

<b>Project Title</b>	Liaoning Guoli Fuxin Wangsiyingzi Wind Power Project
<b>ERM CVS Project Reference</b>	2345.V1
<b>Client Name</b>	Liaoning Guoli Renewable Energy Co., Ltd
<b>Client Address</b>	4 <sup>th</sup> Floor, 21 Centry Mansion, Shenyang, Liaoning Province, China

## CDM Validation Report

### ERM Certification and Verification Services

2nd Floor, Exchequer Court  
33 St Mary Axe  
London EC3A 8AA

<b>Version Control</b>	<b>Date</b>
Version 1.0	20 July 2012 (draft report)
Version 2.0	26 October 2012 (final report)
Version 3.0	21 December 2012 (updated final report)

## Table of Contents

<b>1</b>	<b>Project Information.....</b>	<b>5</b>
1.1	Key project information.....	5
1.2	Key technical information.....	6
1.3	Key financial information.....	6
<b>2</b>	<b>Summary and Validation Opinion.....</b>	<b>7</b>
<b>3</b>	<b>Introduction.....</b>	<b>9</b>
3.1	Validation Objectives .....	9
3.2	Scope .....	9
3.3	Contract Review .....	9
3.4	Validation Personnel.....	9
3.5	Summary of CVs of the validation personnel.....	10
<b>4</b>	<b>Validation Approach.....</b>	<b>11</b>
4.1	Document Review.....	11
4.2	Site visit and Interviews .....	11
4.3	Preparation of Draft Validation Report.....	12
4.3.1	Remediation requests .....	12
4.4	Final Validation Report and Validation Opinion.....	12
4.5	Internal Quality Control .....	12
<b>5</b>	<b>Validation findings – Approval &amp; Participation, Authorisation, Contribution to Sustainable Development, and Modalities of Communication .....</b>	<b>13</b>
5.1	Approval & Participation .....	13
5.2	Authorisation.....	15
5.3	Contribution to Sustainable Development.....	15
5.4	Modalities of Communication.....	16
<b>6</b>	<b>Validation findings – GSP, PDD and Project Description .....</b>	<b>18</b>
6.1	Main changes between the PDD version published for GSP and the final version submitted for registration.....	18
6.2	Global Stakeholder Consultation .....	18
6.3	Project Design Document (PDD) .....	18
6.4	Project Description.....	19
6.4.1	Description of the project activity.....	19
6.4.2	Project Location and Status .....	19
6.4.3	Description of baseline scenario .....	20
<b>7</b>	<b>Validation findings – Baseline and Monitoring Methodology.....</b>	<b>22</b>
7.1	Validity of selected methodology and methodological tools.....	22
7.2	Applicability of the selected methodology to the project activity.....	23
7.3	Project Boundary .....	26
7.3.1	Emission sources .....	27
7.3.2	Physical delineation of the project.....	28
7.4	Baseline identification .....	28
7.5	Algorithms and/or formulae used to determine emission reductions.....	30
7.5.1	Ex Ante Data and Parameters.....	30
7.5.2	Equations and calculations used to calculate emission reductions .....	33
<b>8</b>	<b>Validation findings – Additionality .....</b>	<b>36</b>
8.1	Starting date and prior consideration of the CDM .....	36
8.1.1	Notification of intent to seek CDM status for the project activity.....	38
8.2	Identification of alternatives .....	39
8.3	Investment analysis .....	39
8.3.1	Evaluation of Analysis Option.....	39
8.3.2	Evaluation of Benchmark/Discount rate .....	40
8.3.3	Investment analysis assumptions and Input Values .....	44
8.3.4	Investment analysis calculations .....	50
8.4	Barrier Analysis.....	55
8.5	Common practice analysis.....	55
8.5.1	Consideration of whether the project activity is ‘first-of-its-kind’ .....	56
8.5.2	Geographical scope of the common practice analysis .....	56
8.5.3	Comparison with similar and operational projects .....	56
<b>9</b>	<b>Validation Findings - Monitoring Plan and Other issues .....</b>	<b>60</b>
9.1	Compliance of the monitoring plan with the approved methodology.....	60
9.1.1	Completeness of monitoring parameters.....	60

---

9.1.2	Compliance of monitoring.....	61
9.2	Implementation of the monitoring plan.....	62
<b>10</b>	<b>Validation Findings –Local Stakeholder Consultation and Environmental Impact.....</b>	<b>64</b>
10.1	Environmental Impacts .....	64
10.2	Local Stakeholder Consultation .....	64
10.3	Public funding .....	65
<b>Appendix A:</b>	<b>Documents and Interviewees.....</b>	<b>66</b>
A.1	DOCUMENT LIST .....	66
A.2	Similar Registered CDM Projects in Liaoning Province .....	67
A.3	INTERVIEWS .....	69
<b>Appendix B:</b>	<b>Remediation Form .....</b>	<b>70</b>

## Abbreviations

BM	Build Margin
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CEF	Carbon Emission Factor
CER	Certified Emission Reduction
CH <sub>4</sub>	Methane
CL	Clarification request
CM	Combined margin
CMP	Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol
CO <sub>2</sub>	Carbon dioxide
CO <sub>2</sub> e	Carbon dioxide equivalent
COP	Conference of the Parties
DNA	Designated National Authority
DVR	Draft Validation Report
FAR	Forward Action Request
DOE	Designated Operational Entity
EB	Executive Board
EIA	Environmental Impact Assessment
FSR	Feasibility Study Report
GHG	Greenhouse Gas
GSP	Global Stakeholder Process
GWP	Global Warming Potential
GWh	Giga Watt hour
IPCC	Intergovernmental Panel on Climate Change
IRR	Internal Rate of Return
LoA	Letter of approval
MOP	Meeting of the Parties
MP	Monitoring Plan
MW/MWh	Mega Watt/Mega Watt hour
NCV	Net Calorific Value
NGO	Non-Governmental Organisation
ODA	Official Development Assistance
OM	Operating Margin
O&M	Operation and Management
PDD	Project Design Document
PPA	Power Purchase Agreement
SCE	Standard coal equivalent
UNFCCC	United Nations Framework Convention on Climate Change
VAT	Value-added tax
VVS	CDM Validation and Verification Standard

## Project/Party specific abbreviations

CPI	Consumer Price Index
EPB	Environmental Protection Bureau
ERPA	Emission Reduction Purchase Agreement
FSR	Feasibility Study Report
NDRC	National Development and Reform Commission
NEPG	Northeast Power Grid
PLF	Power Load Factor
PPI	Producer Price Index
PRC	People's Republic of China
RMB	Ren Min Bi

# 1 Project Information

## 1.1 Key project information

<b>Project Title</b>	Liaoning Guoli Fuxin Wangsiyingzi Wind Power Project
<b>Project Location(s)</b>	Furong Town, Fuxin City, Liaoning Province, P.R.China
<b>Host Party</b>	People's Republic of China
<b>Other Party(ies)</b>	N/A
<b>Project participants</b>	Liaoning Guoli Renewable Energy Co. Ltd.

<b>Methodology(ies) used</b>	ACM0002 Consolidated baseline methodology for grid-connected electricity generation from renewable sources Version 13.0.0
<b>Methodological tool(s) used</b>	Tool to calculate the emission factor for an electricity system (Version 2.2.1) Tool for the demonstration and assessment of additionality (Version 6.1.0)
<b>Sectoral Scope(s)</b> (as per <a href="http://cdm.unfccc.int/DOE/scopes.html">http://cdm.unfccc.int/DOE/scopes.html</a> )	Sectoral Scope 01:Energy industries (renewable - / non-renewable sources)

<b>Project Design Document GSP Version</b>	Date: 21 May 2012	<b>Project Design Document Final Version</b>	Date: 19 December 2012
	Version Number: 01		Version Number: 03

<b>Starting date of the project activity</b>	28 February 2012
<b>Crediting Period start and end date</b>	01 April 2013 to 31 March 2020 (Renewable)
<b>Estimated annual average emission reductions</b>	93,051 tCO <sub>2</sub> e

<b>Dates of GSP</b>	08 June 2012 - 07 July 2012
<b>Date(s) of validation site visit</b>	14 June 2012

## 1.2 Key technical information


Capacity of the project (if applicable)	48MW
Lifetime of the project	20 years(operational lifetime)
Quantity of energy (electrical/thermal/mechanical) delivered to the end user per year (if applicable)	96,576 MWh/year
Grid to which the project is connected to (if applicable)	NEPG

## 1.3 Key financial information

IRR of the project without income of CERs	6.30%
IRR benchmark	8%

## 2 Summary and Validation Opinion

<b>Project Title</b>	Liaoning Guoli Fuxin Wangsiyingzi Wind Power Project
<b>Name of Client</b>	Liaoning Guoli Renewable Energy Co., Ltd
<b>Basis of validation</b>	<p>ERM CVS based its validation work on:</p> <ul style="list-style-type: none"> <li>• CDM approved monitoring methodology “ACM0002 Consolidated baseline methodology for grid-connected electricity generation from renewable sources Version 13.0.0”</li> <li>• CDM Validation and Verification Standard (version 02.0)</li> <li>• ERM CVS’s internal CDM validation methodologies and protocols</li> <li>• CDM decisions and guidance issued by the CDM Executive Board</li> <li>• UNFCCC criteria for the Clean Development Mechanism</li> <li>• Host Country criteria for the Clean Development Mechanism</li> </ul>
<b>Responsibilities of ERM CVS</b>	ERM CVS is responsible to provide a thorough independent third party assessment of the proposed CDM project activity to ensure that the proposed CDM project activity meets all the identified and applicable criteria for registration of projects under the CDM.
<b>Responsibilities of Project participants</b>	The Project Participants are responsible for preparing the PDD, supporting documentation and providing all necessary evidences to support the information included in the PDD.
<b>Activities performed</b>	<p>ERM CVS conducted its activities in accordance with the CDM Validation and Verification Standard. The validation consisted of a review of project documentation, a site visit, interviews with relevant personnel, cross checking information through other reliable sources and reporting. Validation work was based on a validation protocol that sets out relevant CDM requirements. Where necessary, Clarification Requests and Corrective Action Requests were raised and closed out with the Project participants. The validation work was subject to detailed Technical Review and assessment prior to submission.</p> <p>No component of the project activity was excluded from the validation.</p>
<b>ERM CVS Conclusion</b>	<p>ERM Certification and Verification Services (ERM CVS) has performed the validation of the project activity against the criteria for the Clean Development Mechanism as set out by the Conference of the Parties and the UNFCCC CDM Executive Board, and host country criteria. The validation employed standard auditing techniques, and addressed the requirements of the CDM Validation and Verification Standard.</p> <p>The Party involved in the project fulfils the criteria for participation in the CDM, and has issued a letter of approval (LoA) for the project and authorised the Project participants. The LoA of the host Party confirms the contribution of the project towards sustainable development.</p> <p>The validation has provided sufficient evidence to demonstrate that the project activity is not the baseline scenario, and that emission reductions would be additional to what would have taken place in the absence of the CDM project activity.</p> <p>The project meets the applicability criteria and correctly applies methodology ACM0002 Consolidated baseline methodology for grid-connected electricity generation from renewable sources Version 13.0.0, and is therefore expected to result in real, measurable and long term reductions in greenhouse gas emissions.</p> <p>The monitoring plan provides for the collection and archiving of data sufficient to ensure that emission reductions can be verified. The DNA of the host Party has confirmed that the project assists in meeting sustainable development criteria.</p> <p>Nothing came to our attention to suggest that the project activity, if implemented as described, would not result in emission reductions of annual 93,051 tCO<sub>2</sub>e per year on average over the first 7 years</p>

	<p>crediting period.</p> <p>In summary, it is the opinion of ERM CVS that the Project as described in the PDD Version 03 of 19 December 2012, meets all stated criteria of the CDM, correctly applies the methodology, and is expected to result in real, measurable and long term emission reductions.</p> <p>ERM CVS therefore requests the CDM Executive Board approves registration of the project activity.</p>
<b>Signed on behalf of ERM CVS</b>	
<b>Name:</b>	Melanie Eddis
<b>Date:</b>	21 December 2012



## 3 Introduction

### 3.1 Validation Objectives

The purpose of validation is to ensure a thorough, independent assessment of proposed CDM project activities submitted for registration as a proposed CDM project activity against the applicable CDM requirements.

The DOE is responsible for reporting the results of its assessment in a validation report and submitting this validation report, along with the supporting documents to the CDM Executive Board as part of the request for registration of a project activity as a proposed CDM project activity.

The DOE also presents its opinion on the compliance of the proposed CDM project activity with the applicable CDM requirements, and only requests registration if this is a positive opinion.

In the course of validation, ERM CVS assesses the project's baseline, additionality demonstration, applicability to an approved CDM methodology, monitoring plan (MP), and compliance with relevant UNFCCC and host country criteria.

#### 3.1.1.1 Validation Criteria

ERM CVS applies the following principles in performing its validation:

- Consistency
- Transparency
- Impartiality, independence and safeguarding against conflicts of interest
- Confidentiality

In all aspects of its work, ERM CVS ensures that the information and data reported are accurate, conservative, relevant, credible, reliable and complete.

### 3.2 Scope

The validation scope addresses the project activity as described in the Project design document (PDD) and associated documentation. The PDD and associated documentation are reviewed against the criteria and requirements stated in the CDM Validation and Verification Standard (VVS) and Article 12 of the Kyoto Protocol, the CDM modalities and procedures as agreed in the Marrakech Accords, as well as relevant decisions made by the CDM Executive Board.

The validation scope also included an assessment of completeness and accuracy of documentation, evaluation of evidences, information and assumptions made in the PDD and supporting documentation.

### 3.3 Contract Review

Prior to contracting with the client, a full review of the project and the validation requirements was made. This addressed both commercial risk and project risks associated with conducting the validation activities and confirmed the availability of an appropriately qualified team to conduct the validation.

### 3.4 Validation Personnel

Based on ERM CVS's review of the project, a validation team was established that takes into account the coverage of the technical area(s), sectoral scope(s) and relevant host country experience.

Personnel who were involved in the validation of this project activity were:

## Validation Team

Name	Role	CDM Requirements	Technical area	Financial Expertise	Participated in site visit?
Li Tao	Team Leader	Yes	Yes	No	Yes
Jessie Zhang	Assessor under Observation	No	Partially Competent	No	Yes
Simon Cochrane	Financial Expert	No	No	Yes	No

## DOE Head Office

Name	Role	CDM Requirements	Knowledge relevant to the technical area
Shubha Shanbhag	Technical Reviewer	Yes	Yes

### 3.5 Summary of CVs of the validation personnel

**Li Tao** is a Lead Auditor based in Beijing with experience in the validation and verification of more than 100 CDM projects, including wind power, hydro power, biomass, LNG cogeneration, LFG and energy efficiency projects. He has been involved in more than 50 validation and verification projects in ACM0002 and AMS I-D.

He has received extensive training in the field of Carbon, in particular on the Kyoto Protocol, Clean Development Mechanism, Joint Implementation, emission reduction monitoring and financial analysis. He has more than 3 years working experience in energy efficiency and energy conservation projects. Responsibilities included the investigation on new energy conservation technologies, and working together with the staff on-site to establish and implement the monitoring plan to confirm the actual effect of the technology. The primary focus is on furnace efficiency, TRT, CDQ, cement production line, frequency control of motor speed, green light, waste water treatment plant and then transfer to the relevant industry in China.

**Jessie Zhang** is a GHG Assessor under Observation based in Beijing, China. Ms. Zhang holds Master Degree in Environmental Science, and has four years working experience in CDM project development, validation and verification in the field of hydropower, wind, methane recovery, and waste heat. She also has extensive experience in WCD assessment for large hydropower projects, participated in over 10 WCD projects as site lead/technical reviewer/project manager. She had gained the knowledge and experience with regards to the resettlement laws & regulations and compensation standards in areas of Sichuan province, Yunnan province, Chongqing city and Qinghai province etc.

**Simon Cochrane** is a CDM Financial Expert based in London, United Kingdom. Mr. Cochrane has attained an Accounting Technician qualification and the CIMA Diploma in Management Accounting, which includes units on investment appraisal methods and tools. He has almost 10 years' experience working in a variety of finance roles within the ERM Group, including project finance focused roles liaising directly with project managers and project directors on hundreds of environmental projects. Since November 2010, Mr. Cochrane has been working with ERM CVS specifically to audit investment analyses against the requirements of the CDM.

**Shubha Shanbhag** has been working in CDM for the past 6 and half years, originally as a project developer and consultant. From year 2007 onwards she has been involved in validation/verification of CDM projects in the capacity of lead validator /verifier and also as a technical reviewer. Shubha has worked on almost 25 validations and 8 verifications in the sectors of Wind, Hydro, Biomass, WHR - Steel, WHR - Cement and CMM. Shubha has completed the ERM CVS CDM training. Shubha was also trained on Renewable Power Technology and Advanced GHG Monitoring, Measuring and Management Training. Shubha has completed Bachelors in Environmental Engineering and has also worked in the capacity of ISO 14001 Environmental Management Systems Auditor.

## 4 Validation Approach

In carrying out its validation work, ERM CVS has:

- (a) Determined whether the proposed project activity complies with the requirements of paragraph 37 of the CDM Modalities and Procedures (M&Ps), the applicability conditions of the selected methodology and guidance issued by the Board;
- (b) Assessed the claims and assumptions made in the project design document (PDD). The evidence used in this assessment has not been limited to that provided by the project participants.

The validation was carried out in accordance with the most recent version of the VVS. The validation process employed standard auditing techniques and undertook necessary cross-checks and follow-up actions to ascertain the correctness of the information. The validation team included staff with experience in the relevant technical areas within the sectoral scope, and financial expertise where relevant. The validation report and associated documents have undergone a thorough technical review by ERM CVS before being submitted to the CDM Executive Board for registration. The validation consisted of the following key stages:

- Upload of the PDD for Global Stakeholder Process (GSP), receipt of any comments from stakeholders
- Review of documentation including PDD, methodology and key supporting documents and references
- A visit to the project site, including interviews with personnel responsible for developing the project
- Development of a draft validation report, identifying non-compliances including Corrective Action Requests (CARs) and Clarification Requests (CLs), taking into account findings of the GSP, desk review and site visit / interviews
- Resolution of outstanding issues (CARs and CLs) and development of a final validation report and validation opinion
- Independent technical review and report approval

### 4.1 Document Review

A detailed document review of the PDD, methodology and all other associated documentation and references took place in advance of the site visit, and additional documents that were not available for the desk review were requested for review during the site visit. The document review includes:

- A review of data and information to verify the correctness, credibility and interpretation of presented information;
- Cross checks between information provided in the PDD and information from other sources, not limited to those provided by the PPs, applying ERM CVS's sectoral or local expertise and, if necessary, with independent background investigations
- Reference to available information relating to projects or technologies similar to the proposed project activity
- Review, based on the approved methodology being applied, of the appropriateness of formulae and accuracy of calculations

Where the review of the PDD at the document review stage raised issues, these were further reviewed and validated through supporting documentation and cross-checking from other sources and interviewing relevant personnel involved in the project activity during the site visit. During the document review the project team also compared the proposed project activity with available information relating to projects or technologies similar to the proposed CDM project activity under validation. Where appropriate, the validation team assessed the appropriateness of formulae and the correctness of calculations presented by the PPs. A list of all documents reviewed or referred to in the course of this validation is included in Appendix A.

### 4.2 Site visit and Interviews

Site visits and interviews provide additional and background to the project as well as cross checks with project documentation. Interviews were undertaken with relevant stakeholders in the host country, as well as personnel with knowledge of the project design and implementation. A list of interviewees, and the main topics discussed with each person can be found in appendix A.

The site visit was designed to enable the validation team to

- undertake a detailed review of additional project documentation and verify the supporting documentation;
- inspect the project site and confirm the validity of the project description in the PDD;
- assess the validity of the project boundary;
- cross-check the validity of the project information with other sources of information, including cross checks between information provided by interviewed personnel (i.e. by checking sources or other interviews) to ensure that no relevant information has been omitted; and
- interview relevant stakeholders in the host country, and personnel with knowledge of the project design and implementation.

### 4.3 Preparation of Draft Validation Report

Based on the findings of the desk review and site visit, ERM CVS prepared a draft validation report including a list of CARs and CLs, and provided this to the PPs. Where issues are identified that need to be further elaborated, researched or added to in order to confirm that the project activity meets the CDM requirements and can achieve credible emission reductions, ERM CVS identified these issues in the DVR so that they could be discussed with the PPs and concluded upon in the final validation report (FVR).

#### 4.3.1 Remediation requests

Where issues were identified, ERM CVS raised one of the following remediation requests:

Clarification Request (CL): where information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met.

Corrective Action Request (CAR): where:

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

Forward Action Requests (FAR): where it was necessary to highlight issues related to project implementation that require review during the first verification of the project activity. FARs shall not relate to the CDM requirements for registration.

CARs and CLs must be 'closed out' before the validation can be concluded. Close out is only possible where the PPs modify the project design, rectify the PDD or provide adequate additional explanation or evidence that satisfies ERM CVS's concerns. The validation process may be halted until the CARs and CLs are addressed to the validation team's satisfaction.

### 4.4 Final Validation Report and Validation Opinion

The final validation report (FVR) is completed when the CARs and CLs have been closed out to the satisfaction of ERM CVS. The FVR includes the validation opinion that sets out the validation conclusion regarding the compliance of the project with CDM requirements.

### 4.5 Internal Quality Control

The process of validation and decision of the validation team has been subject to an independent Technical Review. The scope of the Technical Review process is to independently assess that all procedures have been followed, necessary requirements have been met, and all conclusions are justified. The final validation decision is based on the findings and conclusions of the validation team, assessing the compliance of the project activity with the CDM requirements, and the technical evaluation of the independent technical reviewer. The final report is then reviewed and approved by the qualified signatory / final decision maker within ERM CVS.

## 5 Validation findings – Approval & Participation, Authorisation, Contribution to Sustainable Development, and Modalities of Communication

### 5.1 Approval & Participation

As per VVS section VII F, ERM CVS assessed whether the DNA of each Party indicated as being involved in the project activity has provided an appropriate letter of approval (LoA).

ERM CVS has confirmed that the LoA has been issued and provides confirmation of:				
Party	Ratified Kyoto Protocol?	Voluntary Participation	Contribution to Sustainable Development	Exact project title
P.R. China (Host Party)	Yes	Yes	Yes	Yes

ERM CVS received the LoA from the PP, Liaoning Guoli Renewable Energy Co. Ltd. The authenticity has been confirmed by checking the list of approved projects on the website of the China DNA /6/.

