



VALIDATION REPORT

for the CDM Project Activity

Jilin province Zhenlai Heiyupao
49.5MW the first phase wind
farm project

in
China

Report No. 01 997 9105052836

Version No. 04, 2009-10-30

TÜV Rheinland Japan Ltd.

I. Project description:

Project title: Jilin province Zhenlai Heiyupao 49.5MW the first phase wind farm project

Host Country: China

Methodology: ACM0002 version 09 ☒ Large Scale ☐ Small Scale

Annual average emission reductions (estimate): 114,515 tCO₂e/yr

GHG reducing measure/technology:
Clean and renewable wind energy is utilized in the project for power generation, which displaces electricity from the grid, and has a total installed capacity of 49.5MW.

Party	Project Participants	Party considered a project participant
P.R. China (host)	Jilin Taihe Wind power Development Co., Ltd	No
Sweden	Carbon Asset Management Sweden AB	No

II. Validation:

Contract party: Carbon Resource Management Ltd.

Validation Team:

Role	Full name	Appointed for Sectoral Scopes	Affiliation
Team Leader	Zhang Lei	1	TÜV Rheinland Shanghai Ltd.
Trainee	Kevin Liu		TÜV Rheinland Shanghai Ltd.
Technical Reviewer	Dr. Manfred Brinkmann	1, 3, 4, 5, 6, 10, 11, 12, 13	TÜV Rheinland Japan Ltd.

Validation Phases:

- ☒ Desk Review
- ☒ Follow up interviews
- ☐ Resolution of outstanding issues

Validation Status:

- ☐ Corrective Actions / Clarifications Requested
- ☒ Full Approval and Submission for Registration
- ☐ Rejected

III. Draft Validation Report:

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Final approval: <input checked="" type="checkbox"/>	Released on: 2009-11-02	Designated Operational Entity (DOE): TÜV Rheinland Japan Ltd. Shin Yokohama Daini Center Bldg., 3-19-5, Shin Yokohama Kohoku-ku, Yokohama, JAPAN 222-0033 Tel.: +81 45 470 1850, Fax: +81 45 470-2361 E-mail: cdm@tuv.com
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Executive Summary – Validation Opinion

The validation team assigned by the TÜV Rheinland Japan Ltd. concludes that the CDM Project Activity “Jilin province Zhenlai Heiyupao 49.5MW the first phase wind farm project” in China, as described in the PDD (version 5.0, 28/10/2009), meets all relevant requirements of the UNFCCC for criteria for the Clean Development Mechanism including article 12 of the Kyoto Protocol, the modalities and procedures for CDM (Marrakesh Accords) and the subsequent decisions by the COP/MOP and CDM Executive Board and host country criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

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

The project host Party is China and the Annex I Party is United Kingdom. Both Parties fulfil the participation criteria and have approved the project and authorized the project participants. The DNA of China issuing the Letter of Approval of the project activity confirmed that the project assist in achieving sustainable development. The validation did not reveal any information that indicates that the project can be seen as a diversion of official development assistance (ODA) funding towards China. The project correctly applies ACM0002 version 9: “Consolidated baseline methodology for grid-connected electricity generation from renewable sources”.

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

The total emission reductions from the Jilin province Zhenlai Heiyupao 49.5MW the first phase wind farm project are estimated to be on an average 114,515 tCO₂e per year over the selected 7 years crediting period. The emission reduction forecast has been checked, and it is deemed likely that the stated amount is achieved given that the underlying assumptions do not change.

General training and monitoring procedures has been developed and will be implemented before the starting of the crediting period.

The project proponent has resolved all Corrective Action Requests and Clarification Requests as stated in the Validation Report and the Validation Protocol, which has resulted in a revision of the PDD. In summary, it is the validation team’s opinion that the ‘Jilin province Zhenlai Heiyupao 49.5MW the first phase wind farm project’ in P.R.China as described in the PDD version 05, 28 October 2009 of meets all relevant UNFCCC requirements for the CDM and all relevant host country criteria and applies the baseline and monitoring methodology ACM0002. TÜV Rheinland thus requests the registration of the Project as a CDM project activity.

Abbreviations

BM	Build Margin
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CEF	Carbon Emission Factor
CER	Certified Emission Reduction
CL	Clarification request
CM	Combined Margin
CO ₂	Carbon dioxide
CO ₂ e	Carbon dioxide equivalent
DNA	Designated National Authority
DRC	Development and Reform Commission
EB	Executive Board
EIA	Environmental Impact Assessment
ERPA	Emission Reduction Purchase Agreement
FAR	Forward Action Request
FSR	Feasibility Study Report
GHG	Greenhouse gas(es)
GWh	Giga Watt Hours
GWP	Global Warming Potential
I	Interview
IPCC	Intergovernmental Panel on Climate Change
LOA	Letter of Approval.
IRR	Internal Rate of Return
kW	Kilo Watt
kWh	Kilo Watt Hours
MP	Monitoring Plan
MVP	Monitoring and Verification Plan
MoV	Means of Verification
MW	Mega Watt
MWh	Mega Watt Hours
NGO	Non-governmental Organisation
NEPG	Northeast Power Grid
NCPG	North China Power Grid
ODA	Official Development Assistance
OM	Operating Margin
PDD	Project Design Document
PDR	Preliminary Design Document
PE	Project Emission
SCE	Standard coal equivalent
UNFCCC	United Nations Framework Convention on Climate Change
VAT	Value-added Tax

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1 INTRODUCTION

The “Carbon Asset Management Sweden AB” has commissioned the DOE TÜV Rheinland Japan Ltd. to perform a validation of the CDM Project Activity “Jilin province Zhenlai Heiyupao 49.5MW the first phase wind farm project” in China (hereafter called “the project”). This final report summarises the findings of the validation of the project, performed on the basis of UNFCCC criteria for the CDM, as well as criteria given to provide for consistent project operations, monitoring and reporting. The term “UNFCCC criteria” refers to Article 12 of the Kyoto Protocol, the CDM modalities and procedures or the simplified modalities and the subsequent decisions by the CDM Executive Board.

1.1 Objective

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

1.2 Scope

The validation scope is defined as an independent and objective review of the project design document (PDD). The PDD is reviewed against the relevant criteria (see above) and decisions by the CDM Executive Board, including the approved baseline and monitoring methodology. The validation team has, based on the recommendations in the *Validation and Verification Manual* employed a risk-based approach, focusing on the identification of significant risks for project implementation and the generation of CERs.

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

2 METHODOLOGY

The validation consists of the following three phases:

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

The following sections outline each step in more detail.

2.1 Desk Review of the Project Design Documentation

The following table outlines the documentation reviewed during the validation:

- /1/ Carbon Asset Management Sweden AB, project design document for the “Jilin province Zhenlai Heiyupao 49.5MW the first phase wind farm project” version 4.0 published on 03 March 2009
- /2/ Carbon Asset Management Sweden AB, project design document for the “Jilin province Zhenlai Heiyupao 49.5MW the first phase wind farm project” version 5.0 published on 28 October 2009
- /3/ Letter of Approval issued by NDRC of China on 9 April 2009
- /4/ LoA of Annex I Party, Swedish Energy Agency of Sweden, 20 May 2009.
- /5/ Modalities of Communication dated 14 October 2008
- /6/ CDM Validation and Verification Manual (Version 01)
<http://cdm.unfccc.int/Reference/Manuals/index.html>
- /7/ CDM-PDD - Project Design Document form, Version 03
http://cdm.unfccc.int/Reference/PDDs_Forms/PDDs/index.html
GUIDELINES FOR COMPLETING THE PROJECT DESIGN DOCUMENT (CDM-PDD) AND THE PROPOSED NEW BASELINE AND MONITORING METHODOLOGIES (CDM-NM), Version 07
<http://cdm.unfccc.int/Reference/Guidclarif/pdd/index.html>
- /8/ National Standard (GB/T 18710-2002), Methodology of wind energy resource assessment for wind farm
- /9/ Approved Baseline & Monitoring Methodology: ACM0002 “Consolidated methodology for grid-connected electricity generation from renewable sources”, version 09 of 13 February 2009
- /10/ AM_Tool_01 “Tool for the demonstration and assessment of additionality”
Version 05.2 (EB 39 Annex 10)
<http://cdm.unfccc.int/Reference/tools/index.html>
Guidance on the Assessment of Investment Analysis: (Version 03.1) from EB51
http://cdm.unfccc.int/Reference/Guidclarif/reg/reg_guid03.pdf
- /11/ AM_Tool_07 “Tool to calculate the emission factor for an electricity system”
Version 01.1
<http://cdm.unfccc.int/Reference/tools/index.html>
- /12/ CDM EB, Answer to DNV’s request for deviation of Chinese project activities from AM0005, received on 1 December 2005. To be found on
<http://cdm.unfccc.int/Projects/Deviations>

- /13/ Feasibility study report of Jilin province Zhenlai Heiyupao 49.5MW the first phase wind farm project in April-August 2008 developed by Jilin Province Power Reconnaissance Design Institute and approval letter by the Development and Reform Commission of Jilin Province on 07 August 2008, Refer to No. Jifagaishenpizi(2008)566.
- /14/ EIA of Jilin province Zhenlai Heiyupao 49.5MW the first phase wind farm project in March 2008 by Jilin Province Xinghuan Environment Technology Service Co., Ltd and the approval letter by Jilin Province Environmental Protection Bureau on 09 April 2008, Refer to No. Jihuanjianbiaozi(2008)63..
- /15/ Project IRR calculation spreadsheet dated 3 March 2009, Version 4.0
- /16/ Guidance on the Assessment of Investment Analysis: (Version 02) from EB41
http://cdm.unfccc.int/EB/041/eb41_repan45.pdf
- /17/ China Electric Power Yearbooks 2000-2007
- /18/ China Energy statistics Yearbooks 2005-2007
- /19/ Revised 2006 IPCC Guidelines for National Greenhouse Gas Inventories
- /20/ The permit opinion for the proposed project connecting to grid by Jilin Province Power Grid Company Limited dated 7 April 2008. Refer to No. Jidianfazhan 2008(207)
- /21/ State Power Corporation of China. Interim Rules on Economic Assessment of Electrical Engineering Retrofit Projects. Beijing: China Electric Power Press, 2003
- /22/ 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
- /23/ Interim Rules on Economic Assessment of Electrical Engineering Retrofit Projects, version 03, issued by State Power Corporation of China in 2006.
- /24/ The pre-permit for using land by the Land Source Bureau of Jilin Province dated on 3 February 2008, Refer to No. Jiguotuziyushenzi(2008)52
- /25/ 38 Stakeholder survey sheets in September 2008
- /26/ Evidence to no hydro resource for proposed project:
http://www.jl.gov.cn/zwxw/zfwj/szfbgtfw/t20050720_16669.htm published in 2001 by Jilin Province Government.
Evidence of the solar PV is hardly cost to be developed:
http://nyj.ndrc.gov.cn/nydx/t20061103_91653.htm presented in end of 2006 by NDRC.
Information of the solar PV is devoid of Policies and Technology to be developed, which was published in June 2006 of Chinese official web
http://www.newenergy.org.cn/html/0067/2006710_10767.html:
Evidence of Biomass is ruled out due to its lack of R&D competence, undeveloped market and bad management:
http://www.sdpc.gov.cn/zjgx/t20071123_174054.htm issued by NDRC web (2007).
- /27/ The project activity started date as the date of the purchasing contract of generator and turbine between Owner and Huarui Wind Power Technology Co., Ltd in September 2008.
- /28/ The layout of China wind energy resource:
<http://www.showchina.org/zgdl/sylm/200701/t104908.htm>
- /29/ Evidence of the tariff would be not increased in the future:

- <http://www.eri.org.cn/manage/upload/uploadimages/eri200672795944.pdf> introduced the on-grid tariffs of the wind farms in China have been decreasing over the last few years
- Interim Regulation for Tariff of Renewable Energy Power Generation and Appointment of Expenses, Fagai Jiage(2006) No.7 presented the tariff of the un-tendering projects should be determined by the government with reference to the tariff of tendering wind projects.
- CHINA WIND POWER REPORT 2008 published by China Recourse Integration Used Association in October 2008
- /30/ China Wind Power Report in 2007, by Li junfeng, China Environment Science press
- /31/ Emission Reduction Purchase Agreement between the project owner and Carbon Asset Management Sweden AB dated 20 August 2008
- /32/ The high price of Jilin Tongyu Gengshengtun 30.06MW Wind power farm:
http://www.lianghui.org.cn/economic/zhuanti/2007nyfz/2007-05/25/content_8303200.htm
- /33/ The standard for calibration: Chinese electric industry regulation DL/T448-2000
- /34/ The result of EF calculated by China NDRC , which was published in December 2008 :
<http://cdm.ccchina.gov.cn/WebSite/CDM/UpFile/2008/20081230102527637.pdf> -- CM
<http://cdm.ccchina.gov.cn/WebSite/CDM/UpFile/2008/20081231101111351.pdf> -- BM
<http://cdm.ccchina.gov.cn/WebSite/CDM/UpFile/File1888.pdf> -- OM
- /35/ 10 February 2009,A written confirmation from Chinese NDRC, that PPs previously informed on commencement of the project activity and of their intention to seek CDM status
- /36/ The evidence of Tax in IRR in calculation:
Revenue Tax rate 25% from China Revenue Tax Law published in 2007
residual rate 5% from Guoshuihan 2005(883)
Loan rate(over 5 years) ,7.83% published web by Chinese Bank from 21 December 2007 to 16 September 2008: <http://www.ccb.com/portal/cn/interest/rmbcredit.jsp>
City Build tax and Education tax: 5% & 3% from No.GuoFa1885(19)& Decree No.448 of the state Council
VAT 8.5% from Caishui No.2001(198)published by National Ministry of Finance and Revenue Bureau
- /37/ The evidence of developer deciding to develop the proposed project as a CDM project on 18 August 2008
- /38/ The evidence of Debt ratio 69%: Debt Permit between Owner and Chinese Agriculture Bank in November 2008.
- /39/ Evidence of tariff used in FSR/PDD available:
Approval letter to wind power projects_[2008]1876 on 23 July 2008
- /40/ Regulations on Wind power FSR preparation:
1. Compilation Code of Wind Power Project Feasibility Study Report, DL/T 5067-1996, 1996;
2. Compilation Method of Wind Power Project Pre Feasibility Study Report, FaGaiNengYuan [2003] No. 1403, NDRC, 2003
3. Compilation Method of Wind Power Project Feasibility Study Report, FaGaiNengYuan [2005] No. 899, NDRC, 2005

