



VALIDATION REPORT

CONSTRUCTION INVESTMENT YANSHAN (GUYUAN) WIND ENERGY Co., LTD.

VALIDATION OF THE GUYUAN WUHUAPING 49.5 MW WIND POWER PROJECT

REPORT No.BVC/CHINA-VAL/0192/2009

REVISION No. 01

BUREAU VERITAS CERTIFICATION

VALIDATION REPORT

Date of first issue: 08/01/2010	Organizational unit: Bureau Veritas Certification Holding SAS
Client: Construction Investment Yanshan (Guyuan) Wind Energy Co., Ltd.	Client ref.: Mr. Yang Xiaohua

Summary:

Bureau Veritas Certification has conducted the validation of Guyuan Wuhuaping 49.5 MW Wind Power Project, owned by Construction Investment Yanshan (Guyuan) Wind Energy Co., Ltd., which is located in Pingdingbu Town, Guyuan County, Zhangjiakou City, Hebei Province, P.R. China 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 rules and modalities and the subsequent decisions by the CDM Executive Board, as well as the host country criteria.

The validation scope is defined as an independent and objective review of the project design document, the project's baseline study, monitoring plan and other relevant documents, and consisted of the following three phases: i) desk review of the project design and the baseline and monitoring plan; ii) follow-up interviews with project stakeholders; iii) resolution of outstanding issues and the issuance of the final validation report and opinion. The overall validation, from Contract Review to Validation Report & Opinion, was conducted using BVC internal procedures.

The first output of the validation process is a list of Clarification and Corrective Actions Requests (CL and CAR), presented in Appendix A. Taking into account this output, the project proponent revised its project design document.

In summary, it is BVC's opinion that the Project correctly applies the baseline and monitoring methodology ACM0002 version 10 and meets the relevant UNFCCC requirements for the CDM and the relevant host country criteria.

Report No.: BVC/CHINA-VAL/0192/2009	Subject Group: CDM	Indexing terms
Project title: Guyuan Wuhuaping 49.5 MW Wind Power Project		
Work carried out by: Jasmine Tang (Team Leader) (Tony) Li Xingtong (Team Member) Li Yiting (Team Member)		☒ No distribution without permission from the Client or responsible organizational unit
Work verified by: Robin Wang (Internal Reviewer)		☐ Limited distribution
Date of this revision: 04/02/2010	Rev. No.: 01	Number of pages: 77
		☐ Unrestricted distribution



VALIDATION REPORT

Abbreviations

BVC	Bureau Veritas Certification
CAR	Corrective Action Request
CCPG	Central China Power Grid
CDM	Clean Development Mechanism
CER	Certified Emission Reductions
CL	Clarification Request
CO ₂	Carbon Dioxide
DNA	Designated National Authority
DOE	Designated Operational Entity
DRC	Development & Reform Commission
EIA	Environmental Impact Assessment
EPA	Environmental Protection Agency
ERPA	Emission Reduction Purchase Agreement
FSR	Feasibility Study Report
GHG	Green House Gas(es)
GSP	Global Stakeholders Process
IPCC	Intergovernmental Panel on Climate Change
IRR	Internal Rate of Return
ISO	International Organization for Standardization
LoA	Letter of Approval
MOC	Modalities of Communication Form
MP	Monitoring Plan
NCPG	North China Power Grid
NDRC	National Development Reform Commission
NEPG	Northeast China Power Grid
NGO	Non Government Organization
ODA	Official Development Assistance
PDD	Project Design Document
PLF	Plant Load Factor
PP	Project Proponent (project owner)
PPA	Power Purchase Agreement
SWPC	Statistics of wind power installed capacity in China
UNFCCC	United Nations Framework Convention on Climate Change
VVM	Validation and Verification Manual
WTG	Wind Turbine Generator

Table of Contents	Page
VALIDATION REPORT	1
1 INTRODUCTION.....	5
1.1 Objective	5
1.2 Scope.....	5
1.3 Validation team	5
2 METHODOLOGY	6
2.1 Review of Documents	7
2.2 Follow-up Interviews	7
2.3 Resolution of Clarification and Corrective Action Requests.....	8
3 VALIDATION CONCLUSIONS	8
3.1 Approval.....	8
3.2 Participation	10
3.3 Project design document	10
3.4 Project description	10
3.5 Baseline and monitoring methodology.....	10
3.5.1 Baseline and monitoring methodology.....	10
3.5.2 Project boundary.....	11
3.5.3 Baseline identification	11
3.6 Additionality	12
3.6.1 Prior consideration of the CDM.....	12
3.6.2 Identification of alternatives	13
3.6.3 Investment analysis	14
3.6.4 Barrier analysis	22
3.6.5 Common practice analysis.....	22
3.7 Calculation of GHG Emissions	23
3.8 Monitoring Plan.....	25
3.9 Environmental Impacts	26
3.10 Local Stakeholder consultation	27
4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS.....	27
5 VALIDATION OPINION	27
6 REFERENCES.....	28
7 CURRICULA VITAE OF THE DOE'S VALIDATION TEAM MEMBERS	32
APPENDIX A: CDM PROJECT VALIDATION PROTOCOL.....	33

1 INTRODUCTION

Construction Investment Yanshan (Guyuan) Wind Energy Co., Ltd. (hereafter referred to as “the PP”) has commissioned Bureau Veritas Certification (hereafter referred to as “BVC”) to validate its CDM project Guyuan Wuhuaping 49.5 MW Wind Power Project (hereafter referred to as “the Project”) in Pingdingbu Town, Guyuan County, Zhangjiakou City, Hebei Province, P.R.China.

This report summarizes the findings of the validation of the Project, performed on the basis of UNFCCC criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

1.1 Objective

The validation serves as project design verification and is a requirement of all projects. The validation is an independent third party assessment of the project design. In particular, the Project's baseline, the monitoring plan (MP), and the Project's compliance with relevant UNFCCC and host country criteria are validated in order to confirm that the project design, as documented, is sound and reasonable, and meet the stated requirements and 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).

UNFCCC criteria refer to Article 12 of the Kyoto Protocol, the CDM rules and modalities and the subsequent decisions by the CDM Executive Board, as well as the host country criteria.

1.2 Scope

The validation scope is defined as an independent and objective review of the project design document, the Project's baseline study and monitoring plan and other relevant documents. The information in these documents is reviewed against Kyoto Protocol requirements, UNFCCC rules and associated interpretations.

The validation is not meant to provide any consulting service towards the PPs. However, stated requests for clarifications and/or corrective actions may provide input for improvement of the project design.

1.3 Validation team

The validation team consists of the following personnel:

(Jasmine) Tang Xuemei Team Leader

BVC, Climate Change Lead Verifier

(Tony) Li Xingtong Team Member

BVC, Climate Change Verifier

VALIDATION REPORT

Li Yiting

Team Member

BVC, Climate Change Verifier

2 METHODOLOGY

The overall validation, from Contract Review to Validation Report & Opinion, was conducted using BVC internal procedures.

In order to ensure transparency, a validation protocol was customized for the Project, according to the version 01.1 of the Clean Development Mechanism Validation and Verification Manual issued by the Executive Board at its 51st meeting on 04/12/2009. The protocol shows, in a transparent manner, criteria (requirements), means of verification and the results from validating the identified criteria. The validation protocol serves the following purposes:

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

The validation protocol consists of two tables. The different columns in these tables are described in below Figure 1. The completed validation protocol is enclosed in Appendix A to this report.

Figure 1 Validation Protocol Tables

Validation Protocol Table 1: Requirements checklist			
Checklist Question	Reference	Comment	Draft and/or Final Conclusion
The various requirements in Table 1 are linked to checklist questions the Project should meet. The checklist is organized in several sections. Each section is then further sub-divided. The lowest level constitutes a checklist question.	Gives reference to documents where the answer to the checklist question or item is found.	The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached.	This is either acceptable based on evidence provided (OK), or a Corrective Action Request (CAR) due to non-compliance with the checklist question. (See below). Clarification Request (CL) is used when the validation team has identified a need for further clarification.

VALIDATION REPORT

Validation Protocol Table 2: Resolution of Corrective Action and Clarification Requests

Report clarifications and corrective action requests	Ref. to checklist question in tables 1	Summary of PP response	Validation conclusion
If the conclusions from the Validation are either a Corrective Action Request or a Clarification Request, these should be listed in this section.	Reference to the checklist question number in Table 1 where the Corrective Action Request or Clarification Request is explained.	The responses given by the Client or other project participants during the communications with the validation team should be summarized in this section.	This section should summarize the validation team's responses and final conclusions. The conclusions should also be included in Table 1, under "Final Conclusion".

2.1 Review of Documents

The Project Design Document (PDD) submitted by Additional Consulting and Engineering (the consultant) and additional background documents related to the project design and baseline, i.e. country Law, Guidelines for Completing the Project Design Document (CDM-PDD), Approved methodology, Kyoto Protocol, Clarifications on Validation Requirements to be Checked by a Designated Operational Entity were reviewed.

To address BVC corrective action and clarification requests Additional Consulting and Engineering revised the PDD and resubmitted it on 17/12/2009 and the validation findings presented in this report relate to the Project as described in the PDD version 03 ^[2].

2.2 Follow-up Interviews

On 12/08/2009 BVC performed interviews with project stakeholders to confirm selected information and to resolve issues identified in the document review. Representatives of the PP, the consultant and local stakeholders were interviewed (see Section 6-References). The main topics of the interviews are summarized in Table 1.

Table 1 Interview topics

Interviewed organization	Interview topics
Construction Investment Yanshan (Guyuan) Wind Energy Co., Ltd. (The PP)	➤ Project background information and CDM consideration. ➤ Project technology, operation, maintenance and monitoring capability. ➤ Project monitoring and management plan. ➤ Stakeholder consultation process. ➤ Project approval status (incl. EIA approval, CDM project approval status) ➤ Wind power development in the area ➤ Government policies related to wind power projects

VALIDATION REPORT

Local Stakeholder	➤ Project background in details ➤ Stakeholder comments ➤ Social and environmental impact of the Project
Additional Consulting and Engineering (CDM Consultant)	➤ Applicability of selected methodology. ➤ Baseline determination. ➤ Emission reductions calculation. ➤ Monitoring plan.

2.3 Resolution of Clarification and Corrective Action Requests

The objective of this phase of the validation is to raise the requests for corrective actions and clarification and any other outstanding issues that needed to be clarified for BVC positive conclusion on the project design.

Corrective Action Request (CAR) is issued, where:

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

BVC may also use the term Clarification Request (CL), if information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met.

To guarantee the transparency of the validation process, the concerns raised are documented in more detail in the validation protocol in the Appendix A.

3 VALIDATION CONCLUSIONS

In the following sections, the findings of the validation are stated.

The findings from the desk review of the original project design documents and the findings from interviews during the follow up visit are described in the Validation Protocol Appendix A.

The Clarification and Corrective Action Requests are stated, where applicable, in the following sections and are further documented in the Validation Protocol in Appendix A. The validation of the Project resulted in 4 Corrective Action Requests and 4 Clarification Requests.

3.1 Approval

The letter of approval has been provided by the PP and the following support documentation has been verified by BVC:

- ✍ The China's DNA has issued the Letter of Approval (No.2120) in Jul. 2009, authorizing Construction Investment Yanshan (Guyuan) Wind Energy Co., Ltd. as the Project Participant

VALIDATION REPORT

and confirmed that the Guyuan Wuhuaping 49.5 MW Wind Power Project contributes to China's Sustainable development ^[3].

BVC does not doubt the letter's authenticity by checking the relevant official information.

The letter of approval does not contain a specific version of both the PDD and the validation report.

☞ Complying with para.49, 50 and 126/VVM, BVC recognizes that the Project is helping to fulfill the country's goals of promoting sustainable development. The Project will contribute to sustainable development of the local community, the host country by means of:

- (a) Reducing greenhouse gas emissions compared to business-as-usual scenario
- (b) Diversifying power sources and mitigating the demand and supply contradiction.
- (c) Helping to stimulate the growth of the wind power industry and encourage and promote the technology progress and commercial popularization of grid-connected renewable power generation projects in China;
- (d) Reducing the emission of other pollutants resulting from the power generation industry in China, compared to a business-as-usual scenario
- (e) Creating 10 employment opportunities for local community during the operation period of the Project and creating several employment opportunities for local community during the construction period of the Project

There are also evidence in various approvals issued by the local government of host country China, which are summarized as below:

- ✍ The Project is Grid connected wind power generation and the development of such Grid connected wind power generation is listed in the Renewable Energy Law ^[4]
- ✍ Feasibility Study Report (FSR) of the Project approved by Hebei Province Development & Reform Commission (DRC) on 31/12/2008 (Code: JFGWZ [2008] No.1838) ^{[5][6]}.
- ✍ Environment Impact Assessment (EIA) approved by Hebei Province Environmental Protection Bureau on 15/05/2008. (Code: JHB [2008] No.320) ^[7].

In the absence of the Project, equivalent amount of annual power output of the Project will be generated and supplied by North China Power Grid (NCPG), which is dominated by thermal power generation. This is same with the baseline scenario. The Project Scenario is considered additional in comparison to the baseline scenario, and therefore eligible to receive Certified Emissions Reductions (CERs) under the CDM, based on the analysis presented in the PDD.

The overall layout of the Project is sound and the geographical (Pingdingbu Town, Guyuan County, Zhangjiakou City, Hebei Province, P.R. China) and temporal (7 years) boundary of the Project is clearly defined.

VALIDATION REPORT

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

3.2 Participation

The participation for project participant has been approved by the Party of the Kyoto Protocol.

✎ Complying with para.54/VVM, BVC hereby confirms that by referring to the information on UNFCCC website i.e.

<http://maindb.unfccc.int/public/country.pl?country=CN>

3.3 Project design document

Complying with para.57/VVM, BVC hereby confirms that the PDD complies with the latest Project Design Document Form (CDM-PDD) version 03.2 and guidance documents for completion of PDD version 07.

3.4 Project description

The Project is sited in Pingdingbu Town, Guyuan County, Zhangjiakou City, Hebei Province, P.R. China. The center geographical coordinates of the Project are longitude of 115°45'08"E, latitude of 41°36'36"N.

The total installed capacity of the Project is 49.5MW, consisting of 33 wind turbines with unit capacity 1,500kW, supplied by General Electric Company (GE). The estimated annual electricity supplied is about 117,216MWh, which will be sold to the NCPG. As the NCPG is dominated by thermal power generation, the establishment of the Project is expected an annual emission reductions of 123,645tCO₂e during the first seven years of its renewable crediting period.

The process undertaken to validate the accuracy and completeness of the project description was including the document review and crosscheck by BVC with the relevant approvals issued by local government.

✎ Complying with para.64/VVM, BVC hereby confirms that the project description in PDD is accurate and complete in all respects ^[2].