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/CAR/ CL	Final OK/ NOT OK
5.1.1	Are LoAs in place for every PP that confirm <ul style="list-style-type: none"> <li>▪ Ratification of the Kyoto Protocol</li> <li>▪ Voluntary Participation</li> <li>▪ Reference to the precise project title in the PDD</li> <li>▪ Contribution to sustainable development (host party only)</li> </ul>	<p>The LoA was not provided during DVR stage. Please see CAR 1.</p> <p>The host party LoA /6/ has been reviewed and confirms that P.R.China ratified the Kyoto protocol on 30 August 2002, confirms voluntary participation in the proposed project, references the precise project title as written in the PDD, and confirms the contribution of the project to the sustainable development of the host party.</p> <p>The Host Party LoA /6/ confirms that:</p> <ul style="list-style-type: none"> <li>▪ China is a Party to the Kyoto Protocol;</li> <li>▪ approves the participation of the China PP in the project activity;</li> <li>▪ states that the project would contribute to sustainable development; and</li> <li>▪ refers to the project using the project title in the PDD.</li> </ul> <p>CAR 1 is closed.</p>	CAR 1.	OK
5.1.2	Is the information in the LoAs consistent with the other project documentation, including PP names, etc	<p>The LoA was not provided during DVR stage. Please see CAR 1.</p> <p>ERM CVS has checked the LoA from host party /6/ that provided by the PP. The information including the PP name, project title etc. in the LoAs /6/ is consistent with the PDD.</p> <p>CAR 1 is closed.</p>	CAR 1.	OK

ERM CVS also reviewed whether the LoAs contain any additional specifications:

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/CAR/ CL	Final OK/ NOT OK
5.1.3	<p>Does any LoA contain additional specification or conditions of the project activity related to the following aspects:</p> <p>(a) The Party is a Party to the Kyoto Protocol;</p> <p>(b) Participation is voluntary;</p> <p>(c) In the case of the host Party, the proposed project activity contributes to the sustainable development of the country;</p> <p>(d) It refers to the precise proposed project activity title in the PDD being submitted for registration.</p> <p>If so, are these conditions fully complied with?</p>	<p>The LoA was not provided during DVR stage. Please see CAR 1.</p> <p>The LoA /6/ has been provided by the PP, and reviewed.</p> <p>As per VVS paragraph 40, ERM CVS confirms that the host party LoA /6/ does not contain additional specifications or conditions related to the project activity.</p> <p>CAR 1 is closed.</p>	CAR 1.	OK
5.1.4	<p>If the LoA references a specific version of the Validation Report and this version cannot be submitted, then has either of the following been submitted?</p> <ul style="list-style-type: none"> <li>▪ a statement indicating final LoA has not been received or</li> <li>▪ an updated Validation Report</li> </ul>	<p>The LoA was not provided during DVR stage. Please see CAR 1.</p> <p>ERM CVS has checked the LoA from host party /6/, which does not reference a specific version of the validation report.</p> <p>CAR 1 is closed.</p>	CAR 1.	OK
5.1.5	<p>If the project is a bundled activity (more than 1 project in the same PDD) does the LoA from the host party acknowledge the bundle activity?</p>	<p>The project is not a bundled activity. Not applicable.</p>	N/A	N/A

## **Conclusion**

ERM CVS confirmed that LoAs have been received from all parties involved in the project..

ERM CVS's validation of the approval status of the project activity confirmed that:

- a) Each Party is a Party to the Kyoto Protocol
- b) Participation is voluntary
- c) In the case of the Host Party, the project activity contributes to the sustainable development of the country
- d) The title of the project activity is identical in the LoAs and the PDD.

ERM CVS therefore confirms that the LoAs are in accordance with paragraphs 38-44 of the VVS.

## 5.2 Authorisation

As per VVS section G, ERM CVS evaluated whether all PPs are listed in a consistent manner in section A.3 of the PDD and have been appropriately authorised by a Party to the Kyoto Protocol. ERM CVS also checked the consistency of information between the PDD, Letters of Approval (LoAs) and the Modalities of Communication (MoC).

PPs (list all)	Is the PP listed in Section A.3 of PDD?	Are contact details given in Annex 1 of PDD?	Does the LoA name the authorised PP?	Is information in the MoC consistent with PDD and LoA?
Liaoning Guoli Renewable Energy Co. Ltd. <sup>1</sup>	Yes	Yes	Yes	Yes

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/CAR/CL	Final OK/ NOT OK
5.2.1	Is the correct information provided on PPs, and consistently applied in A.3 and Annex 1 of the PDD and other project documentation (Letters of Approval and Modalities of Communication)?	<p>The LoA and the MoC were not provided during DVR stage. See CAR 1.</p> <p>The LoA /6/ has been provided by the PP, and reviewed. CAR 1 is closed. Please refer to Appendix B to this report.</p> <p>The PPs are listed in a consistent manner in the PDD and all related project documentation, including the LoAs /6/and Modalities of Communication /7/.</p>	CAR 1.	OK
	Can it be confirmed that there are no entities other than those approved as PPs included in section A.3 or Annex 1 of the PDD.	<p>The LoA was not provided during DVR stage. See CAR 1.</p> <p>The LoA /6/ has been provided by the PP, and reviewed. CAR 1 is closed. Please refer to Appendix B to this report.</p> <p>ERM CVS has checked the LoAs /6/ and Modalities of Communication /7/, and confirms that there are no entities other than those included as PPs in section A.4 or Annex 1 of the PDD.</p>	CAR 1.	OK
	Does the host party wish to be considered a Project Participant? If so, is this correctly presented in the PDD?	<p>The LoA was not provided during DVR stage. See CAR 1.</p> <p>The LoA /6/ has been provided by the PP, and reviewed. CAR 1 is closed. Please refer to Appendix B to this report.</p> <p>ERM CVS has checked the LoA /6/and Modalities of Communication /7/, and confirms that the host party does not wish to be considered a Project Participant.</p>	CAR 1.	OK

## Conclusion

The PP to the project activity have been authorised by a party to the Kyoto Protocol, and ERM CVS has reviewed the letter of approval to confirm this. The PP is listed in a consistent manner in the PDD and all related project documentation, including the LoA and Modalities of Communication. No entities other than that approved as PP are included in section A.3 or Annex 1 of the PDD.

## 5.3 Contribution to Sustainable Development

As per VVS section H, ERM CVS evaluated whether the letter of approval by the DNA of the host Party confirms the contribution of the proposed CDM project activity to the sustainable development of the host Party.

<sup>1</sup> Vitrol S.A. was named as a project participant in the GSP-PDD. The project is being submitted as a unilateral project at the time of request for registration.

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
5.3.1	Does the LOA from the Host Party confirm that the project activity contributes to the sustainable development of that country?	<p>The LoA was not provided at the DVR stage. See CAR 1.</p> <p>The LoA /6/ has been provided by the PP, and reviewed. CAR 1 is closed. Please refer to Appendix B to this report.</p> <p>Yes, The LoA by the DNA of the host Party /6/ confirms the contribution of the proposed CDM project activity to the sustainable development of the host Party.</p>	CAR 1.	OK

## 5.4 Modalities of Communication

As per VVS section I, ERM CVS validated that the MoC statement has been correctly completed and duly authorised. ERM CVS also, validated the corporate identity of all project participants and focal points included in the Modalities of Communication (MoC) statement, as well as the personal identities, including specimen signatures and employment status, of their authorized signatories (VVS para 53).

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/CAR/ CL	Final OK/ NOT OK
5.4.1	Are all corporate and personal details in the MoC, including specimen signatures, correct?	<p>The MoC was not provided. CAR 1.</p> <p>In accordance with the VVS paragraph 54, corporate and personal details in the MoC have been confirmed through directly checking Business License of Liaoning Guoli Renewable Energy Co., Ltd issued by Shenyang City Administration of Industry and Commerce /23/. The name of the project participant in the revised PDD and MoC are confirmed consistent with the information in the Business License.</p> <p>The MoC was directly provided by the project participant, Liaoning Guoli Renewable Energy Co. Ltd., with whom ERM CVR has contractual relationship. It is confirmed by the confirmation letter /54/ that all corporate and personal details, including specimen signatures are valid and accurate in the MoC statement. The confirmation letter was issued by the PP with company seal and signature of the legal person, and it confirms that the official who signed the confirmation letter are duly authorized to do so on behalf of the PP.</p> <p>CAR 1 is closed. Please refer to Appendix B to this report.</p>	CAR 1.	OK
	<p>Has the MoC statement been correctly completed, including:</p> <ul style="list-style-type: none"> <li>Using the latest form?</li> <li>All information, including annex 1, has been correctly provided?</li> <li>Listing all PPs?</li> </ul>	<p>The MoC was not provided. CAR 1.</p> <p>CAR 1 is closed. Please refer to Appendix B to this report.</p> <p>ERM CVS has checked the Modalities of Communication /7/, and confirms that:</p> <ul style="list-style-type: none"> <li>The MoC is using the latest form;</li> <li>All information, including annex 1, has been correctly provided;</li> <li>The MoC is listing all PPs.</li> </ul>	CAR 1.	OK
	<p>Has the MoC been signed by the authorised signatories of the PP?</p> <p>Are the signatories consistent with the names given in Annex 1 of the MoC?</p>	<p>The MoC was not provided. CAR 1.</p> <p>CAR 1 is closed. Please refer to Appendix B to this report.</p> <p>ERM CVS has checked the Modalities of Communication /7/, and confirms the MoC been signed by the authorised signatories of the PP and the signatories are consistent with the names given in Annex 1 of the MoC.</p>	CAR 1.	OK



---

## Conclusion

ERM CVS has performed due diligence on the MoC statement in accordance with the requirements established in the VVS. ERM CVS can confirm that the MoC statement complies with all relevant forms and requirements.

## 6 Validation findings – GSP, PDD and Project Description

### 6.1 Main changes between the PDD version published for GSP and the final version submitted for registration:

- The total investment and average annual O&M cost have been revised in the PDD to be consistent with the FSR, which was the basis of investment decision;
- The calculation mistakes in the IRR calculation spreadsheet have been corrected;
- The sensitivity analysis has been updated in line with the Guidelines on the Assessment of Investment Analysis;
- The common practice analysis has been updated according to the “Tool for the demonstration and assessment of additionality” version 06.1.0;
- Information of the timeline of the proposed project has been updated in section B.5. Table B-2 of PDD;
- Data and parameters that fixed ex ante or to be monitored have been updated;
- The monitoring plan was updated for more accuracy.
- The project changed to a unilateral project with only project participant from the host country.
- For details of the changes, please refer to Appendix B

### 6.2 Global Stakeholder Consultation

At the start of the validation, in accordance with the latest version of the Project Cycle Procedure, the unvalidated PDD supplied by the client was uploaded on the UNFCCC website for global stakeholder review for a period of 30 days. The global stakeholder process (GSP) period was from 08 June 2012 - 07 July 2012

(<http://cdm.unfccc.int/Projects/Validation/DB/KFWWIW18T9HBUSPKNTJTR2EKZIHMN9/view.html>)

No comments were received.

### 6.3 Project Design Document (PDD)

As per VVS section J, ERM CVS reviewed the PDD to determine whether it has been prepared in accordance with the latest PDD form (template) and guidance from the CDM Executive Board available on the UNFCCC website.

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/CAR/ CL	Final OK/ NOT OK
6.3.1	Is the PDD prepared in accordance with the latest forms and guidance required by the CDM EB?  <a href="http://cdm.unfccc.int/Reference/PDDs_Forms/index.html#req">http://cdm.unfccc.int/Reference/PDDs_Forms/index.html#req</a>	ERM CVS can confirm that the PDD has been checked against the latest ‘Guidelines for Project Design Document (CDM-PDD) and the Proposed new baseline and monitoring methodologies (CDM-NM)’ (Ver01.0, EB66 Annex08) /14/ and the latest template for the Project Design Document (version 04.1) /13/ available on the CDM website. The final PDD (version 03) is in compliance with the template and guidelines.	OK	OK

### Conclusion

ERM CVS has confirmed that the PDD has been prepared in accordance with the latest relevant forms and guidance.

## 6.4 Project Description

As per VVS section K, ERM CVS reviewed the description of the project in the PDD in order to evaluate whether it provides a clear and accurate description of the proposed CDM project activity. Validation of the project description was based on review of documentation, a physical site inspection and interviews.

### 6.4.1 Description of the project activity

The findings of our validation of the project description in the PDD are set out below.

### 6.4.2 Project Location and Status

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
6.4.1	<p><b>(i) Description: project design</b></p> <p>Does the project description in the PDD section A.4 provide a clear, accurate and sufficiently detailed description of all relevant elements of the proposed project activity?</p> <p>Specifically, does the project description provide clear indication of:</p> <ul style="list-style-type: none"> <li>a) List of main technologies involved</li> <li>b) List of main equipment and installations</li> <li>c) The lifetime of the project equipment</li> <li>d) Monitoring equipment and its location</li> <li>e) Capacities and efficiencies</li> <li>f) Emissions sources and GHGs involved in the project activity</li> <li>g) Existing and forecast energy and mass flows and balances</li> <li>h) Interaction with processes/equipment outside the project boundary, if any, is stated.</li> <li>i) Description of technology transfer from Annex I countries (if applicable)</li> </ul>	<p>The PDD contains a clear and complete description of the project activity, and the nature and technical implementation of the project activity. The description includes:</p> <ul style="list-style-type: none"> <li>a) List of main technologies involved-The project will employ 24* 2 MW wind turbines and generators. The main parameters including installed capacity, rotor diameter, cut in speed, rated wind speed, cut out speed, hub height of turbines, and rated voltage, rotational direction, number of blades, rated frequency and designed product life of generators have been described in Section A.3 of the PDD, which is confirmed to be consistent with the FSR /2/ and manufacturer's specifications /22/.</li> <li>b) List of main equipment and installations-The equipment purchase contract /22/ and manufacture's specification on the technical data for turbine and generator /21/ have been provided, and have been confirmed against the FSR.</li> <li>c) The lifetime of the project equipment-The lifetime of the project equipment is stated in the PDD and has been validated against the specifications provided by the equipment manufacturer /21/.</li> <li>d) Monitoring equipment and its location-The electricity supplied to the NEPG through Liaoning provincial power grid will be measured by electricity meter installed at the project site, which is confirmed based on the interview with the site management /IV1/ / IV2/.</li> <li>e) Capacities and efficiencies-The installed capacity of the project is stated and has been validated against the FSR /2/.</li> <li>f) Emissions sources and GHGs involved in the project activity-These have been listed in accordance with the applied methodology</li> <li>g) Existing and forecast energy and mass flows and balances-The plant load factor is 22.97% and annual power supply to NEPG has been included in the PDD, as required by the Guidelines for Completing the PDD.</li> <li>h) Interaction with processes/equipment outside the project boundary, if any, is stated-Not applicable, since the electricity grid is also included as part of the project boundary.</li> <li>i) Description of technology transfer from Annex I countries-This is not applicable as the project uses domestically produced equipment /21/. This has been validated against the manufacturer's specifications /21/ and FSR /2/.</li> </ul>	OK	OK
6.4.2	<p><b>Description: Project location</b></p> <p>Is the location of the project correctly stated in the PDD? Are geographical coordinates given (in decimal format)? How has the location been validated?</p>	<p>Yes. The central geographical coordinate of the wind farm is N41° 59' 32", E122° 3' 23" in GSP PDD. However, the geographical coordinates of wind tower given in the FSR is N41° 59.68' E122° 5.00' . Please clarify how the centre geographical coordinate in the PDD was determined. See CL 1.</p> <p>The geographical coordinates of wind tower given in the FSR is not the centre point. ERM CVS checked the <i>Notification on the central geographical coordinates of Liaoning Guoli Fuxin Wangsiyingzi Wind Power Project /46/</i> and confirm the location is correctly stated as N41.9922° E122.0563° in the PDD v02. Therefore, CL 1 is closed.</p>	CL-1	OK

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
6.4.3	<b>Description: Existing installations</b>  a) If the proposed CDM project activity involves the alteration of an existing facility, installation or process, does the project description clearly state the differences resulting from the project activity compared to the pre-project situation? b) How has the description of the existing facility, installation or process been validated? c) Is the description of the existing facility, installation or process consistent with information provided in other parts of the PDD such as common practice and baseline selection?	Not applicable. The project does not take place in an existing installation.	N/A	N/A
6.4.4	<b>Description: Operational lifetime</b>  a) Does the PDD state the operation start date of the project? How was this validated? If the project is being implemented in phases, is this clearly described in the PDD? b) What is the expected operational lifetime of the project activity? Is this lifetime considered reasonable for a project of this type in the host country?	a) The project is not being implemented in phases. However, the GSP PDD does not state the operation start date. CL 2 was raised for PP to estimate a project operational start date.  b) The expected operational lifetime of the project activity is 20 years, which is in line with the FSR /2/ and the manufacture specification /21/. Based on ERM CVS local and sectoral knowledge, this lifetime is considered reasonable for a project of this type.  As the construction of the project has not started, the estimate is that the project will be operational on April 1st, 2013. This information has been checked and confirmed to be consistent with the construction schedule in the FSR /2/. The operational start date has been added in section B.5 of the revised PDD as confirmed by ERM CVS. Therefore, CL 2 is closed.	CL-2	OK
6.4.5	Is information on the plant load factor provided in the PDD? How has this been validated (please refer to the Guidelines for the reporting and validation of plant load factors, EB48_Annex 11.	The load factor of 22.97% is stated and has been determined by an independent third party in the FSR /2/, which was also approved by the local government, and is therefore in line with the 'Guidelines for the reporting and validation of plant load factors' /11/.	OK	OK

## **Conclusion**

The process undertaken to validate the accuracy and completeness of the project description is set out in detail above. ERM CVS has confirmed that the project description in the PDD provides a clear, accurate and complete understanding of the nature of the proposed CDM project activity.

### *6.4.3 Description of baseline scenario*

The project description was evaluated to confirm whether or not it provides a clear and accurate summary of the project and baseline scenario.

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
6.4.6	<p>Is there a clear description of the baseline scenario in the PDD? This should include:</p> <ul style="list-style-type: none"> <li>a) A list of the equipment(s) and systems that would have been in place in the absence of the project activity (if any)</li> <li>b) Information about the age and average lifetime of the baseline facility based on manufacturer's specifications and industry standards (if applicable)</li> <li>c) Installed capacities, load factors and efficiencies of the baseline facility (if applicable)</li> <li>d) An explanation of how the same types and levels of services provided by the project activity would have been provided in the baseline scenario.</li> </ul>	<p>The PDD includes a description of the baseline, which is defined in the methodology ACM0002 as "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 according to the "Tool to calculate the emission factor for an electricity system". Details of the grid are provided in section B.6 of the PDD, and have been validated against the data provided by the DNA on the electricity grid /33/</p> <p>(a) Not applicable since the project is a Greenfield project</p> <p>(b) Not applicable since there is no baseline facility</p> <p>(c) Not applicable since there is no baseline facility</p> <p>(d) The PDD explains that the electricity generated by the project would have been generated by the grid in the baseline scenario.</p>	OK	OK
	<p>If the scenario existing prior to the start of the implementation of the project activity is different from the selected baseline scenario, is there a clear description of the pre-existing scenario, with a list of the equipment(s) and systems in operation at that time?</p>	<p>Not applicable. The scenario existing prior to the start of the implementation of the project activity is the same as the selected baseline scenario.</p>	OK	OK

## Conclusion

The project description in the PDD contains a clear description of the project activity that provides the reader with a clear understanding of the precise nature of the project activity and the technical aspects of its implementation. The description sufficiently covers all relevant elements, is accurate, and clearly states the differences resulting from the project activity compared to the pre-project situation.

## 7 Validation findings – Baseline and Monitoring Methodology

ERM CVS has evaluated the baseline and monitoring methodology selected by the PPs to confirm its applicability and whether or not it has been appropriately applied to the project activity.

### 7.1 Validity of selected methodology and methodological tools

As per VVS section L.1, ERM CVS validated that an approved and currently valid baseline and monitoring methodology (and associated methodological tools) have been applied for this proposed CDM project activity.

Baseline methodology applied	ACM0002 Consolidated baseline methodology for grid-connected electricity generation from renewable sources Version 13.0.0
Methodological tools applied as required by the methodology	Tool to calculate the emission factor for an electricity system (Version 2.2.1)      Tool for the demonstration and assessment of additionality (Version 6.1.0)

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
7.1.1	Are the number, title and version of the approved methodology clearly and correctly stated?  Is the methodology within its period of validity?	ERM CVS has determined that the methodology is correctly quoted and applied by comparing with the actual text of the applicable version of the methodology available on the UNFCCC CDM website.  The methodology is within its period of validity.	OK	OK
	Are all the required tools applied and fully referenced in the PDD?  Are the version numbers applicable at the time of validation?	ERM CVS has determined that the methodological tools are correctly quoted and applied by comparing with the actual text of the applicable version of the tools available on the UNFCCC CDM website. The tools are within their period of validity.	OK	OK
	If applicable, has any specific guidance provided by the CDM EB relevant to the project type or methodology been considered?	Yes. The following EB guidance have been considered:  Guidelines on the demonstration and assessment or prior consideration of the CDM, EB 62, Annex 13;  Guidance on the Assessment of Investment Analysis, EB 62, Annex 5;  Guidance for the reporting and validation of plant load factors (version 01), EB 48 Annex 11;  EB guidance on the application of approved methodology AM0005 now consolidated into ACM0002 can be applied for the purpose of estimating the build margin emission factor for each fuel type.	OK	OK

### Conclusion

The applied methodology and associated methodological tools have been correctly described and are approved by the CDM Executive Board. All versions are currently valid.

## 7.2 Applicability of the selected methodology to the project activity

As per VVS section L.2, ERM CVS evaluated whether the selected baseline and monitoring methodology applied is applicable to the project activity. This evaluation was based on a review of the PDD and associated documentation and a visit to the project site. ERM CVS has validated that the applicability conditions of the methodology (and tools, where relevant) are met and that the project activity is not expected to result in emissions other than those allowed by the methodology.