- /41/ Clarification of Power Loss Factor for Wind Power Projects Implemented Within China, NDRC of China, 2 Jun. 2009
- /42/ Guidance on The Demonstration and Assessment of Prior Consideration of The CDM, Version 02, 17th Jul. 2009.
- /43/ CDM Validation and Verification Manual, Version 01, 28th Nov. 2008.
- /44/ Notice on Wind Power Construction and Management (Ref No.: FaGaiNengYuan [2005] No. 1204), NDRC of China, 4th Jul. 2005.
- /45/ Approval of Ratifying Electricity Tariff for Wind Power Projects Heilongjiang Ma Anshan and Liaoning Fuxin and others (FaGaiJiaGe [2008] No 1876), NDRC of China, 23rd Jul. 2008.
- /46/ Statistics on wind power installed capacity of China 2007, <http://www.cwea.org.cn/upload/20080324.pdf>
- /47/ CDM Monitoring Training Plan,
- /48/ Notice on tariff for grid-connected wind power project, NDRC, FaGaiJiaGe [2009] No. 1906, 20 July 2009
- /49/ Evidence of the tariff:
Approval letter to wind power projects_[2007]1260, dated 9 June 2007
Approval letter from NDRC on 23 July 2008 Ref. [2008]1876, dated 23 July 2008
- /50/ Notice on Value Added Tax Policy Regarding Resource Multi-utilization and Other Products (Ref No.: CaiShui [2001] No. 198), Ministry of Finance of P.R.China & State Administration of Taxation, 1st Dec 2001
- /51/ Law of Enterprise Incoming Tax of People's Republic of China, as of effect on 1st Jan. 2008, 16 Mar. 2007.
- /52/ NDRC and Construction Ministry, Economic Evaluation Method and Parameters for Project Construction, version 03
- /53/ State Administration of Taxation, Notification on the execution method of adjustment of residual value rate of fixed asset for enterprises, Sep. 14th 2005

2.2 Follow-up Interviews with Project Stakeholders

	Date	Name	Organization	Topic
/1/	2009-04-23/24	Ms. Sunhui Mr. Nijun	Technic Dept. Manager of Carbon Asset Management Sweden AB	<ul style="list-style-type: none"> ➤ PDD process ; ➤ The consulting process on the stakeholder's comments; ➤ The additionality of the project; ➤ The GHG emission calculation; ➤ The methodology justification
/2/	2009-04-23/24	Ms. Liuyang Mr. Dushuyao Mr. Chentuo Mr. Shizhipeng	Deputy GM & Engineer of Chinese Wind Power Group / Investor of Owner Business Manager & Admin Manager of Jilin Taihe Wind power Development Co., Ltd	<ul style="list-style-type: none"> ➤ The status & schedule of the project construction; ➤ The FSR of the project; ➤ The approval of the report; ➤ The technical issues; ➤ The investment barriers; ➤ The Environment Impact Assessment; ➤ The approval letter of the EIA; ➤ The status of economy in the local area ➤ The development of wind farm projects in the local area; ➤ The status of grid connected;

2.3 Resolution of Outstanding Issues

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

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

The validation protocol consists of three tables. The different columns in these tables are described in the figure below. The completed validation protocol for this project is enclosed in Appendix A to this report.

Findings established during the validation can either be seen as a non-fulfilment of CDM criteria or where a risk to the fulfilment of project objectives is identified. Corrective action requests (CAR) are issued, where:

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

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

Validation Protocol Table 1: Validation requirements				
Checklist Question	Reference	Means of verification (MoV)	Comment	Draft and/or Final Conclusion
<i>The various requirements in Table 2 are linked to checklist questions the project should meet. The checklist is organised in different sections, following the logic of the large-scale PDD template, version 03 - in effect as of: 28 July 2006. Each section is then further sub-divided.</i>	<i>Gives reference to documents where the answer to the checklist question or item is found.</i>	<i>Explains how conformance with the checklist question is investigated. Examples of means of verification are document review (DR) or interview (I). N/A means not applicable.</i>	<i>The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached.</i>	<i>This is either acceptable based on evidence provided (OK), or a corrective action request (CAR) due to non-compliance with the checklist question (See below). A request for clarification (CL) is used when the validation team has identified a need for further clarification.</i>

Draft report clarifications and corrective action requests	Ref. to checklist question in table 2	Summary of project owner response	Validation conclusion
<i>If the conclusions from the draft Validation are either a CAR or a CL, these should be listed in this section.</i>	<i>Reference to the checklist question number in Table 2 where the CAR or CL is explained.</i>	<i>The responses given by the project participants during the communications with the validation team should be summarised in this section.</i>	<i>This section should summarise the validation team's responses and final conclusions. The conclusions should also be included in Table 2, under "Final Conclusion".</i>

Validation Protocol Table 3: List of forward action requests (FARs)
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Figure 1. Validation protocol tables

2.4 Internal Quality Control

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

2.5 Validation Team

Role/Qualification	Last Name	First Name	Affiliation of Team Members
Team Leader	Lei	Zhang	TÜV Rheinland (Shanghai) Co., Ltd.
Trainee/ MEng	Kevin	Liu	TÜV Rheinland (Shanghai) Co., Ltd.
Technical Reviewer PhD	Brinkmann	Manfred	TÜV Rheinland Japan Ltd.

3 VALIDATION FINDINGS

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

The final validation findings relate to the project design as documented and described in the revised and resubmitted project design documentation.

3.1 Approval and Participation

The project participants are Jilin Taihe Wind Power Development Co., Ltd of China and Carbon Asset Management Sweden AB of Sweden. The host Party China and the participating Annex I Party meet the requirements to participate in the CDM.

The letter of approval from the DNA of China /3/, has authorized Jilin Taihe Wind Power Development Co., Ltd. as project participant and also confirmed that the project assists in achieving sustainable development.

According to the revised PDD, the project activity is a bilateral CDM-project, with Sweden identified as the Annex I party. The LoA of this party has also been provided /4/.

All LoAs as received from the Project Participants confirm voluntary participation in the CDM project activity.

No public funding from an Annex I Party is involved in the project and the review of documents and on-site interview during the validation did not reveal any information that indicates that the project can be seen as a diversion of official development assistance (ODA) funding towards China.

Project participants	1. Jilin Taihe Windpower Development Co., Ltd.	2. Carbon Asset Management Sweden AB
Parties involved	P.R. China (host)	Sweden
Ratification status of the parties	China ratified the Kyoto Protocol on 30 August 2002.	Sweden ,the Annex I party, ratified the Kyoto Protocol on 31 May 2002
APPROVAL		
LoA received	Yes	Yes
Date of LoA	9 April 2009	20 May 2009
Reference to document	Ref /3/	Ref /4/
LoA received from	The project participant	The project participant
Validation of authenticity	All approved CDM projects by DNA of China NDRC will be published on: ' http://cdm.ccchina.gov.cn/ '. The Project is indicated as approved by China DNA, source: http://cdm.ccchina.gov.cn/web/NewsInfo.asp?NewsId=3552	The Audit Team made a comparison between the LoA of the Project with that of the latest registered CDM project as Sweden as the Annex I party and no doubts were found.
Validity of LoA	Valid	Valid
PARTICIPATION		
Party is party to Kyoto Protocol	Yes	Yes
Voluntary participation	Yes	Yes
Diversion of official development aid towards host country	No	
Project contribution to SD	Yes	N/A

3.2 Project Design Document

The Project Design Document is based on the currently valid PDD template and is completed in accordance with the applicable guidance document /7/.

3.3 Project Description

The objective of the proposed project activity will be to generate electricity by utilizing wind resources through the installation and the operation of 49.50MW wind farm. Every wind turbines will have a transformer from 690V to 35kV, which will be connected to a substation on the wind farm. The electricity generated will be delivered to the Northeast China Power Grid (NEPG)/20/&/17/ through the onsite substation of 220/35kV, which will be connected to the 220kV substation of the local Power Grid Company. All the electricity generated by the wind farm will be transferred to the NEPG via the grid substation./13/&/20/.

The project site is located in Zhenlai County, Baicheng City, Jilin Province, P. R. China. The geographical coordinates of project are 123°25'—123°29' E and 45°50'—45°53' N./13/

The project's system boundaries are clearly defined as the wind farm and the Northeast China power grid (NEPG). The proposed project will involve the installation and the operation of 33 wind turbines each of a capacity for 1500 kW. As per the FSR/13/, the installation also includes a substation, measurement and surveillance of the wind farm operation. The Validation Team checked the equipment purchasing contract/27/ and observed some wind turbines had been installed by onsite inspection, therefore confirmed the implementation of the project activity is consistent with design in FSR.

The project will generate greenhouse gas (GHG) emission reductions by avoiding CO₂ emissions from electricity generation by fossil fuel power plants and it is expected to have a net annual power output of 100,122MWh at a plant load factor of 23.1%. These parameters are taken from the approved FSR /13/. In the page 44 and page 69 to 70 of FSR/13/ based on the historical wind data of year 1988 to 2007 from the local weather station and analyse with National Standard/39/, good wind resource has been in project site. Further, Estimation on electricity output to grid was calculated on energy loss estimation, which included air density, wind turbine efficiency, contamination of rotor blades, turbulent flow influence, transmission loss & auxiliary power use, correction on power curve, weather influence and others, and are carried out using professional WasP8.3 software (www.wasp.dk) designed for wind energy, then, an average load factor of 23.1% has been applied. During desk review period, the Validation Team has verified and confirmed the result/13/.

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

<i>Starting date of project</i>	<i>Expected project operational lifetime</i>	<i>Crediting period</i>
01 September 2008	20 years	Renewable crediting period Starting of the first crediting period will be 1 January 2010 or date of registration, whichever is later

3.4 Baseline and Monitoring Methodology

3.4.1 Applicability of the selected methodology to the project activity

The project applies the approved baseline methodology ACM0002 (version 09) of 13 February 2009, “Consolidated methodology for grid-connected electricity generation from renewable sources”/9/. The applied baseline methodology is justified as the project activity fulfills the following criteria:

- It is a grid connected zero emission renewable power generation activity from wind resources/13/;
- It does not involve switching from fossil fuel to renewable energy at the project site/13/;
- The proposed project activity is connected to the NEPG for which the geographical and system boundaries are clearly identified and information on the characteristics of this grid is available/17/&/20/.

The project boundary is clearly defined as the project site and the grid electricity system boundary, which is defined as the NEPG including the grids of Liaoning Province, Jilin Province, Heilongjiang Province, on the basis of information announced by NDRC /17/ in December 2008. There are no significant transmission constraints between the power plants of the NEPG/17/. The selected sources and gases are justified for the project activity.

3.4.2 Project Boundary

The spatial extent of the project boundary is clearly defined as the site of project activity and all power plants connected physically to NEPG. According to the China Electric Power Yearbook 2007/17/, NEPG is connected to NCPG, but has no importing electricity from another power grid.

This is in line with the delineation of grid boundaries as provided by the DNA of China in December 2008/34/. There are no significant transmission constraints between the power plants of the NEPG.

The baseline emission factor calculation is only considered NEPG to the baseline emission.

The relevant information is source from web-site referenced in PDD. DOE has checked the information and be able to confirm it. The baseline determination is transparent and reasonable.

The defined project boundary is in line with ACM0002 (version 09). Emissions sources included in or excluded from the project boundary:

	GHGs involved	Description
Baseline emissions	CO ₂	Main emission source from Grid
	CH ₄	Conservative / according to ACM0002
	N ₂ O	Conservative / according to ACM0002
Project emissions	CO ₂	No supplementary fossil fuel required as confirmed during on-site visit
Leakage	CO ₂	According to ACM0002/Version09, the Leakage of wind power project activity is Neglected
	CH ₄	
	N ₂ O	

3.4.3 Baseline Identification

According to the description in the approved baseline methodology ACM0002, if the project activity is the installation of a new renewable power plant, the baseline scenario is the following:

Electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in the “Tool to calculate the emission factor for an electricity system”.

Based on FSR/13/ and pre-permit from Grid Company/20/, the project activities will do not modify or retrofit an existing electricity generation and will be connected to Northeast China Power Grid. So Northeast China Power Grid is considered as the “connected electricity system”, which is defined as the “project boundary” of the proposed project.

According to China Electric Power Yearbook/17/, The NEPG is dominated by coal-fired power plants. It is deemed likely that coal-fired power plants will continue to dominate the power sector due to the local availability of low-cost coal. It is expected that renewable capacity additions will not have significant effects on the mix of the NEPG during the first crediting period.

The Validation Team has verified the documents/13/&/17/&/20/and confirmed the baseline scenario of the project has been demonstrated to be that an equivalent amount of electricity would, in the absence of the project activity, have been generated by the operation of grid-connected thermal power plants and by the addition of new generation sources.

Emission sources and gases related to the baseline scenario, project scenario and leakage included in project boundary comply with the methodology applied. Section B.3 of PDD includes a diagram (Figure B.1) as indicated in the Guidelines for completing the Project Design Document (CDM-PDD) (EB41) which clearly shows the project boundary and the physical delineation of the project activity.

In accordance with the approved methodology ACM0002/Version09/9/, the electricity baseline emission factor is determined ex-ante as a combined margin, consisting of the weighted average of the operating margin(OM) emission factor and the build margin(BM) emission factor (as explained in section 3.6). In line with the default values stipulated by the methodology for wind farm projects, weighting is set to 75% and 25% for OM and BM respectively.

In conclusion, it is the Validation Team’s opinion that the baseline scenario is correctly and reasonable.

<i>The approved baseline methodology applicable to the projec</i>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	ACM0002/Version09
<i>PDD includes all assumptions and data used by project participants</i>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Emission sources and gases related to the baseline scenario, project scenario and leakage included in project boundary comply with the methodology applied. Section B.3 of PDD includes a diagram (Figure B.1) as indicated in the Guidelines for completing the Project Design Document (CDM-PDD) (EB41) which clearly shows the project boundary and the physical delineation of the project activity
<i>All the references and documents used are relevant for establishing the baseline scenario</i>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Full argument and references has been carried out in this section and PDD.
<i>All the references and documents used are correctly quoted and conservatively interpreted in the PDD</i>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	The FSR and its approval, the China Electric have been correctly quoted and conservatively interpreted in the PDD.

<i>All relevant policies / regulations considered are listed in the PDD</i>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	All relevant policies / regulations considered in PDD.
<i>Identified potential baseline scenarios reasonably represent what would/could occur in the absence of the proposed project activity</i>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	The approved baseline methodology ACM0002/version 09 has presented clearly the baseline.
<i>The baseline scenario selection is appropriate and determined according to the methodology</i>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	The baseline scenario selection that coal-fired power plants will continue to dominate the power sector due to the local availability of low-cost coal.
<i>The approved methodology used is applicable to the identified baseline scenario</i>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	The approved methodology has identified baseline scenario: Electricity delivered to the NEPG by the proposed project would have otherwise been generated by the operation of grid-connected power plants in the NEPG and by the addition of new generation sources in the NEPG.

3.4.4 GHG Emission Reductions

The emission reduction ER_y by the project activity during the crediting period is the difference between baseline emissions (BE_y), project emissions (PE_y) and emissions due to leakage (Ly), as follows:

- 1) Baseline emissions: baseline emissions (BE_y in tCO_2) are the product of the baseline emissions factor (EF_y in tCO_2/MWh) times the net electricity supplied by the project activity to the grid (EG_y in MWh).
- 2) Project emissions: there are no emissions from the project which is a renewable energy project.
- 3) Leakage: no leakage has to be considered for the proposed project activity.
- 4) Emission reduction: $ER_y = BE_y - PE_y - Ly = BE_y$.

