions been used when calculating the project emissions?	/1/	DR	N/A		OK
B.6.12 Are uncertainties in the project emission estimates properly addressed?	/1/	DR	N/A		OK
<b>Leakage (VVM para 89-93)</b>					
B.6.13 Are the leakage calculations documented according to the approved methodology and in a complete and transparent manner?	/1/ /37/	DR	There is no need to consider leakage according to the approved methodology ACM0002 “ <i>Consolidated baseline methodology for grid-connected electricity generation from renewable sources</i> ” version 12.1.0.		OK
B.6.14 Have conservative assumptions been used when calculating the leakage emissions?	/1/	DR	N/A		OK
B.6.15 Are uncertainties in the leakage emission estimates properly addressed?	/1/	DR	N/A		OK
<b>Emission Reductions (VVM para 89-93)</b>					
B.6.16 Algorithms and/or formulae used to determine emission	/1/	DR	• Yes. EIA was approved by		OK

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<p>reductions:</p> <ul style="list-style-type: none"> <li>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</li> <li>All documentation is correctly quoted and interpreted.</li> <li>All values used can be deemed reasonable in the context of the project activity</li> <li>The methodology has been correctly applied to calculate the emission reductions and this can be replicated by the data provided in the PDD and supporting files to be submitted for registration.</li> </ul>	/44/ /49/	CC	<p>Environmental Protection Bureau of Inner Mongolia Autonomous Region on 23 April 2007 and FSR was approved by Development and Reform Commission of Inner Mongolia Autonomous Region on 13 July 2009 and all other document used to determine emission reductions can be verified, the data can be deemed as appropriate.</p> <ul style="list-style-type: none"> <li>Yes. According to the reference list, all documents used to determine emission reductions were correctly quoted and interpreted.</li> <li>Yes. All values used can be deemed reasonable in the context of the project activity.</li> <li>Yes. The description of baseline emission in the PDD needs to be updated according to the approved <i>“Tool to calculate the emission factor for an electricity system”</i> version 02.</li> </ul> <p>The calculation of emission factors was verified to be based on the most recent data available at the time of submission of the PDD to the DOE for validation and also cross-checked by the figures issued by NDRC.</p>		
<b>B.7 Monitoring plan (VVM para 122-124)</b>					
<b>Data and parameters monitored</b>					
B.7.1 Do the means of monitoring described in the plan comply with the requirements of the methodology?	/1/ /37/	DR	The monitoring plan is in accordance with the approved monitoring methodology ACM0002		OK

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				version 12.1.0 “Consolidated baseline methodology for grid-connected electricity generation from renewable sources” and is in a complete and transparent manner.		
B.7.2	Does the monitoring plan contains all necessary parameters, and are they clearly described?	/1/ /4/	DR	It needs to clarify the location of the main meter and back-up meter clearly in the PDD B.3 and B.7.2 as the actual situation of the project is not consistent with the descriptions in the PDD.	<del>CL7</del>	OK
B.7.3	In case parameters are measured, is the measurement equipment described? Describe each relevant parameter.	/1/ /37/	DR	Yes. The electricity supplied to grid and achieved from grid will be measured continuously by meters. The measurement equipment is described in PDD.		OK
B.7.4	In case parameters are measured, is the measurement accuracy addressed and deemed appropriate? Describe each relevant parameter.	/1/	DR	According to PDD the error of the meters shall not exceed 0.5%, which is appropriate.		OK
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/ /37/	DR CC	Yes. The measurement equipment is described and deemed appropriate in the PDD. The metering equipments are calibrated and checked for accuracy in accordance with industry standards. Calibration is carried out by the qualified entity, and these records will be maintained by the project owner.		OK
B.7.6	Is the monitoring frequency adequate for all monitoring parameters? Describe each parameter.	/1/ /37/	DR	Yes. The monitoring frequency is adequate for monitoring parameter described in the PDD. The monitoring parameters will be continuously measurement and at least monthly recording, and then cross check measurement results with records for sold electricity.		OK
B.7.7	Is the recording frequency adequate for all monitoring parameters? Describe each parameter.	/1/ /37/	DR	Yes. The readings of electricity meter will be at least monthly recorded.		OK