ERM CVS has assured the compliance of the project activity with each of the applicability conditions of the selected methodology and tools:

	Applicability Conditions in methodology and/or tools	Is this condition discussed in the PDD? (yes/no)	Does the project meet this condition? (Yes/No, or state that this condition is not relevant for the project)	Validation findings (including justification and substantiation of information, data and evidence).	Draft OK/ CAR/CL	Final OK/ Not OK
7.2.1	This methodology is applicable to grid-connected renewable power generation project activities that (a) install a new power plant at a site where no renewable power plant was operated prior to the implementation of the project activity (greenfield plant); (b) involve a capacity addition; (c) involve a retrofit of (an) existing plant(s); or (d) involve a replacement of (an) existing plant(s)	Yes	Yes	This applicability condition was able to be validated on site. ERM CVS has confirmed by visual inspection that the project is a newly built grid connected wind power plant. This was confirmed against the FSR and approval from authority /2/. No renewable power plant was operated at the site prior to the implementation of the project activity. This was confirmed by review of the FSR and FSR approval /2/	OK	OK
	The project activity is the installation, capacity addition, retrofit or replacement of a power plant/unit of one of the following types: hydro power plant/unit (either with a run-of-river reservoir or an accumulation reservoir), wind power plant/unit, geothermal power plant/unit, solar power plant/unit, wave power plant/unit or tidal power plant/unit;	Yes	Yes	The applicability conditions properly explained and clearly justified in the PDD. It is confirmed by the FSR /2/ and interviews /IV1//IV2/ with PP representatives by ERM CVS that the project is a newly built grid connected wind power plant.	OK	OK
	In the case of capacity additions, retrofits or replacements (except for wind, solar, wave or tidal power capacity addition projects which use Option 2: on page 10 to calculate the parameter $EG_{P,J,y}$ ): the existing plant started commercial operation prior to the start of a minimum historical reference period of five years, used for the calculation of baseline emissions and defined in the baseline emission section, and no capacity addition or retrofit of the plant has been undertaken between the start of this minimum historical reference period and the implementation of the project	Yes	N/A	Not applicable, the Project does not involve capacity additions, retrofits or replacements, which was confirmed by the FSR /2/ and interviews /IV1//IV2/ with PP representatives.	N/A	N/A

	Applicability Conditions in methodology and/or tools	Is this condition discussed in the PDD? (yes/no)	Does the project meet this condition? (Yes/No, or state that this condition is not relevant for the project)	Validation findings (including justification and substantiation of information, data and evidence).	Draft OK/ CAR/CL	Final OK/ Not OK
	<p>activity;</p> <p>In the case of retrofits, replacements, or capacity additions, this methodology is only applicable if the most plausible baseline scenario, as a result of the identification of baseline scenario, is "the continuation of the current situation, i.e. to use the power generation equipment that was already in use prior to the implementation of the project activity and undertaking business as usual maintenance".</p>					
	<p>In case of hydro power plants, one of the following conditions must apply:</p> <ul style="list-style-type: none"> <li>The project activity is implemented in an existing single or multiple reservoirs, with no change in the volume of any of the reservoirs; or</li> <li>The project activity is implemented in an existing single or multiple reservoirs, where the volume of any of the reservoirs is increased and the power density of each reservoir, as per definitions given in the Project Emissions section, is greater than 4 W/m<sup>2</sup>; or</li> <li>The project activity results in new single or multiple reservoirs and the power density of each reservoir, as per definitions given in the Project Emissions section, is greater than 4 W/m<sup>2</sup></li> </ul>	Yes	N/A	The proposed project is a wind power project, which was confirmed by the FSR /2/ interviews /IV1//IV2/ with PP representatives, and during site visit.	N/A	N/A
	<p>In case of hydro power plants using multiple reservoirs where the power density of any of the reservoirs is lower than 4 W/m<sup>2</sup> after the implementation of the project activity all of the following conditions must apply:</p> <ul style="list-style-type: none"> <li>The power density calculated for the entire project activity using</li> </ul>	Yes	N/A	The proposed project is a wind power project, which was confirmed by the FSR /2/, interviews /IV1//IV2/ with PP representatives, and during site visit.	N/A	N/A



	Applicability Conditions in methodology and/or tools	Is this condition discussed in the PDD? (yes/no)	Does the project meet this condition? (Yes/No, or state that this condition is not relevant for the project)	Validation findings (including justification and substantiation of information, data and evidence).	Draft OK/ CAR/CL	Final OK/ Not OK
	<p>equation 5 is greater than 4 W/m<sup>2</sup>;</p> <ul style="list-style-type: none"> <li>All reservoirs and hydro power plants are located at the same river and where are designed together to function as an integrated project that collectively constitutes the generation capacity of the combined power plant;</li> <li>The water flow between the multiple reservoirs is not used by any other hydropower unit which is not a part of the project activity;</li> <li>The total installed capacity of the power units, which are driven using water from the reservoirs with a power density lower than 4 W/m<sup>2</sup>, is lower than 15MW;</li> </ul> <p>The total installed capacity of the power units, which are driven using water from reservoirs with a power density lower than 4 W/m<sup>2</sup>, is less than 10% of the total installed capacity of the project activity from multiple reservoirs.</p>					
	<p>The methodology is not applicable to the following:</p> <ul style="list-style-type: none"> <li>Project activities that involve switching from fossil fuels to renewable energy sources at the site of the project activity, since in this case the baseline may be the continued use of fossil fuels at the site;</li> <li>Biomass fired power plants;</li> <li>Hydro power plant that result in the creation of a new reservoir or in the increase in an existing reservoir where the power density of the reservoir is less than 4 W/m<sup>2</sup>.</li> </ul>	Yes	Yes	<p>The proposed project is a Greenfield wind power plant, and the project activity does not involve energy source switching from fossil fuels. Biomass fired power plant and hydro power plant are irrelevant to the Project. This was confirmed by the FSR /2/, interviews /IV1/IV2/ with PP representatives, and during site visit</p>	OK	OK
	<p>Applicability condition "Tool to calculate the emission factor for an electricity system"</p> <p>This tool may be applied to</p>	Yes	Yes	<p>This tool will be applicable for the project case, as the project supplies electricity to the grid.</p> <p>It is confirmed from the review of the FSR /2/, grid connection opinion issued by Liaoning</p>	OK	OK

	Applicability Conditions in methodology and/or tools	Is this condition discussed in the PDD? (yes/no)	Does the project meet this condition? (Yes/No, or state that this condition is not relevant for the project)	Validation findings (including justification and substantiation of information, data and evidence).	Draft OK/ CAR/CL	Final OK/ Not OK
	<p>estimate the OM, BM and/or CM when calculating baseline emissions for a project activity that substitutes grid electricity, i.e. where a project activity supplies electricity to a grid or a project activity that results in savings of electricity that would have been provided by the grid (e.g. demand-side energy efficiency projects).</p> <p>The tool is not applicable if the project electricity system is located partially or totally in an Annex I country.</p>			<p>Electric Power Company Limited /52/ and ERM CVS's local and sectoral knowledge that the project electricity system is NEPG, which covers Liaoning Province, Jilin Province and Heilongjiang Province within P. R. China /33/. Therefore, the project electricity system is neither totally nor partially located in an Annex I country. Therefore, the "Tool to calculate the emission factor for an electricity system" is applicable.</p>		

	Question	Validation findings (including justification and substantiation of information, data and evidence).	Draft OK/ CAR/CL	Final OK/ Not OK
7.2.2	Has any source of GHG emission been identified within the project boundary that is expected to contribute more than 1% of the project activity's expected average annual emissions reductions, and which is not addressed by the applied methodology?	Other than the emissions addressed in the applied approved methodology ERM CVS has determined that there will be no other GHG emissions within the project boundary expected to contribute more than 1% of the predicted emission reductions, which are not addressed by the applied methodology. This was confirmed by assessment of the project on site and by review of the detailed project design in the FSR /2/.	OK	OK

## Conclusion

The applied methodology and associated tools are fully applicable to the project activity and is correctly applied in the PDD. There are no greenhouse gas emissions occurring within the proposed CDM project activity boundary as a result of the implementation of the proposed CDM project activity which are expected to contribute more than 1% of the overall expected average annual emissions reductions, which are not addressed by the applied methodology, were identified.

### 7.3 Project Boundary

As per VVS section L.5, ERM CVS reviewed the description of the project boundary in the PDD, to determine whether all main GHG emission sources, the physical delineation of the proposed project activity and other relevant project and baseline emission sources covered in the methodology are included within the project boundary for the purpose of calculating project and baseline emissions for the proposed CDM project activity.

According to the applied methodology, the spatial extent of the project boundary includes the project power plant and all power plants connected physically to the electricity system (NEPG) that the CDM project power plant is connected to.

## 7.3.1 Emission sources

The emissions sources included in or excluded from the project boundary, as set out in the applied methodology are as follows:

	Source	Gas	Is this source included within the project boundary in the PDD?	Is inclusion / exclusion from the project boundary justified in the PDD?	How has this been validated?
Baseline emissions	CO <sub>2</sub> emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity	CO <sub>2</sub>	Yes	Yes	This is main emission source in baseline as per ACM0002.
		CH <sub>4</sub>	No	Yes	This is minor emission source in baseline as per ACM0002.
		N <sub>2</sub> O	No	Yes	This is minor emission source in baseline as per ACM0002.
Project emissions	Project activity	CO <sub>2</sub>	No	Yes	No project emissions need to be considered for wind power project as per ACM0002.
		CH <sub>4</sub>	No	Yes	No project emissions need to be considered for wind power project as per ACM0002.
		N <sub>2</sub> O	No	Yes	No project emissions need to be considered for wind power project as per ACM0002.
Leakage emissions	No leakage	NA	NA	NA	No leakage needs to be considered for wind power project as per ACM0002.

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
7.3.1	Has the PDD justified the inclusion/exclusion of all potential sources of GHG emissions as set out in the applied baseline methodology	<p>ERM CVS evaluated whether the sources of GHG emission set out in the applied methodology were included in the project boundary and, where the methodology allows PPs to choose whether a source or gas is To be concluded within the project boundary, this has been clearly justified in the PDD. The validation was based on the PDD /1/and the methodology applied ACM0002/8/.</p> <p>However, the Justification/Explanation of GHG Source in the baseline scenario was not fully consistent with ACM0002 /8/.</p> <p>CL 3 was raised for PP to correctly justify all the Justification/Explanation in the methodology in Section B.3 of the PDD.</p> <p>ERM CVS has reviewed the revised PDD, and confirmed that all the justification/explanation of baseline in section B.3 of the revised PDD has been corrected in consistence with the methodology. CL 3 is closed.</p>	CL-3	OK

## Conclusion

The identified boundary and the selected sources and gases included in the final PDD are appropriately described and justified for the project activity, in accordance with the applied methodology. The information is correctly described in the section B.3 of the PDD.

## 7.3.2 Physical delineation of the project

ERM CVS evaluated whether the PDD correctly describes the physical delineation of the proposed CDM project activity, including which installations/processes are included within the geographical boundary of the project activity.

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
7.3.2	Does the PDD correctly describe the project boundary, including the physical delineation of the proposed CDM project activity included within the project boundary?	<p>Based on the site visit and review of FSR and its approval /2/, ERM CVS confirmed that the PDD correctly describes which installations/processes are included within the geographical boundary of the project activity.</p> <p>A diagram is included in the PDD that correctly illustrates the project boundary, including all the key equipment, systems and flows of energy, as well as the emissions sources and gases included in the project boundary.</p> <p>However, the key meter and the crosscheck meter in the line diagram of Section A.3 and B.3 were not distinguished in the GSP PDD.</p> <p>CL 4 was raised for PP to distinguish the key meter and the crosscheck meter in the line diagram in Section A.3.</p> <p>ERM CVS has checked the revised PDD, confirms that the key meter and the backup meter in the line diagram of Section A.3 and B.3 have been distinguished with M1 and M2, the key meter is M1 and the backup meter is M2 in Section A.3 in the revised PDD. CL 4 is closed.</p>	CL-4	OK
	Were any emission sources identified that will be affected by the project activity and are not addressed by the selected approved methodology? If so, was clarification of, revision to or deviation from the methodology approved in accordance with required procedures.	No emissions sources other than those addressed by the methodology were identified	OK	OK

## Conclusion

The PDD correctly describes the project boundary, including the physical delineation of the proposed CDM project activity, in compliance with the requirements of the selected baseline methodology, and this is consistent with site observations and other documentation provided. All sources and GHGs required by the methodology have been included within the project boundary. Where the methodology allows PPs to choose whether a source or gas is to be included within the project boundary, the PPs have sufficiently justified that choice. The justifications provided are reasonable, based on assessment of supporting documented evidence /2/ and site observations. The project boundary is justified for the project activity, based on ERM CVS's local and sectoral knowledge.

## 7.4 Baseline identification

As per VVS section L.6, ERM CVS reviewed the PDD to assess whether it correctly identifies the baseline for the proposed CDM project activity, defined as the scenario that reasonably represents the anthropogenic emissions by sources of GHGs that would occur in the absence of the proposed CDM project activity.

As per VVS paragraph 115, no alternative analysis is required if the approved methodology that is selected by the proposed CDM project activity prescribes the baseline scenario.

The baseline identification has been validated as follows:

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
7.4.1	Does the PDD identify the baseline, a scenario that represents the anthropogenic emissions by sources of GHG that would occur in the absence of the proposed CDM project activity?	Yes. The PDD clearly identifies the baseline scenario as <i>Electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in the "Tool to calculate the emission factor for an electricity system. This was confirmed by ACM0002/8/.</i>	OK	OK
	Have the procedures/ steps to identify the most reasonable baseline scenario, as required by the methodology and applicable tools, been documented clearly in the PDD?	Since the baseline is specified by the methodology, no further procedures / steps to identify the most reasonable baseline scenario are required.	OK	OK
	Are all feasible and credible alternatives identified including but not limited to all the potential scenarios listed in the methodology?  Does the list of alternatives include the project activity undertaken without being registered as a CDM project?	Since the baseline is specified by the methodology, no further procedures / steps to identify the most reasonable baseline scenario are required.	OK	OK
	Are realistic different configurations or combinations of alternatives that may be able to provide similar outputs and services considered?	Since the baseline is specified by the methodology, no further procedures / steps to identify the most reasonable baseline scenario are required.	OK	OK
	Are all considered alternatives assessed for consistency with (enforced) mandatory laws and regulations?	Since the baseline is specified by the methodology, no further procedures / steps to identify the most reasonable baseline scenario are required.	OK	OK
	(a) Have all applicable CDM requirements been taken into account in the identification of the baseline scenario?  (b) Have all relevant national and/or sectoral policies and circumstances been taken into account, such as sectoral reform initiatives, local fuel availability, power sector expansion plans, and the economic situation in the project sector?  Are the relevant national and/or sectoral policies and circumstances identified and correctly considered in the PDD?	Since the baseline is specified by the methodology, no further procedures / steps to identify the most reasonable baseline scenario are required.	OK	OK

## Conclusion

Based on the site visit and documentary evidence to cross check the information contained in the PDD as referenced above, ERM CVS confirms that:

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

### 7.5 Algorithms and/or formulae used to determine emission reductions

As per VVS section L.7, ERM CVS has evaluated whether the steps taken and equations applied to calculate project emissions, baseline emissions, leakage and emission reductions comply with the requirements of the selected baseline and monitoring methodology.

ERM CVS conducted validation activities to determine whether the equations and parameters in the PDD have been correctly applied by comparing them to those in the selected approved methodology. Where the methodology provides for selection between different options for equations or parameters, ERM CVS confirmed that adequate justification has been provided (based on the choice of the baseline scenario, context of the proposed CDM project activity and other evidence provided) and that the correct equations and parameters have been used, in accordance with the methodology selected.

ERM CVS verified the justification given in the PDD for the choice of data and parameters used in the equations. Where data and parameters will not be monitored throughout the crediting period of the proposed CDM project activity but have already been determined and will remain fixed throughout the crediting period (ex-ante parameters), ERM CVS assessed that all data sources and assumptions are appropriate and calculations are correct, applicable to the proposed CDM project activity and will result in a conservative estimate of the emission reductions. Where data and parameters will be monitored on implementation and hence become available only after validation of the project activity, ERM CVS confirmed that the estimates provided in the PDD for these data and parameters are reasonable (please see section 8 for details of the validation of the monitored parameters).

#### 7.5.1 Ex Ante Data and Parameters

Each parameter required by the methodology and tools for this project type is listed and validated in detail as follows:

Parameter required as per methodology / tools	Description of the parameter (as per methodology/tools)	Is the parameter included in the PDD?	Title and description in the PDD line with the methodology/tools?	Data unit correctly expressed in PDD?	Value in PDD correct and provides for conservative estimate of Emission Reductions?  How was this validated?	Measurement method correctly described in the PDD (if applicable)
$FC_{i,y}$	Amount of fossil fuel type $i$ consumed in the project electricity system in year $y$	Yes	Yes, it is in line with the Tool to calculate the emission factor for an electricity	Yes	ERM CVS validated this by checking China Energy Statistical Yearbooks 2008-2010 /31/	N/A

Parameter required as per methodology / tools	Description of the parameter (as per methodology/tools)	Is the parameter included in the PDD?	Title and description in the PDD line with the methodology/tools?	Data unit correctly expressed in PDD?	Value in PDD correct and provides for conservative estimate of Emission Reductions?  How was this validated?	Measurement method correctly described in the PDD (if applicable)
			system			
EG <sub>y</sub>	Net electricity generated and delivered to the grid by all power sources serving the system, not including low-cost/must-run power plants/units, in year y	Yes	Yes, it is in line with the Tool to calculate the emission factor for an electricity system	Yes	ERM CVS validated this by checking China Electric Power Yearbook 2008-2010 /30/	N/A
F <sub>i,j,y</sub>	The amount of fuel type i (in a mass or volume unit) consumed in province j in years y	Yes	This parameter is not listed in the methodology or tool but is unique to grid emission factor calculations in China	Yes	ERM CVS validated this by checking China Energy Statistical Yearbooks 2008-2010 /31/	N/A
EG <sub>i,y</sub>	Net electricity generated and delivered to the grid by power source i serving the system, not including low-cost / must-run power plants / units, in year y	Yes	Yes, it is in line with the Tool to calculate the emission factor for an electricity system	Yes	ERM CVS validated this by checking China Electric Power Yearbook 2008-2010 /30/	N/A
Internal power consumption of power plants	Internal power consumption of power plants (fraction)	Yes	This parameter is not listed in the methodology or tool but is unique to grid emission factor calculations in China	Yes	Yes ERM CVS validated this by checking China Electric Power Yearbook 2008-2010 /30/	N/A
Efficiency of advanced thermal power plant additions	Efficiency of advanced thermal power plant additions	Yes	This parameter is not listed in the methodology or tool but is unique to grid emission factor calculations in China	Yes	ERM CVS validated this by checking China Energy Statistical Yearbooks 2008-2010 /31/	N/A
Electricity imports from other connected grids	Electricity imports from other connected grids	Yes	This parameter is not listed in the methodology or tool but is unique to grid emission factor calculations in China	Yes	ERM CVS validated this by checking 2011 Baseline Emission Factors for Regional Power Grids in China issued by NDRC /33/	N/A

Parameter required as per methodology / tools	Description of the parameter (as per methodology/tools)	Is the parameter included in the PDD?	Title and description in the PDD line with the methodology/tools?	Data unit correctly expressed in PDD?	Value in PDD correct and provides for conservative estimate of Emission Reductions?  How was this validated?	Measurement method correctly described in the PDD (if applicable)
NCV <sub>i,y</sub>	Net calorific value (energy content) of fossil fuel type i in year y	Yes	Yes, it is in line with the Tool to calculate the emission factor for an electricity system	Yes	ERM CVS validated this by checking China Energy Statistical Yearbook 2008-2010 /31/	N/A
EF <sub>CO2,i</sub>	CO <sub>2</sub> emission factor of fossil fuel type i in year y	Yes	Yes, it is in line with the Tool to calculate the emission factor for an electricity system	Yes	ERM CVS validated this by 2006 IPCC Guidelines /32/	N/A
CAP <sub>Total</sub>	Total newly capacity addition exceeds 20% on different power sources connected to the grid	Yes	Yes, it is in line with the Tool to calculate the emission factor for an electricity system	Yes	ERM CVS validated this by checking China Electric Power Yearbook 2008-2010 /30/	N/A
CAP <sub>Thermal</sub>	Newly capacity addition on thermal power sources connected to the grid	Yes	Yes, it is in line with the Tool to calculate the emission factor for an electricity system	Yes	ERM CVS validated this by checking China Electric Power Yearbook 2008-2010 /30/	N/A
EF <sub>Coal,adv,y</sub>	The emission factor of coal-fired power plants with best technology commercially available	Yes	This parameter is not listed in the methodology or tool but is unique to grid emission factor calculations in China	Yes	ERM CVS validated this by checking 2011 Baseline Emission Factors for Regional Power Grids of China /33/	N/A
EF <sub>oil,adv,y</sub>	The emission factor of oil-fired power plants with best technologies commercially available	Yes	This parameter is not listed in the methodology or tool but is unique to grid emission factor calculations in China	Yes	ERM CVS validated this by checking 2011 Baseline Emission Factors for Regional Power Grids of China /33/	N/A
EF <sub>gas,adv,y</sub>	The emission factor of gas-fired power plants with best technologies commercially available	Yes	This parameter is not listed in the methodology or tool but is unique to grid emission factor	Yes	ERM CVS validated this by checking 2011 Baseline Emission Factors for Regional Power Grids of China	N/A



Parameter required as per methodology / tools	Description of the parameter (as per methodology/tools)	Is the parameter included in the PDD?	Title and description in the PDD line with the methodology/tools?	Data unit correctly expressed in PDD?	Value in PDD correct and provides for conservative estimate of Emission Reductions?  How was this validated?	Measurement method correctly described in the PDD (if applicable)
			calculations in China		/33/	

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
7.5.1	Have the parameters required by the methodology / tools been correctly described in the PDD?  Where the methodology provides for selection between different options for data and parameters; is the choice of data and parameters justified?	No. The parameters of Power generation by source, $CAP_{Total}$ , $CAP_{Thermal}$ , $EF_{Coal,Adv.,y}$ , $EF_{Oil,Adv.,y}$ , $EF_{Gas,Adv.,y}$ , $EF_{CO2,1,y}$ etc. that required by the methodology and tools were not correctly described in the PDD. CL 5 was raised for PP to correctly justify the data and parameters. For further details please see the table above.  ERM CVS has checked the revised PDD, confirms that all the parameters required by the methodology and tools are correctly described in the revised PDD. CL 5 is closed.	CL-5	OK

## 7.5.2 Equations and calculations used to calculate emission reductions

The following steps are applied in the PDD to determine emission reductions, in accordance with the methodology and tools applied:

### Baseline emissions

#### Grid emissions factor:

According to the requirement of ACM0002 version 13.0.0, the proposed project applied the steps of the Tool to calculate the emission factor for an electricity system /10/ to calculate the grid emission factor. The grid emission factor is calculated as a combined margin (CM) which is made up of the combination of operating margin (OM) and build margin (BM).