The baseline emission factor for the project is determined *ex-ante* as a combined margin, consisting of combination of the operating margin (OM) and build margin (BM) according to “Tool to calculate the emission factor for an electricity system” of version 1.1 /11/.

The PDD used the available data for calculation of the grid emission factor with China Energy Statistics Yearbooks 2005-2007/18/ and China Electric Power Yearbooks 2000-2007/17/ and relevant result of calculation published by Chinese NDRC in December 2008/34/. This was at the time of requesting registration of the project to the data available.

According to the data from China Electric Power Yearbook /17/, the low-cost/must run resources constitute only 5.43% in 2002, 4.72% in 2003, 6.53% in 2004, 8.28% in 2005 and 5.25% in 2006 among total electric power generation of the 2007. Therefore, the operating margin (OM) is calculated using the “simple OM” method which is justified because low cost and must run power plants constitute less than 50% of the total grid generation.

The aggregated generation and fuel consumption data are used due to the fact that more disaggregated data are not available in the NEPG. Country specific data for net calorific value (NCV_i) of each type of fossil fuel, the IPCC 2006 default values for the oxidation factor of each type of fossil fuel and the total electricity delivered to the NEPG are selected and are deemed reasonable. Vintage data for the

years 2005, 2006 and 2007 from China Energy Statistics Yearbooks/18/ and China Electric Power Yearbooks 2000-2007/17/ editions are used for the operating margin calculation.

According to ACM0002, if net imports do not exceed 20% of total generation in the project electricity system, the average emission rate of the exporting grid is adopted, and exports should not be subtracted from electricity generation data used for calculating the baseline emission. Project electricity system of the proposed project is NEPG and no the imported power generation from other grid/17/.

Based on these data, the simple OM emission factor of Northeast China Power Grid is calculated as 1.2561 tCO₂ /MWh as a generation-weighted average for the three years. which can be verified with the spreadsheet for OM calculation from China NDRC/34/.

Because plant specific fuel consumption and electricity generation data is not publicly available in China, the EB guidance on the request for deviation titled “Application of AM0005 and AMS-I.D in China” /12 / has been applied for this project. Following the EB’s guidance the build margin is calculated as follows:

- Use of capacity additions from the years 2000 to 2006 is chosen and reach 23.81% of the total installed capacity;
- Use of weights estimated using installed capacity in place of annual electricity generation. Thermal power plant accounts for 88.91% of the total installed capacity additions in this period. Since specific data for each technology is not available, the fraction of fuels (coal 98.70%; natural gas 1.08%; oil 0.22%) was estimated from the CO₂ intensity for the fuels used in the China Energy Statistics Yearbooks /18/;
- Use of the efficiency level of the best technology commercially available in the provincial/regional or national grid of China, as a conservative proxy, for each fuel type in estimating the fuel consumption. This is 37.28% for coal power plants and 48.81% for oil power plants and gas power plants /34/.

Country specific net calorific value of each kind of fuel, country specific emission factor of each fuel and IPCC 2006 default values of oxidization factors are used to calculate the BM. The data applied are considered as the best data available for calculating the BM in China. The official supporting documentation has been verified. The BM is calculated as 0.8068 tCO₂/MWh.

The weights ω_{OM} and ω_{BM} are selected as 0.75 and 0.25, respectively, for the wind farm project by the default stipulated in the methodology. The combined margin of 1.1438 tCO₂/MWh is fixed ex-ante for the entire first crediting period.

According to FSR/13/, the proposed project activity is estimated to supply 100,122MWh per year, the calculation result of the estimated emission reduction is totally 114,515 tCO₂ per year for the proposed project.

The latest data used to calculate OM and BM are derived from China Energy Statistical Yearbooks 2005 to 2007 and from China Electric Power Yearbooks 2000 to 2007 /17/&/18/.

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

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

<i>All assumptions made for estimating GHG are listed in the PDD</i>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	The estimated emission reduction is totally 114,515 tCO ₂ per year for the proposed project
<i>All data used by project participants are</i>	<input checked="" type="checkbox"/> Yes	Detail listed in section B6.2 and Annex 3 of

<i>listed in the PDD</i>	<input type="checkbox"/> No	PDD/1/&/2/.
<i>Their references and sources are also listed in the PDD</i>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	China Electric Power Yearbooks 2000-2007 /17/ China Energy statistics Yearbooks 2005-2007/18/ Revised 2006 IPCC Guidelines for National Greenhouse Gas Inventories/19/ The result of EF calculated by China NDRC , which was published in December 2008 /34/
<i>Formulas, parameters, values are complete, accurate, transparent and conservative</i>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Detail listed in section B6.2 & Annex 3 of PDD/1/&/2/
<i>All the references and documents used are correctly quoted and conservatively interpreted in the PDD</i>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	All the references and documents used in PDD have been verified and confirmed by DOE.
<i>Methodology has been applied correctly to calculate project emissions, baseline emissions, leakage emissions and emission reductions</i>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	As the project activity is the installation of a new grid-connected renewable power plant/unit, the applicable Methodology is as following: Approved Baseline & Monitoring Methodology: ACM0002 “Consolidated methodology for grid-connected electricity generation from renewable sources”, version 09 and AM_Tool_07 “Tool to calculate the emission factor for an electricity system”Version 01.1
<i>All the emissions of baseline emissions can be replicated using information provided in the PDD</i>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	For the project activity, only a new grid-connected renewable power plant/unit will be installed. So baseline emissions include only CO2 emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity.

3.5 Additionality

According to the approved methodology ACM0002/Version 09/9/, the additionality of the project has been established applying the “*Tool for the demonstration and assessment of additionality*” version 05.2, of EB39 Annex 10/10/.

3.5.1 CDM consideration

As per the ‘Guidance on The Demonstration and Assessment of Prior Consideration of The CDM’/42/, annex 61 of EB48, for those project activities with a start date earlier than 2 August 2008, if the Project starting date is prior to the date of publication of the PDD for global stakeholder consultation, it is required to demonstrate that the CDM was seriously considered in the decision to implement the project activity. Hence the project starting date shall be verified in first place.

Regarding the project starting date, the Validation Team has assessed the relevant documents during validation.

In August 2008, FSR for the project activity was completed/13/. The FSR was prepared by Jilin Province Power Reconnaissance Design Institute, which is the Class A (070008-sj) design company awarded by Construction Ministry of China. It has been indicated in the FSR that IRR of the project activity was 5.68% without CER revenue of the project/15/, the CDM revenue was stipulated and determined the Project is to apply CDM activity because the CDM revenue would assure the project's financial safety to conquer the difficulties of low electricity tariff.

The FSR was approved by the Development and Reform Commission of Jilin Province on 7 August 2008./13/, Refer to No. Jifagaishenpizi(2008)566/13/.

Upon the decision to execute the Project and to apply the Project as a CDM activity, on 18 August 2008, the project owner held a meeting /37/, regarding CDM activity applying jobs.

On 20 August 2008/31/, the project developer signed ERPA with Carbon Asset Management Sweden AB.

In September 2008, the turbine and generator purchasing contract/27/ was signed between project owner and supplier.

On 10 September 2008, the Contract of Construction was signed.

On 10 October 2008, the construction started.

On 10 February 2009, A written confirmation letter from Chinese NDRC was issued, which demonstrate PP's consideration on commencement of the project activity and their intention to seek CDM status/35/.

Among the above mentioned activities, the earliest date of the project real action is the date purchasing the wind turbines and generators, since the cost of wind turbine generator accounts for a major part of the Project total cost. As the exact date of the turbines and generator contract is not clearly defined in the document, 1 September 2008 is identified as the starting date of the project, which is considered by the Validation Team reasonable.

During site interview, the Validation Team had verified the above documents and confirmed the evidence of CDM consideration to be sufficient.

Starting date of project	Justification of and evidences (references) on the starting date of project	Date of CDM consideration
1 st September 2008	/13//27/31/	18 August 2008/31/ Board meeting to decided to develop the proposed project as a CDM project.

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It has been demonstrated by the chronological events that CDM revenues were considered for the proposed project activity, before to the starting date of the project activity.

3.5.2 Alternatives

The project activity is based on the methodology ACM0002 version 09, in which the baseline scenario has been prescribed for Greenfield projects. As per article 103 VVM /43/, no further alternative analysis is required

3.5.3 .Investment analysis

As the project generates revenues from the sale of electricity, a benchmark analysis has been adopted to demonstrate the barrier due to investment. A Project IRR of 8% (after tax) is chosen as the benchmark according to the Interim Rules on Economic Assessment of Electrical Engineering Retrofit Projects/23/. The Validation Team has assessed this Interim Rules on Economic Assessment of Electrical Engineering Retrofit Projects issued by State Power Co., and confirmed that a Project IRR of 8% (after tax) is applied in power industry or power transmission& dispatching industry. It has been demonstrated in the PDD that the Project IRR is 5.68% (after tax) in absence of CDM revenues, which is lower than the bench mark of 8%, and hence not financially attractive.

Moreover, a sensitivity analysis has been assessed with regards to static total investment, net electricity generation or tariff and annual O&M cost. The sensitivity analysis shows that without the income from CERs sales the IRR of the proposed project is still lower than the benchmark even when the variations reaches favorable level of the main parameters are considered.

The IRR calculation sheet /15/ has been assessed by the Validation Team. The main parameters input in the IRR calculation are presented in Table B.2 of the PDD. The data source for each parameter has been clearly identified. Most of the input parameters are quoted from the FSR. The FSR is finalized by the Jilin Province Power Reconnaissance Design Institute in August 2008/13/. And the main equipments were purchased on in September 2008/27/, and the Project started construction on 10 October 2008. The time between the FSR's finalization and the investment decision can be deemed sufficient short.

In order to ensure the input values transparency, the Validation Team as verified the main input parameters as follows:

Project Installation

The Project total installation capacity is 49.5MW. This figure is consistent with that in the FSR and also confirmed by reviewing the equipment purchase contract/27/ during on site assessment.

Project Output

The expected annual electricity delivered to the grid is 100,120 MWh. This Value is consistent with that in the FSR. Wind resource is the key factor affecting the project output. In section 2 of the FSR, the wind resource at the project site is discussed and assessed by the Validation Team. A anemometer tower was erected beside to the project site to detect both the wind speed and wind direction; the collected data were cross checked against local 20 years statistics data (1988~2007) from Zhenlai Observation Station. The average wind power density, 324.8W/m² (a height of 70m at the project site, the same to the wind turbine's hub height), was reached based on the observed wind data that were processed by professional program; considering the wind farm array effects and the power loss factor constitutes of air density, wind turbine efficiency, contamination of rotor blades, turbulent flow influence, transmission loss & auxiliary

power use, correction on power curve, weather influence and others. The power loss factor are discussed in section 6.9 of the FSR and cross checked mainly against with Wind Power FSR compilation codes and methods/40/. Also DNA of China, Chinese NDRC has issued Clarification of Power Loss Factor for Wind Power Projects Implemented Within China/41/ by entrusting General Institute of Hydropower & Water Conservation, who acting as constitutor for wind power technology standard in China. Comparing to the above mentioned documents, the wind power loss factor of the Project estimation is confirmed to be reasonable and plausible.

The estimated realistic output is 100,120 MWh. To the Validation Team's opinion, is that the project annual output is reached in a scientific way. Correspondingly, the estimated project load factor is 23.1%. Its credibility can also be cross checked with projects registered in Jilin Province, which load factor ranges from 18.3% to 28.6%, and load factor of registered projects with installed capacity about 49MW ranges from 18.3% to 23.9%. The whole calculation process and data sheet were expressed transparently and completely in the section 5 of the FSR. To the Validation Team's opinion, the project net output is plausible.

Project Investment

The Project total assets investment is 520.13 Million RMB and is consistent with that in the FSR. The Validation Team cross checked this figure by reviewing the Approval of the Project/13/, issued by the NDRC on 7 Aug. 2008. The static investment 506.30 Million RMB was used in the investment analysis, which is assessed by the Validation Team conservative.

Besides, the credibility of the investment cost of the project will be discussed based on all wind farms located in Jilin province listed below

Table I- data of the all wind farms located in Jilin province registered as CDM projects

No	UNFCCC Ref.	Project name	Installed capacity (MW)	Investment per kW (RMB/kW)	Percentage of O&M cost to total investment	Tariff (RMB/kWh)
1	0238	Jinlin Taobei Huaneng wind power project	49.3	9710	N/A	0.61
2	0256	Jinlin Tongyu Huaneng 100.5MW wind power project	100.5	9805	N/A	0.509 (VAT excl.)
3	0483	Jilin Changling wind farm phase I project	49.5	9203	N/A	0.61
4	0544	Jilin Taobei Fuyu wind power project	49.5	7629	N/A	0.61
5	0599	Jilin Taonan wind power project	49.3	8782	N/A	0.61
6	0771	Changling wind power project	9.35	11220	2.8%	0.63
7	0869	Datang Jilin Shuangliao Wind farm project	49.3	9897	N/A	0.61
8	0897	Jilin Tongyu Tuanjie wind	100.3	8139	N/A	0.509 (VAT

		project				excl.)
9	1129	Jilin Baicheng Chaganhot wind power project	30	8724	1.2%	0.61
10	2068	Jilin Tongyu Tongfa wind power project	100.3	8088	3.4%	0.509 (VAT excl.)
11	2083	CGN Jilin Daan 49.5MW wind power project	49.5	10908	2.6%	0.61
12	2586	Jilin Da'an Dagangzi wind power project phase II	49.5	9318	1.4%	0.61
13	2598	Huaneng Jilin Tongyu phase II wind farm project	100.5	10332.8	2.3%	0.509 (VAT excl.)
14	2685	Jilin Shuangliao 2nd phase wind power project	49.5	10656	2.7%	0.61
15	3111	The proposed project	49.5	10508	2.3%	0.6112

Based on the statement and analysis above, it is found that the investment cost per kW of projects located in Jilin province is from 7,629 RMB/kW to 11,220RMB/kWh. The total investment per kW of the proposed project as 10,508 RMB/kWh is considered to be reasonable due to its value being within the range.

A sensitivity analysis has been made to the project fixed assets by the project proponent. The sensitivity analysis shows that even by decrease 22.13% of project fixed assets investment the project IRR will reach 8%, which is considered unlikely. Hence the claimed Project fixed assets investment value is credible.