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<b>Ability of project participants to implement monitoring plan</b>						
B.7.8	How has it been assessed that the monitoring arrangements described in the monitoring plan are feasible within the project design?	/1/ /37/	DR	Yes. Detailed responsibilities and authorities for project management, monitoring procedures and QA/QC procedures have been presented in the PDD. The monitoring practices are considered appropriate and feasible within the project design.		OK
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/	DR	Yes. The authority and responsibility of project management is described 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/ /37/	DR	Yes. QA/QC procedures are included in monitoring plan.		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/ /37/	DR	Yes. Data will be kept at least for 2 years after the end of the last crediting period by means of electronic and paper document.		OK
<b>Monitoring of sustainable development indicators/ environmental impacts</b>						
B.7.12	Is the monitoring of sustainable development indicators/ environmental impacts warranted by legislation in the host country?	/1/ /37/	DR	Neither ACM0002 version 12.1.0 nor the Chinese DNA requires collection and archiving of relevant data concerning environmental, social and economic impacts.		OK
B.7.13	Does the monitoring plan provide for the collection and archiving of relevant data concerning environmental, social and economic impacts?	/1/ /37/	DR	Chinese DNA does not require collection and archiving of data related to environmental, social and economic impacts. The environmental impacts will be monitored by local environmental authority.		OK
B.7.14	Are the sustainable development indicators in line with	/1/	DR	Yes. This will be on local authority decision.		OK

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stated national priorities in the host country?	/5/				
<b>C Duration of the project activity / crediting period</b>					
<b>C.1.1 Start date of project activity (VVM para 99-100, 104)</b>					
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/ /4/ /5/ /9/ /10/ /13/ /15/	DR	The date of wind turbine and tower pylon purchase contract was 10 March 2010. And the date of construction contract signing was 20 March 2010 and construction starting permission date was 8 April 2010. Therefore, the wind turbine and tower pylon purchase contract is considered as the earliest financial commitment for the project activity and 10 March 2010 is chosen as the starting date of the project activity. The first construction activity was on 8 April 2010 according to the issued construction permission letter.		OK
C.1.3 Is the stated expected operational lifetime of the project activity reasonable?	/1/ /4/	DR	Yes. The 20 years of operational lifetime is reasonable and it is from the FSR.		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	In accordance with PDD the starting date of crediting period is defined to be 1 January 2011 or the date of registration, whichever is later. And the length of the renewable crediting period is defined as 7 years, which is reasonable.		OK
<b>D Environmental Impacts (VVM para 131-133)</b>					
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	/1/ /5/ /37/	DR	Yes. The EIA was approved by Environmental Protection Bureau of Inner Mongolia Autonomous Region dated on 23 April 2007. There is no special condition that needs		OK

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that need monitoring?			monitoring according to the EIA and the approval of EIA for the proposed project. Neither ACM0002 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.		
D.1.2 Does the project comply with environmental legislation in the host country?	/1/ /5/	DR	Yes. The project complies with Chinese environmental legislation as EIA was approved by local authority.		OK
D.1.3 Will the project create any adverse environmental effects?	/1/ /5/	DR I	As per the results of EIA and the reply from the approval of the Environmental Protection Bureau of Inner Mongolia Autonomous Region, dated 23 April 2007, no significant impact on local environment has been found.		OK
D.1.4 Have identified environmental impacts been addressed in the project design?	/1/ /5/	DR I	Yes. The environmental impacts have been properly described in the PDD, which covers noise, air quality, waste water and solid waste and ecosystem environment.		OK
D.1.5 Has an analysis of the environmental impacts of the project activity been sufficiently described?	/1/ /5/	DR	Yes. The analysis of the environmental impacts in both construction and operation period have been sufficiently described in the PDD.		OK
D.1.6 Are transboundary environmental impacts considered in the analysis?	/1/ /5/	DR I	There are no transboundary environmental impacts in this project.		OK
<b>E Stakeholder Comments (VVM para 128-130)</b>					
E.1.1 Have relevant stakeholders been consulted?	/1/ /9/	DR	Yes. The project participants have carried out a stakeholder public survey on the project in the		OK