The DNA of the host country has published a delineation of the project electricity system and connected electricity systems /10/, and these delineations are used in the PDD as required by the Tool to calculate the emission factor for an electricity system. The description in the PDD has been checked against the official data published by the authority of China /33/ as correct.

The emission factor of the grid is determined ex-ante for the first 7 years crediting period following the Tool to calculate the emission factor for an electricity system /10/.

The PDD version for the Global Stakeholder Process was published for global consultation on 08 June 2012, and the calculation of the grid emission factor is calculated based on the latest data available at the time of validation. The most recent years (2007-2009) of data available at the time of PDD submission are used based on the China Electric Power Yearbook /30/ and the China Energy Statistical Yearbook /31/, IPCC guidelines /32/ and official data published by authority of China /33/.

#### Operating Margin (OM):

Method (a) (Simple OM) is used. This is appropriate since low-cost/must run resources constitute less than 50% of total grid generation in the average of the five most recent years (2005-2009) /30//31/. The Simple OM emission factor is calculated as the generation-weighted average emissions per electricity unit ( $tCO_2/MWh$ ) of all generating sources serving the system, excluding low operating cost and must-run power plants. The data on fuel consumption and net electricity generation of each power plant /unit in the grid is not publicly available; therefore the simple OM is calculated based on data on the total net electricity generation of all power plants serving the system and the fuel types and total fuel consumption of the project electricity system (option B). Aggregated generation and fuel consumption data are used as more disaggregated data are not available. Low-cost/must run power resources in the grid include only renewable power generation, and the quantity of

electricity supplied to the grid by these sources is known. Off-grid power plants are not included in the calculation. Therefore, Option B is appropriate for calculating the Simple OM emission factor. Net calorific values of each fuel type were obtained from the China Energy Statistical Yearbook /31/, and IPCC 2006 default values /32/ were used for the emission factor of each type of fossil fuel. The values used and the calculation of the simple OM is considered to be reasonable, and is in line with official data published by authority of China /33/. The OM is calculated to be 1.0852 tCO<sub>2</sub>/MWh.

## Build Margin (BM):

Because plant specific fuel consumption and electricity generation data are not publicly available in China, the guidance given by the CDM Executive Board for a deviation from methodology AM0005 /19/ has been applied for calculation of the build margin (BM) emission factor for this project. In accordance with this guidance, the build margin consists of the set of power capacity additions in the electricity system that comprises 20% of the generation capacity (in MW) of the system that have been built most recently, based on the aggregate incrementally installed capacity of all generation sources in year y, and the aggregate incrementally installed capacity of all generation sources in year y-n, where n represents the number of years of historical data that need to be considered in order for the sample group to comprise 20% of the total system generation capacity (in MW). The emissions factor of fossil fuel fired power generation in the grid is calculated using the proportions of GHG emissions from solid, liquid and gaseous fuels in the total GHG emissions related to power generation as the weights, and the emission factors of the most advanced commercial generation technologies available in the host country (as published by the NDRC). Finally, the BM emission factor is calculated as the product of this emission factor of fossil fuel fired power generation and the proportion of fossil fuel fired power plants in the newly installed 20% capacity, based on data for years 2007-2009, contained in the power yearbooks 2008-2010. The sample group of capacity additions reached 23.48% of the total system generation capacity in the period between 2007 and 2009. The BM is calculated as 0.5987 tCO<sub>2e</sub>/MWh.

The OM and BM of the connected regional grid system (NEPG) are calculated based on public and official data from the China Energy Statistical Yearbooks 2008-2010 editions /31/ and the China Electric Power Yearbooks 2008-2010 editions /30/. The weights  $\omega_{OM}$  and  $\omega_{BM}$  are selected as 0.75 and 0.25 respectively for wind power projects according to the Tool to calculate the emission factor for an electricity system /10/. The combined margin is fixed ex-ante for the entire first crediting period.

**Combined Margin (CM):** The combined margin emissions factor is calculated as  $0.75 * EF_{grid,OM,y} + 0.25 * EF_{grid,BM,y} = 0.9635$  tCO<sub>2</sub>/MWh. Therefore baseline emissions are calculated as  $96,576 \text{ MWh} * 0.9635 \text{ tCO}_2/\text{MWh} = 93,051 \text{ tCO}_2\text{e per annum}$ .

The results are consistent with the data 2011 Baseline Emission Factors for Regional Power Grids of China, published by the DNA of China in October 2011 /33/.

## Project emissions

The proposed project is a wind power project. According to the methodology ACM0002 /9/, the project emission is taken as zero.

Therefore, project emissions are not considered in the ex-ante estimation of emission reductions.

## Leakage

There is no leakage emissions considered as per the applied methodology ACM0002 /9/.

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
7.5.2	Has the PP correctly applied all relevant calculations as required by the methodology and associated tools?  Is it fully explained how the procedures provided in the Methodology and applicable Tools are applied by the proposed project activity? (i.e. Are the required steps clearly followed?)	Yes, the PP applied all relevant calculations as required by the methodology and tools. All the equations have been applied correctly; the calculation spreadsheet is correct and traceable.	OK	OK

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
	Where the methodology provides for selection between different options for equations; is every choice of options for calculating project emissions, baseline emissions and leakage offered by the methodology correctly justified in the context of the project activity and baseline scenario?	Yes, ACM0002 provides for selection between different options for equations, the choice of options for calculating project emissions, baseline emissions and leakage offered by the methodology is correctly justified in the context of the project activity and baseline scenario.	OK	OK
	Are the formulae required for the determination of project emissions, baseline emissions and leakage correctly presented in a complete and transparent manner, enabling a complete identification of parameters to be used and / or monitored?	Yes, the calculation of project emissions, baseline emissions and leakage are followed the procedures as per the Tool to calculate the emission factor for an electricity system and ACM0002 and correctly presented in a complete and transparent manner.	OK	OK
	Are detailed calculations provided in a traceable spreadsheet showing relevant information?  Are the tables of emission reductions in the PDD (section A.4.4 and B.6.4) consistent with the calculations?	Yes, detailed calculations provided in a traceable spreadsheet showing relevant information, and the tables of emission reductions in the PDD (section A.4.4 and B.6.4) are consistent with the calculations /4/.	OK	OK
	Can the calculation of emission reductions be replicated using the data and parameters supplied in the PDD?	Yes, the calculation of emission reductions are replicated using the data and parameters contained in the PDD.	OK	OK

## **Conclusion**

ERM CVS confirms that:

As per the VVS paragraph 99, based on the information reviewed and calculations reproduced by the validation team, ERM CVS confirms the following:

- (a) All assumptions and data used by the PPs are listed in the PDD, including their references and sources;
- (b) All documentation used by PPs as the basis for assumptions and the sources of data are correctly quoted and interpreted in the PDD;
- (c) All values used in the PDD are considered reasonable in the context of the proposed CDM project activity;
- (d) The baseline methodology has been applied correctly to calculate project emissions, baseline emissions, leakage and emission reductions;

All estimates of the baseline emissions can be replicated using the data and parameter values provided in the PDD.

## 8 Validation findings – Additionality

As per the VVS sections L.8 to L.13, ERM CVS assessed the PDD to determine whether it clearly describes how the proposed CDM project activity is additional, as supported by sufficient and appropriate evidence. In accordance with decision 3/CMP.1, annex, paragraph 43, a CDM project activity is additional if anthropogenic emissions of greenhouse gases by sources are reduced below those that would have occurred in the absence of the registered CDM project activity.

ERM CVS assessed and verified the reliability and credibility of all data, rationales, assumptions, justifications and documentation provided by PPs to support the demonstration of additionality in order to critically assess the presented evidence, using local knowledge and sectoral and financial expertise. In undertaking this aspect of the validation, ERM CVS considered tools and documents provided by the CDM Executive Board to demonstrate the additionality of proposed CDM project activity, as well as specific complementary or alternative requirements included in the approved CDM methodology. In the sections below, ERM CVS describes all steps taken, and sources of information used, to cross-check the information contained in the PDD on additionality. Where appropriate, we describe how the validation team determined that the documentation assessed is authentic.

### 8.1 Starting date and prior consideration of the CDM

As per VVS section L.9, if the project activity start date is prior to the date of publication of the PDD for stakeholder comments, it shall be demonstrated that the CDM benefits were considered necessary in the decision to undertake the project as a proposed CDM project activity. ERM CVS therefore evaluated the start date of the project activity

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
8.1.1	What is the start date of the project activity? Is this before the publication of the PDD for public comments?	<p>The project activity start date was not indicated in the table B-2 in section B.5, the timeline of the proposed project of the PDD, CL 6 was raised for the PP to correctly state the start date of the project activity.</p> <p>ERM CVS has checked the revised PDD and equipment purchase contract of wind power turbine and generator /22/, confirms that the start date of the project activity was 28 February 2012, which is correctly stated in the table B-2 in section B.5 of the revised PDD. CL 6 is closed.</p> <p>This date is before the publication of the PDD for public comments from 08 June 2012 to 07 July 2012.</p>	CL-6	OK
	<p>Is the start date clearly defined in the PDD in accordance with the "Glossary of CDM terms"?</p> <p>Does the PDD contain a description of how this start date has been determined, and a description of the evidence available to support this start date?</p>	<p>The project activity start date was not indicated in the table B-2 in section B.5, the timeline of the proposed project of the GSP PDD, CL 6 was raised for the PP to correctly state the start date of the project activity.</p> <p>During the validation site visit it was observed that no real action had taken on site. The start date of the project activity is defined as 'the date of main equipment purchase contract was signed' /22/, since this is the earliest date of construction, implementation or real action on the project activity. ERM CVS therefore confirms that the start date of the project activity, reported in the revised PDD, is in accordance with the "Glossary of CDM terms"/53/. The revised PDD contains a description of how the start date was determined and references evidence to support the start date. CL 6 is closed.</p>	CL-6	OK
	If the start date is prior to the publication of the PDD for stakeholder comments, does the PDD provide an implementation timeline of the proposed CDM project activity, in line with the PDD guidelines?	<p>The PDD includes the implementation timeline and relevant key stages such as the dates when the main equipment purchase contract was signed and relevant CDM related activities, such as CDM consulting service contract and notifications for UNFCCC and NDRC. Detailed validation of each individual stage is contained in the table below.</p> <p>However, some information of project and CDM activities were missing or not correctly stated as listed below:</p> <ol style="list-style-type: none"> <li>1. The author of the EIA report was Shenyang Technology Research Institute as validated by ERM CVS on the EIA provided by PP, which is not Liaoning Technology Research Institute;</li> </ol>	CL-6	OK

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
		<p>2. The FSR was completed in December 2011 as validated by ERM CVS on FSR provided by PP, not May 2011 as shown in the PDD;</p> <p>3. The project activity start date is not indicated in table B-2 in section B.5 of the PDD;</p> <p>4. The date of the contract of CDM Consulting Service with COWI China is not indicated table B-2 in section B.5 of the PDD;</p> <p>5. The operation start date is not indicated table B-2 in section B.5 of the PDD.</p> <p>Therefore, CL 6 was raised for the PP to provide full exact information for the implementation timeline.</p> <p>ERM CVS has checked the revised PDD and confirms that the full exact information for the implementation timeline as stated above has been provide in table B-2 in section B.5 of the PDD.</p> <p>CL 6 is closed.</p>		

The timeline of the project is set out in the table below, showing the evidence used to support each step.

	Activity	Date	How has ERM CVS validated this information	Draft OK/ CAR/CL	Final OK/ Not OK
8.1.2	The Environmental Impact Assessment (EIA) was completed.	May 2011	<p>The EIA /3/ has been checked, date and signatures are confirmed. But the institute that prepared the EIA report was Shenyang Technology Research Institute as validated by ERM CVS on the EIA provided by PP, which was not Liaoning Technology Research Institute See CL 6.</p> <p>The name of the institute that prepared the EIA report has been corrected into Shenyang Technology Research Institute, which is in line with the EIA report as confirmed by ERM CVS. CL 6 is closed.</p>	CL-6.	OK
	Feasibility Study Report (FSR) of the project was completed	December 2011	<p>The FSR /2/ has been checked, date and signatures are confirmed. But the FSR was completed in December 2011 as validated by ERM CVS on FSR provided by PP, not May 2011 as shown in the PDD See CL 6.</p> <p>The date of FSR completion has been corrected into December 2011 in the PDD, which is confirmed in line with the FSR by ERM CVS. CL 6 is closed.</p>	CL-6.	OK
	EIA approval	29 December 2011	The EIA approval /3/ has been checked and the date is confirmed.	OK	OK
	Equipment Purchase Contract for Wind Power Turbine Generators signed between Liaoning Guoli Renewable Energy Co., Ltd and CSIC(Chongqing) Haizhuang Windpower Equipment Co., Ltd	28 February 2012	The signed contract /22/ has been checked, date and signatures are confirmed.	OK	OK
	The Contract of CDM Consulting Service between	09 May 2012	The signed contract /20/ has been checked, date and signatures are confirmed. But the date of the contract of	CL-6.	OK

	Activity	Date	How has ERM CVS validated this information	Draft OK/ CAR/CL	Final OK/ Not OK
	Liaoning Guoli Renewable Energy Co., Ltd and COWI China		CDM Consulting Service between Liaoning Guoli Renewable Energy Co., Ltd and COWI China in the table B-2 of the PDD was different from the date of the signed contract See CL 6.  The date of the CDM Consulting Service contract has been corrected into 09 May 2012, which is confirmed by ERM CVS to be consistent with the date of the signed contract. CL 6 is closed.		
	Project notification for China DNA	18 April 2012	The notification /25/ has been checked and the date is confirmed.	OK	OK
	Prior consideration of CDM notification to UNFCCC.	25 April 2012	The notification form /24/ has been checked, date and signatures are confirmed.	OK	OK
	ERPA signed between the Liaoning Guoli Renewable Energy Co., Ltd and Vitol S.A	25 April 2012	ERPA has been checked, date and signatures are confirmed /26/	OK	OK

ERM CVS reviewed the evidence provided for the timeline, and can confirm that the timeline is credible and supported by reliable evidence.

## Conclusion

Based on the evidence provided, ERM CVS confirms that the start date for this project is 28 February 2012. This is before the publication of the PDD for stakeholder comments. The starting date of the project activity is after 02 August 2008. ERM CVS has validated the compliance of the project with the Guidelines on the demonstration and assessment of prior consideration of the CDM provided by the CDM Executive Board (EB 62 Annex 13) as follows.

### 8.1.1 Notification of intent to seek CDM status for the project activity

If the proposed project activity defines a start date on or after 02 Aug 2008, and the PDD has *not* been published for global stakeholder consultation and no new methodology has been proposed to the EB for the specific project before the project activity start date, the following compliance criteria are considered:

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
8.1.3	<p>Have the PPs informed the DNA and UNFCCC secretariat in writing of the commencement of the project activity and of their intention to seek CDM status, within 6 months of the project activity start date?</p> <p>Do the notifications indicate the precise geographic location and provide a brief description of the proposed project using the standardized form F-CDM-Prior Consideration?</p> <p>Have the PPs informed the UNFCCC secretariat of the progress of the project activity every two years subsequent to the initial notification (if</p>	<p>The start date of the proposed project is 28 February 2012, when the main equipment purchase contract was signed:.</p> <p>As per the EB guidelines /18/, the PPs informed the host Party DNA (NDRC) on 18 April 2012 and UNFCCC secretariat on 25 April 2012 /25/ /24/in writing of the commencement of the project activity and of their intention to seek CDM status.</p> <p>ERM CVS has reviewed the notifications /25/ /24/submitted and confirmed the notifications indicate the precise geographic location and provide a brief description of the proposed project using the standardized form F-CDM-Prior Consideration.</p> <p>Less than 2 years have elapsed since the initial notification to UNFCCC, therefore the PPs have not been required to inform the UNFCCC secretariat of progress.</p>	OK	OK

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
	applicable)?			

## **Conclusion**

The PP has informed the Host Party DNA /25/ and the UNFCCC secretariat /24/ in writing of the commencement of the project activity and of their intention to seek CDM status. The notifications were made within six months of the project activity start date. The notifications contain the precise geographical location and a brief description of the proposed project activity. ERM CVS has reviewed the notifications and has confirmed that the information contained matches the project as described in the PDD, and has checked that the standardised form F-CDM-Prior Consideration was used. ERM CVS has validated the authenticity of the notifications by reviewing the list of notifications on the UNFCCC website, and by reviewing the document that was sent to the Host Party DNA which is stamped with the seal of the PPs and the DNA. Therefore it has been demonstrated that the CDM benefits were considered necessary in the decision to undertake the project. The project activity therefore complies with the 'Guidelines on the demonstration and assessment of prior consideration of the CDM'.

### **8.2 Identification of alternatives**

The approved methodology that is selected by the proposed CDM project activity prescribes the baseline scenario and no further analysis is required. The methodology defines the baseline as 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". therefore no further assessment of baseline alternatives is required.

## **Conclusion**

ERM CVS confirms that the baseline is correctly defined in the PDD in line with the methodology.

### **8.3 Investment analysis**

As per VVS section L.11, ERM CVS evaluated the investment analysis presented in the PDD to demonstrate the additionality of the proposed CDM project activity. ERM CVS evaluated whether there is sufficient and reliable evidence to validate that the proposed CDM project activity would not be either:

- the most economically or financially attractive alternative; or
- economically or financially feasible without the revenue from the sale of CERs.

Additionality of the project is demonstrated using the 'Tool for the demonstration and assessment of additionality' version 6.1.0. An investment analysis is used to demonstrate that the project activity is not financially or economically feasible without CER revenues, or is not the most financially or economically attractive option.

The financial analysis was assessed by the validation team, including assessment of the spreadsheet and evidences relating to the input values to the financial analysis. The analysis was also assessed by referring to the latest version of the 'Guidelines on the assessment of investment analysis' ('I.A. Guidelines') by a financial expert assigned by ERM CVS, who has specific expertise in the assessment of financial analysis for CDM projects. The validation of the investment analysis is set out below and in the resolution of CARs and CLs relating to the investment analysis.

#### *8.3.1 Evaluation of Analysis Option*

PPs can choose one of the following approaches:

- **Option I (Simple Cost Analysis):** Used when the proposed CDM project activity and the identified alternatives would produce no financial or economic benefits other than CDM-related income. It involves documentation of the costs associated with the proposed CDM project activity and the alternatives identified and demonstration that there is at least one alternative which is less costly than the proposed CDM project activity;



- **Option II (Investment Comparison Analysis):** Used to compare the rate of return of the project activity (without CDM) and the alternative(s), to demonstrate whether the proposed CDM project activity is less economically or financially attractive than at least one other credible and realistic alternative;
- **Option III (benchmark analysis):** Used to demonstrate that the financial returns of the proposed CDM project activity would be insufficient to justify the required investment, when compared to a benchmark.

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
8.3.1	Has the appropriate option been chosen? (as per the <i>Guidance on the Assessment of Investment Analysis</i> )	The PP has chosen the benchmark analysis, which is appropriate given that the project generates revenues from electricity sales (hence option I, simple cost analysis, is not applicable) and the alternative (continuation of electricity supply by the grid) is not a comparable investment alternative (hence option II, investment comparison analysis, is not applicable). The selection by the PP is in line with the 'Tool for the demonstration and assessment of additionality' /10/ and the 'Guidance on the assessment of investment analysis' /19/.	OK	OK

## Option III evaluation

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
8.3.2	Is benchmark analysis appropriate? ( <i>If the PP has to make an investment, to supply the same outputs and services, and there is at least one other alternative option than building the project activity without CDM, benchmark analysis is not appropriate and investment comparison analysis should be used</i> ).	The project developer has the alternative of making no investment (continuation of the supply of electricity from the existing generation mix operating in the grid). The project developer is not obliged to make an investment to supply the same outputs and services.	OK	OK
	Is the most suitable financial indicator for the project type and decision-making context clearly identified, such as IRR?	Yes. Project IRR after tax is used, and this is consistent with the selected benchmark.  This is also consistent with the method of analysis used in the third party FSR, which was the basis for decision making in the proposed project /2/.	OK	OK

## Conclusion

ERM CVS confirms that the choice of option used for evaluation of the investment analysis is appropriate for this project activity.

### 8.3.2 Evaluation of Benchmark/Discount rate

The assessment used an external source of Benchmark. To confirm the suitability of the benchmark applied in the investment analysis, ERM CVS has

- Determined whether the type of benchmark applied is suitable for the type of financial indicator presented;
- Ensured that any risk premiums applied in determining the benchmark reflect the risks associated with the project type or activity;



- c) Determined whether it is 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 PPs involved and determining whether the same benchmark has been applied or if there are verifiable circumstances that have led to a change in the benchmark.