Electricity Tariff

The fixed electricity tariff (including VAT) of 0.6112 RMB/kWh applied for the project activity is derived from the approved FSR. The tariff of which is set based on the tariff approvals of Jilin province for other wind projects therein at that time of preparation of FSR/13/. By reviewing the tariff approval for some wind projects in Jilin province by NDRC respectively on 9 June 2007(1260) and 23 July 2008 (1876)/49/ the validation team can find out the tariff for wind projects in Jilin province are stable to be 0.61RMB/kWh (incl. VAT). Besides, further investigation is made to discover that the tariff of wind projects in the area the proposed project located was steady from 2007 to 2008 before the project start date (i.e. 25 June 2008), and the tariff of 0.61 RMB/kWh (incl. VAT) is stable for wind projects in Jilin province when FSR was completed in February 2008 and the decision to proceed with investment is made on 25 June 2008. Thus the validation team can confirm the tariff applied in the PDD to be valid and applicable at the time of the investment decision made by the project owner in September 2008. Even with the highest tariff observed in Jilin province as table I above, the benchmark of 8% would not be reached.

The O&M costs

It is found that the operation and maintenance cost (O&M cost) is generally consisting of salary and welfare cost, maintenance cost, insurance, material fee and other costs used for the investment analysis. It was clearly stated in FSR that the salary and welfare cost is 15x50, 000 x (1+41%) RMB per year, maintenance cost rate is 1.5% and material fee is 15, 000 RMB/MWh, and other cost is 40, 000RMB/MWh.

The maintenance cost value for years of operation is estimated to be fixed which is in accordance with the national regulation regarding investment analysis (i.e. "Economic Evaluation Method and Parameters for Project Construction")/52/

Otherwise according to the table I above, percentage of O&M cost to total investment of wind farm projects located in Jilin province is generally from 1.2% to 3.4%. The value of the proposed project is estimated to be 2.3%, which is considered to be credible due to its value being within the range.

In conclusion, based on experience with other projects validated by the validation team, verification of the FSR, cross-checking with the technological literature "Economic Evaluation Method and Parameters for Project Construction" which is issued by NDRC and Ministry of Construction in August 2006/52/, the validation team is of the understanding that fixed O&M costs assumption for financial analysis is reasonable.

Calculation of the "recovered fixed assets margin"

Recovered fixed assets margin = rate of residual value \times fixed asset value

= rate of residual value \times (static investment + interest during construction period)

As for the proposed project, residual value rate is as 5% which is cited from FSR. According to the Notification on the execution method of adjustment of residual value rate of fixed asset for enterprises issued by State Administration of Taxation on Sep. 14th 2005/53/, the rate of residual value is fixed as 5%. Selection of 5% in FSR and PDD is in line with national regulation. It's reasonable to adopt 5% in PDD and FSR for the proposed project.

Recovered current funds

Current fund is used to pay for daily management or sudden expense during operation period. It is determined according to expert value and actual needs of the proposed and project owner. It is stated in the FSR that the current fund is 33, 9300 RMB.

According to last item of table B, page 51 of the Economic Assessment Method and Parameters for Construction Project (version 03) issued by NDRC and Construction department in August 2006/52/, current funds shall be recovered by the end of operation period.

Thus the current fund is considered as outflow for the first operation year and as inflow for the 20th year of the operation of the proposed project.

Validation of the adjusted income tax

Based on the *Economic Assessment Method and Parameters for Capital Construction Project (version 03.1)* issued as Chinese codes for project economic assessment in August 2006/52/, it is found that the income tax calculation in cash flow should be based on the total profit without an interest, i.e. the income tax (also called as adjusted income tax) equals to the product of a tax rate multiplying the sum of the profit and interest. Because the profit equals to difference of the total revenue and the total cost which includes the interest, thus it is considered that the project IRR calculation is conducted independently of the interest or source of financing.

But according to the *Guidelines on the assessment of Investment Analysis* version 03/10/, actual payment of interest shall be taken into account when post-tax benchmark is applied. In the new submitted IRR calculation spreadsheet, the interest being considered, the value of the project IRR (post-tax) is changed to be 5.68% from 4.94%.

Tax Rate

The VAT of the Project is 8.5%. This is consistent with that in the FSR. The Validation Team has assessed the Chinese Law and Regulation: Notice on Value Added Tax Policy Regarding Resource Multi-utilization and Other Products/50/ and confirms the VAT value. The income tax rate is 25%. This is consistent with that in the FSR. The Validation Team has assessed the Law of the Enterprise Incoming Tax of P.R.China/51/ and confirms the value.

3.5.4 Barrier analysis

- The project did not use the step.

3.5.5 Common practice analysis

As required by ‘Tool for the demonstration and assessment of additionality’/10/, a common practice is requested to be carried out as a credibility check to complete the investment analysis. The geographic scope of common practice made in the PDD is within in Jilin Province, where the project is located. The geographic scope shall be in a comparable environment with respect to regulatory framework, investment climate, access to financing, etc.

According to article 1 of the ‘Notice on Wind Power Construction and Management’ issued by China NDRC, wind farm project development plan should be developed at provincial level based on its own wind resources and local social economical conditions, the Validation Team can confirm that Jilin Province can be regarded as the geographic scope with respect to regulatory framework. Electricity Tariff is also an important issue for development wind farm projects. The determined tariff shall be finally approved by the Chinese NDRC. By referring to the most latest approved electricity tariff set by the Chinese NDRC, the electricity tariff could significantly different among provinces within China. Hence project financing incentives could be different to each other province. As discussed above, the Validation Team was able to confirm that the geographic scope for common practice analysis is appropriate.

Similar wind power projects observed in Jilin Province are sourced out from “Statistic on wind power installed capacity of China 2007”/46/ (hereafter referred as to the “Statistics”), issued by Mr.SHI Pengfei from China Wind Energy Association. This statistics report is deemed to be an expertise, public available and independent data source by the time the PDD was submitted for validation. The Validation Team checked each wind power projects in the Statistics and the validation findings are presented in the below table:

Project Name	Installation time	Installed Capacity	Validation findings
Tongyu Gengshengtun 30.06MW (Jilin Wind-power)	1999-08	7.26	The project enjoyed a high tariff of 0.9RMB/Kwh
	2000-12	22.8	
Tongyu Dongxinrong 100.5MW (Huaneng)	2006-12	21	Registered CDM project
	2007-11	79.5	
Tongyu Dongxinrong 2×100.3MW (Longyuan)	2006-12	20.4	Registered CDM project
	2007-10	130.05	Being developed as a CDM project
Taobei Qingshan 49.5MW (Fuyu)	2005-12	4.5	Registered CDM project
	2006-01	10.5	
	2007-10	15	
Taobei Qingshan 49.3MW	2005-12	49.3	Registered CDM project

(Huaneng)			
Shuangliao Baoshitu 49.3MW (Datang)	2006-11	49.3	Registered CDM project
Changling Xin'an 49.5MW (Zhongshui Construction)	2006-12	1.5	Registered CDM project
	2007-10	48	
Chaganhaote Lingxia 30MW (Zhongshui)	2006-12	7.5	Registered CDM project
	2007-02	22.5	
Da'an Shuanggangshan 49.5 MW (Zhongguanghe)	2007-11	49.5	Being developed as a CDM project

According to the 'Tool for the demonstration and assessment of additionality', CDM project activities, including registered project activities and project activities which have been published on the UNFCCC website for global stakeholder consultation as part of the validation process, are not to be included in this analysis. Hence one project are left for further analyzing.

The project is Tongyu Gengshengtun 30.06MW (Jilin Wind-power) wind power project. However, the electricity tariff for this project is 0.9 RMB/kwh. Compared with 0.61 RMB/kwh, the tariff that most recently approved in Jilin Province, the Tongyu Gengshengtun 30.06MW (Jilin Wind-power) wind power project enjoys a much higher one.

In summary, the validation team has confirmed that there are essential distinctions between the project activity and other similar wind power projects and the project activity is not common practice and is hence additional.

3.6 Monitoring

The project proponents correctly applies the approved monitoring methodology ACM0002 "Consolidated baseline methodology for grid-connected electricity generation from renewable sources", Version 09. The justification of applying the monitoring methodology is clearly defined in the section B.2 of the PDD transparently and completely. Based on below discussion, the monitoring plan is found in compliance with the requirements of the methodology, and the project participants are deemed competent to implement the monitoring plan.

The Project is a newly built wind power plant using renewable resources. The project design does not include backup power installations, project emissions therefore need not be considered. Leakage rising from plant construction or land inundation needs not to be considered, hence the project leakage is considered as zero. Monitoring of sustainable development indicators is not required by the Chinese DNA. The Validation Team has assessed the Project Environmental Impact Assessment (EIA)/14/, which was approved by Jilin Environment Protection Bureau. The environmental impacts are considered minor in the EIA.

It has been clearly defined in the PDD that the electricity supplied to the NEPG will be continuously measured and monthly recorded by the main monitoring meter installed at the substation. In addition, the electricity sales receipts may be provided for data quality control and cross check.

A CDM executive team will be set up serving the monitoring work. In order to achieve a smooth monitoring job, a detail Project CDM Monitoring Training plan/47/ has been developed by the project owner.

3.6.1 Parameters determined ex-ante

According to the approved monitoring methodology and deviation/9/&/12/, The baseline emissions factor has been fixed for the first crediting period. In each year the amount of CERs actually generated by the project will depend on the metered electricity supplied by the project to the grid.

The parameters that have been determined ex-ante based on the most recent information available are the grid emission factors of the NEPG. The grid emission factor has been determined as per the methodology/9/, as the combined margin of the operating and the build margin in a 75:25 ratio as applicable for the wind projects. The parameters determined ex-ante are listed in below table:

<i>Data and Parameters</i>	<i>Unit</i>	<i>Value applied</i>	<i>Source of data used</i>
Installed Capacity of the project activity	MW	49.5	FSR/13/
Operating margin of NEPG (OM)	tCO ₂ /MWh	1.2561	See section 3.4.4
Build Margin of NEPG (BM)	tCO ₂ /MWh	0.8068	See section 3.4.4
Emission factor of NEPG	tCO ₂ /MWh	1.1438	See section 3.4.4

3.6.2 Parameters monitored ex-post

The only parameter monitored ex-post is the net electricity supplied to the NEPG by the Project, which is in compliance with the monitoring methodology. The monitoring is stated to be continuous and will be recorded monthly. Additionally, these data will be cross-checked with receipts of electricity sales.

3.6.3 Management system and quality assurance

A special monitoring director of Jilin Taihe Wind power Development Co., Ltd., is responsible for the monitoring and reporting of the wind farm.

The details about the responsibility of data monitoring, cross checking for QA/QC, calibration frequency, calibration standard are described in the following monitoring plan:

- Monitoring organization
- Monitoring equipment and installation and calibration
- Data recording procedure
- Data and records management
- Training procedure
- Reporting and verification

Detailed requirement were involved operation/monitoring plan in section B.7 of updated PDD/2/.

These will be maintained and implemented to enable subsequent verification of emission reductions.

3.7 Sustainable Development

The DNA from the host country NDRC has issued the Letter of Approval/3/, which has been assessed by the Validation Team to be valid, and confirms the Project will assist China in achieving sustainable development.

By review the FSR and EIA report/13//14/, it is deemed that the Project will bring positive effects to the local people. First of all, the Project can provide clean energy; Secondly, the Project can provide permanent job opportunities and temporary job opportunities during construction phase; Finally, the Project stimulate the local economy conditions because the construction materials are purchased locally.

3.8 Environmental Impacts

An Environmental Impact Assessment (EIA) has been conducted according to Chinese law and regulation/14/. The potential environmental impacts have been sufficiently identified. No significant environmental impacts are expected from the project activity. The Environmental Protection Bureau of Jilin Province has approved the EIA on 9 April 2008 /14/. A detail description in PDD has been presented by PP/2/.

During validation period, audit team has checked and confirm the documents. On site of proposed project, audit team saw the construction of project was on going, and the relevant measure planned in EIA was being implemented.

The Validation Team also checked the pre-permit for using land by the Land Source Bureau of Jilin Province dated on 3 February 2008, Refer to No. Jiguotuziyushenzi(2008)52/27/, and confirmed the land used for proposed project available.

3.9 Local Stakeholder Consultation

During EIA period, the author who is Jilin Province Xinghuan Environment Technology Service Co., Ltd had carried out a survey to villagers' representative of closed the area of the project. The result of survey in EIA report had presented no adverse comments on the project activity, and the conclusion had been conformed by approval letter from Jilin Province Environmental Protection Bureau on 09 April 2008, Refer to No. Jihuanjianbiaozi(2008)63/14/. The Validation Team has verified EIA report and the approval.

Due to the materials during EIA period kept in the local Environmental Protection Bureau in China, the developer couldn't obtain them. For further investigating of the impacts on local ecological environment, On September 11th 2008, the owner, who is Jilin Taihe Windpower Development Co., Ltd. conducted a survey to the local residents and local government. The particular of the survey are described in section E.1. of PDD in detail./1/&/2/. The 38 questionnaires were distributed and the survey had a 100% response./25/. These questionnaires have been verified during the on-site assessment by the Validation Team. The survey demonstrates that the local community is supportive to the project. The implementation of the project could benefit the local economics. The local stakeholder consultation process of the project is adequate.

During site visit, the original of 30 questionnaires were verified and confirmed by DOE. Based on observation from audit team on site, the impacts on local ecological environment is accordance to the EIA and the result of survey.

3.10 Comments by Parties, Stakeholders and NGOs

The PDD *version* 04 of 3 March 2009 was made publicly available on (<http://cdm.unfccc.int/Projects/Validation/index.html>) from 31 March 2009 to 30 April 2009 in order to invite comments from public stakeholders.

No public comments have been received during that period.

Appendix A

CDM VALIDATION PROTOCOL

Project Title and Location

REPORT NO. 01 997 9105052836

Table 1: Validation requirements

(based on § 37 of the CDM Modalities and Procedures and on CDM Validation and Verification Manual, Annex 3 of EB44)

Checklist question	Ref.	MoV ¹	Findings, comments, references, data sources	Draft conclusion	Final conclusion
1. Approval					
1.1 Have Letters of Approval have been provided from all involved Parties?	/1/	DR I	No. The letters of approval from the DNA of China and the Sweden have not been obtained.	CAR+	OK
1.2 Are all Parties, who issued the LoA, Parties to the Kyoto Protocol <u>and</u> is this stated in the LoA?	/1/	DR I	Yes. P.R. China (host) and Sweden are Parties in the project. China ratified the Kyoto Protocol on 30 August, 2002. The Sweden ratified the Kyoto Protocol on 31 May 2002. Both Parties involved have designated national authorities for the CDM. The letters of approval from the DNA of China and the Sweden have not been obtained.	CAR+	OK

¹ MoV = Means of Verification, DR = Document Review, I = Interview, www = internet search.