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				format of questionnaires on 30 November 2009. Totally 40 questionnaires were sent and 40 copies were received.		
E.1.2	Have appropriate media been used to invite comments by local stakeholders?	/1/ /9/	DR	Yes. On 30 November 2009, the questionnaires were sent to invite comments from the stakeholders. 40 copies of questionnaires were received. The project site has very few population and all the questionnaires participants came from the surrounding villages where several kilometers away from the project site. Moreover, these 40 questionnaires participants include both male and female, residents and government officials with different age range and different educational background. Therefore, DNV could confirm that the sampling size of questionnaires is sufficient and acceptable.		OK
E.1.3	If a stakeholder consultation process is required by regulations/laws in the host country, has the stakeholder consultation process been carried out in accordance with such regulations/laws?	/1/ /5/	DR	Yes. The stakeholder consultation process is in accordance with Chinese EIA regulations.		OK
E.1.4	Is a summary of the stakeholder comments received provided?	/1/ /9/	DR	Yes. 40 copies of questionnaires were received which were verified by DNV to be consistent with the summary in the PDD.		OK
E.1.5	Has due account been taken of any stakeholder comments received?	/1/	DR I	There is no negative comment received from the stakeholder representatives.		OK

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

**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
<p>CAR 1</p> <p>The LoA from Annex I party was not obtained.</p>	<p>A.3.1</p> <p>A.3.2</p> <p>A.3.3</p> <p>A.5.1</p>	<p>The LoA of UK is provided to DOE.</p>	<p>OK.</p> <p>The LoA from China and Annex I party have been obtained and verified. The authenticity of LoA from China was verified through cross-checking the website of NDRC of China /34/. The evidence on the authenticity of LoA from Annex I party UK has been verified by the communication letter between Department of Energy &amp; Climate Change and the project participant. DNV has not found elements to question on the authenticity of the letter.</p> <p>Therefore, the CAR 1 is closed.</p>
<p>CAR 2</p> <p>The working capital is required to return in the last year of operation in the IRR calculation spreadsheet.</p>	<p>B.5.18</p> <p>B.5.25</p> <p>B.5.48</p>	<p>The revenue is corrected in last operational year, which count in the working capital recovery. Please check the updated IRR spreadsheet for details.</p>	<p>OK.</p> <p>The working capital return in the last year of operation has been taken into account in the IRR calculation spreadsheet version 2.0 dated 2 December 2010.</p> <p>Therefore, the CAR 2 is closed.</p>
<p>CL 1</p> <p>The client needs to provide the detailed coordinates of each turbine to validation team.</p>	<p>A.4.1</p>	<p>The detailed coordinates of each turbine are provided to DOE.</p>	<p>OK.</p> <p>The coordinates list of each wind turbines has been provided and verified by DNV.</p> <p>Therefore, the CL 1 is closed.</p>
<p>CL 2</p> <p>It needs to identify all the alternatives according to approved methodology in the PDD and justify the conclusion is appropriate or not. This process</p>	<p>B.4.1</p> <p>B.5.1</p> <p>B.5.2</p> <p>B.5.3</p>	<p>In terms of the ‘Tool for the demonstration and assessment of additionality’, all the alternatives are analyses in Section B.5 of the updated PDD. Please check it in Page</p>	<p>OK.</p> <p>All the alternatives are identified in the PDD according to approved methodology and have been justified the conclusion is</p>

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
<p>should be in line with the “Tool for the demonstration and assessment of additionality” version 5.2.</p>	<p>B.5.12</p>	<p>14.</p>	<p>appropriate. The process is in line with the “Tool for the demonstration and assessment of additionality” version 5.2.</p> <p>Four alternatives to the project have been identified and discussed:</p> <ul style="list-style-type: none"> <li>a) The proposed project activity undertaken without being registered as a CDM project activity;</li> <li>b) A fossil fuel-fired power plant with the comparable capacity or electricity generation;</li> <li>c) A power plant using other source of renewable energy with the comparable capacity or electricity generation, such as PV, biomass and hydro, etc;</li> <li>d) Comparable capacity or electricity generation addition provided by the NCPG.</li> </ul> <p>The alternative b) does not comply with the Chinese law /30/. This law strictly prohibits the installation of thermal power plants with a capacity below 135 MW in areas covered by large grids such as provincial grids. For the alternative c), DNV was also able to confirm that the proposed project is located in the dry region which has no hydropower energy to exploit . Also due to the technology development status and the high cost for power generation, solar PV, geothermal and biomass with the same annual electricity output as the proposed project are alternatives far from being</p>