Details of the validation of the benchmark are provided in the following table:

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
<b>If a Government/officially approved benchmark has been used</b>				
8.3.3 (a)	Is the use of a government/official benchmark appropriate ( <i>i.e. are such benchmarks used for investment decisions for this type of project in the host country?</i> )?	The chosen benchmark is a project IRR established as a suitable rate for this kind of project by the Government of China. According to the official documented source this benchmark should be applied for projects of this type in the host country /35/. The rate is widely used in the country and is a widely accepted reference for investment decisions on electric power projects.  Based on local and sectoral knowledge and on past project experience, the validation team confirms that the benchmark is verifiable and appropriate.	OK	OK
	Is an appropriate benchmark or discount rate value chosen that is relevant for the project activity ( <i>i.e. for this investor, country, risk of project, time of investment decision?</i> )?  Is the benchmark applicable to the project activity and the type of IRR calculation presented ( <i>project or equity IRR; before or after tax?</i> )?	The benchmark is provided by the host country government in the document 'Interim Rules on Economic Assessment of Electrical Engineering Retrofit Projects' /35/, is specific for electric power projects and is widely applied in the host country. The benchmark is specifically applicable to the electric power industry in China, and therefore is suitable for the proposed project. The reference for the benchmark /35/ was issued in 2002 and there is no more recent guidance to replace it.  A project IRR indicator, after tax, is used, which is consistent with the type of benchmark applied, which is a post-tax project IRR benchmark supplied by the relevant national authority/35/.	OK	OK
	Is the benchmark or discount rate based on verifiable publicly available data sources?	Yes. The benchmark is based on a publicly available source 'Interim Rules on Economic Assessment of Electrical Engineering Retrofit Projects' issued in 2002 by the Government of China /35/.	OK	OK
	Is the chosen benchmark appropriate and in line with other benchmarks or discount rates used in current or previous projects by the same or similar investors? ( <i>including the Benchmark or discount rate used in Feasibility Studies or other financial analyses of the project activity</i> )	The chosen benchmark established as a suitable rate for this kind of project by the Government of China. The rate is widely used in the country and is widely accepted as a reference for projects of this type. Based on local and sectoral knowledge, the chosen benchmark is widely applied in investment decisions for similar projects and by similar investors.	OK	OK
<b>If an external benchmark or discount rate has been used:</b>				
8.3.3 (b)	Is the use of an external benchmark appropriate?	N/A	N/A	N/A
	Is the benchmark or discount rate based on publicly available data sources?	N/A	N/A	N/A
	Is the benchmark based on parameters that are standard in the market? (I.A Guideline 13)	N/A	N/A	N/A
	Are the assumptions underlying the referenced benchmark or discount rate	N/A	N/A	N/A

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
	relevant to the sector?			
	Is an appropriate benchmark or discount rate value chosen that is relevant for the project activity ( <i>i.e. for this investor, country, risk of project, time of investment decision</i> )?	N/A	N/A	N/A
	Is the chosen benchmark conservative and in line with other benchmarks or discount rates used in current or previous projects by the same investor? ( <i>including the benchmark or discount rate used in Feasibility Studies or other financial analyses of the project activity</i> )	N/A	N/A	N/A
	Does the benchmark meet the requirements of the investment analysis guidelines paragraph 15, <i>i.e. if the cost of equity is used in the determination of the benchmark, is the cost of equity determined either by:</i> <i>(a) selecting the values provided in Appendix A of the investment analysis guidelines; or by (b) calculating the cost of equity using best financial practices, based on data sources which can be clearly validated?</i>  Are all underlying factors sufficiently justified?	N/A	N/A	N/A
	If the cost of debt is used in the determination of the benchmark, is it calculated as the cost of financing in the capital markets ( <i>e.g. commercial lending rates and guarantees required for the country and the type of project activity concerned</i> ), based on documented evidence from financial institutions with regard to the cost of debt financing of comparable projects? In cases where this data is not available, has the commercial lending rate in the host country been used to calculate the cost of debt? (I.A. Guideline 16)	N/A	N/A	N/A
	Is the debt:equity ratio used to determine the benchmark based on the typical debt/equity finance structure observed in the sector of the	N/A	N/A	N/A

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
	country? <i>If such information is not readily available, 50% debt and 50% equity financing may be assumed as a default.</i> (I.A. Guideline 18)			
<b>If an internal company benchmark or discount rate has been used:</b>				
8.3.3 (c)	<p>Can the project only be implemented by the PP? (<i>Only in the particular case where the project activity can only be implemented by the PP, can the specific financial/economic situation of the company undertaking the project activity can be considered in the financial analysis</i>)</p> <p>Therefore is the use of an internal benchmark or discount rate appropriate in this case?</p>	N/A	N/A	N/A
	<p>Is it sufficiently demonstrated that project activities under similar conditions developed by the same company used the same benchmark or discount rate?</p> <p>Has ERM CVS undertaken a thorough assessment of the financial statements of the PP to assess the past financial behaviour of the entity during at least the last 3 years in relation to similar projects? (I.A. Guideline 14)</p> <p>If the company is brand new, has it been demonstrated that the same benchmark would have been used for similar projects in the same sector in the country/region?</p>	N/A	N/A	N/A
	Is the cost of debt determined in accordance with the guidelines on the assessment of investment analysis, guideline 16?	N/A	N/A	N/A
	<p>Is the cost of equity determined either by: (a) selecting the values provided in Appendix A of the investment analysis guidelines; or by (b) calculating the cost of equity using best financial practices, based on data sources which can be clearly validated?</p> <p>Are all underlying factors</p>	N/A	N/A	N/A

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
	sufficiently justified?  (I.A. Guideline 15)			
	Is the debt:equity ratio in line with Guideline 17 of the Guidelines on the assessment of investment analysis?	N/A	N/A	N/A
<b>Risk Premiums</b>				
8.3.4	Are risk premiums applied in the development of the benchmark or discount rate?  If so, are they reasonable and justified? How has this been validated?	A government benchmark is used and no additional risk premiums are applied.	OK	OK

### 8.3.3 Investment analysis assumptions and Input Values

ERM CVS evaluated the assumptions and input values used in the investment analysis

#### Assumptions based on Feasibility Study Reports (FSR)

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
8.3.5	Has the FSR been the basis of the decision to proceed with the investment in the project? How has this been verified?	The PPs rely on values from a Feasibility Study report (FSR) that is approved by the appropriate national authorities, and therefore ERM CVS has ensured that the FSR has been the basis of the decision to proceed with the investment in the project, i.e. that the period of time between the finalisation of the FSR December 2011 and the investment decision 28 February 2012 /22/ is sufficiently short for ERM CVS to confirm that it is unlikely in the context of the underlying project activity that the input values would have materially changed.	OK	OK
	Are the values used in the PDD and associated annexes valid and consistent with the FSR?	<p>The values used in the financial analysis have been crosschecked with the FSR /2/ and its approval the result is as below:</p> <ul style="list-style-type: none"> <li>● Installed capacity is 48 MW in PDD, consistent with FSR and its approval;</li> <li>● Operating hours with full load is 2,012 hours in PDD, consistent with FSR and its approval;</li> <li>● Electricity delivered to the grid is 96.576 GWh in the PDD and IRR calculation spreadsheet, which is consistent with FSR and its approval; however, 96.58 GWh was shown in the table B-3. See CAR 2;</li> <li>● Power tariff (incl. VAT) is 0.61 RMB / kWh in PDD, consistent with FSR;</li> <li>● Power tariff (excl. VAT) is 0.5214 RMB / kWh in PDD, consistent with FSR;</li> <li>● Total investment is 460,111,900 RMB in PDD, but in the IRR calculation spreadsheet the total investment is 463,278,500 RMB, both were not consistent with 461,838,500 RMB in the FSR and its approval. PP is required to explain how to justify and apply the correct input value of total investment. See CAR 2;</li> </ul>	CAR-2	OK

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
		<ul style="list-style-type: none"> <li>Long term lending rate is 7.05% in PDD, consistent with FSR;</li> <li>Short term lending rate is 6.56% in PDD, which was not sourced from FSR, please clarify the source of this value and how it impacts the IRR of this project, See CAR 2;</li> <li>VAT rate is 17% in PDD, consistent with FSR;</li> <li>VAT reduction rate is 8.5% in PDD, consistent with FSR;</li> <li>Income tax is 25% in PDD, consistent with FSR;</li> <li>Additional urban construction tax is 5% in PDD, consistent with FSR;</li> <li>O&amp;M cost was 13,030,000 RMB in PDD, not consistent with the 13,092,630 RMB on average in the FSR, See CAR 2;</li> </ul> <p>CAR 2 was raised for the PP to justify and correct the input values in PDD and financial analysis calculation sheet accordingly.</p> <p>The parameters of electricity delivered to the grid, total investment cost, short term lending rate and O&amp;M cost have been corrected in the revised PDD and IRR calculator version 02 in consistent with the FSR; this has been confirmed by ERM CVS. CAR 2 is closed.</p>		
	At the time of the investment decision, are the input values from the FSR valid and applicable ( <i>based on specific local and sectoral expertise and knowledge</i> )?	Based on ERM CVS's local and sectoral knowledge, the values in the approved third party FSR are valid and applicable at the time of investment decision. The values have been cross checked against other sources as described below.	OK	OK

## Input values used in the investment analysis

As per VVS paragraph 120 (a to c) ERM CVS has conducted a thorough assessment of all parameters and assumptions used in calculating the relevant financial indicator, and determined the accuracy and suitability of these parameters using the available evidence and expertise in relevant accounting practices. ERM CVS has cross-checked the parameters against third-party or publicly available sources, such as contracts or price indices where available, and has reviewed feasibility reports, where available, related to the proposed CDM project activity and the PPs. Details of the validation activities and cross checks carried out are set out as follows:

	Input parameter	Validation (source of the value used in the PDD financial analysis, including justification and substantiation of information, data and evidence)	Cross check (cross check of parameter against other sources or sectoral/financial knowledge, including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
<b>Technical assumptions</b>					
8.3.6	Electricity delivered to the grid (load factor) – 96,576 MWh	The amount of annual electricity generation in the IRR calculation spreadsheet is sourced from the FSR /2/.	<p>The amount of annual electricity generation in the IRR calculation spreadsheet and PDD is cross checked against FSR and FSR approval /2/. Inconsistency was identified in the PDD, please see CAR 2.</p> <p>ERM CVS has checked the revised PDD and IRR calculation</p>	CAR-2	OK

	Input parameter	Validation (source of the value used in the PDD financial analysis, including justification and substantiation of information, data and evidence)	Cross check (cross check of parameter against other sources or sectoral/financial knowledge, including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
			<p>spreadsheet version 02, and confirms that the amount of annual electricity generation in the IRR calculation spreadsheet and the revised PDD has been corrected to 96,576 MWh in consistent with FSR and FSR approval /2/.</p> <p>The electricity delivered to the grid equals to load factor * installed capacity * 8760 hours. The load factor of the project is 22.97%, is within the range of 20.90% (Ref.4067) to 26.53% (Ref.4842) amongst registered similar projects in Liaoning province, which is considered reasonable based on ERM CVS's local, sectoral and financial knowledge.</p> <p>Please find the list of all projects used for this cross-check in A.2 in Appendix A.</p> <p>CAR 2 is closed.</p>		
	Project operational lifetime (assessment period) – 20 years plus 1 year for construction	The project lifetime is sourced from the FSR /2/; it contains 1 year of construction and the 20 years of operation lifetime of the project which is consistent with the PDD.	The operational lifetime is cross checked against FSR /2/ and Specification on technical data of the wind turbine by the equipment manufacturer /21/, the value is confirmed to be consistent. Based on ERM CVS's local, sectoral and financial knowledge, the operational lifetime of the proposed project is reasonable.	OK	OK
<b>Costs</b>					
8.3.7	Investment costs	Total investment is 460,111,900 RMB in PDD, but in the IRR calculation spreadsheet the total investment is 463,278,500 RMB, both are not consistent with 461,838,500 RMB in the FSR and its approval. PP is required to explain how to justify and apply the correct input value of total investment. See CAR 2.	<p>The investment cost in the IRR calculation spreadsheet and PDD is cross checked against FSR and FSR approval /2/. Inconsistency was identified, please see CAR 2.</p> <p>ERM CVS has checked the revised PDD and IRR calculation spreadsheet version 02, and confirms that the amount of total investment in the IRR calculation spreadsheet and PDD has been corrected to 461,838,500RMB in consistent with FSR and FSR approval /2/.</p> <p>The static total investment of the project is 461,838,500 RMB, and the unit investment of the proposed project calculates as 9622RMB/kW. This unit investment is within the range of 8,065 RMB/kW (Ref.4195) to 11,634 RMB/kW (Ref.4367) amongst registered similar projects in</p>	CAR-2	OK

	Input parameter	Validation (source of the value used in the PDD financial analysis, including justification and substantiation of information, data and evidence)	Cross check (cross check of parameter against other sources or sectoral/financial knowledge, including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
			<p>Liaoning province, which is considered reasonable based on ERM CVS's local, sectoral and financial knowledge.</p> <p>Please find the list of all projects used for this cross-check in A.2 in Appendix A.</p> <p>CAR 2 is closed.</p>		
	Annual O&M cost	O&M cost is 13,030,000 RMB in PDD, not consistent with the 13,135,700 RMB on average in the FSR. See CAR 2.	<p>The O&amp;M cost in the IRR calculation spreadsheet and PDD is cross checked against FSR /2/. Inconsistency was identified, please see CAR 2.</p> <p>ERM CVS has checked the revised PDD and IRR calculation spreadsheet version 02, and confirms that the annual O&amp;M cost in the IRR calculation spreadsheet and PDD has been corrected to 13,135,700 RMB in consistent with FSR and FSR approval /2/.</p> <p>The rate of annual O&amp;M costs/ total static investment of 2.8% is within the range of 1.8% (Ref.3934) –4.8% (Ref.4195) amongst registered similar projects in the same region - Liaoning province, which is considered reasonable based on ERM CVS's local, sectoral and financial knowledge.</p> <p>Please find the list of all projects used for this cross-check in A.2 in Appendix A.</p> <p>CAR 2 is closed.</p>	CAR-2	OK
<b>Revenues</b>					
8.3.8	Are all potential sources of revenue accounted for in the analysis?	Yes, all the revenues have been included in the analysis, which includes the income of electricity sale, residual value and the recovery of current assets, which was validated to be consistent with the FSR.	This is confirmed with ERM CVS's local expertise and knowledge.	OK	OK
	Electricity delivered to the grid – 96,576 MWh	Electricity delivered to the grid is derived from the FSR /2/.	<p>The amount of annual electricity generation in the IRR calculation spreadsheet and PDD is cross checked against FSR and FSR approval /2/. Inconsistency was identified in the PDD, please see CAR 2.</p> <p>ERM CVS has checked the revised PDD and IRR calculation</p>	CAR-2	OK

	Input parameter	Validation (source of the value used in the PDD financial analysis, including justification and substantiation of information, data and evidence)	Cross check (cross check of parameter against other sources or sectoral/financial knowledge, including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
			<p>spreadsheet version 02, and confirms that the amount of annual electricity generation in the revised IRR calculation spreadsheet and PDD has been corrected to 96,576 MWh in consistent with FSR and FSR approval /2/.</p> <p>The annual power generation equals to load factor * installed capacity * 8760 hours. The load factor was determined in the FSR/2/ by a qualified third party /28/, in line with the 'Guidelines for the reporting and validation of plant load factors' /11/.</p> <p>The load factor of the project is 22.97%, is within the range of 20.90% (Ref.4067) to 27.98% (Ref.4909) amongst registered similar projects in Liaoning province, which is considered reasonable based on ERM CVS's local, sectoral and financial knowledge.</p> <p>Please find the list of all projects used for this cross-check in A.2 in Appendix A.</p> <p>CAR 2 is closed.</p>		
	Electricity tariff – RMB 0.61 p/kWh incl. VAT	Electricity tariff is derived from the FSR /2/.	<p>Electricity tariff in IRR calculation spreadsheet and PDD are cross checked against FSR /2/.</p> <p>This is consistent with the highest approved tariff in the Liaoning region according to the EB Information Note /16/.</p> <p>The tariff is also applied consistently throughout the assessment period with the guided tariff for wind power that issued by China NDRC /45/.</p>	OK	OK
<b>Taxes and subsidies (if applicable)</b>					
8.3.9	Are there any policies, subsidies, incentives, grants, tax breaks etc that apply to any of the alternatives? Are these incorporated in the analysis?	<p>The following have been applied in the analysis:</p> <ul style="list-style-type: none"> <li>Input VAT suffered on the purchase of fixed assets is later reclaimed against future output VAT payable</li> <li>Once the above is fully reclaimed, 50% of output VAT is repaid to the project and treated as a revenue</li> <li>Losses are carried forward</li> </ul>	Implementation Regulations of the People's Republic of China Enterprise Income Tax Law /34/ have been cross checked, the regulation is published by the central government and applicable to the project activity.	OK	OK



	Input parameter	Validation (source of the value used in the PDD financial analysis, including justification and substantiation of information, data and evidence)	Cross check (cross check of parameter against other sources or sectoral/financial knowledge, including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
		to offset against future profits for the calculation of income tax			
	Income tax rate	25%, referenced to the FSR.	<p>The validation team checked the Enterprise Income Tax Law of the People's Republic of China which is issued on 16 March 2007 and in effective since 01 January 2008 /34/. The consistency of applying the Law is confirmed.</p> <p>Therefore, it is confirmed by ERM CVS that the income tax rate is valid and applicable at the time of investment analysis.</p>	OK	OK
	Value added tax (VAT) for electricity	17%, referenced to the FSR.	<p>VAT in IRR calculation spreadsheet and PDD are cross checked against FSR /2/.</p> <p>The validation team checked the Interim Regulation of the People's Republic of China on Value Added Tax issued by the State Council in November 2008 /36/. The VAT rate of the project 17% is consistent with the Regulation.</p> <p>ERM CVS also checked the Notice of the Value Added Tax on Products Using Comprehensive Resources and Other Products (Finance &amp; Tax [2008] No.156) issued by Ministry of Finance and the State Administration of Taxation /37/, and confirms the VAT rebate of the project (50% VAT is refunded) is compliance with the China regulation.</p> <p>Therefore, it is confirmed by ERM CVS that the VAT rate and VAT refund is valid and applicable at the time of investment analysis.</p>	OK	OK
	City maintenance & construction tax	5% of VAT, referenced to the FSR.	<p>The validation team checked Interim Provision on the City Maintenance and Construction Tax issued in 1985 /39/. The consistency of applying the Provision is confirmed. The tax rate is mandatory in China and applicable since 1985.</p> <p>Therefore, it is confirmed by ERM CVS that the rate of City maintenance &amp; construction tax is valid and applicable at the time of investment analysis.</p>	OK	OK
	Educational surtax	Education surtax is 5% in PDD, referenced to the FSR.	According to Decision on the revision of the "Provisional Regulations of Levying Education Surtax", issued by	OK	OK

	Input parameter	Validation (source of the value used in the PDD financial analysis, including justification and substantiation of information, data and evidence)	Cross check (cross check of parameter against other sources or sectoral/financial knowledge, including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
			State Council, the unified national educational surtax imposed by the state council is fixed at 3%. Besides, the Ministry of Finance of P. R. China issued Notification on Integrate the Issues of Local Education Surtax Policy in November 2010 and stated that a 2% additional education surtax could be levied locally. According to Notification on Local Education Surtax Standard by Liaoning Provincial Government, the local educational surtax in Liaoning province after 31 January 2011 could add another 2% /40/; therefore the 5% educational surtax is deemed to be reasonable.		

## 8.3.4 Investment analysis calculations

As per VVS paragraph 120(d) ERM CVS has assessed the correctness of computations carried out and documented by the PPs as follows:

### Spreadsheet evaluation

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
8.3.10	<p>Has the PP supplied unprotected and traceable spreadsheet versions of all investment analysis?</p> <p>Have the listed input values been consistently applied in all calculations?</p> <p>Are the computations/ formulae correct? (this includes the computations implicit in input values, such as technical calculations of the amount of energy demanded or sold etc)</p> <p>From the investment analysis provided, is it possible to reproduce the results?</p>	<p>The PP has supplied unprotected and traceable spreadsheet versions of all investment analysis. However, the calculation of 'Reparation of previous loss' (row 14 of the 'C4 Loss and profits distributio' tab) was not consistent with Chinese tax law, which states that losses can be carried forward for up to 5 years. Please make the analysis consistent with the relevant tax legislation. See CAR 3</p> <p>The electricity delivered to the grid, the total investment and the O&amp;M cost were not consistently applied in all calculations, see CAR 2.</p> <p>ERM CVS has checked the revised PDD and IRR calculation spreadsheet version 02, and confirms that the mistake of calculation of 'Reparation of previous loss' (row 14 of the 'C4 Loss and profits distributio' tab) in the IRR calculation spreadsheet and PDD has been corrected.</p> <p>The unprotected and traceable spreadsheet version 02 of all investment analysis has been provided, the listed input values been consistently applied in all calculations, the computations/ formulae are correct from the investment analysis provided, and the results are reproducible.</p> <p>CAR 3 is closed.</p>	CAR-3	OK

## Depreciation and residual value

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
8.3.11	Is any residual value of the project activity assets included in the analysis?  Are residual value assumptions reasonable and justified and consistent with local accounting rules/international best practice/industry experience?	Residual value of 3% of fixed asset value is included in the analysis. The residual value rate is included as income in the cash flow at the end of the period, which is considered to be in accordance with the host country accounting regulations - Enterprise Income Tax Law of the People's Republic of China issued on 16 March 2007 /34/.	OK	OK
	Is the depreciation consistent with the assessment period and the residual value?  Are depreciation costs/ periods consistent with local accounting regulations?	Assets are depreciated over 12 years in consistence with the FSR /2/; the depreciation is consistent with the residual value of the assets.  The validation team checked the Implementation Rules for Law of the People's Republic of China on Enterprise Income Tax which in effect from 01 January 2008 /38/. The consistency of applying the Law is confirmed.  Therefore, it is confirmed by ERM CVS that the Depreciation rate is valid and applicable at the time of investment analysis.	OK	OK
	Is depreciation correctly accounted for?  (Depreciation costs (and other non-cash items) related to the project activity should be <u>excluded (not deducted)</u> from net Cash Flow used for calculating the financial indicator (e.g. IRR, NPV). Depreciation is relevant only for the calculation of income tax.)	Yes, only the fixed assets including buildings and equipment are subject to depreciation in the calculations.  Depreciation costs are excluded from the cash flow and are only included for the purposes of determining income tax.	OK	OK

## Taxation and interest

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
8.3.12	Is the treatment of taxation consistent with the chosen benchmark or discount rate? (i.e. taxation should only be treated as an expense in the IRR/NPV calculation if the chosen benchmark or discount rate is intended for post-tax calculations?)	Yes, the treatment of taxation is consistent with the chosen benchmark. Both the investment analysis and the benchmark are post-tax, and interest costs are included only for tax calculation purposes, in line with the Guidance on the Assessment of Investment Analysis.	OK	OK
	For post-tax benchmarks or discount rates :  ▪ Are interest costs included in the calculation of net taxable income	A post-tax benchmark is applied.  a. Interest costs are not deducted from Net Cash Flow in the calculation of project IRR /4/. They are only used for the calculation of income tax.  b. Interest payments are correctly accounted for in line with the Guidance on the	OK	OK

	<p>and thus tax?</p> <ul style="list-style-type: none"> <li>Are interest costs calculated in accordance with the <i>Guidance on the Assessment of Investment Analysis</i>?</li> </ul>	Assessment of Investment Analysis.		
	<p><i>If a <b>Project IRR</b> has been used:</i> Are the costs of financing expenditures excluded from the calculation of Project IRR? (<i>financing costs should not be deducted from Net Cash Flow</i>)</p> <p><i>If an <b>Equity IRR</b> has been used:</i> Is the debt portion of the investment cost excluded as a cash outflow and the interest costs and principal repayments included as costs?</p>	A project IRR has been used. The costs of financing expenditures are not deducted from the net cash flow /4/.	OK	OK

## **Recommended projects (Project activities where an investment decision was taken but implementation subsequently ceased)**

The project is not a recommended project (i.e. an investment decision was taken but the implementation of the project subsequently ceased, and then re-started due to consideration of the CDM benefits).