1.3	Is every LoA from the Parties involved issued by an organisation listed as Designated National Authority (DNA) on the UNFCCC web site?	/1/	DR	<p>Chinese DNA is: National Development and Reform Commission of the People's Republic of China; Director General, Office to National Climate Change Coordination Committee</p> <p>Sweden DNA is: Swedish Energy Agency, Department of Energy system Analysis and Climate Change</p> <p>The above DNA have listed on UNFCCC web site, www.unfccc request\CDM Designated National Authorities (DNA).mht</p> <p>The letters of approval from the DNA of China and the Sweden have not been obtained.</p>	CAR1	OK
1.4	Is the participation in the CDM project activity voluntary <u>and</u> is this stated in all LoAs?	/1/	DR	<p>The project participants are Jilin Taihe Windpower Development Co., Ltd China and Carbon Asset Management Sweden AB., the Sweden.</p> <p>The letters of approval from the DNA of China and the Sweden have not been obtained.</p>	CAR1	OK
1.5	Is the LoA unconditional with respect to 1.2 to 1.4?	/1/	DR	The letters of approval from the DNA of China and the Sweden have not been obtained.	CAR1	OK
1.6	Is the title of the CDM project activity as given in the PDD identical with the title given in all LoAs and Modalities of Communication?	/1/	DR I	The letters of approval and the Modalities of Communications from the DNA of China and the Sweden have not been obtained.	CAR1	OK
1.7	If any of provided LoAs contains additional specification of the CDM project activity (PDD version number, validation report version number, amount of ER, etc.) are those specifications valid and consistent with other documents?	/1/	DR I	The letters of approval from the DNA of China and the Sweden have not been obtained.	CAR1	OK

1.8	Does the project activity involve any public funding from Annex I Parties?	/1/	DR I	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 China.		OK
2. Participation (VVM E.2)						
2.1	Are the Parties and project participants (PP) listed in the section A.3 of the PDD correctly <u>and</u> is this information consistent with the contact details provided in Annex 1 of the PDD?	/1/	DR	Yes. The China/Sweden and Chinese/Sweden PP listed in the section A.3 of the PDD have been provided the clear information, which are accordant as it in Annex 1 of the PDD.		OK
2.2	Has every Party involved approved the participation of each corresponding PP, either by means of a LoA or by a separate written document?	/1/	DR	The letters of approval from the DNA of China and the Sweden have not been obtained. The relevant information can't be verified.	CAR1	OK
3. Project Design Document (VVM E.3)						
3.1	Is the PDD presented for validation based on the latest template available at the UNFCCC website?	/1/ /7/	DR	Yes. The PDD presented for validation based on the latest template available at the UNFCCC website, which is CDM-PDD - Project Design Document form, Version 03.		OK
3.2	Has the PDD been established in accordance with the CDM requirements for completing PDDs issued by the CDM EB?	/1/ /7/	DR	Yes. The PDD has been established in accordance with the CDM requirements for completing PDDs issued by the CDM EB		OK
4. Project Description (VVM E.4)						

<p>4.1 Does the PDD contain a description, which provides the reader with a clear understanding of the precise nature of the project activity and the technical aspects of its implementation?</p>	<p>/1/ /13/</p>	<p>DR I</p>	<p>Yes. The objective of the proposed project activity will be to generate electricity by utilizing wind resources. Totally 33 wind turbines (SL-1500/82Model) are employed in the project. The unit capacity of the turbine is 1.5MW. The wind turbines are estimated to generate on average 100,122 MWh of electricity annually once fully operational. The electricity generated from the project will be transmitted to the substation of NEPG. PP should further fill technology to be employed in PDD, example: the generation average of electricity annually, average load factor, the transmission, etc.</p>	<p>CL1</p>	<p>OK</p>
<p>4.2 In the case of greenfield project activity, is the project design described sufficiently by means of specifications, drawings and manuals?</p>	<p>/1/ /13/ /14/</p>	<p>DR I</p>	<p>Yes. According to FSR and EIA approved, the objective of the proposed project activity will be to generate electricity by utilizing wind resources. which can decrease the GHGs emission and at the same time alleviate the environment pollution caused by the combustion of the fossil fuels, and increase the proportion of the renewable energy sources for generation and improve the energy structure of the Northeast China Power Grid.. In section B.3. of PDD, Sources and gases in the project boundary have been described sufficiently drawings and list.</p>		<p>OK</p>

<p>4.3 Does the project activity reflects current good practices, uses state of the art technology or would the technology result in a significantly better performance, than any commonly used technologies in the host country?</p>	<p>/1/ /13/ /39/</p>	<p>DR</p>	<p>The technology of equipmet and facility have been used in practice in China. For the project activity, according to local wind resource, some type equipments had been compared and analysed sufficiently during FSR period by professional institution. It is the better result of operating 33 wind turbines, each of which has a capacity of 1500kW and expected to generate 100,112 MWh per year. These parameters are taken from the approved FSR. In the page 44 and page 69 to 70 of FSR based on the historical wind data of year 1959 to 2008 from the local weather station and analyse with National Standard, .good wind resource has be in project site. Further, Estimation on electricity output to grid was calculated on energy loss estimation, which included air density, wind turbine efficiency, contamination of rotor blades, turbulent flow influence, transmission loss & auxiliary power use, correction on power curve, weather influence and others, and are carried out using professional WasP8.3 software (www.wasp.dk) designed for wind energy, then, an average load factor of 23.1% has been applied. The purchasing contract of generator and turbine between Owner and Huarui Wind Power Technology Co., Ltd as the project activity start date/20/. The starting date of the first crediting period will be 1 January 2010_or date of registration, whichever is later. As per the approved FSR, the expected operational lifetime of the project activity is 20 years. A renewable crediting period of 7 years has been chosen. The project is expected to reduce GHG emissions of estimated 114,520 tCO₂e per year and 801,640 tCO₂e over the first seven-year crediting period. During desk review period, the Validation Team has verified and confirmed the result. The FSR has been approved by Development and Reform Commission of Jilin province on 07 August 2008.</p> <p>PP should further fill technology to be employed in PDD, example: the generation average of electricity annually, average load factor, the transmission, etc.</p>	<p>CL1</p>	<p>OK</p>
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4.4	In cases where the project activity involves the alteration of an existing installation or process, does the PDD provide a clear description of the differences between the project and the pre-project scenario?	/1/ /13/	DR I	There is no existing installation or process of the project activity. FSR has a description and DOE has verified and conformed. During site visit, the Validation Team had look around wind farm and the status can be confirmed		OK
5. Baseline and Monitoring methodology						
5.1 General requirements						
5.1.1	Is the methodology used in the project activity approved by the CDM EB <u>and</u> is the selected version still valid?	/1/ /9/	DR	Yes. The methodology used in the project activity approved by the CDM EB of approved consolidated baseline and monitoring methodology ACM0002 “Consolidated baseline methodology for grid-connected electricity generation from renewable sources” version 09 of 13 February 2009.		OK
5.2 Applicability of the selected methodology						
5.2.1	Does the project activity qualify under the criteria for small-scale CDM project activities set out in § 6 (c) of decision 17/CP.7 and Annex II of the Modalities and Procedures for the CDM?	/1/ /13/ /20/	DR I	No. In approval of FSR and the permit opinion of connecting grid, 49.5MW of the total installed capacity has been presented clearly. So, the project activity is not qualified under the criteria for small-scale CDM project activities.		OK
5.2.1.1	If yes, does the PDD extensively demonstrates and confirms that the small-scale project activity is not a debundled component of a larger project?			Ditto		

5.2.2 Are all applicability conditions of the selected baseline and monitoring methodology and all tools involved satisfied by the project activity?	/1/ /7/ /9/ /10/ /11/ /16/	DR I	<p>Yes. The project meets all the applicability criteria stated in the methodology:</p> <ul style="list-style-type: none"> ·The project is a capacity addition from a renewable energy source, i.e. wind resources; ·The project does not involve an on-site switch from fossil fuels to a renewable source; ·The geographic and system boundaries for the relevant electricity grid, the NEPG, can be clearly identified and information on the characteristics of the grid is available. <p>Therefore, the project activity meets all the applicability criteria for ACM0002 (version 09) and tool.</p> <p>A clearly description has been presented in PDD.</p>		OK
5.2.3 Is the selection of the applied baseline and monitoring methodology justified?	/1/ /7/ /9/ /10/ /11/ /16/	DR I	<p>Yes. This methodology approved consolidated baseline and monitoring methodology ACM0002 of version 9 is applicable to grid-connected renewable power generation project activities that involve electricity capacity additions.</p> <p>It is applicable that the project activity is the installation of a wind power plant connected- grid. During site visit, the pre-permit opinion for the proposed project connecting to grid by Northeast China Power Grid Company Limited has been verified and confirmed by the Validation Team.</p>		OK

5.2.4 Is the selected methodology correctly quoted in all related documents?	/1/ /9/ /10/ /11/	DR	<p>Yes.</p> <p>This methodology of ACM0002 of version 9 also refers to the latest approved versions of the following tools:</p> <ul style="list-style-type: none"> • Tool to calculate the emission factor for an electricity system; • Tool for the demonstration and assessment of additionality; 		OK
5.2.5 Does the PDD sufficiently describe all the GHG emission sources or sinks occurring as a result of project activity, which have not been accounted for under the selected methodology and are expected to contribute more than 1% of the overall expected average annual emission reductions?	/1/ /9/ /13/ /17/ /18/	DR I	<p>Yes.</p> <p>According the selected methodology , all assumptions and data used by the project participants are clearly listed in the PDD.</p> <p>1) Baseline emissions: is main emission source .</p> <p>2)There are no emissions from the project which is a renewable energy project.</p> <p>3) No leakage has to be considered for the proposed project activity.</p> <p>The related document (include Methodology ,FSR, Power year book and Energy year book)to be submitted for registration. The data have been properly referenced in PDD.</p> <p>Relevant national and/or sectoral policies and circumstances have been considered by PP in PDD.</p> <p>The Validation Team has verified and confirmed the documents.</p>		OK
5.3 Project boundary					

5.3.1 Does the PDD correctly describe the project boundary?	/1/ /13/ /17/ /20/ /34/	DR I	<p>Yes.</p> <p>According to FSR and the pre-permit by grid company, the proposed project will be connected to NEPG.</p> <p>So, the spatial extent of the project boundary includes the project site and all power plants connected to NEPG. NEPG is an electricity system which is defined by the spatial extent of the power plants that can be dispatched without significant transmission constrains.</p> <p>The clear description has been in PDD.</p>		OK
5.3.2 Does the PDD correctly indicate and describe the emission sources and sinks of GHG gases that are included in the project boundary?	/1/ /17/ /34/	DR	<p>Yes. the PDD correctly indicate and describe the emission sources.</p> <p>The project boundary is clearly defined as the project site and the grid electricity system boundary, which is defined as the NEPG including the grids of Liaoning Province, Jilin Province, Heilongjiang Province, on the basis of information announced by NDRC in December 2008. There are no significant transmission constraints between the power plants of the NEPG. The selected sources and gases are justified for the project activity.</p>		OK

<p>5.3.3 In cases where the methodology allows project participants to choose whether a source or gas is to be included in the project boundary, is the choice explained and justified by PPs?</p>	<p>/1/ /9/ /11/ /17/</p>	<p>DR</p>	<p>The project activity is the installation of a new grid-connected wind farm power plant/unit. According to methodology, most renewable energy project activities, $PE_y = 0$.</p> <p>The proposed project will be connected to NEPG. And all the power plants connected to the NEPG are included for calculating the OM and BM. The baseline emissions are calculated in accordance with "Tool to calculate the emission factor for an electricity system". The baseline emission factor is based on the combined margin using the 'simple operating margin' Option (a) of the "Tool to calculate the emission factor for an electricity system" because the low-cost /must run resources constitute less than 50% of total grid generation and the data of the preferred option (c) is not public available.</p> <p>PDD has described fully the section.</p> <p>Thus, the selected sources and gases are justified for the project activity.</p>		<p>OK</p>
<p>5.4 Baseline identification</p>					

<p>5.4.1 Has the procedure contained in the selected methodology to identify the most reasonable baseline scenario been applied correctly and documented in the PDD?</p>	<p>/1/ /9/ /13/ /17/ /20/ /34/</p>	<p>DR</p>	<p>According to the description in the approved baseline methodology ACM0002, if the project activity is the installation of a new renewable power plant, the baseline scenario is the following:</p> <p>Electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in the “Tool to calculate the emission factor for an electricity system”.</p> <p>Based on FSR and pre-permit from Grid Company, the project activities will do not modify or retrofit an existing electricity generation and will be connected to Northeast China Power Grid. So Northeast China Power Grid is considered as the “connected electricity system”, which is defined as the “project boundary” of the proposed project.</p> <p>According to China Electric Power Yearbook, The NEPG is dominated by coal-fired power plants. It is deemed likely that coal-fired power plants will continue to dominate the power sector due to the local availability of low-cost coal. It is expected that renewable capacity additions will not have significant effects on the mix of the NEPG during the first crediting period.</p> <p>The Validation Team has verified the documents and confirmed the baseline scenario of the project has been demonstrated to be that an equivalent amount of electricity would, in the absence of the project activity, have been generated by the operation of grid-connected thermal power plants and by the addition of new generation sources.</p> <p>Emission sources and gases related to the baseline scenario, project scenario and leakage included in project boundary comply with the methodology applied. Section B.3 of PDD includes a diagram (Figure B.1) has indicated clearly.</p>		<p>OK</p>
<p>5.4.1.1 Is the identified baseline scenario plausible?</p>			<p>Ditto</p>		<p>OK</p>

5.4.1.2 Are all assumptions stated in a transparent and conservative manner?		DR	The same as 5.2.5 & 5.4.1		OK
5.4.2 Does the selected methodology require the use of tools <u>and</u> does PDD reflects that correctly?	/1/ /10 /11/	DR	Yes. The same to 5.2		OK
5.4.2.1 Were all the tools applied correctly?	/1/ /11/	DR	Yes. The same to 5.2		OK
5.4.3 In case the methodology requires several alternative scenarios to be considered in the identification of the most reasonable baseline scenario, have all scenarios been considered <u>and</u> have no reasonable alternative scenario been excluded?	/1/ /9/	DR	The same to 5.4.1		OK
5.4.3.1 Has the choice of the baseline scenario been done using conservative assumptions?	/1/ /9/	DR	The same to 5.4.1		OK
5.4.4 Is the identified baseline scenario reasonable according to the assumptions, calculations and rationales used in the PDD and other reference sources?	/1/ /9/	DR	The same to 5.4.1		OK
5.4.6 Does the PDD describe how the national and sectoral policies relevant to the baseline scenario have been identified and considered in the PDD?	/1/ /9/	DR	The same to 5.4.1		OK

5.4.7 Does the PDD provide a verifiable description of the identified baseline scenario, including a description of the technology that would be employed and/or the activities that would take place in the absence of the project activity?	/1/ /9/	DR	The same to 5.4.1		OK
5.5 Algorithm and/or formulae used to determine emission reductions					