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
			<p>attractive investment in the region. Hence, alternative b) and c) are not credible alternatives for the project developer and has been eliminated before further discussion.</p> <p>Hence, alternative a) and d) are the alternatives consistent with current laws and regulations as potential alternatives.</p> <p>Therefore, the CL 2 is closed.</p>
<p>CL 3</p> <p>The appropriateness of the taxes applied in the PDD for financial analysis like VAT, income tax rate, City Maintenance and Construction Tax rate, Education tax, etc should be further justified.</p> <p>And also the data sources should be further clarified.</p>	<p>B.5.17</p> <p>B.5.24</p>	<p>a) VAT: According to National VAT Law issued by State Administration of Taxation (State council [2008]538 [1]), VAT policy on Comprehensive Utilization of Resource and Other Products (Cai Shui [2008] 156 [2]) released by Ministry of Finance and State Administration of Taxation on 09 December 2008, The VAT rate in China is 17%, and for wind projects, half VAT will be recovered as income annually. 8.5% is a typo in VAT part of PDD. Therefore, to keep consistent with the regulations, the 17% VAT rate was used and a recovery of half VAT has been taken into account in the income annually in the IRR calculation. The reduction in VAT on the electricity generated was first introduced after 11 November 2001 [3], but is taken in to account in the assessment. This is conservative.</p> <p>b) VAT on equipment: The Notice about</p>	<p>OK.</p> <p>The appropriateness and data sources of the VAT, income tax, City Maintenance and Construction Tax rate, Education tax, etc applied in financial analysis have been justified.</p> <p>(a)VAT for equipment</p> <p>According to the current law in China, Provisional Regulations of the People's Republic of China on Value Added Tax, the VAT for the fixed asset is defined as 17% for wind power industry /56/. According to Provisional regulations of the people's republic of China on value added tax from State Council No.538 [2008], issued on 10 November 2008 and implemented from 1 January 2009 /58/, the equipment VAT can be credited over the operation period against the tariff VAT until the VAT from the equipment VAT is fully recovered.</p> <p>(b) VAT on tariff</p> <p>The VAT rate of 17% /56/ on the tariff</p>

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
		<p>implementation of VAT reform in the whole country (Cai Shui [2008]170 [4]), which allows for the VAT from the investment in wind projects to be recouped, has been in force from 1 January 2009. While the FSR was completed prior to this regulation coming into force, the project start date is more than a year after coming into force, therefore, the assessment in the PDD has conservatively taken this regulation into account.</p> <p>The possibility to recoup the VAT on the investment for wind farms was introduced after 11 November 2001, but is taken into account in the assessment. This is conservative.</p> <p>c) Income Tax: According to People's Republic of China Enterprise Income Tax Provisional Regulations issued in March 2007, State Council No. 63, the income tax was approved as 25% [5].</p> <p>d) Education Tax: According to the Interim Provision on Education Tax Law, the education rate is 3% of VAT [6]; the additional regional education tax is 1% of VAT [7].</p> <p>e) City Building Tax: According to the National City Tax Law, the city building tax rate is 7% of VAT [8].</p> <p>[1]  <a href="http://www.360doc.com/content/10/1007/2">http://www.360doc.com/content/10/1007/2</a></p>	<p>applied to the financial analysis is substantiated by the following arguments. On 9 December 2008, the “Notice of the Ministry of Finance and the State Administration of Taxation about policies regarding the value added tax on comprehensive utilization of resources and other products” (No.156 [2008]) /57/ was issued. As stipulated in this notice (No.156 [2008]) /57/ 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. Based on the document introduced above, the VAT rate applied by the proposed project is 17%. Half of the VAT incurred by the electricity sales has been annually recovered from the 7<sup>th</sup> year to 21<sup>st</sup> year after the equipment VAT is fully recovered.</p> <p>The income tax of Inner Mongolia Wuchuan Yihemei Wind Farm 49.5 MW Project is chosen as 25% that is in line with the Law of the People's Republic of China on Enterprise Income Tax /60/; DNV can confirm that the tax benefits from interest payments were considered in the calculation of income tax by including the interest of loan in total cost, in line with the requirement of Annex 58 of EB 51 meeting /41/.</p> <p>The residual rate of 5% used for the</p>