## **Sensitivity analysis**

A sensitivity analysis has been carried out to demonstrate the impact on the IRR of variations in the key input values to the financial analysis in accordance with the *Guidelines on the assessment of investment analysis* /18/. All costs and revenues greater than or equal to 20% of total costs / revenues have been included in the analysis. The variation in each parameter needed in order for the IRR to reach the benchmark, and the likelihood of such variations taking place, are explained in the PDD. As per VVS paragraph 120(e) ERM CVS has assessed the sensitivity analysis by the PPs to determine under what conditions variations in the result would occur, and the likelihood of these conditions. ERM CVS has reviewed the calculations for the sensitivity analysis which are presented in the IRR Spreadsheet /4/ and checked whether the computations are reproduced as correct and consistent with the information presented in the PDD.

The findings of the validation of sensitivity analysis are set out below.

	Parameters ≥ 20% of costs or revenues (list all)	Is the parameter included in the PDD sensitivity analysis?	Is the sensitivity analysis correctly calculated and traceable?	Is the degree of variation reasonable ?	Validation of why such variation is considered unlikely, based on evidence	Draft conclusion [OK/ CAR / CL]	Final conclusion [OK/Not OK]
8.3.14	Static investment	Yes	Yes	Yes	As per VVS paragraph 120(e), the sensitivity analysis is required to be assessed by the PP to determine under what conditions variations in the result would occur, and the likelihood of these conditions, which were missing from the PDD. CAR 4 was raised for the PP to justify how the sensitivity analysis in the PDD meets the CDM requirement, and substantiate the	CAR 4	OK

	Parameters ≥ 20% of costs or revenues (list all)	Is the parameter included in the PDD sensitivity analysis?	Is the sensitivity analysis correctly calculated and traceable?	Is the degree of variation reasonable ?	Validation of why such variation is considered unlikely, based on evidence	Draft conclus ion [OK/ CAR / CL]	Final conclus ion [OK/Not OK]
					<p>results with evidence.</p> <p>ERM CVS has checked the revised PDD and IRR calculation spreadsheet version 02, and confirms that the variations in the sensitivity analysis cover a range of +10% and -10%, this is in line with the Guidelines on the Assessment of Investment Analysis /18/.</p> <p>When the total investment decreases by 10.11%, the Project IRR reaches the benchmark. According to the China Statistical Bureau, China's Consumer Price Index (CPI) and Producer Price Index (PPI) have kept increasing since December 2009; the CPI and PPI in 2010 were 3.3% and 5.5%, and in 2011 is 5.4% and 6.0% respectively /48/, which indicated that the investment cost is increasing.</p> <p>Besides, at time of validation, the project has not started construction, only the Equipment purchase contract of wind power turbine and generator/22/ was signed. ERM CVS has reviewed the equipment cost in the contract against the investment plan in the FVR, and confirms that the actual investment of the turbine and generators is 212 million RMB, 10.4% higher than the 192 million RMB that planned in the FSR.</p> <p>Therefore, it is unlikely for the investment to decrease by 10.11% and the IRR reach the benchmark.</p> <p>CAR 4 is closed.</p>		
	O&M costs	Yes	Yes	Yes	<p>As per VVS paragraph 120(e), the sensitivity analysis is required to be assessed by the PP to determine under what conditions variations in the result would occur, and the likelihood of these conditions, which were missing from the PDD. CAR 4 was raised for the PP to justify how the sensitivity analysis in the PDD meets the CDM requirement, and substantiate the results with evidence.</p> <p>ERM CVS has checked the revised PDD and IRR calculation spreadsheet version 02, and confirms that the variations in the sensitivity analysis cover a range of +10% and -10%, this is in line with the Guidelines on the Assessment of Investment Analysis /18/.</p> <p>Only when the annual O&amp;M cost has a drop of 40.14%, can the project IRR reach the benchmark rate. However, According to the China Statistical Bureau, China's Consumer Price Index (CPI) and Producer Price Index (PPI) have kept increasing since December 2009; the CPI and PPI in 2010 were 3.3%</p>	CAR 4	OK

	Parameters ≥ 20% of costs or revenues (list all)	Is the parameter included in the PDD sensitivity analysis?	Is the sensitivity analysis correctly calculated and traceable?	Is the degree of variation reasonable ?	Validation of why such variation is considered unlikely, based on evidence	Draft conclus ion [OK/ CAR / CL]	Final conclus ion [OK/Not OK]
					and 5.5%, and in 2011 is 5.4% and 6.0% respectively /48/; therefore it is considered highly unlikely that the O&M costs decreases significantly (40.14%) to an extent that the benchmark will be reached. CAR 4 is closed.		
	Power tariff	Yes	Yes	Yes	<p>As per VVS paragraph 120(e), the sensitivity analysis is required to be assessed by the PP to determine under what conditions variations in the result would occur, and the likelihood of these conditions, which were missing from the PDD. CAR 4 was raised for the PP to justify how the sensitivity analysis in the PDD meets the CDM requirement, and substantiate the results with evidence.</p> <p>ERM CVS has checked the revised PDD and IRR calculation spreadsheet version 02, and confirms that the variations in the sensitivity analysis cover a range of +10% and -10%, this is in line with the Guidelines on the Assessment of Investment Analysis /18/.</p> <p>When the power tariff increases by 10.74%, the IRR reaches the benchmark. The validation team checked the latest electricity tariff regulations issued by the NDRC of China /45/ and confirmed that the power tariff of wind project is regulated based on four divided resource areas in China. The tariff of Liaoning province falls to the category IV area and the regulated tariff is 0.61 RMB/kWh. ERM CVS also checked the information note on the highest tariffs applied by the EB /16/ and confirms that the power tariff of 0.61 RMB/kWh in the PDD is consistent with the highest tariff in Liaoning province in the information note. Hence, it is not likely the electricity tariff to increase by 10.74%. CAR 4 is closed.</p>	CAR-4	OK
	Power supplied to the Grid	Yes	Yes	Yes	<p>As per VVS paragraph 120(e), the sensitivity analysis is required to be assessed by the PP to determine under what conditions variations in the result would occur, and the likelihood of these conditions, which were missing from the PDD. CAR 4 was raised for the PP to justify how the sensitivity analysis in the PDD in line with the CDM requirements, and substantiate the results with evidence.</p> <p>ERM CVS has checked the revised PDD and IRR calculation spreadsheet version 02, and confirms that the variations in the sensitivity analysis cover a range of +10% and -10%, this is in line with the Guidelines on the Assessment of Investment Analysis /18/.</p> <p>Only when the annual electricity output increases by 10.74%, can the project IRR reach the benchmark rate. The data is</p>	CAR-4	OK

	Parameters ≥ 20% of costs or revenues (list all)	Is the parameter included in the PDD sensitivity analysis?	Is the sensitivity analysis correctly calculated and traceable?	Is the degree of variation reasonable ?	Validation of why such variation is considered unlikely, based on evidence	Draft conclus ion [OK/ CAR / CL]	Final conclus ion [OK/Not OK]
					<p>sourced from FSR /2/, and based on on-site wind data measurements from 01 June 2010 to 31 May 2011 and the almost 30 years' weather statistical data provided by local meteorological station from 1980 to 2009. The operational hours is calculated according to the Methodology of Wind Energy Resource Assessment for Wind Farm that published by authority (GB/T18710-2002) by certified design institute/28/. Power generation in wind projects is highly dependent on the wind availability and it is to be noted that wind resource may vary from year to year and therefore, it is unlikely for the power supply to the Grid to increase by 10.74% throughout the operational lifetime to reach the benchmark.</p> <p>CAR 4 is closed.</p>		

### **Investment analysis conclusion**

On the basis of its specific local and sectoral expertise, ERM CVS has confirmed that the input values to the investment analysis are valid and applicable at the time of the investment decision.

The PDD presents the key input parameters and results of the IRR of the project, and ERM CVS assessed the correctness of computations carried out by the PPs by reproducing the results using the IRR calculation spreadsheet /4/.

The validation team confirms that the calculations are correct, traceable, and consistent with the results of the FSR.

All input values used in the spreadsheet are consistent with the PDD and the FSR /1//2//4/ and the calculation is in line with the Guidelines on the Assessment of Investment Analysis, and is considered reasonable on the basis of ERM CVS's local and sectoral expertise and financial knowledge.

The project IRR calculated in the PDD and the spreadsheet is in line with the results of the FSR /1//2//4/. The IRR of the project without CDM income is well below the benchmark of 8%, and hence it can be concluded that the project is additional.

### **8.4 Barrier Analysis**

Barrier analysis has not been used to demonstrate the additionality of the proposed CDM project activity.

### **8.5 Common practice analysis**

The proposed project activity is a large-scale project and therefore common practice analysis has been carried out as a credibility check of the other available evidence used by the PPs to demonstrate additionality. This is a test to complement the investment analysis (Step 2 of the additionality tool) to confirm that the project activity is not widely observed and commonly carried out in the region.

The project applies the additionality tool version 06.1.0. For measures covered in paragraph 6 of the tool, common practice analysis should be carried out in accordance with the requirements of paragraph 47 of the tool. The project falls under the measures listed in paragraph 6 since it involves (b) Switch of technology with or without change of energy source (including energy efficiency improvement as well as use of renewable energies). ERM CVS used its local and sectoral expertise to assess compliance with the common practice requirements of the tool for the demonstration and assessment of additionality, paragraph 47. The tool requires the following:

Step 1: Calculate applicable output range as +/-50% of the design output or capacity of the proposed project activity.

Step 2: In the applicable geographical area, identify all plants that deliver the same output or capacity, within the applicable output range calculated in Step 1, as the proposed project activity and have started commercial operation before the start date of the project. Note their number  $N_{all}$ . Registered CDM project activities and projects activities undergoing validation shall not be included in this step;

Step 3: Within plants identified in Step 2, identify those that apply technologies different that the technology applied in the proposed project activity. Note their number  $N_{diff}$ .

Step 4: Calculate factor  $F=1-N_{diff}/N_{all}$  representing the share of plants using technology similar to the technology used in the proposed project activity in all plants that deliver the same output or capacity as the proposed project activity.

The proposed project activity is a "common practice" within a sector in the applicable geographical area if both the following conditions are fulfilled:

(a) the factor F is greater than 0.2, and

(b)  $N_{all}-N_{diff}$  is greater than 3.

## 8.5.1 Consideration of whether the project activity is 'first-of-its-kind'

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
8.5.1	Is the proposed project activity described a 'first of its kind'?  If so, does the project comply with the 'Guidelines on additionality of first-of-its-kind project activities'?	Not applicable.	N/A	N/A

## 8.5.2 Geographical scope of the common practice analysis

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
8.5.2	Is the applicable geographical area of the common practice analysis appropriate for the assessment related to the project activity's technology or industry type?  If a region other than the host country is chosen, is this appropriate?	The geographical scope of the analysis (i.e. the defined region) is determined as Liaoning province.  This is considered appropriate for the project type and industry because the People's Republic of China administers 33 province-level divisions, including 22 provinces, 5 autonomous regions, 4 municipalities, and 2 special administrative regions. A province is a first-level administrative subdivision of the People's Republic of China. . The development policies and investment environment for projects in each province of China are not same; Liaoning Province is considered to be a geographical area with comparable investment environment and therefore is selected for geographical boundaries of common practice analysis.	OK	OK

## 8.5.3 Comparison with similar and operational projects

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
--	----------	---	------------------------	------------------------



	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
8.5.3	<p>In the applicable geographical area, has the PP identified all plants that deliver the same output or capacity, within the applicable output range, that started commercial operation before the starting date of the project?</p> <p>How have we validated the data sources, including that the list includes all relevant plants?</p>	<p>The PP has defined the similar scale as the capacity range of +/-50% (24~72MW) of the proposed project activity.</p> <p>However, the Step 4: Common practice analysis in the section B.5 of PDD was not fully consistent with "Tool for the demonstration and assessment of additionality (version 06.1.0)". See CAR 5</p> <p>ERM CVS has checked the revised PDD, and confirms that the latest version of the 'Tool for the demonstration and assessment of additionality' is applied in the PDD.</p> <p>The similar projects were chosen in Liaoning province from projects that have started commercial operation before the start date of the project (28 February 2012), and after 2002 since there was a significant reform in year 2002 on the electric power sector conducted by the State Council /42/. Under the reform enacted in 2002, the China power industry started to create a market-driven structure by separating power generation from transmission and distribution (the grid), and the market conditions for renewable energy project development has changed significantly after 2002. So it is deemed to be reasonable and acceptable.</p> <p>China Electric Power Yearbook/30/ and China Wind Farm Installation Capacity Statistic /44/, which are official publication of the Government of China, and Information on the UNFCCC website are applied as reference for common practice analysis, which can be regarded as an independent and reliable source.</p> <p>Registered CDM projects or projects seeking CDM status are not included in the analysis.</p> <p>CAR 5 is closed.</p>	CAR-5	OK
	Has the PP correctly identified those plants that apply technologies different that the technology applied in the proposed project activity?	<p>The Step 4: Common practice analysis in the section B.5 of PDD was not fully consistent with "Tool for the demonstration and assessment of additionality (version 06.1.0)". See CAR 5</p> <p>ERM CVS has checked the revised PDD, and confirms that the latest version of the 'Tool for the demonstration and assessment of additionality' is applied in the revised PDD.</p> <p>The projects for common practice are divided the plants into two categories, <math>N_{all \text{ wind power plants}}</math> and <math>N_{all \text{ other power plants}}</math></p> <p><math>N_{all \text{ other power plants}}</math> identified above have different energy source from wind power.</p> <p>As per the Installed Capacity of Wind Farms in China 2007-2011 /44/, China Electric Power Yearbook (2011)/30/ and information on the UNFCCC website, it is known that all the wind power projects in Liaoning are seeking help from applying CDM.</p> <p><math>N_{all} = 0 + N_{all \text{ other power plants}} = N_{all \text{ other power plants}}</math></p> <p><math>N_{diff}</math> is identified as all the other power plants within the capacity of 24~72MW located in Liaoning Province. <math>N_{diff} = N_{all \text{ other power plants}}</math>.</p> <p>CAR 5 is closed.</p>	CAR-5	OK
	<p>Has the PP correctly calculated the factor F, in accordance with the requirements of the tool?</p> <p>Is the project activity common</p>	<p>The Step 4: Common practice analysis in the section B.5 of PDD was not fully consistent with "Tool for the demonstration and assessment of additionality (version 06.1.0)". See CAR 5</p> <p>ERM CVS has checked the revised PDD, and confirms that the latest version of the 'Tool for the demonstration and assessment of additionality' is applied in the</p>	CAR-5	OK

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
	practice (The proposed project activity is a common practice within a sector in the applicable geographical area if both the following conditions are fulfilled: (a) the factor F is greater than 0.2, and (b) $N_{all} - N_{diff}$ is greater than 3)?	<p>PDD.</p> <p>Based on the above (<math>N_{all}=N_{diff}</math>) and the tool /9/:</p> <p>Factor F is determined as <math>1 - N_{all}/N_{diff} = 0 &lt; 0.2</math>; and <math>N_{all} - N_{diff} = 0 &lt; 3</math>.</p> <p>The proposed project is therefore not common practice.</p> <p>CAR 5 is closed.</p>		
	Has the PP provided documented evidence and, where relevant, quantitative information to support the analysis?	<p>The Step 4: Common practice analysis in the section B.5 of PDD was not fully consistent with "Tool for the demonstration and assessment of additionality (version 06.1.0)". See CAR 5</p> <p>ERM CVS has checked the revised PDD, and confirms that the latest version of the 'Tool for the demonstration and assessment of additionality' is applied in the PDD.</p> <p>The data source and references used to identify similar projects are stated as the Installed Capacity of Wind Farms in China 2007-2011 /44/, China Electric Power Yearbook (2006-2011)/30/ and information on the UNFCCC website, in the PDD which was deemed to be reasonable and acceptable.</p> <p>CAR 5 is closed.</p>	CAR-5	OK

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
8.5.4	Overall, has it been demonstrated that the proposed CDM project activity is not common practice?	<p>The Step 4: Common practice analysis in the section B.5 of PDD was not fully consistent with "Tool for the demonstration and assessment of additionality (version 06.1.0)". See CAR 5</p> <p>ERM CVS has checked the revised PDD, and confirms that the latest version of the 'Tool for the demonstration and assessment of additionality' is applied in the PDD.</p> <p>As <math>N_{all}</math> is equal to <math>N_{diff}</math> for this proposed project, the factor F is less than 0.2 and <math>N_{all} - N_{diff}</math> is less than 3. It has been demonstrated in the PDD that the proposed project is not common practice.</p> <p>CAR 5 is closed.</p>	CAR-5	OK

## Common Practice Conclusion

The proposed project is not claimed to be the first-of-its kind, therefore common practice analysis has been carried out as a credibility check to complement the demonstration of additionality to confirm that the project activity is not widely observed and commonly carried out in the region. ERM CVS has validated that:

- a) The geographical scope of the common practice analysis is justified;
- b) An assessment of the existence of similar projects has been undertaken by the PPs and validated by ERM CVS
- c) The project complies with the requirements of the Tool for the demonstration and assessment of additionality

- 
- d) The proposed project activity is not common practice.

## 9 Validation Findings - Monitoring Plan and Other issues

ERM CVS evaluated the monitoring plan for the proposed project to ensure that it is based on the approved monitoring methodology that has been applied. As per the VVS section L.14, ERM CVS applied a two-step process, based on review of the documented procedures, interviews with relevant personnel, project plans and any physical inspection, to assess:

- a) *Compliance of the monitoring plan with the approved methodology*:
  - (i) By means of document review, identify the list of parameters required by the selected approved methodology;
  - (ii) Confirm that the monitoring plan contains all necessary parameters, that they are clearly described and that the means of monitoring described in the plan complies with the requirements of the methodology.
- b) *The Implementation of the monitoring plan*, taking into account:
  - (i) Whether the monitoring arrangements described in the monitoring plan are feasible within the project design;
  - (ii) Whether the means of implementation of the monitoring plan, including the data management and quality assurance and quality control procedures, are sufficient to ensure that the emission reductions achieved by/resulting from the proposed CDM project activity can be reported ex post and verified.

### 9.1 Compliance of the monitoring plan with the approved methodology

The monitoring plan in the PDD includes all parameters necessary for monitoring of this type of project in accordance with the approved methodology that has been applied for this project. The parameters are clearly described and the means of monitoring described in the plan complies with the requirements of the methodology.

#### 9.1.1 Completeness of monitoring parameters

The monitoring parameters required by the methodology and applicable tools for this type of project are:

Parameter Name	Parameter Description	Is the parameter appropriately included in the Monitoring Plan? (including justification and substantiation of information, data and evidence and explanation if any are excluded from the monitoring plan)
EG <sub>facility,y</sub>	Quantity of net electricity generation supplied by the project plant/unit to the grid in year y	The parameter is appropriately described, which is quantity of net electricity generation supplied by the project plant/unit to the NEPG in year y.
EG <sub>im, y</sub>	Electricity imported from the grid by the project activity in year y	The parameter is appropriately described, which is electricity imported from the grid by the project activity in year y and is used for calculation of net electricity generation from the project activity
EG <sub>out,y</sub>	Electricity export to the grid by the project activity in year y	The parameter is appropriately described, which is electricity export to the grid by the project activity in year y and is used for calculation of net electricity generation from the project activity

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
9.1.1	Are all required parameters (according to the methodology and tools) included in the monitoring plan?	Yes. This has been verified by cross-checking the PDD against the methodology, it is in accordance with ACM0002 version 13.0.0.	OK	OK

## Conclusion

The monitored parameters included in the monitoring are complete and appropriate for monitoring of this project activity. In ERM CVS's opinion, the PPs are able to implement the monitoring plan.

### 9.1.2 Compliance of monitoring

For each parameter, ERM CVS has validated whether it has been addressed in accordance with the baseline and monitoring methodology.

Monitored Parameters	Parameter Names		
	EG <sub>facility,y</sub>	EG <sub>im,y</sub>	EG <sub>out,y</sub>
Parameter Description correct?	Yes	Yes	Yes
Description in line with methodology/tool?	Yes	Yes	Yes
Data unit correctly expressed?	Yes	Yes	Yes
Source clearly referenced?	Yes	Yes	Yes
Correct value provided for ex ante estimation?	Yes	Yes	Yes
How has this value been verified?	The value is verified against the FSR and FSR approval /2/.	This value is assumed to be zero.for exante estimations and is appropriate.	The value is verified against the FSR and FSR approval /2/.
Measurement method correctly described?	Yes. Net electricity generation is calculated as the difference between power exported (EG <sub>out,y</sub> ) to and imported (EG <sub>im,y</sub> ) from the grid, which are continuously measured and recorded monthly.	Yes. The readings of the electricity meter will be continuously measured and monthly recorded.	Yes. The readings of the electricity meter will be continuously measured and monthly recorded.
Measurement and recording frequency correctly described?	Yes. It is continuously measured and recorded monthly.	Yes. It is continuously measured and recorded monthly.	Yes. It is continuously measured and recorded monthly.
Correct reference to standards?	No. See CL 7  Yes. Please refer to CL 7. The relevant standard is included, and this CL is closed.	Yes. The calibration of the devices will be conducted in accordance with Electronic energy meter testing procedures (JJG 596-1999).	Yes. The calibration of the devices will be conducted in accordance with Electronic energy meter testing procedures (JJG 596-1999).
Indication of accuracy provided?	No. See CL 7  Yes. Please refer to CL 7. The accuracy information is included, and this CL is closed.	Yes. The accuracy of electricity meter will be no lower than 0.5S.	Yes. The accuracy of electricity meter will be no lower than 0.5S.
QA/QC procedures described?	Yes. Cross check measurement results with the invoices of electricity sold to the grid company.	Yes. Receipts for electricity sales will be kept for further verification, when necessary.	Yes. Receipts for electricity sales will be kept for further verification, when necessary.
QA/QC procedures appropriate/in line with methodology/tool?	Yes, QA/QC procedures are in line with methodology ACM0002 /9/.	Yes, QA/QC procedures are in line with methodology ACM0002 /9/.	Yes, QA/QC procedures are in line with methodology ACM0002 /9/.