<p>5.5.1 Are all calculations applied and documented according to the selected methodology and in a complete and transparent manner?</p>	<p>/1/ /9/ /11/ /12/ /13/ /17/ /18/ /19/ /20/ /34/</p>	<p>DR</p>	<p>Yes. According to selected methodology, all calculations are applied and documented as below process: - Following the methodology, the baseline emissions (BE_y) are the CO₂ emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity . - The emission reduction ER_y by the project activity during the crediting period is the difference between baseline emissions (BE_y), project emissions (PE_y) and emissions due to leakage (Ly), as follows: 1) Baseline emissions: baseline emissions (BE_y in tCO₂) are the product of the baseline emissions factor (EF_y in tCO₂/MWh) times the electricity supplied by the project activity to the grid (EG_y in MWh).: $BE_y = EG_y * EF_y$ 2) Project emissions: there are no emissions from the project which is a renewable energy project. 3) Leakage: no leakage has to be considered for the proposed project activity. 4) Emission reduction: $ER_y = BE_y - PE_y - Ly = BE_y = EG_y * EF_y$. - The emissions are calculated from the net electricity delivered to the grid by the project activity (EG_y) and the combined margin emissions factor (EF_y) as described in the "Tool to calculate the emission factor for an electricity system". EF_y is calculated in the following 6 steps: 1. Identify the relevant electric power system. 2. Select an operating margin (OM) method. 3. Calculate the operating margin emission factor according to the selected method. 4. Identify the cohort of power units to be included in the build margin (BM). 5. Calculate the build margin emission factor. 6. Calculate the combined margin (CM) emissions factor. The logic and process of calculation has been presented clearly in PDD and Annex3.</p>		<p>OK</p>
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<p>5.5.2 In case the methodology allows a selection between different options for equations or parameters, has adequate justification been given and have the correct equations and parameters been used, in accordance with the methodology selected?</p>	<p>/1/ /9/ /11/</p>	<p>DR</p>	<p>Yes. According to Tool, two options In terms of vintage of data, between ex-ante and ex-post data vintages, can be chosen. The project participants had choose the ex-ante option, fixing the emission factor in the PDD for the first crediting period, detail is as below: For the first crediting period, calculate the build margin emission factor ex-ante based on the most recent information available on units already built for sample group m at the time of CDM-PDD submission to the DOE for validation. For the second crediting period, the build margin emission factor should be updated based on the most recent information available on units already built at the time of submission of the request for renewal of the crediting period to the DOE. For the third crediting period, the build margin emission factor calculated for the second crediting period should be used. This option does not require monitoring the emission factor during the crediting period. Based on Tool, PP should fill the explain of EF calculation in 2th & 3th crediting period</p>	<p>CL2</p>	<p>OK</p>
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5.5.3 In case some data and parameters will not be monitored throughout the crediting period, but have already been determined and fixed, are all data sources, assumptions and calculations correct, applicable to the proposed CDM project activity and conservative?	/1/ /9/ /11/ /12/ /17/ /18/ /34/	DR I	<p>Yes. EF_y is ex-ante The grid emission factor is correctly calculated in line with ACM0002 as a combined margin (CM), consisting of the combination of operating margin (OM) and build margin (BM).</p> <p>The parameter used in OM&BM calculation is source from China Electric Power Yearbook(2000-2007) and China Energy Statistical Yearbook(2005-2007) and IPCC2006.</p> <p>According to the delineation of the Chinese DNA, No imports into the project electricity system of the proposed project activity The specific of OM&BM calculation is in Annex 3 of PDD.</p> <p>TÜV Rheiland has checked and been able to confirm them. The result of calculation is following: EF_{OM}: 1.2561; EF_{BM}: 0.8068; EF: 1.1438</p>		OK
5.5.4 In case 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 reasonable?	/1/ /9/	DR	Due to 5.5.2, the question is NA to the proposed project.		OK
5.5.5 Have the major risks and uncertainties, which can influence the emission reduction estimates, been identified and addressed in the PDD?	/1/ /13/	DR	PP should identify and address the major risks and uncertainties, which can influence the emission reduction estimates.	CL3	OK
5.6 Leakage					
5.6.1 Has the leakage been identified and calculated according to the approved methodology?	/1/ /13/ /9/	DR	According to selected methodology , no leakage has to be considered for the proposed project activity		OK

5.6.2 Have the leakage been addressed in complete, conservative and substantiated manner?			DITTO		OK
5.6.3 Are uncertainties in the leakage emission estimates properly addressed?			DITTO		OK
6. Methodology-related issues for afforestation or reforestation CDM project activities					
Add specific A/R requirements – if applicable!			Not applicable for this CDM project activity	O.K.	O.K.
7. Additionality					
7.1 Prior consideration of the CDM (VVM E.6.III.a)					
7.1.1 Is there documented evidence provided by the project participants on how and when the decision to proceed with the project activity was taken?	/1/ /13/ /31/ /35/ /37/	DR I	<p>Yes.</p> <ul style="list-style-type: none"> The financial barriers and CDM consideration had been presented in FSR from April to August 2008, and FSR was approved on 08 August 2008 The developer hold a board meeting to decided to develop the proposed project as a CDM project on 18 August 2008. ERPA was signed between owner and Carbon Asset Management Sweden AB on 20 August 2008. On 10 February 2009, A written confirmation from Chinese NDRC was obtained, that PPs previously informed on commencement of the project activity and of their intention to seek CDM status. <p>The above documented evidence had sufficiently demonstrated how and when the decision to proceed with the project activity was taken by PP. they had been provided to DOE.</p> <p>The Validation Team has verified and confirmed the documented evidence</p>		OK

7.1.2 Is the starting date of the project activity, reported in the PDD, in accordance with the “Glossary of CDM terms” <u>and</u> CDM VVM (§97)?	/1/ /10/ /27/	DR I	The proposed project started date in PDD was 10 October 2008. During site visit period, it was found the date of equipment purchasing contract signed was earlier, which was in September 2008. So, the point should be re-identified and argued in updated PDD. The generator and turbine purchasing contract was signed between owner and supplier in September 2008, which had been verified and confirmed by the Validation Team.	CAR2	OK
7.1.3 Is the date stated in the provided evidence consistent with other available evidence (e.g. dates of construction, purchase orders for equipment)?	/1/ /10/ /27/	DR I	The same to 7.1.2	CAR2	OK
7.1.4 If the project was not published and the starting date is on or after 2 nd August 2008, was it possible to receive from UNFCCC secretariat and/or DNA a written confirmation that PPs previously informed the above entities on commencement of the project activity and of their intention to seek CDM status?	/1/ /35/	DR I	Yes. A written confirmation from Chinese NDRC on 10 February 2009, which was previously informed on commencement of the project activity seek CDM status. The document had been verified and confirmed by the Validation Team.		OK
7.1.5 For the project activities with a starting date before 2 nd August 2008 and before the actual publication, was there enough evidence presented to prove that PPs were previously aware of CDM?	/27/	DR I	The project activities starting date was in September 2008 after 2 nd August 2008. The question is NA to the project,		OK

7.1.6 For the project activities with a starting date before 2 nd August 2008 and before the actual publication, was there enough evidence presented to prove that CDM benefits have been a decisive factor in the decision to proceed with the project activity?	/27/	DR I	The project activities starting date was in September 2008 after 2 nd August 2008. The question is also NA to the project,		OK
7.1.7 Does the individual or body that took the decision to proceed with the project activity have/had the authority to do so?	/1/ /13/ /31/ /35/ /37/	DR I	The same to 7.1.1		OK
7.1.8 For the project activities with a starting date before 2 nd August 2008 and before the actual publication, was there enough evidence presented to prove that PPs were taking continuing and real actions to secure CDM status for the project in parallel with its implementation?	/27/	DR I	The project activities starting date was in September 2008 after 2 nd August 2008. The question is also NA to the project,		OK
7.1.9 In case there is a significant gap between the start date of the project activity and the commencement of validation, how was it possible for the project participant to commit funds to the project in advance of receiving a positive validation opinion?	/1/	DR I	For the project start date in September 2008, only 6 months in advance of validation date start on 1 January 2009, the schedule is normal. It is considered no significant gap between the start date of the project activity and the commencement of validation. The Validation Team confirmed that PP prepared PDD and contacted DOE during the period.		OK
7.2 Identification of alternatives					

<p>7.2.1 Does the PDD identify and list credible alternatives to the CDM project activity in order to determine the most realistic baseline scenario, unless selected approved methodology prescribes/identifies the baseline scenario and no further analysis is required?</p>	<p>/1/ /9/ /10/</p>	<p>DR</p>	<p>Based on “<i>Tool for the Demonstration and Assessment of Additionality (version 5.2)</i>”, which was approved in the EB 39, The alternative scenarios for the project activity consistent with current laws and Regulations have been identified in B.5. of PDD, as below:</p> <ul style="list-style-type: none"> a) The proposed project activity undertaken without being registered as a CDM project activity; b) Construction of a fossil fuel-fired power plant with equivalent capacity or equivalent amount of annual electricity output; c) Construction of a power plant using other renewable energy sources with equivalent capacity or equivalent amount of annual electricity output; d) Continuation of the current situation that is electricity generation provided by the NEPG. 		<p>OK</p>
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<p>7.2.2 Does the list of alternatives include as one of the options that the project activity is undertaken without being registered as a CDM project activity?</p>	<p>/1/ /9/ /10/ /15/ /22/ /26/</p>	<p>DR</p>	<p>Yes.</p> <p>The above 4 alternatives for the project activity are all undertaken without being registered as a CDM project activity. According to the national regulation "the announcement which strictly forbids the construction of thermal power stations with an installed capacity lower than 135WM published by the State Council Office, Guo Ban Fa Ming Dian[2002] No.6" coal-fired based power plants with installed capacity less than 135MW are forbidden to be constructed in areas covered by provincial grids. Thus, the scenario b) is not consistent with the current law and regulation.</p> <p>The project IRR without carbon revenue is 5.68%, lower than an accepted benchmark for investments in this type of projects and thus it is not a financially attractive alternative.</p> <p>There is no available another renewable energy resource, such as solar, hydropower, etc, in area of proposed project located the reference should be further clarified in updated PDD. After the problem is checked and confirmed, the scenario c) will be not a plausible alternative in the project region.</p> <p>Alternative d) is in compliance with legal and regulatory requirements. So the scenario d) is realistic and credible choice.</p> <p>The possible baseline scenarios are the alternative (a) and the alternative (d). Thus, It has been demonstrated that the only realistic and credible alternative for the proposed project is electricity generation in the existing power plants/capacity addition in the NEPG grid. The NEPG is dominated by coal-fired power plants. It is deemed likely that coal-fired power plants will continue to dominate the power sector due to the local availability of low-cost coal. It is expected that renewable capacity additions will not have significant effects on the mix of the NEPG during the first crediting period.</p>	<p>€4</p>	<p>OK</p>
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7.2.3 Does the list contain all realistic/credible alternatives that the DOE, on the basis of its local and sectoral knowledge, considers to be viable means of supplying the outputs or services that are to be supplied by the project activity?	/1/ /9/ /10/ /26/	DR	The same as question 7.2.2	€4	OK
7.2.4 Is the exclusion of the alternatives for legal reasons justified?	/1/ /22/	DR	Yes. As the argument of question 7.2.2, the exclusion of the alternatives for legal reasons is justified.		OK
7.3 Investment Analysis					
7.3.1 Are all sources of revenues (including savings) have been considered in the PDD and all calculations?	/1/ /13/ /15/ /21/ /36/ /38/	DR I	Yes. All sources of revenues have been considered in the PDD and all calculations, which are all from FSR approved. During validation period, the tax used in IRR calculation had been cross-checked according to related regulation and considered reasonable by the Validation Team. IRR calculation spreadsheet of English should be submitted to DOE and included all parameters reference, list for O&M cost and investment, Sensitivity analysis, the calculation process and formula.	€15	OK

7.3.2 Is the type of investment analysis selected correctly in the PDD?	/1/ /10/ /16/	DR	<p>Yes.</p> <p>The proposed project generates financial and economic benefits through the sales of electricity other than CDM related income. A benchmark analysis is thus selected for conducting the investment analysis. This type of investment analysis selected is in line with Chinese practice and followed in the FSR.</p> <p>It is available and correct that benchmark analysis is used for the project activity.</p>		OK
7.3.3 Is the selected financial indicator chosen and applied correctly?	/1/ /13/ /16/ /23/	DR I	<p>Yes.</p> <p>Based on Chinese regulation, An IRR of 8% for the total investment of a project is regarded as a benchmark for investments in new hydropower plants, fossil fuel fired plants and wind farm projects.</p>		OK
7.3.4 Is the guidance on IRR calculation and assessment correctly applied?	/1/ /13/ /15/ /23/	DR	<p>Yes.</p> <p>According to the approved feasibility study report, the project IRR without CER revenues has been estimated to be 4.95 %, which shows that the project is not financially attractive compared to the benchmark in the absence of CDM benefits.</p> <p>The IRR calculations in FSR were reviewed by DOE and were deemed transparent and conservative.</p> <p>IRR calculation spreadsheet of English should be submitted to DOE and included all parameters reference, list for O&M cost and investment, Sensitivity analysis, the calculation process and formula.</p> <p>The income tax should be included based on para 11 of investment analysis guideline version 03 for the project IRR calculation compared with post-tax benchmark.</p>	<p>€15</p> <p>€AR3</p>	OK

<p>7.3.5 In case project participants use values from Feasibility Study Reports (FSR) is it possible to verify that the period between the FSR date and investment decision was reasonably short and FSR values did not change materially?</p>	<p>/1/ /13/ /15/ /27/ /36/ /38/</p>	<p>DR I</p>	<p>All the selected financial indicator are chosen from FSR, which is in April to August 2008 developed by Jilin Province Power Reconnaissance Design Institute and approval letter by the Development and Reform Commission of Jilin Province on 07 August 2008, Refer to No. Jifagaishenpizi(2008)566.</p> <p>No delay prior to The decision to proceed with the start date of the project which was in September 2008.</p> <p>It is unlikely in the context of the project that the input values would have materially changed and that it is thus reasonable to assume that the FSR has been the basis of the decision to proceed with the investment in the project.</p> <p>During validation, the tax used IRR calculation had been further cross-checked by DOE. The City Build tax, Education tax, VAT, Loan rate, Residual rate and Revenue tax rate are from revelation Chinese regulation.</p> <p>The input parameters used in the financial analysis were also compared with the data reported for other similar CDM projects registered in Jilin Province (ten projects until April 2009) by the Validation Team, comparing the investment costs per MW, electricity tariff, percentage of O&M costs relative to total investment costs and average load factor. By in addition applying our sectoral competence. The Validation Team was able to confirm that the input parameters used in the financial analysis are reasonable and adequately represent the economic situation of the project.</p>		<p>OK</p>
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7.3.6 Are all the values consistent between FSR and PDD <u>and</u> are inconsistencies properly justified?	/1/ /13/ /15/	DR	The Validation Team compared the input parameters for the financial analysis included in the PDD with the parameters stated in the FSR and was able to confirm that the values applied are consistent with the value stated in FSR.		OK
7.3.7 Were all the values from FSR applicable and valid at the time of the investment decision?			The same as 7.3.5		OK
7.3.8 Is it reasonable to assume that no investment would be made at a rate of return lower than the benchmark by, for example, assessing previous investment decisions by the project participants or some verifiable circumstances that have lead to a change in the benchmark?			NA to the proposed project.		
7.3.9 Is the Investment Analysis prepared in compliance with the latest version of the “Guidance on the Assessment of Investment Analysis” as provided by the CDM EB?			the Assessment of Investment AnalysisPP should calculate the variation needed to reach the benchmark and discusse the like hood for that to happen. The Validation Team needs to assess it. Variations of $\pm 10\%$ is not necessarily enough. In addition, the relevant evidence should be provided and further argument in updated PDD.	€16	OK
7.4 Barrier analysis					
7.4.1 Are there any issues addressed in the barrier analysis that have a clear impact on the financial viability of the project activity and that shall be assessed by an investment analysis?			The project did not use the step		