3.5 Baseline and monitoring methodology

3.5.1 Baseline and monitoring methodology

The Project uses the approved consolidated baseline and monitoring methodology ACM0002 version 10– “Consolidated baseline methodology for grid-connected electricity generation from renewable sources” valid from 11/06/2009.^[1]

The assessment of the relevant information contained in the PDD against each applicability

VALIDATION REPORT

condition of methodology is described below:

- The Project is a grid-connected renewable wind power project that install a new power plant at a site where no renewable power plant was operated prior to the implementation of the Project (green-field plant);
- The Project does not involve switching from fossil fuels to renewable energy at the site of the Project.

BVC hereby confirms that the selected baseline and monitoring methodology is previously approved by the CDM Executive Board, and is applicable to the Project, which complies with all the applicability conditions therein.

Based on the on-site assessment, BVC hereby confirms that, as a result of the implementation of the Project, there is no GHG emission occurring within the project boundary, which is expected to contribute more than 1% of the overall expected average annual emissions reductions, which are not addressed by the applied methodology.

3.5.2 Project boundary

The spatial extent of the Project boundary is clearly defined in line with ACM0002 version 10 as “the physical, geographical site of Project and all other power plants connected physically to the NCPG that the Project is connected to”.

- ☞ Complying with **para.57/VVM**, BVC hereby confirms that the identification of Project boundary is in line with the delineation of grid boundary as provided in the latest version of “Notification on Determining Baseline Emission Factor of China’s Grid” published by China’s DNA on 30/12/2008 (hereafter called “Notification of China-Grid EF”) ^[8].

3.5.3 Baseline identification

As the Project is the installation of a newly built and grid-connected renewable power plant that delivers the generated electricity to the grid (NCPG), hence, according to methodology ACM0002, the baseline scenario is determined properly as:

The electricity delivered to the grid by the Project would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in the “Tool to calculate the emission factor for an electricity system” version 02 dated 16/10/2009 (hereafter called “Tool-Grid EF”).^[3]

As methodology ACM0002 (version 10) prescribes the baseline scenario and no further analysis is required, there is no need to take steps to identify the baseline scenarios.

According to the “Notification of China-Grid EF”, the delineation of grid boundary of the Project is the NCPG. Therefore, the baseline of the Project determined in the PDD i.e. “electricity delivered to the grid by the Project would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources” is transparent and deemed to be reasonable.

VALIDATION REPORT

☞ Complying with **para.80 and 81/VVM**, BVC hereby confirms that:

- (a) All the assumptions and data used by the project participants are listed in the PDD, including their references and sources;
- (b) All documentation used is relevant for establishing the baseline scenario and correctly quoted and interpreted in the PDD;
- (c) Assumptions and data used in the identification of the baseline scenario are justified appropriately, supported by evidence and can be deemed reasonable;
- (d) Relevant national and/or sector policies and circumstances are considered and listed in the PDD;
- (e) The approved baseline methodology has been correctly applied to identify the most reasonable baseline scenario and the identified baseline scenario reasonably represents what would occur in the absence of the proposed CDM project activity.

3.6 Additionality

The additionality of the Project has been assessed in accordance with the “*Tool for Demonstration and Assessment of Additionality*” version 05.2 dated 26/08/2008 (hereinafter called “*Tool-Additionality*”). [4] The additionality of the Project has been carefully checked and BVC has put the main focus on the following issues:

3.6.1 Prior consideration of the CDM

It has been demonstrated by the timeline of events of the Project that the CDM revenues were seriously considered in the decision to proceed with the Project prior to start of the Project and the continuing and real action were taken to secure CDM status for the Project in parallel with its implementation:

Table 2 Timeline of the Project

Date	Events	Evidences Verified
Sep.2008	Feasibility Study Report (FSR) of the Project has been finalized by Hebei Electric Power Design & Research Institute. It was recommended to consider apply the CDM for the Project.	[5]
31/12/2008	The FSR of the Project was approved by Hebei Development and Reform Commission.	[6]
20/01/2009	The PP held a board meeting to decide to apply CDM for the Project.	[9]
18/03/2009	The PP signed Tower Purchase Contract with the manufacturer	[10]
13/04/2009	China's DNA was informed on the commencement of the Project and the intention to implement CDM development of the Project.	[11]
21/04/2009	Civil Engineering Contract was signed.	[12]

VALIDATION REPORT

10/05/2009	The Project started construction.	[13]
15/05/2009	Wind Turbine Generator (WTG) Purchase contract signed with General Electric Company	[14]
03/06/2009	The PP submitted the application for the LoA of China's DNA.	[15] [17]
15/06/2009	The PDD was publicly available on UNFCCC website for Global stakeholders Process (GSP)	[16]
Jul.2009	The PP got the LoA from China's DNA.	[3][18]

From the table above, BVC confirms that the start date of the Project is 18/03/2009, the signed date of Tower Purchase Contract, which is the earliest date when the implementation or construction or real action of the Project began. This is in accordance with the latest CDM glossary.

According to Para 99-102/VVM, the Project is a new project activity with a start date after 02/08/2008. And the PDD has been published for GSP on 15/06/2009, which is later than the start date of the Project. A notification was sent to China's DNA on 13/04/2009 to inform the commencement of the Project and the intention to seek CDM status, which complies with "Guidance on the Demonstration and Assessment of Prior Consideration of the CDM" version 01 (EB 41, Annex 46, 02/08/2008). When the PP submitted the commencement of the Project as the CDM project to China's DNA on 13/04/2009, the "Guidance-Prior Consideration" version 02 (EB48, Annex61,17/07/2009) and version 03 (EB49, Annex22,11/09/2009) are not available ^[5], therefore, the requirement to inform UNFCCC secretariat in writing of the commencement of the Project and of their intention to seek CDM status within six months of the start date of the Project is not suitable for the Project, BVC therefore confirmed that the notification to China's DNA is enough to prove that the incentives of CDM were seriously considered prior to the start of the Project. BVC has checked all documents mentioned in above table and is able to verify that all documents are substantial and authentic at that situation in the host country. The gaps between the documented evidences are less than two years. Therefore BVC was able to verify that the incentives of CDM were seriously considered prior to the start of the Project and continuing and real action were taken to secure CDM status for the Project in parallel with its implementation.

☞ According to the latest Glossary of CDM terms Version 05,^[6] BVC has verified the start date of the Project and concluded that the start date of 18/03/2009 defined in the PDD is appropriate and reasonable at that situation.

☞ Complying with para.103/VVM, BVC has verified this issue which could significantly influence the additionality of the Project and concluded that the serious consideration under the context of the Project has been addressed appropriately in accordance with the above guidance. Consequently, the chronological events described with the relevant documented evidences are the objective foundation on which BVC developed its validation opinions.

3.6.2 Identification of alternatives

The plausible and credible alternatives to the Project were identified as per the ACM0002

VALIDATION REPORT

version 10:

Alternative I) Construction of a thermal power plant with equivalent amount of annual electricity output;

Alternative II) The proposed project activity undertaken without being registered as a CDM project activity.

Alternative III) Construction of other renewable energy power plant with equivalent amount of annual electricity output;

Alternative IV) Provision of equivalent annual electricity output supplied by NCPG.

Alternative I was correctly eliminated through examination of current practice in China in which the laws or regulations applies. According to the Notice on Strictly Prohibiting the Installation of Thermal Generators with the Capacity of 135MW or Below issued by the General Office of the State Council, Decree No. 2002-6 ^[39], construction of thermal power plants of less than 135MW are prohibited in the areas covered by the large grid such as provincial grids in China.

Alternative III was eliminated by analyzing the commercial exploitation feasibility of local renewable energy resources including Solar PV, biomass, geothermal and hydropower as addressed in the PDD. Realizing the high cost, power generation from solar PV is far from being economically attractive in local region. And there are no surplus biomass residues for electricity generation, nor economically exploitable geothermal resource in local area. Moreover, due to the great shortage of water resources in the region of Hebei Province, there is no enough hydro resource which can be utilized ^[40].

☞ Complying with para.106/VVM, BVC was able to verify that the alternatives identified to the Project are credible and complete, and hence found **Step 1** of “Tool-Additionality” was applied appropriately.

3.6.3 Investment analysis

Option III (Benchmark Analysis) is applied to conduct the investment analysis as per the *Sub-step 2b* of **Step 2** of “Tool-Additionality”.

Project IRR of 8% (post-tax) was employed by the Project as benchmark, which is sourced from the “Interim Rules on Economic Assessment of Electric Power Engineering Retrofit Projects” ^[19] issued by State Power Corporation of China in 2002. BVC is able to confirm that this benchmark is widely applied in Chinese power generation industries.

☞ Therefore, BVC confirms that the benchmark is suitable for the Project.

And based on the data from the FSR, the project IRR of the Project without CERs revenue is calculated as 5.31%, which shows that the Project is not financially attractive in the absence of CERs revenues compared to the benchmark 8%.

Before reviewing the IRR calculation, BVC has validated the basic parameters listed in the PDD in accordance with the Guidance of EB 38th paragraph 54 and para.112/VVM.

VALIDATION REPORT

a) The FSR was completed in Sep. 2008 by Hebei Electric Power Design & Research Institute^[5] granted in the power industry by China government and approved by Development & Reform Commission of Hebei Province on 31/12/2008^[6]. Based on the FSR and the outcome of financial analysis, the PP held a board meeting on 20/01/2009^[9] and decided to seek CDM support. The period of time between the finalization of the FSR and the PP's final decision is thus considered short.

☞ Therefore, BVC can confirm that the input values used in the financial analysis are credible and reliable at the time of the investment decision and it is unlikely that the input values would have materially changed, which is in line with the paragraph 54 (a) of EB 38th and para.112(a)/VVM.

b) BVC has reviewed the input values used in the PDD and IRR calculation against the data of the approved FSR, and found that they are fully consistent with each other; therefore, BVC confirms that the investment analysis is in accordance with the paragraph 54 (b) of EB 38th and para.112(b)/VVM.

Furthermore, BVC has reviewed the data in IRR calculation sheet and confirmed that:

☞ The **Operation Period** of 20 years were selected reasonably following the requirements of *"Interim Rules on Economic Assessment of Electric Power Engineering Retrofit Projects"* and Para. 3 of *"Guidance on the Assessment of Investment Analysis"* ver. 03, i.e. a minimum period of 10 years and a maximum of 20 years will be appropriate".

☞ The **Residual Value Rate** was selected reasonably following relevant regulation in China;

☞ About the main part of **Total Project Cost** in the FSR, BVC has checked that:

- The total project cost of the Project sourced from the FSR is determined in Sep. 2008 by Hebei Electric Power Design & Research Institute, which is one of the first class design institutes granted by China's Government. The total project cost of the Project has been reviewed and approved by Hebei DRC, which is also experienced at wind power project review and familiar with local investment environment.
- BVC has checked the public available evidence^[41] of some domestic manufactured WTG and found the average turbine cost is 5,400RMB/kW in the 2nd quarter of 2009. But the turbine of the Project was manufactured by GE, of which the cost was estimated to be 7,700RMB/kW in the FSR, which has been crosschecked with the signed WTG purchase contract of the Project and found consistent. The GE turbine in the Project is 42% higher than domestic manufactured WTG. Hence, BVC can get the conclusion that the turbine cost of the Project is the main reason for high total project cost.

- Furthermore, BVC has checked the turbine cost in developed countries according to *IEA Wind Energy Global Report 2008*^[42] as the following table:

County	Turbine Cost (€/kW)
Germany	941-1,340
Ireland	1,100
Italy	1,270
Japan	1,000-1,200
Portugal	1,061
Switzerland	1,450
The Project	826*

*With the average exchange rate in May. 2009 of 1EUR:9.32RMB

From above table, it can be found that the turbine cost of the Project is lower than the one in developed countries. BVC therefore concluded that the turbine cost in the Project is appropriate.

- The Project is still in the construction period. BVC has checked the signed contracts of key equipments and engineering^{[10][12][14]} and found that the value accounts more than 90% of the total project cost in the FSR, which could almost reach the sub-items value estimated in the FSR.

BVC is therefore to confirm the assumption for the **total project cost** in the FSR is appropriate.

About the **Tariff**

- 1). The tariff of 0.54RMB/kWh (incl. VAT) of the Project used in the PDD is taken from FSR which was completed by the qualified 3rd party of "Hebei Electric Power Design & Research Institute" in Sep.2008, after the implementation of *Law of the People's Republic of China on Renewable Energies*^[4] and *Tentative Measures for the Administration of Renewable Energy Power Price and Cost-sharing* (Code: Fa Gai Jia Ge [2006] No.7)^[23] in 2006.
- 2). BVC has studied the relevant policies and local investment environment in wind power sector and summarized as follows:
 - Since 2002, the reform has been implemented in China's electric power sector^[33] to separate the grid and the power plant from the state power company
 - Since 2006, the Renewable Energy Law issued by China's government came into effect. From then on, the wind power projects increased rapidly in China.
 - On 04/01/2006, China NDRC issued the Tentative Measures for the Administration of Renewable Energy Power Price and Cost-sharing (Code: Fa Gai Jia Ge [2006] No.7)^[23]. According to Fa Gai Jia Ge [2006] No.7, the tariff of most wind power projects began to be approved by government.

VALIDATION REPORT

- On 29/06/2006, Price Bureau of Hebei Province issued the document Ji Jia Guan Zi [2006] No. 57^[26], in the document, tariff of wind power projects located in Hebei Province was approved as 0.60RMB/kWh (incl. VAT) in the document.
- On 09/06/2007, China NDRC issued the document Fa Gai Jia Ge [2007] No.1260^[27], and the tariff of wind power projects located in Hebei Province was approved as 0.54RMB/kWh (incl. VAT), except Haixing Wind Farm of 0.61RMB/kWh (incl. VAT).
- On 03/12/2007, China NDRC issued the document Fa Gai Jia Ge [2007] No.3303^[28], and the tariff of wind power projects located in Hebei Province was approved as 0.54RMB/kWh (incl. VAT) in the document.
- On 23/07/2008, China NDRC issued the document Fa Gai Jia Ge [2008] No.1876^[29], and the tariff of wind power projects located in Hebei Province was approved as 0.54RMB/kWh (incl. VAT) in the document.