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
9.1.2	Are all required parameters appropriately monitored in accordance with the methodology/tools?	See CL 7  ERM CVS has checked the revised PDD, and confirms that all required parameters have been included appropriately. CL 7 is closed.	CL-7	OK

## **Conclusion**

The means of monitoring all relevant monitored parameters complies with the requirements of the methodology and applicable tools.

### **9.2 Implementation of the monitoring plan**

ERM CVS evaluated the feasibility and sufficiency of the monitoring plan. The key components of the monitoring plan are as follows.

#### **Operational and management structure:**

The PDD contains a diagram illustrating the organisational structure to be implemented in order to monitor the project activity. Additionally a manager in charge of CDM will be in overall charge of the monitoring system and there will be separate roles for data recording and meter calibration and data management, in order to carry out the monitoring plan.

#### **Equipment:**

Two electricity meters will be installed for monitoring, the key meter and backup meter. The meters will be implemented in accordance with technical administrative code of electric energy metering (DL/T448—2000) /49/, and the owner and the grid company should co-authorize a third party, qualified metrical organization to conduct the calibration of the devices accordance with Electronic energy meter testing procedures (JJG 596-1999) /50/. The metering equipment will be calibrated annually and operates at no less than the stated level of accuracy 0.5s.

The equipments are considered sufficient to meet the monitoring requirements of the methodology.

#### **Quality Assurance and Quality Control (QA/QC) of equipment and data:**

The monitoring plan described in section B.7.3 of the PDD states that all data required for verification and issuance will be archived and be kept for 2 years after the end of the crediting period or the last issuance of CERs of the Project, whichever occurs later.

All data collected on-site will be checked internally, the data should be checked by relevant electricity sales receipt of the project owner for the purpose of quality control, before being compiled in an electronic format, to ensure that it is complete and of appropriate quality, and will perform a final check of the data, and analyse project performance prior to any verification.

#### **Feasibility of the monitoring plan:**

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
9.2.1	Are the arrangements described in the plan feasible and practical within the project design? Please consider:  (a) operational and management structure, including responsibilities	Please clarify as information below:  (a) The operational and organisational structure was considered not sufficient to fulfil the monitoring requirements of the methodology and to ensure that emission reductions can be verified. Roles and responsibilities are not identified in the organisational structure.  (b) Only the electricity meter measuring power output was stated to be calibrated. Please clarify how the meter that measures the power import be	CL-8	OK

	<p>(b) Plans for maintenance and calibration of equipment</p> <p>(c) Plans for QA/QC of equipment and data</p> <p>(d) Installation of monitoring equipment (whether in place, or planned)</p>	<p>calibrated in line with national standard</p> <p>(c) The QA/QC procedure in section B.7.1 of PDD states the cross check measurement of electricity sold to the grid company; however the cross check measurement of the power import from the grid and net power supplied to the grid are not stated in the PDD.</p> <p>(d) The information of installation of monitoring equipment is not specified in the PDD.</p> <p>ERM CVS has checked the revised PDD, and confirms that the arrangements described in the plan feasible and practical within the project design. CL 8 is closed.</p>		
--	---	--	--	--

## Conclusion

Based on the validation activities performed, ERM CVS concludes that:

- (a) The monitoring plan is fully in compliance with the requirements of the methodology;
- (b) The monitoring arrangements described in the monitoring plan are feasible within the project design;
- (c) The means of implementation of the monitoring plan, including the data management and quality assurance and quality control procedures, are sufficient to ensure that the emission reductions achieved by/resulting from the proposed CDM project activity can be reported ex post and verified.

The assessment conducted by ERM CVS is by means of review of the documented procedures, interviews with relevant personnel, project plans and physical inspections of the proposed CDM project activity site.

## 10 Validation Findings – Local Stakeholder Consultation and Environmental Impact

### 10.1 Environmental Impacts

As per VVS section M, ERM CVS evaluated whether an analysis of the environmental impacts of the project activity had been conducted in accordance with paragraph 37(c) of the CDM modalities and procedures.

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
10.1.1	Confirm whether an analysis of the environmental impacts of the project activity has been conducted, including transboundary impacts, and if those impacts are considered significant by the PPs or Host Party?	Yes. An analysis of the environmental impacts of the proposed project has been conducted by means of perform the Environmental Impact Assessment (EIA) /3/. The EIA form was prepared by Shenyang Environment Technology Research Institute, who is a qualified third party /3/. The EIA was approved by Liaoning Provincial Environmental Protection Bureau on 29 December 2011 /3/.	OK	OK
	Has the PP conducted an environmental impact assessment if required to do so by the host Party, in accordance with the Party's procedures?	Yes. An Environmental Impact Assessment (EIA) Report has been performed according to China requirements /3/. The EIA report was conducted by Shenyang Environment Technology Research Institute in December 2011 /3/ and the document has been reviewed by ERM CVS. The EIA was approved, as per host country regulations, by the Liaoning Provincial Environmental Protection Bureau on 29 December 2011 /3/. However, the name of Liaoning Provincial Environmental Protection Bureau is not consistent throughout PDD.	OK	OK

### Conclusion

An analysis of environmental impacts of the project has been undertaken /3/

In accordance with procedures required by the host Party, an environmental impact assessment was undertaken /3/.

### 10.2 Local Stakeholder Consultation

As per VVS section N, ERM CVS evaluated whether the project participants have completed a local stakeholder consultation process and that due steps were taken to engage stakeholders and solicit comments for the proposed project activity.

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
10.2.1	Have comments from relevant local stakeholders been invited prior to the publication of the PDD on the UNFCCC website?	Yes. In April 2012, the project owner put up posters of proposed project in the market fair of Furong Town which is the nearest residents' settlement to the proposed project. The project owner also requested local broadcasting station to disseminate information of the proposed project to the local community. The project owner randomly sent out questionnaires to local people and returned with comments. 50 out of 50 questionnaires /27/ were recovered. The original samples of the questionnaires were available at the site validation, and the content of the questionnaires are specified in the PDD. However, the evidence for posters and broadcasting as stakeholder consultation were not provided; the number of questionnaires was not indicated in the PDD, see CL 9.  ERM CVS has checked the revised PDD and evidence on broadcasting and posting the news of stakeholder survey /51/ and confirms that local stakeholders been invited prior to the publication of the PDD on the UNFCCC website the number of questionnaires is included. CL 9 is closed.	CL-9	OK



	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
	Is the summary of comments received as provided in the PDD complete?	Yes. Based on review of the 50 stakeholder survey questionnaires/27/, summary of comments received is provided in the PDD. In addition, ERM CVS interviewed several project stakeholders onsite and confirmed the feedback to be consistent with the summary and conclusion in the PDD	OK	OK
	Has due account been taken of any stakeholder comments received and is this adequately and clearly described in the PDD?	Yes. According to the survey questionnaire, all surveyed stakeholders were reflected in the summary described in the PDD.	OK	OK

## Conclusion

Based on the document reviews undertaken and interviews with local stakeholders, ERM CVS concludes that relevant local stakeholders were invited to comment on the project prior to publication of the PDD on the UNFCCC website, and that the consultation undertaken is adequate in the context of the project. The stakeholders did not identify any serious concerns or significant negative impacts from the construction of the project.

ERM CVS has therefore validated that the local stakeholder consultation is adequate

## 10.3 Public funding

ERM CVS evaluated whether the information relating to public funding in the PDD Annex 2 has been correctly presented.

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
10.3.1	If the project involves public funding from an Annex 1 country, have the annex 1 parties involved provided an affirmation that such funding does not result in a diversion of official development assistance?	Not applicable. The project will be financed by the project owner and local bank as justified in the FSR approval /2/. No public funding will be used for the project activity according to the interview with the project developer and the financial analysis in the FSR and its approval.	N/A	N/A
	Is the information provided on public funding (PDD, Annex 2) provided in compliance with the actual situation or planning as available by the PPs?	Not applicable.	N/A	N/A

## Conclusion

ERM CVS has confirmed that there is no public funding from Annex 1 countries.

## Appendix A: Documents and Interviewees

### A.1 DOCUMENT LIST

Reference number	Date	Document Title and version number (if applicable)
/1/	21 May 2012 20 August 2012 19 December 2012	Project Design Document for the proposed project Version 01 (for GSP) Version 02 and Version 03 (Final)
/2/	December 2011 31 December 2011	Feasibility Study Report (FSR) for the Project completed by Liaoning Power Design Institute FSR approval for the project issued by Liaoning Provincial Development and Reform Commission
/3/	December 2011 29 December 2011	Environmental Impact Assessment (EIA) for the Project prepared by Shenyang Environment Technology Research Institute Letter of approval of EIA for the Project issued by Liaoning Environmental Protection Bureau
/4/	28 July 2012	IRR calculation spreadsheet version 02
/5/	28 July 2012	ER calculation spreadsheet version 02
/6/	27 July 2012	Host Country Letter of approval for the proposed project issued by authority of China <a href="http://cdm.ccchina.gov.cn/web/index.asp">http://cdm.ccchina.gov.cn/web/index.asp</a>
/7/	12 December 2012	Modalities of Communication for the proposed project.
/8/	11 May 2012	CDM Executive Board: ACM0002 "Consolidated baseline methodology for grid-connected electricity generation from renewable sources", version 13.0.0
/9/	13 September 2012	CDM Executive Board: Tool for the demonstration and assessment of additionality version 06.1.0
/10/	29 September 2011	CDM Executive Board: Tool to calculate the emission factor for an electricity system version 02.2.1
/11/	17 July 2009	CDM Executive Board: Guidelines for the reporting and validation of plant load factors, Version 01, EB 48 Annex 11
/12/	25 November 2011	CDM Executive Board: CDM Validation and Verification Standard, Version 02.0, EB 65
/13/	11 April 2012	CDM Executive Board: CDM PDD Form (CDM PDD), Version 04.1
/14/	02 March 2012	CDM Executive Board: Guidelines for Project Design Document (CDM-PDD) and the Proposed new baseline and monitoring methodologies (CDM-NM), version 01.0, EB66
/15/	19 August 2009	CDM Executive Board: Glossary of CDM terms, Version 05.
/16/	03 June 2011	CDM Executive Board: Information note on the highest tariffs applied by the EB in its decisions on registration of projects in the People's Republic of China, version 02.0, EB 61 <a href="http://cdm.unfccc.int/Reference/Notes/reg_note07.pdf">http://cdm.unfccc.int/Reference/Notes/reg_note07.pdf</a>
/17/	15 July 2011	CDM Executive Board: Guidelines on the demonstration and assessment of prior consideration of the CDM, Version 04, EB 62 Annex 13
/18/	15 July 2011	CDM Executive Board: Guidelines on the assessment of investment analysis, Version 05, EB 62 Annex 05
/19/	2005	CDM Executive Board: The guidance for deviation in use of methodology AM0005 by several project activities in China by EB. <a href="http://cdm.unfccc.int/Projects/deviations/87512">http://cdm.unfccc.int/Projects/deviations/87512</a>
/20/	09 May 2012	CDM Service Clientage Contract between Liaoning Guoli Renewable Energy Co., Ltd and COWI China
/21/	23 February 2012	Specification of the wind turbine by the equipment manufacturer- CSIC (Chongqing) Haizhuang Wind power Equipment Co., Ltd
/22/	28 February 2012	Equipment purchase contract of wind power turbine and generator between Liaoning Guoli Renewable Energy Co., Ltd and CSIC (Chongqing) Haizhuang Wind power Equipment Co., Ltd
/23/	18 August 2009-17 August 2009	Business License of Liaoning Guoli Renewable Energy Co., Ltd by Shenyang City Administration of Industry and Commerce
/24/	18 April 2012	Prior Consideration of the CDM received by EB (EB notification)
/25/	25 April 2012	Prior consideration form sent to NDRC.
/26/	25 April 2012	Emission Reduction Purchase Agreement (ERPA) signed between Liaoning Guoli Renewable Energy Co., Ltd and Vitol S.A
/27/	-	50 stakeholder questionnaires
/28/	Valid until 11 March 2013	Class A of power industry, construction engineering certificate for Liaoning Power Design Institute, Accreditation No. A121000042, issued by the Ministry of Construction of the People's Republic of China.
/29/	Valid until 16 February 2015	Class A of Environmental Protection certificate for Shenyang Environment Technology Research Institute, Accreditation No. 1504, issued by the Ministry of Environmental Protection of the People's Republic of China.
/30/	2008, 2009, 2010 and 2011	China Electric Power Yearbook
/31/	2008-2010	China Energy Statistical Yearbook
/32/	2006	2006 IPCC Guidelines for National Greenhouse Gas Inventories
/33/	20 October 2011	China NDRC: 2011 Baseline Emission Factors for Regional Power Grids of China, NDRC official website: <a href="http://cdm.ccchina.gov.cn/WebSite/CDM/UpFile/File2720.pdf">http://cdm.ccchina.gov.cn/WebSite/CDM/UpFile/File2720.pdf</a>
/34/	16 March 2007	Enterprise Income Tax Law of the People's Republic of China
/35/	2002	Interim Rules on Economic Assessment of Electrical Engineering Retrofit Projects
/36/	05 November 2008	Temporary Regulation on Value Added Tax issued by the State Council <a href="http://www.gov.cn/jwqk/2008-11/14/content_1149516.htm">http://www.gov.cn/jwqk/2008-11/14/content_1149516.htm</a>

Reference number	Date	Document Title and version number (if applicable)
/37/	Issued on 09 December 2008 and valid since 01 January 2009	Notice of policies regarding the value added tax on comprehensive utilization of resources and other products, Caishui [2008] No.156, issued by Ministry of Finance & State Administration of Taxation. <a href="http://www.gov.cn/ztlz/kdxx/content_1176455.htm">http://www.gov.cn/ztlz/kdxx/content_1176455.htm</a>
/38/	Adopted on 28 November 2007 and in effect from 01 January 2008.	Implementation Rules for Law of the People's Republic of China on Enterprise Income Tax, Promulgated by Decree No. 512 of the State Council of the People's Republic of China
/39/	1985	Interim Regulations on City Maintenance and Construction Tax of the People's Republic of China.
/40/	20 August 2005  07 November 2010  31 January 2011	Decision on the revision of the "Provisional Regulations of Levying Education Surtax", issued by State Council Notification on Integrate the Issues of Local Education Surtax Policy, issued by the Ministry of Finance of the People's Republic of China <a href="http://zhs.mof.gov.cn/zhengwuxinxi/zhengcefabu/201011/t20101116_349016.html">http://zhs.mof.gov.cn/zhengwuxinxi/zhengcefabu/201011/t20101116_349016.html</a> Notification on Local Education Surtax Standard by Liaoning Provincial Government <a href="http://www.sydj.com/sydsww/75724469611528192/20110706/12910.html">http://www.sydj.com/sydsww/75724469611528192/20110706/12910.html</a>
/41/	28 February 2011	2010 national economic and social development statistical bulletin prepared by National Bureau of Statistics of China
/42/	11 April 2002	Approval and implementation of Power industry system reform in China
/43/	08 June 2012 - 07 July 2012	UNFCCC project website <a href="http://cdm.unfccc.int/Projects/Validation/DB/KFWWIW18T9HBUSPKNTJTR2EKZIHMN9/view.html">http://cdm.unfccc.int/Projects/Validation/DB/KFWWIW18T9HBUSPKNTJTR2EKZIHMN9/view.html</a>
/44/	2007 to 2011	China Wind Farm Installation Capacity Statistic issued by Chinese Wind Energy Association
/45/	27 July 2009	Notification on Improve Policy of Wind Power Tariff, by China NDRC <a href="http://www.sdpc.gov.cn/zcfb/zcfbtz/2009tz/t20090727_292827.htm">http://www.sdpc.gov.cn/zcfb/zcfbtz/2009tz/t20090727_292827.htm</a>
/46/	23 July 2012	Notification on the central geographical coordinates of Liaoning Guoli Fuxin Wangsiyingzi Wind Power Project, issued by Liaoning Power Design Institute
/47/	-	Cross-check data of financial input values of Similar Registered CDM Projects in Liaoning Province. Refer to details as A.2 below.
/48/	-	China's Consumer Price Index (CPI) and Producer Price Index (PPI) of 2010 and 2011 <a href="http://news.xinhuanet.com/fortune/2011-01/20/c_121003561.htm">http://news.xinhuanet.com/fortune/2011-01/20/c_121003561.htm</a> <a href="http://news.sohu.com/20120117/n332422898.shtml">http://news.sohu.com/20120117/n332422898.shtml</a>
/49/	2000	Technical Administrative Code of Electric Energy Metering (DL/T448-2000)
/50/	1999	Verification Regulation of Electrical Energy Meters with Electronics (JJG 596-1999)
/51/	24 July 2012	Evidence on broadcasting and posting the news of stakeholder survey, issued by Wangsiyingzi Village committee
/52/	07 December 2011	Opinion on Grid Connection of Liaoning Guoli Fuxin Wangsiyingzi Wind Power Project, issued by Liaoning Electric Power Company Limited
/53/	2 March 2012	Glossary of CDM terms version 06.0, issued by EB 66
/54/	18 December 2012	Confirmation letter on the authorization of MoC issued by the Liaoning Guoli Renewable Energy Co., Ltd

## A.2 Similar Registered CDM Projects in Liaoning Province

The projects listed below were used for the cross-check of financial input values (reference /47/)

UNFCCC Ref.	Project Name	Installed Capacity (MW)	Total static investment (million RMB)	Unit investment cost (RMB/kW)	Plant Load Factor (%)	Annual operating cost (million RMB)	Annual O&M cost/ Total investment (%)	Electricity tariff including VAT (RMB/MWh)
3934	Liaoning Linghai Shengli Wind Farm Project	49.5	485.59	9,810	23.56%	8.73	1.8%	0.51
4059	Liaoning Changtu Manjing Wind Power Project	49.5	521.21	10,530	24.57%	14.91	2.9%	0.61
4067	Dalian Tuchengzi Wind Power Project 30 MW	30	252.31	8,410	20.90%	6.90	2.7%	0.61
4104	Liaoning Kangping Dongsheng Wind Power Project	49.5	456.62	9,225	24.26%	12.66	2.8%	0.61
4195	Liaoning Kangping Zhangqiang Wind Power Project	49.5	399.24	8,065	25.46%	19.23	4.8%	0.62 before accumulative operation 30000 hours, 0.45 after accumulative operation 30000 hours

UNFCCC Ref.	Project Name	Installed Capacity (MW)	Total static investment (million RMB)	Unit investment cost (RMB/kW)	Plant Load Factor (%)	Annual operating cost (million RMB)	Annual O&M cost/ Total investment (%)	Electricity tariff including VAT (RMB/MWh)
4367	Kaiyuan Yemin 49.5 MW Wind Power Project	49.5	575.9	11,634	24.83%	12.79	2.2%	0.61
4401	Liaoning Xidayingzi Wind Farm Project	49.5	506.54	10,233	24.06%	12.60	2.5%	0.61
4415	Huadian Tieling Zhenxibao Wind Farm Project	48	507.6	10,575	24.18%	11.57	2.3%	0.61
4416	Liaoning Julonghu Wind Farm Project	49.5	506.73	10,237	24.01%	12.61	2.5%	0.61
4749	Huaneng Panjin Dawa Wind Farm Project	49.5	517.99	10,464	24.65%	11.76	2.3%	0.61
4784	Liaoning Kangping Aoliyingzi Wind Power Project	49.5	478.9	9,675	25.77%	15.55	3.2%	0.61
4842	Liaoning Faku Ma'anshan North Wind Power Project	49.5	472.05	9,536	26.53%	19.72	4.2%	0.61
4845	Liaoning Dongfanghong Wind Farm Project	49.5	504.4266	10,190	24.03%	12.59	2.5%	0.61
4909	Liaoning Faku Ma'anshan Wind Power Project	49.5	475.91	9,614	27.98%	19.57	4.1%	0.61
4933	Liaoning Qianfoshan Wind Farm Project	49.5	504.83	10,199	24.04%	12.59	2.5%	0.61
4987	Liaoning Faku Yemaotai Wind Power Project	49.5	490.66	9,912	24.33%	13.54	2.8%	0.61
5009	Liaoning Kangping Zhangjiayao Wind Power Project	49.5	466.78	9,430	23.98%	12.07	2.6%	0.61
5060	Liaoning Chaoyang Kazuo Zhongsanjia Wind Power Project	30	314.832	10,494	23.37%	7.81	2.5%	0.61
5109	Liaoning Zhangwu Pingandi Wind Farm Project	49.5	490.01	9,899	22.62%	11.65	2.4%	0.61
5147	Liaoning Faku Woniushi Wind Power Project	49.5	481.15	9,720	24.37%	13.64	2.8%	0.61
5312	UPC Linghai Xibaqian 49.5 MW Wind Farm Liaoning	49.5	505.72	10,217	24.55%	12.91	2.6%	0.61
5377	Liaoning Chaoyang Lishugou Wind Power Project	49.5	463.56	9,365	22.42%	11.41	2.5%	0.61
5429	Guodian UPC Kangping Haoguan 49.5 MW Wind Farm Liaoning	49.5	469.71	9,489	24.69%	15.98	3.4%	0.61
5444	Fumeng Gulibengao Wind Farm Project	49.5	485.69	9,812	23.66%	14.85	3.1%	0.61
5446	CGN Dalian Xizhongdao Wind Farm Project	48.6	538.57	11,082	26.36%	16.57	3.1%	0.61
5448	Fumeng Maniuhu Wind Farm Project	49.5	490.01	9,899	23.75%	13.66	2.8%	0.61
5472	Diobingshan Wind Power Project	49.5	534.38	10,796	25.22%	9.97	1.9%	0.61
5503	Liaoning Jianping Yangshuling Wind Power Project	49.5	498.69	10,074	23.61%	13.07	2.6%	0.61
5587	Liaoning Kangping Fangjia Wind Power Project	49.5	497.28	10,046	24.74%	14.69	3.0%	0.61
5633	Liaoning Jianping Longgang Wind Power Project	49.5	506.54	10,233	24.61%	13.42	2.7%	0.61
5747	CGN Liaoning Paoya Dabeishan Wind Power Project	49.5	514.55	10,395	23.69%	13.02	2.5%	0.61
5776	Liaoning Tieling Taizishan Wind Power Project	49.5	484.97	9,797	24.43%	14.83	3.1%	0.61
5783	Beizhen Yangjiadian Wind Power	49.5	483.09	9,759	23.89%	14.79	3.1%	0.61

UNFCCC Ref.	Project Name	Installed Capacity (MW)	Total static investment (million RMB)	Unit investment cost (RMB/kW)	Plant Load Factor (%)	Annual operating cost (million RMB)	Annual O&M cost/ Total investment (%)	Electricity tariff including VAT (RMB/MWh)
	Project							
5851	Guoshuitou Diaobingshan Quanyangou Wind Power Project	49.5	529.16	10,690	23.96%	13.22	2.5%	0.61
5855	Datang Haipai Donggang Wind Power Project	49.5	461.35	9,320	22.59%	11.71	2.5%	0.61
5886	Zhongdiantou Dalian Tuoshan Wind Farm Project	49.5	451.66	9,124	22.00%	10.87	2.4%	0.61
6009	Liaoning Fuxin Qianzhatai Wind Farm Project	49.5	484.63	9,791	22.99%	13.58	2.8%	0.61
6058	Fuxin Kaidi Tailama Dongshan Wind Power Project	49.5	467.65	9,447	23.65%	14.85	3.2%	0.61
<b>Minimum value</b>			<b>252.31</b>	<b>8,065</b>	<b>20.90%</b>	<b>6.90</b>	<b>1.8%</b>	<b>0.51</b>
<b>Average value</b>			<b>480.96</b>	<b>9,926</b>	<b>24.17%</b>	<b>13.31</b>	<b>2.8%</b>	<b>0.61</b>
<b>Maximum value</b>			<b>575.90</b>	<b>11,634</b>	<b>27.98%</b>	<b>19.72</b>	<b>4.8%</b>	<b>0.61</b>
<b>The proposed project</b>	<b>Liaoning Guoli Fuxin Wangsiyingzi Wind Power Project</b>	<b>48</b>	<b>461.84</b>	<b>9,622</b>	<b>22.97%</b>	<b>13.14</b>	<b>2.8%</b>	<b>0.61</b>

Note: the similar projects are selected as wind power projects that registered in recent years (2011-2012) with installed capacity of 24-72 MW in Liaoning Province public available in UNFCCC website.