7.4.2 Do the listed barriers exist <u>and</u> is their existence substantiated?			Ditto		
7.4.3 Would any of the identified barriers prevent the implementation of the project activity but not equally prevent the implementation of the possible alternatives, in particular the implementation of the identified baseline scenario?			Ditto		
7.5 Common practice analysis					
7.5.1 If the PPs claim in the PDD that CDM project activity is the “first of its kind”, is it justified?	/1/	DR	The project activity is not the “first of its kind”.		OK
7.5.2 Are the geographical boundaries of the project activity identified correctly?	/1/ /28/	DR I	<p>Yes.</p> <p>In PDD, the other activities similar to the proposed project activity are defined as wind projects in the same region (Jilin province), rely on a broadly similar technology (wind projects), and a similar scale.</p> <p>The geographical boundaries of the project activity are identified correctly.</p> <p>TÜV Rheinland has checked the reference and confirmed the different investment environment for each province, the different electricity tariff for different province, and the difference of wind resources in China.</p> <p>Hence, It is the correctly that Jilin province selected as geographical area for the project common practice analyse .</p>		OK

7.5.3 Does the PDD provide an explanation why this region was selected and deemed more appropriate <u>and</u> is this explanation traceable and reliable?	/1/ /28/	DR	<p>The PDD had provided an explanation why this region was selected. The different investment environment for each province, the different electricity tariff for different province, and the difference of wind resources in different are in China.</p> <p>TÜV Rheiland has checked the reference and consider the choice correct.</p> <p>PP should further clarify the evidence refered in the section of the selected geographical area of updated PDD.</p>	€17	OK
7.5.4 Are there similar operational project activities, other than CDM activities, “widely observed and commonly carried out” in the defined region?	/1/ /16/	DR	<p>Yes.</p> <p>According to EB’s requirement, the registered project activities and project activities which have been published on the UNFCCC website for global stakeholder consultation as part of the validation process are not to be included in Common practice analysis! PP should reframe the section of PDD. Otherwise, it should be explained why un-exceed 150MW was regarded as one of the similar scale</p>	€AR4	OK
7.5.5 In case there are similar commercially operated project activities, other than CDM activities, already “widely observed and commonly carried out” in the defined region, are there essential distinctions between the CDM project activity and the other similar activities?	/1/ /16/	DR	Ditto	€AR4	OK
8. Monitoring plan					

8.1 Are all parameters required by the selected approved methodology or tool identified <u>and</u> listed in the PDD?	/1/ /9/ /11/ /17/ /18/ /19/	DR	<p>Yes.</p> <p>EF_y is ex-ante The grid emission factor is correctly calculated in line with ACM0002 as a combined margin (CM), consisting of the combination of operating margin (OM) and build margin (BM). all parameters required in EF calculation had been listed in PDD section B 6.2 clearly.</p> <p>The net electricity supplied to the grid from the project activity will be monitored.</p>		OK
8.2 Is the measurement method clearly stated for each value to be monitored and deemed appropriate?	/1/ /9/ /13/	DR I	<p>Yes.</p> <p>On site, audit team had found that the net electricity supplied to the grid will be monitored hourly through the main meter installed in the onsite substation of the wind farm, which is accordance to FSR.</p> <p>This main meter has two-way metering, recording both exports to the grid (Gen) and imports from the grid (Cons); net electricity supplied to the grid (EG) is calculated as exports minus imports and shown directly through the meter..</p> <p>The results from the main meter will be supplied by the Grid Company to the Developer monthly.</p>		OK

<p>8.3 Are values of the ex-ante parameters / monitoring parameters selected correctly and conservative in accordance to methodology or tools?</p>	<p>/1/ /9/ /11/ /17/ /18/ /34/</p>	<p>DR</p>	<p>Yes.</p> <p>1)The parameters that has been determined ex-ante based on the most recent information available is the grid emission factor of the NEPG. The emission factor will be fixed in the PDD for the first crediting period in PDD, namely, for the first crediting period, calculate the build margin emission factor ex-ante based on the most recent information available on units already built for sample group m at the time of CDM-PDD submission to the DOE for validation. For the second crediting period, the build margin emission factor should be updated based on the most recent information available on units already built at the time of submission of the request for renewal of the crediting period to the DOE. For the third crediting period, the build margin emission factor calculated for the second crediting period should be used. This option does not require monitoring the emission factor during the crediting period.</p> <p>2) the process of determined is as the same to 5.5.3 Thus, values of the ex-ante parameters are selected correctly and conservative. They are verified and confirmed by DOE.</p>		<p>OK</p>
<p>8.4 Is the measurement equipment for each parameter described and deemed appropriate?</p>	<p>/1/ /13/</p>	<p>DR I</p>	<p>The net electricity supplied to the grid will be monitored hourly through the main meter installed in the onsite substation of the wind farm. This main meter has two-way metering, recording both exports to the grid (Gen) and imports from the grid (Cons); net electricity supplied to the grid (EG) is calculated as exports minus imports.</p>		<p>OK</p>

8.5	Is the measurement accuracy addressed and deemed appropriate?	/1/ /13/ /33/	DR	Yes. In PDD, the measurement accuracy addressed 0.2s, which is according to the appropriate the standard for calibration: Chinese electric industry regulation DL/T448-2000		OK
8.6	Are procedures in place on how to deal with erroneous measurements <u>and</u> are the corrective actions identified?	/1/ /7/	DR I	<p>The developer should establish management system for monitoring CER, example: operation/monitoring manual or document, and PP should reframe monitoring plan based on FSR and the practice, the management documents and description in PDD should involve as below:</p> <ol style="list-style-type: none"> 1. procedures for maintenance of monitoring equipment and installations; 2. The type and accuracy of meter 3. How to deal with erroneous measurements <u>and</u> the corrective actions are identified and implemented. 4. The monitoring plan documented which is according to the approved methodology and in a complete and transparent manner 5. The sampling, measurement methods 6. Details about the resposniblity of data monitoring, how the same is cross checked for QA/QC. 7. How to handle day-to-day records. 8. The feasible monitoring arrangements described in the monitoring plan. 9. The data management and quality assurance and quality control procedures, sufficient to ensure that the emission reductions achieved by / resulting from the project activity can be reported ex post and verified 10. Emergency preparedness for cases where emergencies can cause unintended emissions 11. review of reported results/data 12. Make provisions for personnel training needs, including monitoring and data controlled, etc. 13. The responsibility of management structure should be presented the above process 	CL8	OK

8.7	Is the frequency of measurement identified and deemed appropriate?	/1/ /9/	DR	Yes. According to ACM0002, The net electricity supplied to the grid will be monitored hourly through the main meter installed in the onsite substation of the wind farm.		OK
8.8	Is the monitoring plan documented according to the approved methodology and in a complete and transparent manner?	/1/ /7/	DR I	The same as 8.6	CL8	OK
8.9	Are the sampling, measurement methods and procedures defined?	/1/ /7/	DR I	The same as 8.6	CL8	OK
8.10	Are procedures identified for maintenance of monitoring equipment and installations?	/1/ /7/	DR I	The same as 8.6	CL8	OK
8.11	Are the equipment calibration intervals identified and justified?	/1/ /7/	DR I	The same as 8.6	CL8	OK
8.12	Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation)?	/1/ /7/	DR I	The same as 8.6	CL8	OK
8.13	Are the monitoring arrangements described in the monitoring plan feasible within the project design?	/1/ /7/	DR I	The same as 8.6	CL8	OK

8.14 Are the means of implementation of the monitoring plan, including the data management and quality assurance and quality control procedures, sufficient to ensure that the emission reductions achieved by / resulting from the project activity can be reported ex post and verified?	/1/ /7/	DR I	The same as 8.6	CL8	OK
8.15 Do the PPs make provisions for personnel training needs?	/1/ /27/	DR I	The training needs of maintain for equipment had presented in the contract of equipment purchased, and will be implemented by supplier based on project schedule.. The Validation Team has verified and confirmed the training needs in contract. In addition, the same as 8.6	CL8	OK
8.16 Is the authority and responsibility of overall project management clearly described?	/1/	DR I	Overall responsibility for monitoring and carrying out the monitoring plan lies with Jilin Taihe Wind power Development Co., Ltd. CDM Group of Jilin Taihe Wind power Development Co., Ltd. is responsible for the monitoring and reporting of the wind farm. The same as 8.6	CL8	OK
8.17 Are procedures identified for emergency preparedness for cases where emergencies can cause unintended emissions?	/1/	DR I	The same as 8.6	CL8	OK
8.18 Are procedures identified for review of reported results/data?	/1/	DR I	The same as 8.6	CL8	OK

8.19 Is the data archiving period for this project activity stated in the PDD and appropriate?	/1/ /6/ /7/	DR	<p>Yes. Physical document such as paper-based maps, diagrams and environmental assessments will be collated in a central place, together with this monitoring plan. In order to facilitate auditors' reference of relevant literature relating to the Jilin province Zhenlai Heiyupao 49.5MW the first phase wind farm project material and monitoring results will be indexed. All paper-based information will be stored by the technology department of Jilin Taihe Wind power Development Co., Ltd. and all the material will have a copy for backup.</p> <p>And all data including calibration records is kept until 2 years after the end of the total crediting period of the CDM project</p> <p>The above content have be discribed in PDD by PP.</p>		OK
8.2 Monitoring of the leakage					
8.2.1 Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining leakage?	/1/ /9/	DR	Project participants needn't to consider leakage in applying this methodology		OK
8.2.2 Is the choice of project leakage indicators made according to selected methodology in a reasonable and conservative manner?			DITTO		
8.2.3 Is the measurement method clearly stated and deemed appropriate for each leakage value?	/1/ /9/	DR	Project participants do not need to consider leakage in applying this methodology		OK

9. Sustainable development					
9.1	Does the LoA from the Host country DNA contain the confirmation that the proposed CDM project activity contributes to the sustainable development of the host Party?	/1/	DR	The letters of approval from the DNA of China and the Sweden have not been obtained.	CAR1 OK
9.2	If PDD indicates any additional environmental benefits of the project, other than GHG emission reductions, were those benefits properly substantiated?	/1/ /13/ /14/	DR	<p>Yes. Except GHG emission reductions, some additional environmental benefits of the project are as following:</p> <ul style="list-style-type: none"> • generate electricity; • help to stimulate the growth of the wind power industry in China; • create local employment opportunity during the assembly and installation of wind turbines, and for operation of the wind farm; • reduce other pollutants resulting from the power generation industry, compared to a business-as-usual approach, such as SO₂ and soot. <p>The above benefits properly substantiated in FSR and EIA.</p>	OK
10. Stakeholders' consultation and comments					

10.1 Were the stakeholders identified in appropriate and complete manner?	/1/ /14/ /25/	DR I	<p>Yes.</p> <p>The local villagers and residents in the area as the Stakeholders received a survey from Jilin Taihe Wind power Development Co., Ltd.</p> <p>The stakeholders were identified in local villagers and residents, who were from Zhenlai County, as the description in EIA approved.</p> <p>The Validation Team has checked EIA approved and 30 questionnaires and confirmed the manner appropriate and complete.</p>		OK
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<p>10.2 Are the identified stakeholders plausible?</p>	<p>/1/ /14/ /25/</p>	<p>DR I</p>	<p>During EIA period, the author who is Jilin Province Xinghuan Environment Technology Service Co., Ltd had carried out a survey to villagers' representative of closed the area of the project. The result of survey in EIA report had presented no adverse comments on the project activity, and the conclusion had been conformed by approval letter from Jilin Province Environmental Protection Bureau on 09 April 2008, Refer to No. Jihuanjianbiaozi(2008)63/14/. The Validation Team has verified EIA report and the approval.</p> <p>Due to the materials during EIA period kept in the local Environmental Protection Bureau in China, the developer couldn't obtain them. For further investigating of the impacts on local ecological environment, On September 11th 2008, the owner, who is Jilin Taihe Windpower Development Co., Ltd. conducted a survey to the local residents and local government. The 30 questionnaires were sent to and the survey had a 100% response. The survey had demonstrated the same result as it in EIA report. The particular of the survey had described in section E.1. of PDD in detail.</p> <p>During site interview, DOE have verified the questionnaires and confirmed the result, which was presented in EIA and PDD.</p> <p>In updated PDD, PP should further fill the summary of Local Stakeholder Consultation during EIA period, and explain how to conduct interviews and received comments from local stakeholders in September 2008. The copies of 30 questionnaires by developer conducted should be provided to DOE.</p>	<p>CL9</p>	<p>OK</p>
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12.3 Does PDD describe the means being used to invite local stakeholder's comments?	/1/	DR	Yes. A survey has been carried out with questionnaires, in order to know local stakeholder's comments.		OK
12.4 Were those means appropriate?	/1/ /25/ /13/ /14/	DR I	Yes. The result of survey of the stakeholder's is the same as the conclusion of EIA and FSR. Thus, those means are appropriate.		OK
12.5 Was the project presented to the stakeholders in unbiased manner?	/1/ /14/ /25/	DR I	The same as 10.2		OK
12.6 If a stakeholder consultation process is required by regulations/laws in the host country, has the stakeholder consultation process been carried out in accordance with such regulations/laws?	/1/ /14/	DR I	The installed capacity of wind farm is 49.5 MW less than 50MW, a stakeholder consultation process is not necessary by regulations/laws in China. During EIA period, the author who is Jilin Province Xinghuan Environment Technology Service Co., Ltd had also carried out a survey to villagers' representative of closed the area of the project		OK
12.7 Is a summary of the stakeholder comments provided in the PDD?	/1/	DR	Yes. The summary of the stakeholder comments received is described in the PDD. No negative comment to the project was received during the consultation.		OK
12.8 Has due account of any stakeholder comments been taken by PPs and reflected in the PDD?	/1/ /25/	DR	Yes. The related description is reflected in the PDD. No negative comments were received. DOE has verified the questionnaires and confirmed the result.		OK
11. Environmental impacts					