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
		<p>2/3766068_59184286.shtml, State Administration of Taxation, National VAT Law.</p> <p>[2]  <a href="http://wenku.baidu.com/view/ddc063d8d15abe23482f4d45.html">http://wenku.baidu.com/view/ddc063d8d15abe23482f4d45.html</a>, State Administration of Taxation, 50%-off discount on VAT for wind power projects.</p> <p>[3] Halved VAT for wind power: “Notice of VAT Policy on Comprehensive Utilization of Some Recourses and Other Products” issued by Ministry of Finance and State Administration of Taxation on 1 December 2001.</p> <p>[4]  <a href="http://wenku.baidu.com/view/cd6eb6eb172ded630b1cb6ac.html">http://wenku.baidu.com/view/cd6eb6eb172ded630b1cb6ac.html</a>, State Administration of Taxation</p> <p>[5]  <a href="http://www.natrust.cn/images/Files/regulation_44.pdf">http://www.natrust.cn/images/Files/regulation_44.pdf</a></p> <p>[6] <a href="http://www.law-lib.com/law/law_view1.asp?id=99771">http://www.law-lib.com/law/law_view1.asp?id=99771</a>.</p> <p>[7]  <a href="http://www.chinaacc.com/new/63/159/183/2006/1/li17657182914160027514-0.htm">http://www.chinaacc.com/new/63/159/183/2006/1/li17657182914160027514-0.htm</a></p> <p>[8]  <a href="http://202.108.90.130/chinatax/jibenfa/jibenfa0401.htm">http://202.108.90.130/chinatax/jibenfa/jibenfa0401.htm</a>.</p> <p>All the reference of taxes is updated in Page</p>	<p>proposed project is in line with the document of the State Administration of Taxation, Guoshuihan [2005] No. 883 dated 14 September 2005 /61/.</p> <p>The education tax (of the VAT) of 4%, including the education tax (3%), and the local education supplementary tax (1%) are respectively following the Interim Provision on Education Tax Law and the local education supplementary tax /62/.</p> <p>The city maintenance and construction tax 7% of VAT used for the proposed project is in line with Provisional Regulations of the People's Republic of China on City Maintenance and Construction Tax /63/.</p> <p>As for the proposed project, the IRR benchmark of 8% is post tax and the interest tax payable has been verified to be included in the calculation of the income tax.</p> <p>Therefore, DNV confirms that all the tax rates used in the financial analysis of the proposed project are in line with the relevant regulations of the tax rates.</p> <p>Therefore, the CL 3 is closed.</p>



Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
		18 of PDD.	
<p>CL 4</p> <p>Further clarification on the data source of the applied electricity tariff and the electricity tariff trend in the region are required.</p>	B.5.21	<p>The data source of the electricity tariff is provided to DOE.</p> <p>The trend of the electricity tariff in the region according to the policies from NDRC is shown as Table 6 of PDD.</p>	<p>OK.</p> <p>The tariff was found that from the year 2007 up to now, the tariff for wind power projects in Western Inner Mongolia has been stable as 0.51 RMB/kWh (incl. VAT), which have been approved by NDRC /29/ /53/ /54/ /55/.</p> <p>For the proposed project, the expected feed-in tariff of 0.51 RMB/kWh (incl.VAT) was the most recently available at the time of the investment decision for the proposed project and is consistent with the previous tariff approvals released to local wind farms in Western Inner Mongolia by the time available. The approved tariffs for wind farms in Western Inner Mongolia have been unified at 0.51 RMB/kWh (incl.VAT) since June 2007. Thus the value of 0.51 RMB/kWh (incl.VAT) assumed in PDD version 2.0 is reasonable for the proposed project, and this tariff is common in local areas.</p> <p>Furthermore, the “Notification on Improving Wind Power Feed-in Tariff Policy”, document No. Fa Gai Jia Ge [2009] 1906, was issued by NDRC on 20 July 2009 /54/, wind farms in Western Inner Mongolia are divided into the class I wind source areas and tariffs for all the farms in class I areas are clearly stipulated as 0.51 RMB/kWh (incl.VAT).</p> <p>In addition, according to the “Information</p>