The Project is not a tendering project and BVC has studied the tariff notifications for wind power projects in Hebei Province and summarized as follows:

Table 3 Tariff for wind power projects in Hebei province

Tariff Approved Year	Project	Tariff (RMB/kWh, incl.VAT)	Tariff Document No.	CDM project or Not?
Feb.2002	Zhangbei Changcheng 9MW Wind Farm	0.65*	Ji Jia Ge [2002]242 [25]	No
	Chengde Hongsongwa 3.6MW Wind Farm			No
Mar.2002	Electric Power Sector Reform Program			
Jul.2006	Chengde Hongsong Wind Farm	0.60	Ji Jia Guan Zi[2006]57	Yes
	Guohua Shangyi Manjing Wind Farm	0.60		Yes
	Hebei Shangyi manjing East Wind Farm	0.60		Yes
	Zhangbei Manjing Wind Farm	0.60		Yes
	Zhangbei Mijiagou 49.5MW Wind Farm	0.60		Yes
	Hebei Kangbao Wolongtushan 30MW Wind Farm	0.60		Yes
Jun.2007	Guyuan 30.6MW Wind Farm	0.54	[2007]1260	Yes
	Hebei Shirensan Wind Farm	0.54		Yes
	Hebei Chengde Songshan Wind farm	0.54		Yes

VALIDATION REPORT

	Hebei Wanquan Yulong Wind farm	0.54		Yes
	Hebei Yuxian Kongzhongcaoyuan 49.5MW Wind Farm Project	0.54		Yes
	Hebei Chongli Qingsanying 49.3 MW Wind Farm	0.54		Yes
	Hebei Haixing 49.5MW Wind Farm	0.61**		Yes
Dec.2007	Hebei Shangyi Manjing West Wind Farm	0.54	[2007]3303	Yes
	Hebei Weichang Zhangjiawan Wind Farm	0.54		Yes
	Hebei Weichang Longyuan Construction Investment Shanwanzi Wind farm	0.54		Yes
Jul.2008	CECIC Zhangbei Dayangzhuang Wind Farm	0.54	[2008]1876	Yes
Aug.2009	Hebei Chengde Huifeng Windfarm Project	0.54	Ji Jia Guan [2009]69	Yes
	Hebei Chengde Fengze Wind Farm Project	0.54		Yes
	Hebei Chongli County Qingsanying Second Phase 49.3 MW Wind Power Project	0.54		Yes (under validation)
	Hebei Yuxian Second Phase 49.5MW Wind Power Project	0.54		Yes (under validation)
	Longyuan Baimiaotan	0.54		Preparing for applying CDM
	Hebei Shiren II Wind Power Project	0.54		Yes (under validation)
	Hebei Chicheng Stage I Windfarm Project	0.54		Yes (under validation)
	Zhangbei bode longxiaoertai wind farm	0.54		Preparing for applying CDM
	Hebei Shangyi Manjing North Wind Farm Project	0.54		Yes
	Hebei Chengde Yudaokou Windfarm 48MW project	0.54		Yes

VALIDATION REPORT

Yueliangshan 49.5MW Wind Power Project in Weichang County Hebei Province	0.54	Yes
Dongbaliang 49.5MW Wind Power Project in Weichang County Hebei Province	0.54	Yes
Hebei Weichang Zhuzixia Wind power project	0.54	Yes (under validation)
Hebei Weichang Guangfayong Wind power project	0.54	Yes (under validation)
Hebei Leting 49.5 MW Wind Farm Project Phase I	0.54	Yes (under validation)
Guohua Hebei Huanghua 49.5 MW Wind Farm Project (Phase I)	0.54	Yes (under validation)
Hebei Kangbao Sanxiatian Wind Farm Project	0.54	Yes (under validation)
Guyuan Wuhuaping 49.5 MW Wind Power Project (the Project)	0.54	Yes (under validation)

* Both projects are small scale demonstration project implemented in 1998 and 2001 respectively.¹

** The Haixing project is a special offshore project and has the significant different operating conditions and wind resources².

➤ The FSR of the Project was finalized in Sep. 2008, when the tariff notifications of Fa Gai Jia Ge [2007] No.1260, Fa Gai Jia Ge [2007] No.3303 and Fa Gai Jia Ge [2008] No.1876 are available. Therefore, BVC confirms the tariff of 0.54 RMB/kWh (incl. VAT) employed in the FSR is available and reasonable for the land-based wind power project in Hebei Province.

➤ From the table 3 and discussion above, BVC found that since *Electric Power Sector Programme* in Mar. 2002, the highest tariff of land-based wind power projects in Hebei Province is 0.60RMB/kWh (incl. VAT) in 2006. For the Project, even if adopting the highest tariff of 0.60RMB/kWh (incl. VAT) to calculate the IRR, the Project IRR is 6.77%, still less than 8% of the benchmark.

¹ <http://www.wp-forum.cn/ArticleShow.asp?nid=2713E111-173F-4C22-A6FF-CEB7719F4ABB>,
<http://hbrb.hebnews.cn/20050617/ca503582.htm>

² <http://www.sdpc.gov.cn/zcfb/zcfbtz/2009tz/W020090727530432780298.pdf>

VALIDATION REPORT

Furthermore, the tariff for the Project is approved to be 0.54RMB/kWh (incl. VAT) according to Ji Jia Guan Zi [2009] No. 69 ^[24] on 28/08/2009 by Price Bureau of Hebei Province.

Therefore, BVC is of the opinion that the tariff of 0.54RMB/kWh (incl. VAT) employed in FSR is appropriate.

➡ The **Supplied Electricity** of the Project has been crosschecked with the design parameters of wind turbine manufactured by GE. And it was based on the wind resource history data during the latest 30 years (1977 to 2006) of the local area and one year of anemometric data measured onsite (2005 to 2006), from which the operational hours was developed using software for assessment (WAsP). Therefore the supplied electricity is found reasonable.

➤ The Plant Load Factor (PLF) of 0.27 is determined by a qualified 3rd party of Hebei Electric Power Design & Research Institute in the FSR, which has been approved by Hebei Provincial Development and Reform Committee. Therefore, BVC confirms that the PLF was determined by a third party contract with the PP, and is the same one provided in the FSR to the government while applying the Project for implementation approval, which complies with the "Guidelines for the Reporting and Validation of Plant Load Factors version 01" (EB48, Annex 11) ^[8].

➡ BVC has confirmed that the **O&M Expenses** are the sum of salary and welfare of employees, materials fee, maintenance fee, insurance and miscellaneous account, which was studied based on the "Code on Compiling Feasibility Study Report of Wind Farms" issued by NDRC ^[21] and Economic Evaluation Method and Parameters for Project Construction (version 3) ^[20]. The original figure for calculating O&M cost has been crosschecked with relevant criteria for wind farm design. BVC has also crosschecked the "Operation and Maintenance Costs for Wind Turbines" by Danish Wind Industry Association ^[22], showing that for newer WTG the estimated maintenance cost range around 1.5%-2% per year of the original turbine investment, the O&M cost of the Project of 2% per year of the original turbine is in the range. Consequently, BVC confirms the O&M expenses is reasonable.

➡ As discussed above, a post-tax benchmark is applied for the investment analysis of the Project and BVC confirms that the actual interest payable has been taken into account in the calculation of income tax. BVC has checked the loan contract and prevailing commercial interest rates in China ^[31], and confirms that the **interest rate** used in the investment analysis is the same one as the loan contract and prevailing commercial interest rates in China ^[32]; furthermore, the **debt-equity ratio** estimated in the FSR was also approved by local DRC, and the loan contract value shows that the debt-equity ratio taken from the FSR is consistent with actual capital situation that PP raising. BVC confirms the debt-equity ratio and interest rate of the Project are

VALIDATION REPORT

appropriate.

- BVC also verified values of various **Taxes** through cross-check with the taxation rules conducted by local government and found to be fully consistent.

☞ In summary, based on the above reliable data sources, BVC is able to confirm that the input values from the approved FSR were valid and applicable at the time of the investment decision. Therefore, BVC confirmed that the input values used in the PDD comply with the paragraph 54 (c) of EB 38th and para.112(c)/VVM.

BVC has reviewed the IRR calculation and found that the calculation is correct and in accordance with “*Guidance on the assessment of investment analysis*” Version 03 (EB51 Annex58). ☐ As it shows, without CDM income, the project IRR of the Project is 5.31%, which is lower than the post-tax benchmark (8%) ^[19].

A sensitivity analysis is performed, by taking into account $\pm 10\%$ variations in following four financial indicators:

- Total project cost
- Supplied electricity
- Tariff (Incl. VAT)
- O&M expenses

According to “Code on Compiling Feasibility Study Report of Wind Power Projects” published by NDRC ^[21], total project cost, supplied electricity, O&M expenses and tariff should be taken as uncertainty factors to implement the sensitivity analysis, and $\pm 10\%$ variation of above factors shall be considered in the sensitivity analysis. Therefore BVC has confirmed that the variables and variations performed for sensitivity analysis is deemed to be reasonable in the wind farm sector in China.

The results of the sensitivity analysis show that the benchmark will not be reached with the variation $\pm 10\%$ of the 4 indicators.

For the four indicators,

- With a decrease in **Total project cost** by 19.42%, the Project IRR may reach 8%. As the Project construction has not completed, the actual values of total investment of the Project cannot be verified exactly, and then BVC reviewed the WTG Purchase Contract ^[14] and the tower purchase contract ^[10] signed with the equipment suppliers and civil engineering contract ^[12] and found that the already signed contract values accounts more than 90% of estimated total project cost in the approved FSR, BVC can confirm that the total investment won't decrease by 19.42%.
- The **O&M expenses** comprise materials expense, maintenance cost, employee salary and welfare, issuance and miscellaneous account. All of these expenses are determined by a

VALIDATION REPORT

qualified entity based on long term operation experience in FSR. With a decrease in annual O&M cost by 192.39%, the Project IRR may reach 8%. However, it is evidently impossible.

- With an increase by 21.32% in **Supplied Electricity**, the project IRR will reach the benchmark. By checking the FSR completed by Hebei Development and Reform Commission and design parameters of wind turbine of GE1.5s/e, the supplied electricity of the Project is based on wind resource data over 30 years and WAsP software as stated in the FSR. Therefore, BVC confirms that it is unlikely that the supplied electricity could increase by 21.32% during the operation period of the Project.
- With an increase in **Tariff** by 21.32%, the Project IRR will reach 8%. However, the tariff of the Project has been approved at 0.54RMB/kWh by Price Bureau of Hebei Province ^[24], and considering the continuous tariff notifications ^{[26]-[29]} since 2007 till now as demonstrated in Table 3, BVC confirms the tariff for wind power projects in Hebei Province is fixed on 0.54RMB/kWh (incl. VAT) in recent years. Therefore, BVC can confirm that the tariff of the Project is unlikely increased by more than 21.32%.

Considering of the CERs sales revenues (11EUR/tCO₂e), the project IRR of the Project can be crossing the benchmark at 8.63%.

☞ Complying with para.113/VVM, BVC can conclude that both of the variation range and relevant assumptions stated in the PDD are robust and the investment of the Project is deemed to be financially unattractive.

3.6.4 Barrier analysis

The Step 3 Barrier analysis was not applied for the Project.

3.6.5 Common practice analysis

The common practice analysis was addressed as per **Step 4** of “*Tool-Additionality*” and latest rules issued by EB.

The wind power project was implemented under the administration of provincial level government. The wind power projects in the same province have the similar wind resource, grid structure, geological and transportation conditions, economic developing status, hence BVC considered that delineating Hebei Province as the geographic boundary is reasonable.

Since 2002, the reform has been implemented in China’s electric power sector ^[33] to separate the grid and the power plant from the state power company, therefore BVC can confirm that the wind power projects commissioned after 2002 will face to comparable regulatory framework and reasonable for the common practice analysis.

Subsequently, BVC identified the similar projects in terms of:

- a) Wind farm in Hebei Province, and
- b) Commissioned after 2002.

Following these criteria, BVC verified the wind farms as identified in the PDD by cross-checking the public statistics i.e. “*Statistics of wind power installed capacity in China (2007)*” dated

VALIDATION REPORT

28/02/2008" written by Mr. Shi Pengfei, the authoritative Expert in the wind power sector (hereafter refer to as SWPC) ^[34].

Project	Installed capacity (MW)
Weichang Hongsongwa	51.3
Fengning Yuershan	1.2
Shangyi Manjing Wind Farm	34.5

"Chengde Hongsong Wind Farm Project" and "Shangyi Manjing wind farm" were facing serious financial barriers and had appealed for carbon funding to overcome their financial barrier ^[35]. Fengning Yuershan Project only installed two units for testing which is not a commercially operated wind power project. Thus, there are essential distinctions among these projects and the Project ^[36].

BVC verified the description in the PDD and found that it is consistent with the sectoral statistics and therefore can conclude that the Project is not common practice in the region.

☞ Complying with para.120/VVM, Based on above demonstration that in accordance with "Tool-Additionality" and supported by reliable data sources, it is the opinion of BVC that the Project is thus additional.

3.7 Calculation of GHG Emissions

According to the baseline methodology ACM0002 version 10 and "Tool-Grid EF" version 02, ^[3] the emission reductions of the Project were calculated as following seven steps. In addition, the calculation in the PDD refers to the latest "Notification of China-Grid EF" published by China's DNA on 30/12/2008 which is valid at the time of the validation ^[8].

As per "Tool-Grid EF" version 02, seven steps therein are applied to calculate the emission factor:

Step 1.-Identify the relevant electricity systems.

North China Power Grid (NCPG) is selected as the electric power system of the Project and, there is electricity transferring from the Northeast Power Grid (NEPG) and Central China Power Grid (CCPG) to NCPG. The weighted average operating margin (OM) emission rate of the exporting grids (NEPG and CCPG) is selected to calculate the CO₂ emission factor(s) for net electricity imports.

☞ BVC was able to verify the data sources of "Notification of China-Grid EF", and confirmed that the identified electric power systems are appropriate.

Step 2.-Choose whether to include off-grid power plants in the project electricity system (optional)

Option I (only grid power plants are included in the calculation) provided in "Tool-Grid EF" version 02 is chosen to calculate the operating margin and build margin emission factor.

Step 3.-Select a method to determine the operating margin (OM)

For the calculation of the OM emission factor, the simple OM emission factor calculation method is

VALIDATION REPORT

selected because low cost/ must-run projects constitute less than 50% of the total grid generation during the last 5 years.

☞ Only grid power plants are included in the calculation. BVC has checked the calculation for low cost/must-run constitution of the total grid generation and confirmed the calculation is correct. Therefore, simple OM emission factor calculation method is selected reasonable. A 3-year generation-weighted average, based on the most recent data from China Electric Power Yearbook 2005-2007, which are the data available at the time of submission of the CDM-PDD to the DOE for validation, has been applied and calculated correctly.

Step 4.-Calculate the operating margin emission factor according to the selected method.

The data on electricity generation and auxiliary electricity consumption are obtained from the China Electric Power Yearbook from 2005 to 2007 (published annually). The data on different fuel consumptions for power generation and the net caloric values of the fuels are obtained from the China Energy Statistical Yearbook from 2005 to 2007. The emission factors of the fuels adopted are obtained from Table 1-2 and Table 1-4 of the "2006 IPCC Guidelines for National Greenhouse Gas Inventories: Workbook."

The renewable crediting period is adopted for the Project and the OM will be fixed for the first crediting period.

☞ The data source are deemed reasonable and BVC confirms that the calculation can be replicated using the data and parameter provided in the PDD.