11.1 Is the documentation supplied by the PPs regarding environmental impacts relevant and accurately reflected in the PDD?	/1/ /14/	DR	<p>Yes.</p> <p>The EIA report and approval have been provided to DOE and verified.</p> <p>The specifically environmental impacts and the relevant measure during operation and construction period had been planned clearly in EIA report and approval letter, PP should presented them in updated PDD</p>	CL10	OK
11.2 Is an environmental impact assessment (EIA) required for the CDM project activity?	/1/ /14/	DR	In China, relevant legislation should aim at all Engineering Projects besides CDM project activity.		OK
11.3 In case an EIA is required, has the EIA has been approved by local authorities and is the outcome accurately reflected in the PDD?	/1/ /14/ /24/	DR I	<p>Yes.</p> <p>An Environmental Impact Assessment (EIA) has been conducted according to Chinese law and regulation.. The potential environmental impacts have been sufficiently identified. No significant environmental impacts are expected from the project activity. The Environmental Protection Bureau of Jilin Province has approved the EIA on 9 April 2008</p> <p>Otherwise, The Validation Team also checked the pre-permit for using land by the Land Source Bureau of Jilin Province dated on 3 February 2008, Refer to No. Jiguotuziyushenzi(2008)52/27/, and confirmed the land used for proposed project available</p>		OK

11.4 Does the PDD include a brief description of the environmental effects of the project, including transboundary?	/1/ /14/	DR	<p>The specifically environmental impacts and the relevant measure during operation and construction period had been planned clearly in EIA report and approval letter, PP should presented them in updated PDD.</p> <p>The Validation Team has verified and confirmed no the environmental effects of transboundary in the proposed project according to EIA. approved</p>	CL10	OK
11.5 Are those effects properly addressed in the design of the project activity?	/1/ /14/	DR	<p>Yes.</p> <p>There are no significant adverse environmental effects for the project according to the EIA.</p> <p>The specifically environmental impacts and the relevant measure during operation and construction period had been planned clearly in EIA report and approval letter, PP should presented them in updated PDD.</p>	CL10	OK
11.6 Does the project comply with environmental legislation in the host country?	/1/ /14/	DR	<p>Yes.</p> <p>The same as 11.3.</p> <p>On site, audit team observed the measure of environment protection being implemented along with the project construction schedule according to EIA.</p>		OK

Table 2: List of Requests for Corrective Action (CAR) and Clarification (CL)

N o.	CAR/CL	Observation (CAR/CL)	Reference	Summary of project owner response	Validation team conclusion
1.	CAR1	The letters of approval from the DNA of China and the Sweden have not been obtained.	1.1 1.2 1.3 1.4 1.5 1.6 1.7 2.2 9.1	Letter of Approval from the DNA of China has been sent to DOE on 15th May 2009 and letter of approval from the DNA of Sweden was provided to DOE on 19 Oct. 2009.	The DNA of China issued the Letter of Approval on 9 April 2009. It is scanned and sent to DOE by email by PP. The DNA of Sweden issued the Letter of Approval on 20 May 2009. Scanned copy of LoA was sent to DOE by PP. The CAR is therefore closed
2.	CAR2	The proposed project started date in PDD was 10 October 2008. During site visit period, it was found the date of equipment purchasing contract signed was earlier, which was in September 2008. So, the point should be re-identified and argued in updated PDD	7.1.2 7.1.3	The starting date is revised as 1 st September 2008 in PDD, the date of wind turbine purchasing contract signature. The argumentation in the relevant part in the PDD has been updated.	The starting date of the project activity has been modified in updated PDD, and the relevant evidence has also been submitted to DOE. The Validation Team has verified the contract and confirmed the date of wind turbine purchasing contract signed as project starting date. The CAR is closed.
3.	CAR3	The income tax should be included based on para 11 of investment analysis guideline version 03 for the project IRR calculation compared with post-tax benchmark.		According to table B, page 51 of <i>the Economic Assessment Method and Parameters for Capital Construction Project (version)</i> issued by NDRC	Based on <i>the Economic Assessment Method and Parameters for Capital Construction Project</i>

					<p>and Construction department on 3rd July 2006, which clearly described the method to calculate the income tax: The income tax calculation in cash flow should be based on the total profit before interest. In the IRR calculation spreadsheet, income tax was calculated in line with the regulation.</p> <p>But we understand on <i>Guidelines on the assessment of Investment Analysis</i> version 3, actual payment of interest shall be taken into account when post-tax benchmark is applied. In the new submitted IRR calculation spreadsheet, interest was considered. There is no influence on the project's additionality.</p>	<p>(version03) issued by NDRC and Construction department in August 2006/52/, it is found that the income tax calculation in cash flow should be based on the total profit without an interest, i.e. the income tax (also called as adjusted income tax) equals to the product of a tax rate multiplying the sum of the profit and interest. Because the profit equals to difference of the total revenue and the total cost which includes the interest, thus it is considered that the project IRR calculation is conducted independently of the interest or source of financing.</p> <p>But according to the Guidelines on the assessment of Investment Analysis version 03.1/10/, actual payment of interest shall be taken into account when post-tax benchmark is applied. In the new submitted IRR calculation spreadsheet, the interest being considered, the value of the project IRR (post-tax) is 5.68% from 4.94%.</p>
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						This CAR is closed.
4.	CAR4		According to EB's requirement, the registered project activities and project activities which have been published on the UNFCCC website for global stakeholder consultation as part of the validation process are not to be included in Common practice analysis! PP should reframe the section of PDD. Otherwise, it should be explained why un-exceed 150MW was regarded as one of the similar scale	7.5.4 7.5.5	The section of common practice has been reframed in the revised PDD.	The section had been reworked in updated PDD. PP chose and explained the benchmark in Common practice analysis correctly, and presented why the proposed project has additionality. The Validation Team verified and confirmed the content revised and reference. The CAR3 is closed.
5.		CL1	PP should further fill technology to be employed in PDD, example: the generation average of electricity annually, average load factor, the transmission, etc.	4.1 4.3	The technology to be employed by the proposed project has been filled in the section A4.3 in the revised PDD.	In updated PDD, PP had added the relevant description, such as the generation average of electricity annually, average load factor, the transmission, etc. Based on FSR and observation on site, the technology to be employed in PDD had been ensured by the Validation Team. The CL1 is closed.
6.		CL2	Based on Tool, PP should fill the explain of EF calculation in 2 th & 3 th crediting period	5.5.2	Using operating margin and build margin emission factors that are fixed for the duration of the first crediting period, the baseline emissions factor is also fixed for the first crediting period. These parameters will be recalculated at the second and third crediting period using the same steps 1-6 in the tool and	According to Tool, the EF calculation during 2 th & 3 th crediting period had been filled in updated PDD. The Validation Team had verified the EF calculation in 2 th & 3 th crediting period and

					the latest data available at that time.	confirmed the section accordance to Tool. The CL2 is closed.
7.		CL3	PP should identify and address the major risks and uncertainties, which can influence the emission reduction estimates.	5.5.5	<p>The expected net supplied power estimated in the FSR is based on long term meteorological data of the wind resource in local area (from 1988 to 2007) and the onsite actual wind resources measurement. Therefore, the wind condition will not influence the emission reduction estimates.</p> <p>Furthermore, the Chinese government always supports the development of renewable energy. The electricity generated by renewable energy will be supplied to the grid with priorities. Therefore, the policy of the Chinese government won't the emission reduction estimates.</p>	<p>The major risk could be probably the availability of wind for power generation in the project site. The net supplied power is calculated with the long-term average wind data from weather stations. So, the baseline is fixed for the entire crediting period.</p> <p>The explain from PP had been confirmed by the Validation Team.</p> <p>The CL3 is closed.</p>
8.		CL4	There is no available another renewable energy resource, such as solar, hydropower, etc, in area of proposed project located the reference should be further clarified in updated PDD	7.2.2 7.2.3	The other renewable energy resource has been clarified in the updated PDD and the evidence has been attached in the footprints.	<p>To layout of wind energy resource, technology and cost of solar and biomass generation, PP argued the feasibility of construction a power plant using other renewable energy with equivalent annual power supply. The modification and reference in updated PDD have been checked and confirmed by the Validation Team.</p> <p>The CL4 is closed.</p>

9.		CL5	IRR calculation spreadsheet of English should be submitted to DOE and included all parameters reference, list for O&M cost and investment, Sensitivity analysis, the calculation process and formula	7.3.1 7.3.4	IRR calculation spreadsheet of English has been submitted to DOE on 15 th May 2009.	DOE has received and verified and confirmed the IRR calculation spreadsheet of English. The CL5 is closed.
10.		CL6	PP should calculate the variation needed to reach the benchmark and discuss the likelihood for that to happen. TÜV Rheinland needs to assess it. Variations of $\pm 10\%$ is not necessarily enough. In addition, the relevant evidence should be provided and further argument in updated PDD.	7.3.9	The PDD has been updated. And the situation at which the project IRR would reach the benchmark has been further clarified.	OK. Further explanations have been included in the sensitivity analysis of in the PDD. It has been demonstrated that the project activity will remain less attractive with the reasonable fluctuations in the critical assumptions. The CL6 is closed.
11.		CL7	In the section of common practise analyse, PP should further clarify the reference in the geographical area selected.	7.5.3	It has been revised and further discussed in the PDD. Please see the PDD for detail.	PP considered the electricity tariff, wind resources, grid-connected and scale as benchmark of the geographical area selected in In the section of common practise analyse. The explain had been argued in updated PDD. The Validation Team considered the modification available. The CL7 is closed.
12.		CL8	The developer should establish management system for monitoring CER, example: operation/monitoring manual or document, and PP should reframe monitoring plan based on FSR and the practice, the management	8.6 8.8 8.9	Monitoring plan has been reframed according to the monitoring methodology.	The monitoring plan had been reworked in updated PDD based on CL issued by DOE during draft period.

			documents and description in PDD should involve as below:	8.10		The Validation Team had verified and confirmed the section b.7 in updated PDD. The CL8 is closed.
			1. procedures for maintenance of monitoring equipment and installations;	8.11		
			2. The type and accuracy of meter	8.12		
			3. How to deal with erroneous measurements and the corrective actions are identified and implemented.	8.13		
			4. The monitoring plan documented which is according to the approved methodology and in a complete and transparent manner	8.14		
			5. The sampling, measurement methods	8.15		
			6. Details about the responsibility of data monitoring, how the same is cross checked for QA/QC.	8.16		
			7. How to handle day-to-day records.	8.17		
			8. The feasible monitoring arrangements described in the monitoring plan.	8.18		
			9. The data management and quality assurance and quality control procedures, sufficient to ensure that the emission reductions achieved by / resulting from the project activity can be reported ex post and verified			
			10. Emergency preparedness for cases where emergencies can cause unintended emissions			
			11. review of reported results/data			
			12. Make provisions for personnel training needs, including monitoring and data controlled, etc.			
			13. The responsibility of management structure should be presented the above process			
13.		CL9	In updated PDD, PP should further fill the summary of Local Stakeholder Consultation during EIA period, and explain how to conduct interviews and received comments from local stakeholders in September 2008.	10.2	The local stakeholders consultation during EIA period has been added in the updated PDD, which is consistent with the description in the EIA report.	OK. The local stakeholders consultation during EIA period has been presented in updated PDD and was

			The copies of 30 questionnaires by developer conducted should be provided to DOE.			consistent with EIA. The copies of 30 questionnaires by developer have been provided to DOE. The CL9 is closed.
14.		CL10	The specifically environmental impacts and the relevant measure during operation and construction period had been planned clearly in EIA report and approval letter, PP should presented them in updated PDD	11.1 11.4 11.5	Environmental impact of the project and the treatment in construction period and operation period has been presented in the updated PDD.	OK. Based on EIA, DOE had verified the modification in updated PDD and further ensured the treatment of being implemented on site. Thus, The Validation Team is able to confirm no significant environmental impacts expected from the project activity. The CL10 is closed.

Table 3: List of forward action requests (FARs)			
FAR number	Reference	Summary of project owner response	Validation team conclusion
FAR01	/	/	/

Appendix B

CERTIFICATES OF COMPETENCE

Qualification

Zhang, Lei /

Emission Trading United Nations Framework Convention on Climate Change

Auditor No.:
(AuditorenRegNr)

Appointed:
(Zugelassen)

☒ ja

Qualification Level:
(Qualifikationsstufe)

Auditor

External:
(Externer)

☐ ja

Add. reviewer:
(Zusätzlicher Prüfer)

☐ yes

EAC Scopes:
(EAC Branchen)

CDM 01 – Energy industries (renewable – / non-renewable sources)

Add. qualification:
(zus. Qualifikation)

First Appointment:
(Erstberufung)

2009/03/09

Valid to:
(Gültig bis)

2012/03/08

Remarks:

Languages:

Experience Exchange

Date

Location

Remarks

Accreditation(s)

Monitoring

Latest Monitoring:
(letzte Beurteilung)

Next Monitoring:
(nächste Beurteilung)

Remarks:

[View / Edit Monitoring](#)

History of scope allocation

Date: 2009-04-02
Change: EAC CDM added
By: Manfred Brinkmann
Reason:

History

Created: 2009/03/10 18:27:53 Lei SHG Zhang/Shg/Chn/TUV
Modified: 2009/10/23 22:14:43 Manfred Brinkmann/Jpn/TUV

Qualification

Brinkmann, Manfred /

Emission Trading United Nations Framework Convention on Climate Change

Auditor No.:
(AuditorenRegNr)

Appointed:
(Zugelassen)

☒ ja

Qualification Level: Auditor
(Qualifikationsstufe)

External:
(Externer)

☐ ja

Add. reviewer:
(Zusätzlicher Prüfer)

☒ yes

EAC Scopes:
(EAC Branchen)

CDM 03 – Energy demand
CDM 04 – Manufacturing industries
CDM 05 – Chemical industry
CDM 10 – Fugitive emissions from fuels (solid; oil and gas)
CDM 11 – Fugitive emissions from production and consumption
of halocarbons and sulphur hexafluoride
CDM 12 – Solvents use
CDM 01 – Energy industries (renewable – / non-renewable
sources)
CDM 06 – Construction
CDM 13 – Waste handling and disposal

Add. qualification:
(zus. Qualifikation)

First Appointment: 2004/03/03
(Erstberufung)

Valid to: 2010/03/03
(Gültig bis)

Remarks:

Languages:

German
English
French

Experience Exchange

Date

Location

Remarks

Accredita

Monitoring

Latest Monitoring:
(letzte Beurteilung)

Next
Monitoring:
(nächste
Beurteilung)

Remarks:

[View / Edit Monitoring](#)

History of scope allocation

Date: 2004-03-05
Change: EAC CDM, CDM added

By: Klaus-Dieter Fritsch
Reason:

Date: 2004-03-03
Change: EAC CDM, CDM, CDM, CDM, CDM, CDM added
By: Klaus-Dieter Fritsch
Reason: Qualification is based on the applicant's ISO 14001 auditor qualification.

History

Created: 2003/12/11 14:27:13 -
Modified: 2007/11/22 12:00:46 Manfred Brinkmann/Jpn/TUV