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
			<p>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)" /45/, published on 24 June 2010, the highest historical tariff in Inner Mongolia is 0.54 RMB/kWh (incl VAT). However, even applied 0.54 RMB/kWh (incl.VAT) to the proposed project, its project-IRR would be 6.50%, which is still lower than the benchmark of 8%. Therefore, it is demonstrated the tariff adopted by the proposed project is appropriate.</p> <p>It is DNV's opinion that the tariff implemented in the PDD /1/ is reasonable, and in line with the stable wind power tariff trend.</p> <p>Therefore, the CL 4 is closed.</p>
<p>CL 5</p> <p>The investment cost per kW, annual O&amp;M costs compared to total investment costs and other costs (5 RMB/kW) applied in investment analysis need to be justified by cross-checking or other appropriate manner with the other similar projects in Western Inner Mongolia to be valid and appropriate. And more evidences and supporting documents are required.</p>	<p>B.5.22</p> <p>B.5.23</p> <p>B.5.24</p> <p>B.5.26</p> <p>B.5.28</p>	<p>The spreadsheet about cross-checking with the other similar projects in Western Inner Mongolia has been sent to DOE.</p>	<p>OK.</p> <p>The investment costs used in the financial analysis of the project was compared with the data for similar CDM registered projects in Western Inner Mongolia region. As shown in the Table 1 in the validation report that the investment cost of 10 566.14 RMB/kW for the proposed project is within the range of the investment cost from 7 809.40 to 11 806.67 RMB/kW) and be similar with the other projects which connected NCPG in Western Inner Mongolia.</p> <p>Furthermore, the investment costs were</p>

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
			<p>further attempted cross-checked against the real costs. At the time of first financial commitment, the wind turbine and tower pylon purchase contract was in place /13/. This is contributed 71.7% to the total investment costs according to the FSR. Compared to the estimate in the FSR, the real costs are 18% higher, which indicates that the FSR investment cost estimate was reasonable at that time.</p> <p>The O&amp;M costs of the proposed project is deemed to have a similar percentage of O&amp;M costs relative to investment costs (1.73%) for similar wind power projects located in the same region (between 1.19% to 3.29%); thus, DNV can confirm that the O&amp;M costs used for financial analysis of the propose project is reasonable.</p> <p>The other costs of the proposed project is a component of O&amp;M costs and applied in the FSR include administration, training, meeting cost etc according to FSR in December 2008 /4/, and it was verified by DNV by cross-checking the other costs of the similar wind power projects in the same region. The range of other costs is from 8 RMB/kW to 40 RMB/kW and the other costs of the proposed project is 5 RMB/kW. Although it is not within the range this is still deemed as reasonable in this region and even more conservative than other similar projects. Furthermore, even when removing</p>