## A.3 INTERVIEWS

Reference	Name	Title & Organisation	Main topics discussed
IV1	Wei Meng	Manager of Liaoning Guoli Renewable Energy Co. Ltd.	<ul style="list-style-type: none"> <li>➤ Project background information.</li> <li>➤ CDM considerations</li> <li>➤ Project financing</li> <li>➤ Project technology, operation, maintenance.</li> <li>➤ Environmental Impact</li> <li>➤ Monitoring and management plan</li> <li>➤ Project approval status</li> <li>➤ Stakeholder consultation process</li> </ul>
IV2	Peng Wang	Assistant of Liaoning Guoli Renewable Energy Co. Ltd.	
IV3	Yongan Zhong	CDM manager of COWI	<ul style="list-style-type: none"> <li>➤ Applicability of selected methodology.</li> <li>➤ Baseline determination.</li> <li>➤ Additionality</li> <li>➤ Emission reductions calculation.</li> <li>➤ Monitoring plan</li> <li>➤ Stakeholder consultation process</li> <li>➤ Environmental Impact</li> <li>➤ Society and Sustainable Development</li> </ul>

## Appendix B: Remediation Form

### Corrective Action Requests (CARs), Clarification Requests (CLs) and Forward Action Requests (FARs)

Corrective Action Requests	Ref. to Question Number	Summary of PPs' response	Final conclusion
<p>CAR 1</p> <p>The LoAs from host party and Annex I party and the MoC have not been made available for validation.</p>	<p>5.1.1 5.1.2 5.1.3 5.1.4 5.2.1 5.3.1 5.4.1</p>	<p>At the time of the request for registration, the Project is designed to be a unilateral project, the LoA from China and the MoC have been provided.</p> <p>The MoC has been provided.</p>	<p>The host party LoA /6/ was reviewed and confirms that P.R.China ratified the Kyoto protocol on 30 August 2002, confirms voluntary participation in the proposed project, references the precise project title as written in the PDD, and confirms the contribution of the project to the sustainable development of the host party.</p> <p>ERM CVS has checked the Modalities of Communication /8/, and confirms the MoC been signed by the authorised signatories of the PP and the signatories are consistent with the names given in Annex 1 of the MoC.</p> <p>CAR 1 is closed.</p>
<p>CAR 2</p> <p>The following values used in the PDD and associated annexes are inconsistent with the FSR:</p> <p>1. Electricity delivered to the grid is 96.576 GWh in the PDD and IRR calculation spreadsheet, which is consistent with FSR and its approval; however, 96.58GWh is shown in the table B-3;</p> <p>2. Total investment is 460,111,900 RMB</p>	<p>8.3.5 8.3.6 8.3.7 8.3.12</p>	<p>1. The value in the table B-3 has already changed into 96.576GWh consistent with FSR and others in the PDD v02.</p> <p>2. The total investment is 461,838,500RMB consistent with the FSR and its approval. The value of total investment in the PDD is a type-mistake which is corrected in the PDD v02. The value of total investment in the IRR calculation spreadsheet is corrected in the IRR calculation spreadsheet v02</p> <p>3. The O&amp;M cost is 13,135,667RMB on average in the FSR. The value of O&amp;M cost on average in the PDD is a type-mistake which is corrected in the PDD v02.</p>	<p>ERM CVS has checked the revised PDD and IRR calculation spreadsheet version 02 against the FSR, and confirms that the parameters of electricity delivered to the grid, total investment cost and O&amp;M cost have been corrected in the revised PDD and IRR calculator version 02 in consistent with the FSR.</p> <p>CAR 2 is closed.</p>

# Validation Report

Corrective Action Requests	Ref. to Question Number	Summary of PPs' response	Final conclusion
<p>in PDD, but in the IRR calculation spreadsheet the total investment is 463,278,500 RMB, both are not consistent with 461,838,500 RMB in the FSR and its approval.</p> <p>3. O&amp;M cost in PDD is not consistent with the value in the FSR.</p>			
<p>CAR 3</p> <p>The calculation of 'Reparation of previous loss' (row 14 of the 'C4 Loss and profits distributio' tab) in the IRR calculation spreadsheet is not consistent with Chinese tax law, which states that losses can be carried forward for up to 5 years. Please clarify how the analysis is consistent with the relevant tax legislation.</p>	8.3.10	<p>In the prior IRR calculation spreadsheet this part was not connected with the formulate by negligence, the IRR calculation spreadsheet has been corrected consistent with the FSR; the values in PDD have also been corrected.</p>	<p>ERM CVS has checked the revised PDD and IRR calculation spreadsheet version 02, and confirms that the mistake of calculation of 'Reparation of previous loss' (row 14 of the 'C4 Loss and profits distributio' tab) in the IRR calculation spreadsheet and PDD has been corrected in line with the Notice of policies regarding the value added tax on comprehensive utilization of resources and other products.</p> <p>CAR 3 is closed.</p>
<p>CAR 4</p> <p>As per VVS paragraph 120(e), the sensitivity analysis is required to be assessed by the PP to determine under what conditions variations in the result would occur, and the likelihood of these conditions, which are missing from the PDD.</p> <p>Please justify how the sensitivity analysis in the PDD in line with the CDM requirements, and substantiate the results</p>	8.3.14	<p>The sensitivity analysis is updated in the PDD. Please see in the PDD v02 Part B.5.</p>	<p>ERM CVS has checked the revised PDD and IRR calculation spreadsheet version 02, and confirms that the variations in the sensitivity analysis cover a range of +10% and -10%. The variation in each parameter needed in order for the IRR to reach the benchmark, and the likelihood of such variations taking place, are explained in the PDD. This is in line with the Guidelines on the Assessment of Investment Analysis /19/.</p> <p>CAR 4 is closed.</p>

# Validation Report

Corrective Action Requests	Ref. to Question Number	Summary of PPs' response	Final conclusion
with evidence.			
<p>CAR 5</p> <p>The Step 4: Common practice analysis in the section B.5 of PDD is not fully consistent with "Tool for the demonstration and assessment of additionality (version 06.1.0)", please make correction.</p>	<p>8.5.3</p> <p>8.5.4</p>	<p>According to the Guidance on the common practice (Version 01.1), the common practice analysis is described as following steps:</p> <p><b>Step 1:</b> Calculate applicable output range as +/-50% of the design output or capacity of the proposed project activity. The project activity is a 48MW wind power project. The applicable output range is selected as +/-50% of the design capacity of the proposed project activity, which is 24~72MW;</p> <p><b>Step 2:</b> In the applicable geographical area, identify all plants that deliver the same output or capacity, within the applicable output range calculated in Step 1, as the proposed project activity and have started commercial operation before the start date of the project. Note their number <math>N_{all}</math>. Registered CDM project activities shall not be included in this step.</p> <p><b>Step 2.1</b> Identify the applicable geographical area In China, provincial governments are authorized to regulate wind power projects in each province by the NDRC, so the investment climate, tariff, land policy, regulations etc. are usually similar for wind power projects in the same province. The location of the proposed project belongs to Liaoning Province. Therefore, Liaoning Province is selected as the geographical scope for the common practice analysis of the project.</p> <p><b>Step 2.2</b> Identify the applicable projects Since the starting date of the project activity was February 2012, the projects started before February 2012 shall be identified. As per the guideline on common practice, all the projects generate power within the capacity range of 24~72MW shall be listed. PP divided the plants into two categories, <math>N_{all}</math> wind power plants and <math>N_{all}</math> other power plants.</p> <p>Hence, <math>N_{all} = N_{all \text{ wind power plants}} + N_{all \text{ other power plants}}</math></p>	<p>ERM CVS has checked the revised PDD/1/, and confirms that the latest version of the 'Tool for the demonstration and assessment of additionality' is applied and the steps of common practice of analysis from the tool are being followed in the revised PDD.</p> <p>The geographical scope of the analysis determined as Liaoning province is considered reasonable based on ERM CVS's sectoral and local expertise.</p> <p>The similar projects were chosen from projects that have started commercial operation before the start date of the project (28 February 2012), and after 2002 since there was a significant reform in year 2002 on the electric power sector conducted by the State Council /43/. Under the reform enacted in 2002, the China power industry started to create a market-driven structure by separating power generation from transmission and distribution (the grid), and the market conditions for renewable energy project development has changed significantly after 2002. So it is deemed to be reasonable and acceptable.</p> <p>China Electric Power Yearbook/31/ and China Wind Farm Installation Capacity Statistic /45/, which are official publication of the Government of China, and Information on the UNFCCC website are applied as reference for common practice analysis and have been reviewed by ERM CVS.</p> <p>The data on wind power projects in Liaoning province is checked from the China Wind Farm Installation Capacity Statistic 2011 /44/, China Electric Power Yearbook (2006-2011)/30/ and information on the UNFCCC</p>



# Validation Report

Corrective Action Requests	Ref. to Question Number	Summary of PPs' response	Final conclusion
		<p>As per the Installed Capacity of Wind Farms in China 2007-2010 and China Wind Farm Installation Capacity Statistic of 2011 issued by Chinese Wind Energy Association, China Electric Power Yearbook (2011) and information on the UNFCCC website, it is known that all the wind power projects in Liaoning are seeking help from applying CDM. Up to now, all the wind farms within the range of 24 MW to 72 MW as the proposed project with commercial date after 2002 in Liaoning have been developed as CDM projects.</p> <p>Thus, <math>N_{\text{all wind power plants}} = 0</math>; and <math>N_{\text{all}} = 0 + N_{\text{all other power plants}}</math>.</p> <p><b>Step 3:</b> within plants identified in Step 2; identify those that apply technologies different that the technology applied in the proposed project activity. Note their number <math>N_{\text{diff}}</math>.</p> <p><math>N_{\text{all other power plants}}</math> identified above have different energy source from wind power. Thus, <math>N_{\text{diff}}</math> is identified in this step as all the other power plants within the capacity of 24~72MW located in Liaoning Province. <math>N_{\text{diff}} = N_{\text{all other power plants}}</math>.</p> <p><b>Step 4:</b> Calculate factor <math>F = 1 - N_{\text{diff}} / N_{\text{all}}</math> representing the share of plants using technology similar to the technology used in the proposed project activity in all plants that deliver the same output or capacity as the proposed project activity.</p> <p><math>F = 1 - N_{\text{diff}} / N_{\text{all}} = 1 - N_{\text{all other power plants}} / N_{\text{all other power plants}} = 0</math> &amp; <math>N_{\text{all}} - N_{\text{diff}} = 0</math></p> <p>Since the factor F is less than 0.2 and <math>N_{\text{all}} - N_{\text{diff}}</math> is less than 3, it is concluded that the proposed project activity is a not common practice within the electricity generation sector in the applicable geographical area.</p>	<p>website.</p> <p>All steps found to be correctly followed, and factor F is correctly calculated.</p> <p>Keeping in view all above, CAR 5 is closed.</p>

# Validation Report

Clarification Requests	Ref. to Question Number	Summary of PPs' response	Final conclusion
CL 1  The centre geographical coordinate of the wind farm is N41° 59' 32", E122° 3' 23", which is not sourced from the FSR, please clarify how it is determined.	6.4.1	The centre geographical coordinates of wind farm is N41° 59' , E122° 3' given in the approval of the FSR. More accurate coordinates are provided by the design institute of FSR. The centre geographical coordinates of wind farm is N41° 59' 32", E122° 3' 23" (N41.9922° , E122.0563° ).The centre geographical coordinates of wind farm has changed into N41.9922° , E122.0563° in the PDD v02 Part A.2.4.v02	The geographical coordinates of wind tower given in the FSR is not the centre point. ERM CVS checked the Notification on the central geographical coordinates of Liaoning Guoli Fuxin Wangsiyingzi Wind Power Project /47/ and confirm the location is correctly stated as N41.9922° , E122.0563° in the PDD v02. Therefore, CL 1 is closed.
CL 2  The PDD does not state the operation start date.	6.4.4	As estimate the project will start operational on April 1st, 2013. The date has been added in the PDD V02 Part B.5	As the construction of the project has not started, the estimate the project will start operational on 01 April 2013. This information has been checked and confirmed to be consistent with the construction schedule in the FSR /2/. The operation start date has been added in section B.5 of the revised PDD as confirmed by ERM CVS. Therefore, CL 2 is closed.
CL 3  Justification/Explanation of GHG Source in the baseline scenario is not fully consistent with ACM0002 /9/.	7.3.1	Justification/Explanation of baseline has been corrected in the PDD V02 Part B.3 according with ACM 0002	ERM CVS has reviewed the revised PDD, and confirmed that all the justification/explanation of GHG Source in the baseline scenario in section B.3 of the revised PDD has been corrected in consistence with the methodology. CL 3 is closed.
CL 4  The key meter and the crosscheck meter in the line diagram of Section A.3 and B.3 cannot be distinguished.	7.3.2	The key meter and the backup meter in the line diagram of Section A.3 and B.3 have been distinguished with M1 and M2, the key meter is M1 and the backup meter is M2 in the PDD v02.	ERM CVS has checked the revised PDD, confirms that the key meter and the backup meter in the line diagram of Section A.3 and B.3 have been distinguished with M1 and M2, the key meter is M1 and the backup meter is M2 in Section A.3 in the revised PDD. CL 4 is closed.
CL 5  The parameters Power generation by source, CAP <sub>Total</sub> , CAP <sub>Thermal</sub> , EF <sub>Coal,Adv.,y</sub>	7.5.1	The data and parameters (Power generation by source, EF <sub>Coal,Adv.,y</sub> , EF <sub>Oil,Adv.,y</sub> , EF <sub>Gas,Adv.,y</sub> and EF <sub>CO2,I</sub> , CAP <sub>Total</sub> , CAP <sub>Thermal</sub> ,) have been corrected in the PDD v02.	ERM CVS has checked the revised PDD, confirms that all the parameters required by the methodology and tools are correctly described in the revised PDD. CL 5

# Validation Report

Clarification Requests	Ref. to Question Number	Summary of PPs' response	Final conclusion
<p>EF<sub>Oil,Adv.,y</sub>, EF<sub>Gas,Adv.,y</sub> and EF<sub>CO2,I</sub> that are required by the methodology and tools and for emission factor calculations were correctly not described in the PDD. .</p> <p>Please correctly justify the data and parameters.</p>			is closed.
<p>CL 6</p> <p>Some information of project and CDM activities are missing or not correctly stated as listed below:</p> <ol style="list-style-type: none"> <li>1. The author of the EIA report was Shenyang Technology Research Institute as validated by ERM CVS on the EIA provided by PP, which is not Liaoning Technology Research Institute;</li> <li>2. The FSR was completed in December 2011 as validated by ERM CVS on FSR provided by PP, not May 2011 as shown in the PDD;</li> <li>3. The project activity start date is not indicated in table B-2 of the PDD;</li> <li>4. The date of the contract of CDM Consulting Service with COWI China in the table B-2 of the PDD is different from the date of the signed contract ;</li> <li>5. The operation start date is not</li> </ol>	8.1.1	<p>The implementation timeline is renewable in the PDD v02.</p> <ol style="list-style-type: none"> <li>1. Dec 2011: The EIA report was completed by Shenyang Technology Research Institute</li> <li>2. Dec 2011: Liaoning Power Design Institute Completed the FSR.</li> <li>3. Feb 28, 2012: The main equipment purchase contract was signed, which is the Project activity start date)</li> <li>4. April 25, 2012: Signed the contract of CDM Consulting Service with COWI China.</li> <li>5. April 1, 2013: The project will start operational</li> </ol>	<p>ERM CVS has checked the revised PDD, and confirms that:</p> <ol style="list-style-type: none"> <li>1. The author of the EIA report was Shenyang Technology Research Institute in the revised PDD, consistent with the EIA report;</li> <li>2. The date of FSR completion was December 2011 in the revised PDD, which is consistent with the date on FSR;</li> <li>3. The project activity start date is indicated in table B-2 of the revised PDD as 28 February 2012, consistent with the equipment purchase contract of wind power turbine and generator /22/;</li> <li>4. The date of the contract of CDM Consulting Service with COWI China in the table B-2 of the revised PDD was 09 May 2012/20/, consistent with the date in the CDM Consulting contract;</li> <li>5. The operation start date is indicated table B-2 of the revised PDD as 01 April 2012, which is in line with the construction schedule of the project of the FSR /2/.</li> </ol> <p>CL 6 is closed.</p>

# Validation Report

Clarification Requests	Ref. to Question Number	Summary of PPs' response	Final conclusion
indicated table B-2 of the PDD.  Please provide full exact information for the implementation timeline.			
CL 7  The information of accuracy level and calibration standard of the meters is not provided in section B.7.1 of PDD.	9.1.2	The accuracy level and calibration information have been provided in Part B.7.1 of PDD v02.	ERM CVS has checked the revised PDD, and confirms that the accuracy level and calibration information have been included appropriately, which are in line with the industry standard /49/ and national standard in China /50/. CL 7 is closed.
CL 8  Please clarify as information below:  1. The operational and organisational structure is considered not sufficient to fulfil the monitoring requirements of the methodology and to ensure that emission reductions can be verified. Roles and responsibilities are not identified in the organisational structure.  2. Only the electricity meter measuring power output is stated to be calibrated. Please clarify how the meter that measures the power import be calibrated in line with national standard  3. The QA/QC procedure in section B.7.1 of PDD states the cross check measurement of electricity sold to the grid company; however the cross check measurement of the power import	9.2.3	1. The operational and organisational structure has been added in Part B.7.2 of PDD v02  2. The meters are bio-direction meters, the output and import can be calibrated at the same time in line with Electronic energy meter testing procedures (JJG 596-1999).as well.  3. The cross check measurement of the power import from the grid and net power supplied to the grid have been added in the PDD v02.	ERM CVS has checked the revised PDD, and confirms that:  1. Roles and responsibilities are identified in the organisational structure;  2. Both the electricity meters measuring power export and import will be calibrated in line with the relevant and applicable standard;  3. The cross check measurement of the power import from the grid and net power supplied to the grid are stated in the revised PDD as well as the electricity sold to the grid company;  Therefore, the arrangements described in the plan feasible and practical within the project design. CL 8 is closed.  CL 8 is closed.

# Validation Report

Clarification Requests	Ref. to Question Number	Summary of PPs' response	Final conclusion
from the grid and net power supplied to the grid are not stated in the PDD.			
CL 9  The evidence for posters and broadcasting as stakeholder consultation and indicate the number of questionnaires in the section E of the PDD is not provided.	10.2.1	<p>The evidences for posters and broadcasting as stakeholder consultation have been provided.</p> <p>The number of questionnaires is 50 and it has been indicated in the section E of the revised PDD.</p>	ERM CVS has checked the revised PDD and evidence on broadcasting and posting the news of stakeholder survey /52/ and confirms that local stakeholders been invited prior to the publication of the PDD on the UNFCCC website the number of questionnaires is included. CL 9 is closed.

# Validation Report

Document template history [delete before submitting Request for Registration]

Date	Version Number	Change
09 February 2009	Version 1	Initial Adoption
06 December 2010	Version 2	Revision of sections relating to stakeholder comments, common practice analysis, project boundaries, elimination of baseline alternatives, financial analysis and technical aspects relating to projects at existing facilities
28 March 2011	Version 3	Revisions to include more detailed requirements to check consistency of equations, units and project specific information, and guidance on the level of detail required in project description
28 May 2011	Version 4	Revision of validation protocol to include further detail relating to paragraph 92 of the VVM
22 October 2011	Version 5	Content and structural updates including removal of the separate validation protocol and incorporations of relevant questions into the report, revision of question wording to improve clarity and to ensure question wording is in line with the VVM, reduction of repetition in the report
01 May 2012	Version 6	Revision of template to comply with the VVS, which replaces the VVM