Step 5.-Identify the group of power units to be included in the build margin (BM).

The set of power capacity additions in the electricity system that comprise 20% of the system generation (in MWh) and that have been built most recently (Option b) is adopted properly for the Project.

Considering data availability, deviation accepted by EB was used in the PDD i.e.

- 1) Use of capacity additions during the last 1~3 years for estimating the build margin emission factor for grid electricity.
- 2) Use of weights estimated using installed capacity in place of annual electricity generation.

☞ BVC hereby confirms that the data source and approaches taken are deemed reliable.

Step 6.-Calculate the build margin emission factor.

The BM emission factor of the power grid is calculated by multiplying the emission factor of the thermal power with the share of the thermal power in the most recently added approach to 20% of total installed capacity. The emission factor for thermal power is determined based on the most advanced and commercially available technology endorsed by China's DNA.

☞ BVC hereby confirms that the data sources are deemed reliable and calculation is appropriate.

Step 7.-Calculate the combined margin (CM) emissions factor.

VALIDATION REPORT

According to the “Tool-Grid EF” the default weights: $\omega_{OM}=0.75$ for Operating Margin and $\omega_{BM}=0.25$ for build Margin in the first crediting period of Wind Power Projects are adopted.

As per baseline methodology ACM0002 and “Tool-Grid EF”, the baseline emission sources considered are the emission reduction ER_y during the crediting period is the difference between baseline emissions, project emissions and leakage. These are:

- 1) Baseline emissions: baseline emissions BE_y (tCO₂e) are equal to baseline emission factor $EF_{grid,CM,y}$ (tCO₂e/MWh) times the net electricity supplied to the grid EG_y (MWh).
- 2) Project Emissions: the project emissions are regarded as 0 as per ACM0002 version 10.
- 3) Leakage: no leakage has to be considered as per ACM0002 version 10.
- 4) Emission reductions:

$$ER_y = BE_y - PE_y - LE_y = BE_y = EF_{grid,CM,y} \times EG_y$$

With reference to the Tool-Grid EF, the Simple OM emission factor ($EF_{grid,OM,y}$) of NCPG is calculated as 1.1169tCO₂e/MWh. Similarly, the build margin emission factor ($EF_{grid,BM,y}$) of the NCPG is calculated ex-ante as 0.8687tCO₂e/MWh.

Therefore the combined baseline emission factor is determined ex-ante and will remain fixed during the first crediting period, viz.

$$EF_{grid,CM,y} = 1.1169 \times 0.75 + 0.8687 \times 0.25 = 1.05485 \text{ tCO}_2\text{e/MWh}$$

According to the estimated annual electricity delivered to the grid 117,216MWh, the estimated annual emission reductions of the Project are 123,645 tCO₂e during the first crediting period represents a reasonable estimation using the assumptions given by the Project.

☞ Complying with **para.91 and 92/VVM**, BVC hereby confirms that:

- a) All assumptions and data used by the PP are listed in the PDD, including their references and sources;
- b) All documentation used by project participants as the basis for assumptions and source of data is correctly quoted and interpreted in the PDD;
- c) All values used in the PDD are considered reasonable in the context of the proposed CDM project activity;
- d) The baseline methodology ACM0002 and “Tool-Grid EF” has been applied correctly to calculate project emissions, baseline emissions, leakages and emission reductions; [1], [3]
- e) All estimates of the baseline emissions can be replicated using the data and parameter values provided in the PDD.

3.8 Monitoring Plan

VALIDATION REPORT

The Project uses the approved consolidated monitoring methodology ACM0002 version 10 for grid-connected electricity generation from renewable sources.

Applicability of this methodology is justified in PDD as it involves grid connected renewable power generation using wind energy. Refer discussions on the validity of the methodology at Section 3.5.1 above.

According to methodology ACM0002 version 10, the parameter required to be monitored for the Project is *net electricity supplied by the project activity to the grid* which is calculated by *the electricity exported by the Project to the grid minus electricity imported by the Project from the grid*. The data will be monitored continuously by meter(s) installed on the main transmission line of the Project and recorded monthly. The precision of the meter(s) employed by the Project will be at least 0.5s. And the meter(s) of the Project will be calibrated once a year. Data will be verified against the sales receipts. BVC confirms that the parameters are clearly described in the PDD and the means of monitoring described in the plan comply with the requirements of the methodology ACM0002.

According to ACM0002 version 10 no leakage has to be considered for the Project, viz. $LE_y=0$.

Operational management for the Project is comprehensively detailed in PDD and this includes description of the responsibility, training, procedure reference, calibration frequency (annually) and maintenance needs, which could ensure that the monitoring plan could be followed during the operation of the Project.

By onsite interview with the PP, BVC confirms that the monitoring arrangements described in the monitoring plan are feasible within the project design, and the means of implementation of the monitoring plan are sufficient to ensure the emission reductions achieved by the Project can be reported ex post and verified.

☞ Complying with para.123/VVM, BVC hereby confirms that the monitoring arrangements described in the monitoring plan are feasible within the project design and the project participants are able to implement the monitoring plan.

3.9 Environmental Impacts

BVC has ensured that the Environmental Impact Assessment was carried out by Hebei Provincial Institute of Geographic Sciences, and approved by the Hebei Provincial Environment Protection Bureau on 15/05/2008. (Code: JHB[2008] No.320)^[7].

The environmental impact caused by the Project has been identified and analyzed in the PDD. By checking the EIA report, BVC is able to ensure that the impact caused by wind farms on the waste water, dust and exhaust gas, noise, solid waste and ecological impact is insignificant.

☞ Complying with para.132/VVM, BVC hereby confirms that the Project will not have any significant impacts on the environment by means of measures of pollution avoidance and control as well as ecological recovery.

3.10 Local Stakeholder consultation

The PP conducted a survey on the stakeholders of the Project in Dec. 2008, by distributing questionnaire. The PP introduced the Project to local stakeholders and invited comments from the local stakeholders prior to the publication of the PDD on the UNFCCC website. The survey was conducted by distributing 60 copies of questionnaires and collecting responses from all interviewees from local villagers and residents near the Project area, and all 60 questionnaires were recovered with 100% response rate^[38].

58 respondents (97%) support the implementation of the Project and 2 respondents (3%) keep a neutral attitude.

40 respondents (67%) think that the implementation of the Project could possibly enhance the electricity consumption of local residents. 18 respondents (30%) think that the implementation of the Project could possibly improve the income of local residents. 33 respondents (55%) think that the implementation of the Project could possibly increase employment opportunities for local residents.

Some respondents think that the implementation of the Project could possibly result in noise or land occupation. The PP will employ the methods mentioned in the EIA to mitigate the impact.

The returned questionnaires with answers from interested stakeholders are maintained by the PP and were presented to BVC^[38], and BVC assessed the questionnaires answered by the stakeholders, and found the local stakeholder consultation is adequate.

☞ Complying with para.129/VVM, BVC hereby confirms that the local stakeholder consultation was performed, the Project will benefit to the local sustainable development with positively affect to the local stakeholders.

4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS

According to the modalities for the Validation of CDM projects, the DOE shall make publicly available the project design document and receive, within 30 days, comments from Parties, stakeholders and UNFCCC accredited non-governmental organizations and make them publicly available^[16].

☞ Complying with para.173/VVM, BVC published the project documents on the UNFCCC CDM website (<http://cdm.unfccc.int>) on 15/06/2009 and invited comments prior to 14/07/2009 by Parties, stakeholders and non-governmental organizations.

No comments were received during this period.

5 VALIDATION OPINION

BVC has performed a validation of the Guyuan Wuhuaping 49.5 MW Wind Power Project, in Hebei Province, P.R. China. The validation was performed on the basis of UNFCCC criteria and host country criteria and also on the criteria given to provide for consistent project operations, monitoring and reporting.

VALIDATION REPORT

The validation consisted of the following three phases: i) a desk review of the project design and the baseline and monitoring plan; ii) follow-up on-site visit and interviews with project stakeholders; iii) the resolution of outstanding issues and the issuance of the final validation report and opinion.

Project participant/s used the latest *Tool for demonstration and assessment of additionality* (version 05.2), *Paragraph 54 of EB 38th* and the “*Guidance-Prior consideration*” -*Guidance on the demonstration and assessment of prior consideration of the CDM* (version 03) to demonstrate the additionality of the Project. In line with this tool, the PDD provides analysis of financial barriers to determine that the Project itself is not the baseline scenario. The latest *Tool to calculate the emission factor for an electricity system* (version 02) is also applied to determine the emission factor of North China Power Grid.

By synthetic description of the Project, the Project is likely to result in reductions of GHG emissions partially. An analysis of the financial barriers demonstrates that the Project is not a plausible baseline scenario. Emission reductions attributable to the Project are hence additional to any that would occur in the absence of the Project. Given that the Project is implemented and maintained as designed, the Project is likely to achieve the average annual emission reductions of 123,645tCO_{2e} over the chosen 7-year renewable crediting period.

The review of the project design documentation (version 03) and the subsequent follow-up interviews have provided BVC with sufficient evidence to determine the fulfillment of stated criteria. In our opinion, the Project correctly applies and meets the relevant UNFCCC requirements for the CDM and the relevant host country criteria.

The validation is based on the information made available to us and the engagement conditions detailed in this report.

6 REFERENCES

Category 1 Documents:

Documents provided by Additional Consulting and Engineering that relates directly to the GHG components of the Project.

- [1]. PDD Version 02 dated 11/06/2009 for GSP
- [2]. PDD Version 03 dated 17/12/2009
- [3]. Letter of Approval from DNA of China (Host country) in Jul.2009 (No.2120)
- [4]. National Renewable Energy Law issued by NDRC of China effective from 01/01/2006.
http://www.gov.cn/flfg/2005-06/21/content_8275.htm
- [5]. Feasible Study Report (FSR) finalized by Hebei Electric Power Design & Research Institute
- [6]. The FSR approval issued by Hebei Province Development & Reform Commission (DRC) on 31/12/2008 (Code: JFGWZ [2008] No.1838)
- [7]. EIA report conducted by Hebei Provincial Institute of Geographic Sciences and Approval issued by Hebei Province Environmental Protection Bureau on 15/05/2008 (Code: JHB [2008] No.320)

VALIDATION REPORT

- [8]. Notification of China-Grid EF issued by NDRC on 30/12/2008.
<http://cdm.ccchina.gov.cn/WebSite/CDM/UpFile/2008/20081230102527637.pdf>
- [9]. PP's Board Meeting Minutes of CDM discussion for the Project made on 20/01/2009
- [10]. Tower Purchase Contract signed on 18/03/2009
- [11]. Notification of intention to seek CDM status to NDRC on 13/04/2009 and approved by NDRC on 27/04/2009
- [12]. Civil Engineering Contract signed on 21/04/2009
- [13]. Starting Construction Order of the Project issued on 10/05/2009
- [14]. WTG Purchase contract signed with General Electric Company on 15/05/2009
- [15]. LoA Application Form submitted to NDRC on 03/06/2009
- [16]. The website of PDD was made available for public comments (GSP) on 15/06/2009.
<http://cdm.unfccc.int/Projects/Validation/DB/8DNXLPWY0UT6I6GNF4LSCX5M5TPA35/view.html>
- [17]. Bulletin on 65th Meeting of National CDM Board issued by China's DNA on 01/07/2009
<http://cdm.ccchina.gov.cn/web/NewsInfo.asp?NewsId=3687>
- [18]. Public information of Letter of Approval issued by NDRC
<http://cdm.ccchina.gov.cn/WebSite/CDM/UpFile/File2307.pdf>
- [19]. Data source of Benchmark (Interim Rules on Economic Assessment of Electrical Engineering Retrofit Projects)
- [20]. Economic Evaluation Method and Parameters for Project Construction (version 3)
- [21]. The Codes on Compiling Feasibility Study Report of Wind Farms issued by NDRC on 25/05/2005.
- [22]. "Operation and Maintenance Costs for Wind Turbines" by Danish Wind Industry Association
<http://www.talentfactory.dk/en/tour/econ/oandm.htm>
- [23]. Tentative Measures for the Administration of Renewable Energy Power Price and Cost-sharing issued by NDRC on 04/01/2006 (Code: Fa Gai Jia Ge [2006] No.7)
- [24]. Price notification issued by Price Bureau of Hebei Province on 28/08/2009 (Code: Ji Jia Guan [2009] No. 69)
http://www.hebwj.gov.cn/upfiles/xy_col32super_20090901160416124272.htm
- [25]. Price notification issued by the State Development Planning Commission in 2002 (Ji Jia Ge [2002] No.242)
<http://www.qzprice.gov.cn/ZHCE-1/gjfg/2002/242.htm>
- [26]. Price notification issued by Price Bureau of Hebei Province on 29/06/2006 (Code: Ji Jia Guan Zi [2006] No. 57)
http://www.hebwj.gov.cn/upfiles/xy_col13super_20060703152016007126.htm
- [27]. Price notification issued by NDRC on 09/06/2007 (Code: Fa Gai Jia Ge [2007] No.1260)
http://www.hebwj.gov.cn/upfiles/xy_col32gjc_20070718164220007126.htm
- [28]. Price notification issued by NDRC on 03/12/2007, (Code: Fa Gai Jia Ge [2007] No. 3303)
http://www.gov.cn/zwgk/2008-02/19/content_892937.htm
- [29]. Document Code Fa Gai Jia Ge [2008] No. 1876 on 23/07/2008.
http://jgs.ndrc.gov.cn/zcfg/t20080813_230722.htm

VALIDATION REPORT

- [30]. IRR calculation spreadsheet of the Project
- [31]. Loan contract of the Project
- [32]. Evidence on prevailing commercial interest rates
- [33]. "Notice of National Council Issued about the Power System of Organization Reform Programme" (National issued [2002] No. 5)
- [34]. "Statistics of wind power installed capacity in China" conducted by Professor Shi Pengfei
Version 2006 dated 18/03/2007,
<http://www.nwtc.cn/Article/UploadSoft/200605/20060508061645569.doc>
Version 2007 dated 28/02/2008, http://www.cwea.org.cn/download/display_info.asp?id=25
- [35]. Public information of Chengde Hongsong Wind Farm
<https://vcsregistry1.apx.com/mymodule/ProjectDoc/EditProjectDoc.asp?id1=61>
Evidence of Shangyi Manjing wind farm applied VCS support
- [36]. Public information of Fengning Yuershan Wind Farm
<http://www.hebei.gov.cn/article/20070416/280348.htm>
- [37]. Emission Factor calculation spreadsheet
- [38]. Evidence of 60 pieces of stakeholder survey questionnaires on Dec.2008
- [39]. Notice on Strictly Prohibiting the Installation of Thermal Generators with the Capacity of 135MW or Below issued by the General Office of the State Council, Decree No. 2002-6.
http://www.gov.cn/gongbao/content/2002/content_61480.htm
- [40]. Evidences of other renewable resources power:
<http://www.zjk.heagri.gov.cn/zhangjk/inc/detail.jsp?id=7900&typeid=16>
http://www.agri.gov.cn/jjps/t20081218_1192353.htm
<http://ghjh.mwr.gov.cn/dfxx/hb/1999tianjin/>
http://market.ccidnet.com/pub/article/c1798_a135747_p1.html
<http://www.chinamining.com.cn/cpc/show.aspx?id=99&cid=1>
- [41]. Public evidence for average turbine cost of some domestic manufactured WTG
<http://stock.jrj.com.cn/2009/11/0407046390314.shtml>
<http://www.cnstock.com/images/2009-06/17/190606171637579144742.pdf>
- [42]. IEA Wind Energy Global Report 2008
- [43]. Modalities of Communication Form (MOC) of the Project

Category 2 Documents:

Background documents related to the design and/or methodologies employed in the design or other reference documents.