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
			<p>this part of the O&amp;M costs, the project-IRR without CER income of the proposed project will be 5.79%, which is still lower than 8% benchmark. Hence DNV was able to confirm that other costs of the proposed project (5 RMB/kW) are deemed to be reasonable.</p> <p>Therefore, the CL 5 is closed.</p>
<p>CL 6</p> <p>The project participant is requested to re-prepare the sensitivity analysis to determine each input parameter's value at which the project-IRR will be equal to the benchmark and assess the likelihood of attaining the arrived values against each parameter and confirm that it is not likely that the project-IRR will become equal to the benchmark.</p>	B.5.27	<p>When the project IRR reach 8%, the value of the main parameter is shown in Table 8 of the updated PDD.</p>	<p>OK.</p> <p>The sensitivity analysis to determine each input parameter's value at which the project IRR will be equal to the benchmark and assess the likelihood of attaining the arrived values against each parameter has been demonstrated in the revised PDD and DNV was able to confirm that it is not likely that the project-IRR will become equal to the benchmark.</p> <p>Therefore, the CL 6 is closed.</p>
<p>CL 7</p> <p>It needs to clarify the location of the main meter and back-up meter clearly in the PDD B.3 and B.7.2 as the actual situation of the project is not consistent with the descriptions in the PDD.</p>	B.7.2	<p>The main meter and back-up meter are both installed at the exit of the on-site substation. The updated description is in PDD B.3 and B.7.2.</p>	<p>OK.</p> <p>The location of the main meter and back-up meter will be at the on-site substation which has been clearly stated in PDD.</p> <p>Therefore, the CL 7 is closed.</p>

**Table 4 Forward action requests**

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

## **APPENDIX B**

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### **CURRICULA VITAE OF THE VALIDATION TEAM MEMBERS**



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## CURRICULA VITAE OF THE VALIDATION TEAM MEMBERS

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### ***Gong Zheng, Justin***

***Gong Zheng, Justin:*** holds a Bachelor and a Master Degree in Chemical Engineering. Having an overall experience of around five years. Prior to joining DNV, having more than three years experience in project operation and pre-planning experience in the operation of energy plants and he was involved in energy design and supply. His experience also covers the fields of project management and cleaner production in chemical industries.

He has experience of around 2 years in validation and verification of numerous CDM projects in DNV. All these projects are located in China.

His qualification, industrial experience and experience in CDM demonstrate his sufficient sectoral competence in "Energy Generation from Renewable Energy Sources".

### ***Zhang Yongkang, Phillip***

***Zhang Yongkang, Phillip:*** holds a dual-Bachelor Degree in Environmental Engineering and Chemical Engineering. Having an overall experience of around eight years. Prior to joining DNV, having around seven years experience in Environmental Engineering at international water company specialized in water and wastewater treatment in pulp and paper and Chemical industry. He has been involved in more than 15 large-scale water and wastewater projects in China since 2002. He is also expert at coarse screen, fine screen, filter, surface aerator and clarifier, sedimental treatment and sludge treatment equipments, process and design principle and also been involved in water quality analysis and monitoring of COD, BOD and SS. In addition, he has also gained substantial experience and involvement in technical support, designing drawings and document review, project management and consultancy with clients and on site technical supervision in both water and wastewater treatment.

He has experience of around half of year in validation CDM projects in DNV Beijing office.

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

## ***Tang Zhiang Walter***

**Tang Zhiang, Walter:** holds a Bachelor Degree in Thermodynamic Engineering and a Master Degree in Business Administration. Having an overall experience of around twelve years. Prior to joining DNV, having around 5 years in the field of power industry covering of consulting and engineering for thermal power, wind power, hydropower and solar energy projects. His experience also covers the field of space industry for thermal design, the energy analysis and thermal control for about 4 years.

He has gained the relevant financial and investment knowledge through his courses in MBA. He has applied his financial and investment knowledge in his consulting work for the power industry, such as investment risk analysis, financial accounting, investment parameters assessment, etc.

He has experience of more than 3 years in validation and verification of numerous CDM, VCS and GS projects in DNV both in China and abroad.

His qualification, industrial experience and experience in CDM demonstrate his sufficient sectoral competence in “Energy Generation from Renewable Energy Sources”.

## ***Lin Wu***

**Lin Wu:** holds a Master Degree in Chemical Engineering & Process, a Bachelor Degree in Chemical Engineering & Process and a Bachelor Degree in Computer Science & Technology, having an overall experience of around seven years. Prior to joining DNV, he has around four years experience in chemical industry covering design of chemical process and system, piping design, commissioning and project management on site. His experience also covers the fields of desulfurization of flue gas in power plant industry.

He has experience of around 3 years in validation and verification of CDM/JI projects and other 3rd party validation/verification services.

His qualification, industrial experience and experience in CDM demonstrate his sufficient sectoral competence in “Energy Generation from Renewable Energy Sources” and “Chemical Processes Industries”.