- ① ACM0002 version 10 valid from 11/06/2009
- ② Validation and Verification Manual Version 01.1 dated 04/12/2009 (EB 51,Annex03)
- ③ Tool to calculate the emission factor for an electricity system Version 02 dated 16/10/2009
- ④ Tool for demonstration and assessment of additionality Version 05.2 dated 26/08/2008

VALIDATION REPORT

- 5 Guidance on the demonstration and assessment of prior consideration of the CDM Version 02 (EB48,Annex61), and 03 (EB 49, Annex22)
- 6 Glossary of CDM terms Version 05
- 7 Guidance on the assessment of investment analysis version 03 (EB51,Annex58)
- 8 Guidelines for the Reporting and Validation of Plant Load Factors version 01 (EB48, Annex11)

Persons interviewed:

List persons interviewed during the validation or persons that contributed with other information that are not included in the documents listed above.

- | | | |
|-----|-------------------|---|
| /1/ | Ms. Zhang Bo | Hebei Construction Investment New Energy Co., Ltd. |
| /2/ | Mr. Zhao Yongchao | Hebei Construction Investment New Energy Co., Ltd. |
| /3/ | Ms. Pan Tao | Consultant of Additional Consulting and Engineering |
| /4/ | Ms. Liu Yao | Consultant of Additional Consulting and Engineering |
| /5/ | Mr. Wang Jinsheng | Local resident |
| /6/ | Ms. Zhou Lihong | Local resident |

 VALIDATION REPORT

7 CURRICULA VITAE OF THE DOE'S VALIDATION TEAM MEMBERS

Ms. (Jasmine) Tang Xuemei	BVC, China	Team Leader, Climate Change Lead Verifier She holds a Master Degree in Environment Engineering. She has 3 years of CDM technical experience in energy sector in P.R China and involved in approximate 60 CDM projects in P.R China. She obtained the certificate of CDM Lead Verifier and Lead Auditor for ISO 14001.
Mr. (Tony) Li Xingtong	BVC, China	Team member, Climate Change Verifier He holds the Master Degree in Landscape Ecology and Bachelor Degree in Environmental Engineering. He has 1 year of CDM technical experience in energy sector in P.R China. He obtained the certificates of CDM Lead Verifier and Lead Auditor of EMS ISO14001. He was involved in approximate 15 CDM projects in P.R. China.
Ms. Li Yiting	BVC, China	Team member, Climate Change Verifier She holds a Master Degree in Environmental Science. She has two and half years of CDM consulting experience in energy sector in P.R China and is involved in approximate 15 CDM projects in P.R China. She obtained the certificate of Lead Auditor for ISO 14001 and the certificate of CDM Lead Verifier.
Mr. (Robin) Wang Jing	BVC, China	Internal Reviewer, Climate Change Lead Verifier He holds a Bachelor Degree in Gas & Heating Engineering. He was a Gas Engineer with over 10 years' experiences in petrochemical sector in P.R. China. He obtained the certificate of CDM Lead Verifier and Lead Auditor for ISO 14001.

VALIDATION REPORT

APPENDIX A: CDM PROJECT VALIDATION PROTOCOL**Table 1. Validation requirements based on the Validation and Verification Manual Version 01.1 (EB51 Annex 03)**

CHECKLIST QUESTION	Ref.	§	comments		Draft Concl	Final Concl
1. Approval			COUNTRY A (China)	COUNTRY B		
1.1. Has the DNA of each Party indicated as being involved in the proposed CDM project activity in section A.3 of the PDD provided a written letter of approval?	VVM	45	No Letter of Approval from DNA of China has been provided.	N/A The Project is a unilateral CDM project.	CAR-1	OK
1.2. Does the letter of approval from DNA of each Party confirm that : - The Party is a Party of the Kyoto Protocol - The participation is voluntary - In the case of the host Party, the proposed CDM project activity contributes to the sustainable development of the country - Refers to the precise proposed CDM project activity title in the PDD being submitted for registration	VVM	45	P. R. China has ratified the Kyoto Protocol on 30/08/2002, refer to http://maindb.unfccc.int/public/country.pl?country=CN Pending on CAR-1	N/A	Pending	OK
1.3. Is(are) the letter(s) of approval unconditional with respect to (1.2) above?	VVM	46	No. It is conditional in China Refer to 1.2 above	N/A	Pending	OK
1.4. Has(ve) the letter(s) of approval been issued by the respective Party's designated national authority (DNA)? If there is doubt with respect to (1.2) above, was verified	VVM	47	Pending on CAR-1	N/A	Pending	OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	comments		Draft Concl	Final Concl
with the DNA that the letter of approval is valid for the proposed CDM project activity under validation?						
2. Participation						
2.1. Have all project participants been listed in a consistent manner in the project documentation?	VVM	51	Construction Investment Yanshan (Guyuan) Wind Energy Co.,Ltd. (P.R.China, Host)	N/A	OK	OK
2.2. Does the DOE have a contractual relationship with the project participants?	VVM	51	Yes	N/A	OK	OK
2.3. Is the information in tabular form of section A.3 consistent with the contact details provided in Annex 1 of the PDD?	VVM	52	Yes	N/A	OK	OK
2.4. Has the participation of each of the project participants been approved by at least one Party involved, either in a letter of approval or in a separate letter specifically to approve participation?	VVM	52	Pending on CAR-1	N/A	Pending	OK
2.5. Are any entities other than those approved as project participants included in these sections of the PDD?	VVM	52	No.		OK	OK
2.6. Has the approval of participation issued from the relevant DNA?	VVM	53	Pending on CAR-1	N/A	Pending	OK
3. Project design document						
3.1. Is the PDD used as a basis for validation prepared in accordance with the latest template and guidance from	VVM	55	Yes. Latest Version 03.2. per the GUIDELINES FOR COMPLETING		OK	OK

VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	comments	Draft Concl	Final Concl
the CDM Executive Board available on the UNFCCC CDM website?			CDM-PDD, CDM-NMB and CDM-NMM – Version 07 — 02/08/2008 (hereafter referred as “CDM-PDD Guideline”)		
3.2. Is the PDD in accordance with the applicable CDM requirements for completing the PDD?	VVM	56	Yes	OK	OK
3.3. Does the DOE conducted physical site visit to assess the Project? If the DOE does not undertake a physical site inspection, this should be appropriately justified.	VVM	62	Yes The physical site visit has been conducted on 12/08/2009.	OK	OK
3.4. In CDM-PDD section A.1 -Title of project -Current version number and date of document	EB 41	Ann 12	Yes Guyuan Wuhuaping 49.5 MW Wind Power Project GSP Version number: 02 Date of the document: 11/06/2009 Requesting registration version:03 Date of the document: 17/12/2009	OK	OK
3.5. In CDM-PDD section A.2, are following provided?	EB 41	Ann 12			
3.5.1. A brief description of the project activity covering purpose which includes the scenario existing prior to the start of project, project scenario and baseline scenario	EB 41 - VVM	Ann 12 - 58 59	The Project is to utilize wind power with installed capacity of 49.5MW wind turbines to generate electricity which will be delivered to the North China Power Grid. In the absence of the Project, equivalent	OK	OK



 VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	comments	Draft Concl	Final Concl
		60	amount of annual power output to the Project will be generated and supplied by North China Power Grid which the Project is connected to. It is the same as the baseline scenario of the Project.		
3.5.2. Does the proposed CDM project activity involve the alteration of an existing installation or process?	VVM	63	No. It is a newly-built project.	OK	OK
3.5.3. Explanation on how the GHG emission reductions effected.	EB 41	Ann 12	The Project will reduce GHG emissions through the displacement of mainly fossil-fuel dominated grid connected power generation. The operation of the Project will lead to emission reductions of CO ₂ , which is estimated to be approximately <u>123,645 t CO₂e</u> per year.	OK	OK
3.5.4. The PP's views on the contribution of project activity to sustainable development	EB 41	Ann 12	The Project makes contribution to the sustainable development as follows: ➤ Reducing greenhouse gas emissions compared to a business-as-usual scenario; ➤ Diversifying power sources and mitigating the demand and supply contradiction; ➤ Helping to stimulate the growth of the wind power industry and encourage	OK	OK



 VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	comments	Draft Concl	Final Concl
			and promote the technology progress and commercial popularization of grid-connected renewable power generation projects in China; ➤ Reducing the emission of other pollutants resulting from the power generation industry in China, compared to a business-as-usual scenario; ➤ Creating 10 employment opportunities for local community during the operation period of the Project and creating several employment opportunities for local community during the construction period of the Project.		
3.6. In CDM-PDD section A.3, are following provided in the tabular format? - List of project participants and parties - Identification of Host Party - Indication whether the Party wishes to be considered as project participant	EB 41 VVM	Ann 12 51,52	Yes. Refer to section 2.2-2.4 above.	OK	OK
3.7. In CDM-PDD section A.4.1, are following provided?	EB 41	Ann 12			

VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	comments	Draft Concl	Final Concl
3.7.1. Physical description, location, host party(ies) and address as required	EB 41	Ann 12	The Project is located in Pingdingbu Town, Guyuan County, Zhangjiakou City, Hebei Province, P. R. China.	OK	OK
3.7.2. Detailed physical location with unique identification of the project activity (e.g. Longitude/latitude)	EB 41	Ann 12	Yes. The center of the Project geographical coordinates is east longitude 115°45'08" and north latitude of 41°36'36".	OK	OK
3.8. In CDM-PDD section A.4.2, is the list of categories of project activities provided?	EB 41	Ann 12	Yes Sectoral Scope 1: Energy Industries (renewable sources)	OK	OK
3.9. In CDM-PDD section A.4.3, are following provided?	EB 41	Ann 12			
3.9.1. A description of how environmentally safe and sound technology, and know-how, is transferred to the Host Party(ies)	EB 41	Ann 12	The wind turbines are produced by General Electric Company. CL-1: It is silent about whether the Project involved technology transfer to China.	CL-1	OK
3.9.2. Further explanation of purpose of project activity with scenario existing prior to the start of project, scope or present activities and the baseline scenario	EB 41	Ann 12	The Project is a newly built wind farm. The baseline scenario is the same as the scenario existing prior to the implementation of the Project, i.e. equivalent amount of annual power output to the Project will be generated and supplied by North China Power Grid which	OK	OK

VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	comments	Draft Concl	Final Concl
			the Project is connected to.		
3.9.3. List and arrangement of the main manufacturing/production technologies, systems and equipments involved	EB 41	Ann 12	The Project involves the installation of 33 sets of wind turbines with unit capacity of 1.5 MW, which amounts to a total installed capacity of 49.5MW. The expected effective operating hours amount to 2,368 per year and the estimated net annual power supplied to the grid is 117,216 MWh.	OK	OK
3.9.4. The emissions sources and GHGs involved	EB 41	Ann 12	Yes	OK	OK
3.10. In CDM-PDD section A.4.4, is the estimation of emission reductions provided as requested in a tabular format?	EB 41	Ann 12	Renewable crediting period has been chosen. The estimation of emission reductions provided as requested in a tabular format.	OK	OK
3.11. In CDM-PDD section A.4.5, is information regarding public funding provided?	EB 41	Ann 12	Yes. There is no public funding from Annex I Parties for the Project.	OK	OK
3.12. In CDM-PDD section (Baseline identification)	EB 41	Ann 12			
3.12.1. The approved methodology and version number	EB 41 VVM	Ann 12 69	ACM0002 "Consolidated baseline methodology for grid-connected electricity generation from renewable sources" (Version 10, EB47)	OK	OK

VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	comments	Draft Concl	Final Concl
			As ACM0002 required, the latest version of “Tool to calculate the emission factor for an electricity system” and “Tool for the demonstration and assessment of additionality” (Version 5.2) has been applied. The “Tool-Grid EF” has been updated on 16/10/2009, and the PDD has been revised accordingly.		
3.12.2. Are the applicability conditions of the methodology met?	VVM	70			
3.12.2.1. This methodology is applicable to grid-connected renewable power generation project activities that (a) install a new power plant at a site where no renewable power plant was operated prior to the implementation of the project activity (greenfield plant); (b) involve a capacity addition; (c) involve a retrofit of (an) existing plant(s); or (d) involve a replacement of (an) existing plant(s).	ACM 0002	Ver 10	The Project is the greenfield project.	OK	OK
3.12.2.2. 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	ACM 0002	Ver 10	The Project is a grid-connected renewable new wind power project.	OK	OK

VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	comments	Draft Concl	Final Concl
plant/unit, solar power plant/unit, wave power plant/unit or tidal power plant/unit					
3.12.2.3. In case of hydro power plants, one of the following conditions must apply: - The project activity is implemented in an existing reservoir, with no change in the volume of reservoir; or - The project activity is implemented in an existing reservoir, where the volume of reservoir is increased and the power density of the project activity, as per definitions given in the Project Emissions section, is greater than 4 W/m²; or - The project activity results in new reservoirs and the power density of the power plant, as per definitions given in the Project Emissions section, is greater than 4 W/m².	ACM 0002	Ver 10	N/A	OK	OK
3.12.2.4. In the case of retrofits, replacements, or capacity additions, this methodology is only applicable if the most plausible baseline scenario, as a result of the identification of baseline scenario, is "the continuation of the current situation".	ACM 0002	Ver 10	N/A	OK	OK
3.13. Does the PDD correctly describe the project boundary, including the physical delineation of the proposed CDM project activity included within the project boundary for the purpose of calculating project and baseline emissions for the proposed CDM project activity?	VVM	77 78	In the PDD B.3, the Project boundary is clearly identified that includes the physical, geographical site of the Project and all power plants connected physically to the NCPG that the Project is connected to. This is in line with the delineation of grid	OK	OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	comments	Draft Concl	Final Concl
			boundaries as provided by the DNA of China. The defined project boundary is in line with ACM0002 ver 10. And all emission sources and GHGs have been included in the project boundary.		
3.14. In CDM-PDD section B.3, are following provided? (a) Description of all sources and gases included in the project boundary in the table (b) A flow diagram of the project boundary physically delineating the project activity with all equipments, systems and flows of mass and energy etc	VVM EB 41	79 Ann 12	Yes	OK	OK
3.15. Is an explanation how the most plausible baseline scenario is identified in accordance with the selected baseline methodology is provided in CDM-PDD section B.4?	EB 41	Ann 12			
3.15.1.If the project activity is the installation of a new grid-connected renewable power plant/unit, how the most plausible baseline scenario is identified?	ACM 0002	Ver. 10	"Electricity delivered to the grid by the Project would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in the "Tool to calculate the emission factor for an electricity system", has been identified	OK	OK

VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	comments	Draft Concl	Final Concl
			directly in ACM0002 (version 10).		
3.15.2. If the project activity is a capacity addition to existing grid-connected renewable power plant/unit, how the most plausible baseline scenario is identified?	ACM 0002	Ver. 10	N/A	OK	OK
3.15.3. If the project activity is the retrofit or replacement of existing grid-connected renewable power plant/unit(s) at the project site, how the most plausible baseline scenario is identified?	ACM 0002	Ver. 10	N/A	OK	OK
3.15.3.1. In step 1, have all the realistic and credible alternative baseline scenarios been identified?	ACM 0002	Ver. 10	N/A	OK	OK
3.15.3.2. In step 2, have the barriers that would prevent the implementation of alternative scenarios identified, and eliminated the relevant alternative scenarios?	ACM 0002	Ver. 10	N/A	OK	OK
3.15.3.3. Has the PP applied the step 3: investment analysis?	ACM 0002	Ver. 10	N/A	OK	OK
3.15.3.4. If yes, has the investment analysis been conducted against the EB41.Annex45?	ACM 0002	Ver. 10	N/A	OK	OK
3.16. Does the PDD identify the baseline for the proposed CDM project activity, defined as the scenario that reasonably represents the anthropogenic emissions by sources of GHGs that would occur in the absence of the proposed CDM project activity?	VVM	80	Yes. The baseline scenario is clearly identified in section B.4 in accordance with ACM0002 (version 10).	OK	OK
3.17. Has any procedure contained in the methodology to identify the most reasonable baseline scenario, been	VVM	81	Not applicable, as methodology ACM0002 prescribes the baseline scenario and no	OK	OK

VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	comments	Draft Concl	Final Concl
correctly applied?			further analysis required, therefore, there is no need to take steps to identify the baseline scenarios.		
3.18. Does the selected methodology require use of tools (such as the “Tool for the demonstration and assessment of additionality” and the “Combined tool to identify the baseline scenario and demonstrate additionality”) to establish the baseline scenario?	VVM	81	N/A	OK	OK
3.19. Does the methodology require several alternative scenarios to be considered in the identification of the most reasonable baseline scenario?	VVM	82	No	OK	OK
3.20. Are the documents and sources referred to in the PDD correctly quoted and interpreted And are they cross checked with other verifiable and credible sources, such as local expert opinion, if available?	VVM	83	N/A	OK	OK
3.21. Have all applicable CDM requirements been taken into account in the identification of the baseline scenario for the proposed CDM project activity?	VVM	84	N/A	OK	OK
3.22. Have all relevant policies and circumstances been identified and correctly considered in the PDD, in accordance with the guidance by the CDM Executive Board?	VVM	84	N/A	OK	OK
3.23. Does the PDD provide a verifiable description of the identified baseline scenario, including a description of the	VVM	85	It is identified in the PDD B.4 that: supply of equivalent annual power output by the	OK	OK

VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	comments	Draft Concl	Final Concl
technology that would be employed and/or the activities that would take place in the absence of the proposed CDM project activity?			North China Power Grid is the baseline scenario for the Project.		
3.24. In CDM-PDD section B.5, are following provided?	EB 41	Ann 12			
3.24.1. Explanation and Justification of how and why this project activity is additional and therefore not the baseline scenario in accordance with the selected baseline methodology	EB 41	Ann 12	Yes	OK	OK
3.24.2. Evidence that the incentive from the CDM was seriously considered in the decision to proceed with the project activity, if the starting date of the project activity is before the date of validation.	EB 41	Ann 12	The board decision on CDM development was made on 20/01/2009. The PP informed China's DNA on the intention to implement CDM development of the Project on 13/04/2009 and confirmed by China's DNA on 27/04/2009.	OK	OK
3.25. In CDM-PDD section B.6.1, are following provided? (Algorithms and/or formulae used to determine emission reductions)	EB 41	Ann 12			
3.25.1. Explanation how the procedures, in the approved methodology to calculate project emissions, baseline emissions, leakage emissions and emission reductions are applied to the proposed project activity	EB 41	Ann 12	Yes. Complying with ACM0002, the "Tool to calculate the emission factor for an electricity system" ver. 02 is applied.	OK	OK
3.25.2. Do the steps taken and equations applied to calculate project emissions comply with the requirement of the	VVM	88	For the Project, $PE_y = 0$.	OK	OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	comments	Draft Concl	Final Concl
selected baseline and monitoring methodology?					
3.25.3. Do the steps taken and equations applied to calculate project emissions comply with the requirement of the selected baseline and monitoring methodology, for the following types: - Greenfield renewable energy power plants - Retrofit or replacement of an existing renewable energy power plant - Capacity addition to an existing renewable energy power plant	VVM	88	$BE_y = EG_{PJ,y} \cdot EF_{grid,CM,y}$ For Greenfield renewable energy power plant: $EG_{PJ,y} = EG_{facility,y}$	OK	OK
3.25.4. Do the steps taken and equations applied to calculate leakage comply with the requirement of the selected baseline and monitoring methodology?	VVM	88	As per ACM0002 (version 10), no leakage emissions are considered.	OK	OK
3.25.5. Do the steps taken and equations applied to calculate emission reductions comply with the requirement of the selected baseline and monitoring methodology?	VVM	88	$ER_y = BE_y - PE_y$	OK	OK
3.25.6. Have the equations and parameters in the PDD been correctly applied with respect those in the select approved methodology?	VVM	89	The steps and equations applied are consistent with ACM0002.	OK	OK
3.25.7. Does the methodology provide for selection between different options for equations or parameters?	VVM	89	Yes. Options in Step 1, 3 and 4 can be used for OM factor determination.	OK	OK
3.25.8. If yes, has adequate justification been provided and correct equations and parameters been used in	VVM	89	As mentioned in the "Tool to calculate the emission factor for an electricity system",	GL-2	OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	comments	Draft Concl	Final Concl
accordance with the methodology selected?			option B in step 4 should only be used if only nuclear and renewable power generation are considered as low-cost/must-run power sources and if the quantity of electricity supplied to the grid by these sources is known. However, PDD is silent about it.		
3.25.9. If data and parameters will not be monitored throughout the crediting period of the proposed CDM project activity but have already been determined and will remain fixed throughout the crediting period, - All data sources and assumptions are appropriate - Calculations are correct - Be applicable to the proposed CDM project activity - Will result in a conservative estimate of the emission reductions.	VVM	90	Yes	OK	OK
3.25.10. If data and parameters will be monitored on implementation and hence become available only after validation of the project activity, are the estimates provided in the PDD for these data and parameters are reasonable?	VVM	90	Yes	OK	OK
3.25.11. Resulting in a conservative estimate of the emission reductions?	VVM	90	Yes	OK	
3.25.12. In CDM-PDD section B.6.2, are following provided? A	EB 41	Ann	Yes.	OK	OK

VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	comments	Draft Concl	Final Concl
compilation of information on the data and parameters that are not monitored throughout the crediting period but that are determined only once and thus remains fixed throughout the crediting period and that are available when validation is undertaken.		12	Complying with “Tool-Grid EF”, the necessary official data of power grid make publically by NDRC are available. Refer to: http://cdm.ccchina.gov.cn/WebSite/CDM/UpFile/2008/20081230102527637.pdf		
3.25.13. Explanation and justification for the choice of the source of data	EB 41	Ann 12	The official data of Chinese power grid issued by NDRC is used.	OK	OK
3.25.14. Clear and transparent references or additional documentation in Annex 3	EB 41	Ann 12	Yes	OK	OK
3.25.15. Where values have been measured, a description of the measurement methods and procedures (e.g. which standards have been used), indicated the responsible person/entity having undertaken the measurement, the date of measurement(s) and the measurement results	EB 41	Ann 12	N/A	OK	OK
3.26. In CDM-PDD section B.6.3, are following provided?	EB 41	Ann 12			
3.26.1. A transparent ex ante calculation of project emissions, baseline emissions (or, where applicable, direct calculation of emission reductions) and leakage emissions expected during the crediting period, applying all relevant equations provided in the approved methodology	EB 41	Ann 12	Yes. The Project design follows the ACM0002 (version 10). Accordingly, the project emissions and leakage are considered to be zero.	OK	OK
3.26.2. Documentation how each equation is applied, in a	EB 41	Ann	Yes.	OK	OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	comments	Draft Concl	Final Concl
manner that enables the reader to reproduce the calculation		12			
3.26.3. Additional background information and or data in Annex 3, including relevant electronic files (i.e. spreadsheets)	EB 41	Ann 12	Yes The calculation process of Emission Factor of NCPG has been provided in Annex 3 of PDD.	OK	OK
3.27. In CDM-PDD section B.6.4 are, the results of the ex ante estimation of emission reductions for all years of the crediting period, provided in a tabular format?	EB 41	Ann 12	Yes. Refer to PDD B.6.4.	OK	OK
3.28. In CDM-PDD section B.7.1, are following provided?	EB 41	Ann 12			
3.28.1. Specific information on how the data and parameters that need to be monitored would actually be collected during monitoring for the project activity	EB 41	Ann 12	Yes	OK	OK
3.28.2. For each parameter the following below information, using the table provided:	EB 41	Ann 12			
3.28.2.1. The source(s) of data that will be actually used for the proposed project activity (e.g. which exact national statistics). Where several sources may be used, explain and justify which data sources should be preferred.	EB 41	Ann 12	CAR-2: The parameter should be continuously monitored and recorded at least monthly.	CAR-2	OK
3.28.2.2. Where data or parameters are supposed to be measured, specify the measurement methods and	EB 41	Ann 12	The net electricity supplied by the Project to the grid will be measured by	Pending	OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	comments	Draft Concl	Final Concl
procedures, how the measurement is undertaken: (i) A description of the QA/QC procedures (if any) that should be applied; (ii) Where relevant: any further comment.			bi-directional meter(s) installed at the main transmission line of the Project and recorded monthly. Pending on CAR-2		
3.29. In CDM-PDD section B.7.2, is a detailed description of the monitoring plan provided?	EB 41	Ann 12	Overall responsibility for monitoring and carrying out the monitoring following this monitoring plan lies with Construction Investment Yanshan (Guyuan) Wind Energy Co., Ltd. The operating and management structure and detailed description of the monitoring plan is provided in B.7.2 in PDD.	OK	OK
3.30. In CDM-PDD section B.8, are following provided?	EB 41	Ann 12			
3.30.1. Date of completion of the application of the methodology to the project activity study in DD/MM/YYYY	EB 41	Ann 12	Yes Date of completion of the PDD version 03 is 17/12/2009.	OK	OK
3.30.2. Contact information of the person(s)/entity(ies) responsible for the application of the baseline and monitoring methodology to the project activity	EB 41	Ann 12	Yes. The relevant contact information is provided.	OK	OK
3.30.3. Indication if the person/entity is also a project participant listed in Annex 1	EB 41	Ann 12	The person/entity is not project participant.	OK	OK
3.31. In CDM-PDD section C.1.1, are following provided?	EB 41	Ann 12			



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	comments	Draft Concl	Final Concl
3.31.1. Is the project's starting date clearly defined and evidenced?	EB 41	Ann 12	CAR-3: As per the contracts provided, the starting date of the Project should be revised as per the signed tower purchase contract on 18/03/2009.	CAR-3	OK
3.32. In CDM-PDD section D., are the conclusions and all references to support documentation of an environmental impact assessment undertaken in accordance with the procedures as required by the Host Party, if environmental impacts are considered significant by the project participants or the Host, provided?	EB 41	Ann 12	Yes. The impacts have been clearly described in section D.1 of the PDD.	OK	OK
3.33. In CDM-PDD section E.1, are the following provided?	EB 41	Ann 12			
3.33.1. The process by which comments by local stakeholders have been invited and compiled. An invitation for comments by local stakeholders shall be made in an open and transparent manner, in a way that facilitates comments to be received from local stakeholders and allows for a reasonable time for comments to be submitted.	EB 41	Ann 12	Yes, as PDD described, it was conducted during Dec. 2008, before GSP of the Project. The survey was carried out by distributing questionnaires to 60 households in local area.	OK	OK
3.33.2. The project activity is described in a manner, which allows the local stakeholders to understand the project activity, taking into account confidentiality provisions of the CDM modalities and procedures.	EB 41	Ann 12	Yes. The survey was carried out by distributing questionnaires to 60 households in local area.	OK	OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	comments	Draft Concl	Final Concl
3.33.3. The local stakeholder process has been, completed before submitting the proposed project activity to the DOE for validation.	EB 41	Ann 12	Yes	OK	OK
3.34. In CDM-PDD section E.2, are following provided?	EB 41	Ann 12			
3.34.1. Identification of local stakeholders that have made comments	EB 41	Ann 12	Yes	OK	OK
3.34.2. A summary of these comments.	EB 41	Ann 12	All the stakeholders understand and support the construction of the Project.	OK	OK
3.35. In CDM-PDD section E.3 is the explanation of how due account have been taken of comments received from local stakeholders provided?	EB 41	Ann 12	There is no necessity to modify the Project in the aspect of design, construction and operation. The Project Owner will refer to public comments and strictly implement the pollution prevention measures stated in the Environmental Impact Statement Form.	OK	OK
3.36. In CDM-PDD Annex 1, are the following provided?	EB 41	Ann 12			
3.36.1. Contact information of project participants	EB 41	Ann 12	Yes.	OK	OK
3.36.2. For each organization listed in section A.3 the following mandatory fields: Organization, Name of contact person, Street, City, Postfix/ZIP, Country, Telephone and Fax or e-mail	EB 41	Ann 12	Yes.	OK	OK
3.37. In CDM-PDD Annex 2, is information from Parties	EB 41	Ann	There is no public funding from Annex I	OK	OK

VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	comments	Draft Concl	Final Concl
included in Annex I on sources of public funding for the project activity which 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 those Parties provided?		12	Parties for the Project.		
3.38. In CDM-PDD Annex 3, is the background information used in the application of the baseline methodology provided?	EB 41	Ann 12	Yes.	OK	OK
3.39. In CDM-PDD Annex 4, is the background information used in the application of the monitoring methodology provided?	EB 41	Ann 12	Yes	OK	OK
4. Additionality of a project activity					
4.1. General checklist for additionality					
4.1.1. Does the CDM-PDD state the latest version of the additionality tool being used?	VVM	94	Yes. The approved "Tool for the Demonstration and Assessment of Additionality" version 05.2 is used.	OK	OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	comments	Draft Concl	Final Concl
4.1.2. Were the steps taken of the “Tool for the Demonstration and Assessment of Additionality” to assess additionality used:	EB 39	Ann 10	Yes. Step 1-identification of alternatives of the project activity, Step 2-Investment analysis Step 3 -Barrier analysis (not applied) Step 4-common practice analysis	OK	OK
4.1.3. Have the following alternatives been included while defining alternatives as per sub-step 1a?	EB 39	Ann 10			
4.1.3.1. The proposed project activity undertaken without being registered as a CDM project activity;	EB 39	Ann 10	Yes. <u>Alternative II</u> is identified. <u>Alternative II:</u> The proposed project not undertaken as CDM project;	OK	OK
4.1.3.2. Other realistic and credible alternative scenario(s) to the proposed CDM project activity scenario that deliver outputs services or services with comparable quality, properties and application areas, taking into account, where relevant, examples of scenarios identified in the underlying methodology;	EB 39	Ann 10	Yes. <u>Alternative I</u> and <u>III</u> are identified. <u>Alternative I:</u> Construction of a thermal power plant with equivalent electricity generation; <u>Alternative III:</u> Construction of a power plant using other sources of renewable energy with equivalent amount of annual electricity generation;	OK	OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	comments	Draft Concl	Final Concl
4.1.3.3. If applicable, continuation of the current situation (no project activity or other alternatives undertaken).	EB 39	Ann 10	Yes. <u>Alternative IV</u> is identified. <u>Alternative IV</u> : Provision of an equivalent amount of annual power output by North China Power Grid which the Project is connected to.	OK	OK
4.1.4. Has the outcome of Step 1a: Identified realistic and credible alternative scenario(s) to the project activity done correctly?	EB 39	Ann 10	Yes <u>Alternative III</u> was eliminated: Because of shortage of water resources and no surplus biomass in Guyuan, there is no economically exploitable water resource, nor biomass resource. There is also no economically exploitable geothermal resource. And the per kW investment of Solar PV is too much higher than the Project.	OK	OK



 VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	comments	Draft Concl	Final Concl
4.1.5. Is the alternative(s) in compliance with all mandatory applicable legal and regulatory requirements, even if these laws and regulations have objectives other than GHG reductions, e.g. to mitigate local air pollution, and outcome of Step 1.b is thus concluded?	EB 39	Ann 10	Yes According to Chinese power regulations, construction of thermal power plant with the installed capacity less than 135MW are prohibited in the areas covered by large grids, Hence the <u>alternative I</u> , Construction of a thermal power plant with equivalent amount of annual electricity generation is not a realistic and credible alternative. <u>Alternative II and IV left.</u>	OK	OK
4.1.6. If an alternative does not comply with all mandatory applicable legislation and regulations, has it been shown that, based on an examination of current practice in the country or region in which the law or regulation applies, those applicable legal or regulatory requirements are systematically not enforced and that noncompliance with those requirements is widespread in the country?	EB 39	Ann 10	Not applicable.	OK	OK
4.1.7. Has PP selected Step 2 (Investment analysis) or Step 3 (Barrier analysis) or both Steps 2 and 3?	EB 39	Ann 10	Step 2 has been applied.	OK	OK
4.1.8. In step 2, have all the sub-steps as below been followed?	EB 39	Ann 10	Yes	OK	OK

VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	comments	Draft Concl	Final Concl
4.1.9. In sub-step 2a has the determination of appropriate method of analysis done as per the guidance as below?	EB 39	Ann 10			
4.1.9.1. Simple cost analysis if the CDM project activity and the alternatives identified in Step 1 generate no financial or economic benefits other than CDM related income (Option I).	EB 39	Ann 10	Excluded as the Project generates financial benefits by the sales of electricity other than CDM revenue.	OK	OK
4.1.9.2. Otherwise, use the investment comparison analysis (Option II) or the benchmark analysis (Option III). Specify option used with justification.	EB 39	Ann 10	Yes. The Project will use benchmark analysis method (option III) based on Project IRR.	OK	OK
4.1.10. Has the below guideline followed for sub-step 2b Option I. Apply simple cost analysis? Document the costs associated with the CDM project activity and the alternatives identified in Step1 and demonstrate that there is at least one alternative which is less costly than the project activity.	EB 39	Ann 10	Not applicable.	OK	OK
4.1.11. Has the below guideline followed for sub-step 2b Option II. Apply investment comparison analysis? Identify the financial indicator, such as IRR, NPV, cost benefit ratio, or unit cost of service most suitable for the project type and decision-making context. Please specify	EB 39	Ann 10	Not applicable.	OK	OK
4.1.12. Has the most suitable benchmark for the project been determined in Sub-step 2b?	EB 39	Ann 10	Yes	OK	OK
4.1.12.1. Which source shall the discount rates and benchmarks derived from? Please specify benchmark	EB 39	Ann 10	Yes. Derived from (d) Government/official approved benchmark where such	OK	OK



 VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	comments	Draft Concl	Final Concl
and justify.			benchmarks are used for investment decisions; With reference to Interim Rules on Economic Assessment of Electrical Engineering Retrofit Projects issued by former State Power Corporation of China in 2002, the financial benchmark of Project IRR of Chinese electricity industry is 8%.		
4.1.13. Has the below guideline followed for Sub-step 2c: Calculation and comparison of financial indicators (only applicable to Options II and III)?	EB 39	Ann 10			
4.1.13.1. Calculate the suitable financial indicator for the proposed CDM project activity and, in the case of Option II above, for the other alternatives. Include all relevant costs (including, for example, the investment cost, the operations and maintenance costs), and revenues (excluding CER revenues, but possibly including inter alia subsidies/fiscal incentives, ODA, etc, where applicable), and, as appropriate, non-market cost and benefits in the case of public investors if this is standard practice for the selection of public investments in the host country.	EB 39	Ann 10	Yes See Table 1 in B.5 of PDD	OK	OK

VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	comments	Draft Concl	Final Concl
4.1.13.2. Present the investment analysis in a transparent manner and provide all the relevant assumptions, preferably in the CDM-PDD, or in separate annexes to the CDM-PDD.	EB 39	Ann 10	The IRR spreadsheet has been provided.	OK	OK
4.1.13.3. Justify and/or cite assumptions.	EB 39	Ann 10	CAR-4: The post-tax IRR calculation should be complied with as the latest "Guidance on the Assessment of Investment Analysis", because the interest payable should be taken into account in the calculation of income tax.	CAR-4	OK
4.1.13.4. In calculating the financial/economic indicator, the project's risks can be included through the cash flow pattern, subject to project-specific expectations and assumptions.	EB 39	Ann 10	Yes. Relevant costs are included.	OK	OK
4.1.13.5. Assumptions and input data for the investment analysis shall not differ across the project activity and its alternatives, unless differences can be well substantiated.	EB 39	Ann 10	Not applicable as Option III is used.	OK	OK
4.1.13.6. Present in the CDM-PDD a clear comparison of the financial indicator for the proposed CDM activity. Please specify details for above.	EB 39	Ann 10	Not applicable as Option III is used.	OK	OK



 VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	comments	Draft Concl	Final Concl
4.1.13.7. Is the period of assessment limited to the proposed crediting period of the CDM project activity?	EB 51	Ann 58	No. The period of assessment is 22 years (including 2-year construction period), which is in accordance with the requirement of <i>"Interim Rules on Economic Assessment of Electric Power Engineering Retrofit Projects"</i> and Para. 3 of <i>"Guidance on the Assessment of Investment Analysis"</i> ver. 03. Therefore the chosen period of assessment reflects the expected operation of the Project.	OK	OK
4.1.13.8. Does the project IRR and equity IRR calculations reflect the period of expected operation of the underlying project activity (technical lifetime), or - if a shorter period is chosen - include the fair value of the project activity assets at the end of the assessment period?	EB 51	Ann 58	In the project IRR calculations, the repayment period is 15 years. And the fair value of the Project has been included at the end of the assessment period.	OK	OK
4.1.13.9. Does the IRR calculation include the cost of major maintenance and/or rehabilitation if these are expected to be incurred during the period of assessment?	EB 51	Ann 58	Yes	OK	OK

VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	comments	Draft Concl	Final Concl
4.1.13.10. Do the project participants justify the appropriateness of the period of assessment in the context of the underlying project activity, without reference to the proposed CDM crediting period?	EB 51	Ann 58	Yes.	OK	OK
4.1.13.11. Does the cash flow in the final year include a fair value of the project activity assets at the end of the assessment period?	EB 51	Ann 58	Yes, the cash flow in the final year included a fair value, and the residual rate of the Project is 5%.	OK	OK
4.1.13.12. Is pre-tax benchmark or post tax benchmark applied in the investment analysis? If a post tax benchmark is applied, is the actual interest payable taken into account in the calculation of income tax? If yes, is the interest calculated according to the prevailing commercial interest rate in the region, preferably by assessing the cost of other debt recently acquired by the project developer and by applying a debt-equity ratio used by the project developer for investments taken in the previous three years.	EB 51	Ann 58	The post tax benchmark is applied in the investment analysis. Pending on CAR-4	Pending	OK
4.1.14. Has the below guideline followed for Sub-step 2d: Sensitivity analysis (only applicable to Options II and III)? Include a sensitivity analysis that shows whether the conclusion regarding the financial/economic attractiveness is robust to reasonable variations in the critical assumptions.	EB 39	Ann 10	Four key indicators are identified for sensitivity analysis of the Project, including total project cost, O&M expenses, tariff, and supplied electricity with a variation range from -10% ~ +10%.	OK	OK



 VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	comments	Draft Concl	Final Concl
4.1.15. Has the outcome of Step 2 clearly mentioned with justification?	EB 39	Ann 10	CL-3: Based on the statistics of the registered CDM projects in Hebei Province, the total project cost of the Project is higher than some others. Consequently, the suitability of value of "total project cost" in the investment analysis should be clarified.	CL-3	OK
4.1.16. Have the barrier analysis (Step 3) been conducted?	EB 39	Ann 10	Not applied.	OK	OK
4.1.17. In step 4: Common practice analysis has all the sub-steps as below followed?	EB 39	Ann 10			
4.1.17.1. Has the below guideline followed for Sub-step 4a: Analyze other activities similar to the proposed project activity? Provide an analysis of any other activities that are operational and that are similar to the proposed project activity. Other CDM project activities are not to be included in this analysis. Provide documented evidence and, where relevant, quantitative information. On the basis of that analysis, describe whether and to which extent similar activities have already diffused in the relevant region.	EB 39	Ann 10	The criteria are: - Projects since April 2002 - Project in Hebei Province CL-4: The reason of Hebei province was defined as the relevant region should be clarified.	CL-4	OK
4.1.17.2. Has the below guideline followed for Sub-step 4b: Discuss any similar Options that are occurring?	EB 39	Ann 10	Three similar activities: Chengde Hongsong Wind Farm Project, Fengning Yuershan Wind Farm Project and Shangyi	OK	OK



 VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	comments	Draft Concl	Final Concl
			Manjing Wind Farm Project are identified, but all of them have essential distinctions with the Project.		
4.1.18. Has the outcome from Step 4 clearly mentioned in PDD?	EB 39	Ann 10	Yes	OK	OK
4.2. Prior consideration of the clean development mechanism					
4.2.1. Is the project activity start date prior to the date of publication of the PDD for stakeholder comments?	VVM	97	Yes The start date is 18/03/2009, which is prior to the date of publication of the PDD for stakeholder comments on 15/06/2009.	OK	OK
4.2.2. If yes, were the CDM benefits considered necessary in the decision to undertake the project as a proposed CDM project activity?	VVM	97	Prior to the starting date, PP had informed the China DNA to implement CDM development of the Project on 13/04/2009, and got the confirmation on 27/04/2009.	OK	OK
4.2.3. Is the start date of the project activity, reported in the PDD, in accordance with the "Glossary of CDM terms", which states that "The starting date of a CDM project activity is the earliest date at which either the implementation or construction or real action of a project activity begins"?	VVM	98	Pending on CAR-3	Pending	OK
4.2.4. Does the project activity require construction, retrofit or other modifications?	VVM	98	The Project requires construction.	OK	OK
4.2.5. Is it ensured that the date of commissioning cannot be considered as the project activity start date?	VVM	98	The commissioning date is not considered as the Project start date.	OK	OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	comments	Draft Concl	Final Concl
4.2.6. Is it a new project activity (a project activity with a start date on or after 02 August 2008) or an existing project activity (a project activity with a start date before 02 August 2008)?	VVM	99	It is a new project activity.	OK	OK
4.2.7. For a new project, for which PDD has not been published for global stakeholder consultation or a new methodology proposed to the CDM Executive Board before the project activity start date, has it been ensured that PPs had informed the host Party DNA and the UNFCCC secretariat in writing of the commencement of the project activity and of their intention to seek CDM status, by means of confirmation from the UNFCCC secretariat?	VVM	100	Yes PP had informed the China DNA to implement CDM development of the Project on 13/04/2009, and got the confirmation on 27/04/2009, at that time, the "Guidance-Prior Consideration" version 02 (EB48, Annex61, 17/07/2009) and version 03 (EB49, Annex22, 11/09/2209) are not available. Therefore, the requirement to inform UNFCCC secretariat in writing of the commencement of the Project and of their intention to seek CDM status within six months of the start date of the Project is not suitable for the Project, BVC therefore confirmed that the notification to China's DNA is enough to prove that the incentives of CDM were seriously considered prior to the start of the Project.	OK	OK

VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	comments	Draft Concl	Final Concl
4.2.8. For an existing project activity, for which the start date is prior to the date of publication of the PDD for global stakeholder consultation, are the following evidences provided:	VVM	101	N/A	OK	OK
4.2.8.1. Evidence that must indicate that awareness of the CDM prior to the project activity start date, and that the benefits of the CDM were a decisive factor in the decision to proceed with the project,	VVM	101	N/A	OK	OK
4.2.8.2. Reliable evidence from project participants that must indicate that continuing and real actions were taken to secure CDM status for the project in parallel with its implementation	VVM	101	N/A	OK	OK
4.3. Identification of alternatives					
4.3.1. Does the approved methodology that is selected by the proposed CDM project activity prescribe the baseline scenario and hence no further analysis is required?	VVM	104	Yes For the Project, it is prescribed the baseline scenario in ACM0002 version 10.	OK	OK
4.3.2. If no, does the PDD identify credible alternatives to the project activity in order to determine the most realistic baseline scenario?	VVM	104	N/A	OK	OK
4.3.3. Does the list of alternatives given in the PDD ensure that: - One of the options that the project activity is undertaken without being registered as a proposed CDM project activity	VVM	105	N/A	OK	OK

VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	comments	Draft Concl	Final Concl
- The list contains all plausible alternatives - The alternatives comply with all applicable and enforced legislation					
4.4. Investment analysis					
4.4.1. If investment analysis has been used to demonstrate the additionality of the proposed CDM project activity , does the PDD provide evidence that the proposed CDM project activity would not be:	VVM	107			
4.4.1.1. The most economically or financially attractive alternative?	VVM	107	N/A	OK	OK
4.4.1.2. Economically or financially feasible, without the revenue from the sale of certified emission reductions (CERs)?	VVM	107	Yes Project IRR 5.31% (without CDM revenue) vs benchmark 8%.	OK	OK
4.4.2. Was this shown by one of the following approaches?	VVM	108			
4.4.2.1. The proposed CDM project activity would produce no financial or economic benefits other than CDM-related income.	VVM	108	N/A	OK	OK
4.4.2.2. The proposed CDM project activity is less economically or financially attractive than at least one other credible and realistic alternative.	VVM	108	N/A	OK	OK
4.4.2.3. The financial returns of the proposed CDM project activity would be insufficient to justify the required investment.	VVM	108	Yes Project IRR 5.31% (without CDM revenue) vs benchmark 8%.	OK	OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	comments	Draft Concl	Final Concl
4.4.3. Was a thorough assessment of all parameters and assumptions used in calculating the relevant financial indicator, and determine the accuracy and suitability of these parameters using the available evidence and expertise in relevant accounting practices conducted?	VVM	110	Pending on CAR-4	Pending	OK
4.4.4. Was the sensitivity analysis by the project participants to determine under what conditions variations in the result would occur and the likelihood of these conditions assessed?	VVM	110	Yes	OK	OK
4.4.5. To determine this, was it assessed whether it is reasonable to assume that no investment would be made at a rate of return lower than the benchmark by: a. Assessing previous investment decisions by the project participants involved, and b. Determining whether the same benchmark has been applied, or c. Determining if there are verifiable circumstances that have led to a change in the benchmark	VVM	111	Yes. The post-tax benchmark of 8% is widely used for power projects. No other benchmark rate can be applied in China power sector.	OK	OK
4.4.6. Did the project participants rely on values from Feasibility Study Reports (FSR) that are approved by national authorities for proposed CDM project activities?	VVM	112	The input values are sourced from the FSR which was approved by the local government.	OK	OK
4.4.7. If yes: (EB38 para.54)	VVM	112			
4.4.7.1. Has the FSR been the basis of the decision to proceed with the investment in the project, i.e. that the period of	VVM	112	Yes The input values used in the investment	OK	OK

VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	comments	Draft Concl	Final Concl
time between the finalization of the FSR and the investment decision is sufficiently short for the DOE to confirm that it is unlikely in the context of the underlying project activity that the input values would have materially changed?			analysis were all quoted from the FSR completed in Sep. 2008 by Hebei Electric Power Design & Research Institute granted in the power industry by China government and approved by DRC of Hebei Province on 31/12/2008. Based on the FSR and the outcome of financial analysis, the PP held a board meeting on 20/01/2009 and decided to seek CDM support. The period of time between the finalization of the FSR and the PP's final decision is thus considered short.		
4.4.7.2. Are the values used in the PDD and associated annexes fully consistent with the FSR? If not, was the appropriateness of the values validated?	VVM	112	Pending on CAR-4	Pending	OK
4.4.7.3. On the basis of its specific local and sectoral expertise, is confirmation provided, by cross-checking or other appropriate manner, that the input values from the FSR are valid and applicable at the time of the investment decision?	VVM	112	Yes The input values from the FSR have been crosschecked with the <i>Economic Evaluation Method and Parameters for Project Construction (version 3)</i> , the <i>Codes on Compiling Feasibility Study Report of Wind Farms in China</i> , and "Operation and Maintenance Costs for Wind Turbines" by Danish Wind Industry Association. And	OK	OK

VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	comments	Draft Concl	Final Concl
			BVC found the input values from the FSR are valid and applicable at the time of investment decision.		
4.5. Barrier analysis					
4.5.1. Has barrier analysis been used to demonstrate the additionality of the proposed CDM project activity?	VVM	114	No	OK	OK
4.5.2. If yes, does the PDD demonstrate that the proposed CDM project activity faces barriers that: a. Prevent the implementation of this type of proposed CDM project activity? b. Do not prevent the implementation of at least one of the alternatives?	VVM	114	Not applicable.	OK	OK
4.6. Common practice analysis					
4.6.1. Is this a large-scale or first-of-its kind project activity?	VVM	118	It is a large-scale project activity.	OK	OK
4.6.2. Was common practice analysis carried out as a credibility check of the other available evidence used by the project participants to demonstrate additionality?	VVM	118	Yes.	OK	OK
4.6.3. Was it assessed whether the geographical scope (e.g. defined region) of the common practice analysis is appropriate for the assessment of common practice related to the project activity's technology or industry type? (For certain technologies the relevant region for assessment will be local and for others it may be	VVM	119	Refer to Section 4.1.17	OK	OK

VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	comments	Draft Concl	Final Concl
trans-national /global.)					
4.6.4. Was a region other than the entire host country chosen?	VVM	119	Yes	OK	OK
4.6.5. If yes, was the explanation why this region is more appropriate assessed?	VVM	119	Pending on CL-4	Pending	OK
4.6.6. Using official sources and local and industry expertise, was it determined to what extent similar and operational projects (e.g., using similar technology or practice), other than CDM project activities, and have been undertaken in the defined region?	VVM	119	Yes Refer to Section 4.1.17	OK	OK
4.6.7. Are similar and operational projects, other than CDM project activities, already “widely observed and commonly carried out” in the defined region?	VVM	119	Yes Refer to Section 4.1.17	OK	OK
4.6.8. If yes, was it assessed whether there are essential distinctions between the proposed CDM project activity and the other similar activities?	VVM	119	Refer to Section 4.1.17	OK	OK
5. Monitoring plan					
5.1. Is this monitoring plan based on the approved monitoring methodology applied to the proposed CDM project activity?	VVM	121	Yes. The monitoring plan based on the approved baseline and monitoring methodology ACM0002 (version 10).	OK	OK
5.2. Does the monitoring plan contain all necessary parameters?	VVM	122	Yes. Refer to section 3.27.1	OK	OK
5.3. Are the monitoring arrangements described in the monitoring plan feasible within the project design?	VVM	122	Yes. In line with local practices in power sector	OK	OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	comments	Draft Concl	Final Concl
5.4. Are the means of implementation of the monitoring plan sufficient to ensure that the emission reductions achieved by/resulting from the proposed CDM project activity can be reported ex post and verified?	VVM	122	As monitoring plan described, The electricity exported by the Project to the grid and electricity imported from the grid will be monitored by the meter(s) installed at the main transmission line of the Project. The procedures of monitoring the meters and data transfer between the two parties are described in PDD.	OK	OK
6. Sustainable development					
6.1. Does the CDM project activity assists Parties not included in Annex I to the Convention in achieving sustainable development?	VVM	124	Pending close out above CAR-1	Pending	OK
6.2. Does the letter of approval by the DNA of the host Party confirm the contribution of the proposed CDM project activity to the sustainable development of the host Party?	VVM	125	Pending close out above CAR-1	Pending	OK
7. Local stakeholder consultation					
7.1. Were local stakeholders (public, including individuals, groups or communities affected, of likely to be affected, by the proposed CDM project activity or actions leading to the implementation of such an activity) invited by the PPs to comment on the proposed CDM project activity prior to the publication of the PDD on the UNFCCC website?	VVM	127	Yes, As PDD described, it was conducted during Dec. 2008, before GSP of the Project. The survey was carried out by distributing questionnaires to 60 households in local area.	OK	OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	comments	Draft Concl	Final Concl
7.2. Have comments by local stakeholders that can reasonably be considered relevant for the proposed CDM project activity been invited?	VVM	128	Refer to section 3.33	OK	OK
7.3. Is the summary of the comments received as provided in the PDD complete?	VVM	128	Yes	OK	OK
7.4. Have the project participants taken due account of any comments received and described this process in the PDD?	VVM	128	Yes. In PDD section E.3, the villagers are all supportive of the Project and to date there has been no need to modify the project design according to the comments received.	OK	OK
8. Environmental impacts					
8.1. Have the project participants submitted documentation on the analysis of the environmental impacts of the project activity?	VVM	130	Yes	OK	OK
8.2. Have the project participants undertaken an analysis of environmental impacts?	VVM	131	Yes. EIA worked out by Hebei Institute of Geographical Sciences.	OK	OK
8.3. Does the host Party require an environmental impact assessment?	VVM	131	Yes.	OK	OK
8.4. If yes, have the environmental impact assessment approved by local government?	VVM	131	Yes. Approved by Hebei Provincial Environmental Protection Bureau on 15/05/2008.	OK	OK

VALIDATION REPORT

Table 2 Resolution of Corrective Action and Clarification Requests

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 1	Summary of project owner response	Validation team conclusion
CAR-1: Please provide LoA from China's DNA	1.1	LOA issued by China's DNA is Provided.	The LoA (No.2120) has been issued on Jul.2009 by China's DNA. BVC has checked the LoA and found authentic. Hence the CAR-1 is closed.
CAR-2: The monitoring parameter to calculate $EG_{PJ,y}$ should be continuously monitored and recorded at least monthly as per ACM0002 version 10.	3.28.2.1	Revision is made in Section B.7 to revise "hourly" to "continuously".	The updated PDD has been verified and found it complied with ACM0002 version 10. Hence the CAR-2 is closed.
CAR-3: As per the contracts provided, the start date of the Project should be revised as per the signed tower purchase contract on 18/03/2009.	3.31.1	Revision is made in Section B.5 to revise the starting date of the Project to March 18, 2009.	BVC has checked the revised start date of 18/03/2009 (when the tower purchase contract was signed), and confirmed that it is the earliest date when the



 VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 1	Summary of project owner response	Validation team conclusion
			implementation or construction or real action of the Project began. Hence the CAR-3 is closed.
CAR-4: As per the latest "Guidance on the Assessment of Investment Analysis", the interest payable should be taken into account in the calculation of income tax. Please revise the IRR calculation in the spreadsheet accordingly..	4.1.13.3	As per the latest "Guidance on the Assessment of Investment Analysis (Ver. 03)" from EB51 Annex 58 (Paragraph 11) "In cases where a post-tax benchmark is applied the DOE shall ensure that actual interest payable is taken into account in the calculation of income tax", the IRR calculation has been revised accordingly in the PDD and spreadsheet.	BVC has checked the revised PDD and spreadsheet and found the EB51 Annex 58 has been followed appropriately. Hence the CAR-4 is closed.
CL-1: Please clarify if the Project involved technology transfer to China.	3.9.1	Revision is made in Section A.4.3 to clarify that the Project involves no technology transfer from abroad.	The updated PDD has been verified and found the Project involves no technology transfer from abroad. Hence the CL-1 is closed.



 VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 1	Summary of project owner response	Validation team conclusion
CL-2: As mentioned in the “Tool to calculate the emission factor for an electricity system”, option B in step 4 should only be used if only nuclear and renewable power generation are considered as low-cost/must-run power sources and if the quantity of electricity supplied to the grid by these sources is known. However, PDD is silent about it.	3.25.8	Revision is made as per latest version of “Tool- Grid EF” in Section B.6.1 to clarify that the data on quantity of electricity supplied to the grid by nuclear and renewable power generation that are considered as low-cost/must-run power sources is available in China.	The updated PDD has been verified and found appropriate. Hence the CL-2 is closed.
CL-3: Based on the statistics of the registered CDM projects in Hebei Province, the total project cost of the Project is higher than some others. Please clarify the suitability of value of “total project cost” in the investment	4.1.15	First, the total project cost of the Project sourced from the FSR is estimated in Sep. 2008 by Hebei Electric Power Design & Research Institute. Hebei Electric Power Design & Research Institute is one of the first class design institutes granted by China’s Government. Therefore the total project cost estimated by Hebei Electric Power Design & Research Institute in the FSR of the Project is reliable. And, the total project cost of the Project has been reviewed and	As per the contracts already signed, the WTG price played the imported part in the total static investment, and the total value of signed contracts could almost reach the



 VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 1	Summary of project owner response	Validation team conclusion								
analysis?		approved by Hebei Development and Reform Commission. Hebei Development and Reform Commission is also experienced at wind power project review and familiar with local investment environment. Therefore, the total project cost approved by Hebei Development and Reform Commission is reliable. Second, comparing to the as per the public evidence, for the domestic manufactured WTG, average turbine cost is 5,400RMB/kW in the 2nd quarter of 2009. But the turbine applied in the FSR was manufactured by GE, which cost was estimated to be 7,700RMB/kW in the FSR, and could be verified by the signed WTG contract. So, the cost of turbine of the Project is main reason for the total project cost higher. And as per the public evidence, for the domestic manufactured WTG, average turbine cost is 5,400RMB/kW in the 2nd quarter of 2009, 42% lower than GE turbine in the Project. And as per IEA Wind Energy Global Report 2008 as following table: <table><tr><th>County</th><th>Turbine Cost (€/kW)</th></tr><tr><td>Germany</td><td>941-1340</td></tr><tr><td>Ireland</td><td>1100</td></tr><tr><td>Italy</td><td>1270</td></tr></table>	County	Turbine Cost (€/kW)	Germany	941-1340	Ireland	1100	Italy	1270	sub-item value estimated in the FSR. BVC has checked all the contracts and found the value of “total static investment” is suitable. Hence the CL-3 is closed.
County	Turbine Cost (€/kW)										
Germany	941-1340										
Ireland	1100										
Italy	1270										



 VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 1	Summary of project owner response		Validation team conclusion								
		<table><tr><td>Japan</td><td>1000-1200</td></tr><tr><td>Portugal</td><td>1061</td></tr><tr><td>Switzerland</td><td>1450</td></tr><tr><td>The Project</td><td>826*</td></tr></table>	Japan	1000-1200	Portugal	1061	Switzerland	1450	The Project	826*		
Japan	1000-1200											
Portugal	1061											
Switzerland	1450											
The Project	826*											
		*With the average exchange rate in May. 2009 of 1EUR:9.32RMB Which shows the WTG cost in the Project is reasonable. Besides the WTG contract, the already signed contracts of main equipments and engineering have been provided to DOE for validation, whose value accounts more than 90% of the total project cost in the FSR. And, the Project is still in the construction period, the total project cost has not been fully spent. In summary, both from the aspect of ex ante estimation based on experience and the aspect of ex post calculation of actual investment of the Project, the value of total project cost sourced from the FSR is reasonable.										
CL-4: Please explain why the Hebei province was defined as the relevant region.	4.1.17.1	Further analysis is added to explain this problem in Section B.5. And relevant evidences have been provided along with this response.		The updated PDD has been verified and found appropriate. Hence the CL-4 is closed.								